

Handbook of Public Sector Economics

edited by
Donijo Robbins

Handbook of Public Sector Economics

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edited by

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*To my parents
Don and Marijo*

Preface

The Handbook of Public Sector Economics is first and foremost a textbook for graduate students in public administration and public policy. Although most handbooks are used as reference texts, this particular handbook was proposed and written as a textbook to be used as the primary book in a graduate public economics course or an important secondary or supplementary book in a public finance or public policy course in a program where a course in public economics is not offered. The primary goal of this book is to contribute to the use and understanding of public economics and its role in public administration, public policy, and decision making. The book exposes students of public policy and administration to a wide array of current issues surrounding the public provision and production of goods and services.

Three major reasons, I believe, explain the usefulness of such a text. First, the book documents the history of economics and fiscal doctrine and their place in public policy and administration. Second, it provides a comprehensive exploration of the theory of public goods and the structures from which resources are collected and expended. Finally, it explores the emerging and heavily-debated issues of economics that are important to students, faculty, and practitioners;

for example, the effects of fiscal policies on saving and investment, consumer behavior, labor supply, wealth, property, and trade. These important reasons guided the development and organization of this text.

Unlike textbooks, this handbook has no pictures, unless a supply and demand figure is considered a picture. Another constraint is that not all issues of public economics are included; for example, specialization and the different market systems are not discussed. My rationale for leaving out such topics, albeit important, rests on a belief that most graduate students in public administration and public policy have been exposed to these subjects in an undergraduate economics course. If not, consulting an undergraduate introductory text should clear up questions that this book does not address.

Each chapter was written specifically for this book and in a manner that is simple and straightforward; as such the text is easy to follow and understand. Although each chapter could stand alone, the flow of the book was put together in such a way that the first two parts establish the foundation of public economics. In addition, each part substantiates the aforementioned reasons for this book.

Part I introduces public economics, fiscal doctrine, and the role of democracy and bureaucracy within the economic framework. Lynn C. Burbridge begins, in Chapter 1, with the history of economics and its doctrines from the Classical economists to the Marxists. Fiscal systems and functions are presented by William Voorhees in Chapter 2. Together, the first two chapters summarize the theory and practice of fiscal doctrine. In Chapter 3, Jane Beckett-Camarata addresses market efficiency and failure within the realm of democratic decision-making. Chapter 4 concludes Part I with Patricia Moore outlining the role of bureaucracy and bureaucrats.

Part II focuses on the theory of public goods. Paul C. Trogen defines public goods and Robert J. Eger III provides a detailed analysis of the provision and production of public goods in Chapters 5 and 6, respectively.

Part III addresses the collection and distribution of government resources. In Chapter 7, Carol Ebdon explains revenue sources, the equity and efficiency of collecting revenues, and current trends and implications. Building on fiscal federalism, Suzanne Leland presents the fiscal characteristics of public expenditures in Chapter 8. Chapter 9, written by Shama Gamkhar, defines and analyzes inter-governmental grants. The collection and distribution of resources are not always in balance. Gary R. Rassel discusses, in Chapter 10,

this imbalance by outlining its history and analyzes the impact of public debt in the United States. The section concludes with applications of economic theory. John R. Bartle examines transportation infrastructure and Donijo Robbins and Gerald J. Miller evaluate e-government technology expenditures in Chapters 11 and 12, respectively.

Part IV concludes the textbook and is composed of five chapters focusing on market reactions to fiscal policies. In Chapter 13, Gerald J. Miller provides an overview of the size, scope, and role of government in the market system, its policies, and their impact on saving, investment, and productivity. Helisse Schayowitz, in Chapter 14, introduces the household decision-making process and discusses consumer reaction to taxation. John D. Wong, in Chapter 15, offers a detailed overview and analysis of the income, corporate, and social security taxes on the supply of labor. In Chapter 16, Renée Irvin defines wealth and examines the policies affecting wealth accumulation. Chapter 17 concludes Part IV and the text with Rafael Reuveny presenting the scope and the gains from international trade, as well as the impact of free trade, restrictions, and international politics.

Finally, many labored to complete this project. I thank the contributors for their efforts and patience, Jack Rabin for his encouragement and support of the initial proposal, the production staff at Marcel Dekker, and my graduate assistant, Genevieve Verhoeven, for her help with this project. We welcome comments and feedback to improve future editions of this text.

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Part I

Introduction to Public Economics and Fiscal Doctrine

The Evolution of Economics: The Search for a Theory of Value

LYNN C. BURBRIDGE

Pacifica, CA

That evening there was a huge dinner of captains of industry, bankers, and professors. Keynes sat next to Max Planck, the German physicist and Nobel prize winner. Planck told him that he had thought of studying economics early in his life but had found it too difficult....What Planck meant was that economics was imprecise and intuitive, and therefore “overwhelmingly difficult” for those whose gift was to imagine, and pursue the implications of known facts.

—Robert Skidelsky, *John Maynard Keynes: The Economist as Savior*, p. 119.

1.1 INTRODUCTION

The above story about John Maynard Keynes' encounter with Max Planck has been told so often one wonders whether it is apocryphal. Keynes' biographer, however, confirms that Keynes did in fact tell this story in his obituary of another great economist, his mentor, Alfred Marshall. It is interesting to begin with this tale because many economists have, in fact, tried to steer economics to emulate the natural sciences, particularly physics. Planck's statement, while a compliment in emphasizing the difficulties in analyzing and understanding the complexities of economic systems, would be discouraging for those who have sought throughout the history of the field to give it the same precision as is found in physics (Mirowski, 1989). The subtitle of this chapter, "The Search for a Theory of Value," underlines the efforts spent by economists to find universal laws underlying the working of the economy that would have the same power as a theory of gravity or the second law of thermodynamics, or the conservation principle, ideas that have been important in the history of physics.

The search for a theory of value, therefore, becomes a useful organizing tool to discuss the evolution of economics (see Figure 1.1). While not all economists spend as much time thinking about whether economics has a good theory of value, some of the important turning points in the history of the field have centered on finding or improving on one. And some feel that the field is ultimately about value (e.g., Schumpeter, 1966; Stigler, 1965): what people value, the valuation process, impediments to the valuation process, and what value actually means. It is a concern that begins with the earliest philosophers to discover the intrinsic source of value, over and above the price something may fetch in the marketplace, but received its first truly thorough treatment with the classical economists, starting in the eighteenth century.

Before beginning, an apology is in order, however. This chapter is a layperson's guide to the history of thought. A detailed critique of various doctrines is beyond the scope of this already long piece. The focus is on the evolution of economic thought and critical turning points in the history of

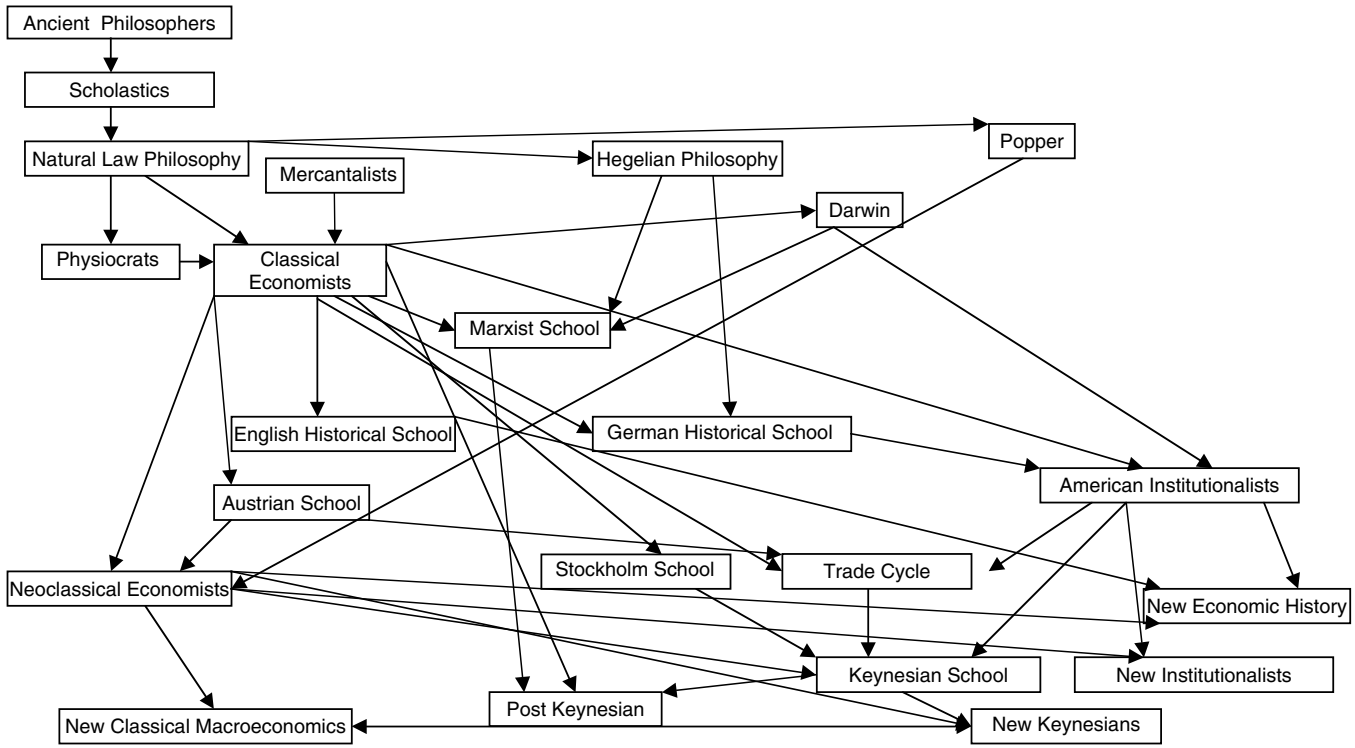


Figure 1.1 Evolution of economics.

that thought. Much is left out. For a detailed critique, the reader is referred to Schumpeter (1966), with 1100 pages of analysis, and Blaug (2002), with 700 pages.

1.2 THE CLASSICAL ECONOMISTS

1.2.1 Precursors

Before getting to the eighteenth century, many historians of economic thought begin with the earliest discussions of economics, usually going back to the fourth century B.C. to the time of Aristotle. One should note, however, that Huag-Chang (1974) traces economic thought even further back to the writings of Confucius in the sixth century B.C. in China, and Sen (2002) notes an Indian philosopher, Kautilya, who was primarily responsible for writing *Arthashastra*, a book devoted to economics and politics, around the same time that Aristotle was speculating about economic topics interspersed with his writings on politics and ethic. So the current discussion focuses on the Western tradition in economic thought as it has evolved over time; which, after all, is the tradition that influenced the classical scholars of the eighteenth century.

The word economics comes from the Greek word, *oikonomia*, which was a discipline that focused on estate management and public administration (Lowry, 1979). And generally when Aristotle (384–322 B.C.) used this term, he was referring to household management.* Nevertheless, he discussed a number of topics relevant to current economic thought (Spiegel, 1991). He was the first to discuss the difference between value in use and value in exchange, which has been an important consideration in the development of theories of value in modern economics. He was one of the first to give a defense of private property, using an argument familiar to many economists, that private property provides an incentive for owners

* It is important to remember that in ancient Greece most people lived on self-sufficient farms. A separate economic sphere was unheard of for most people. So since most economic decisions involved household management, this was not a trivial topic.

to use their land more productively. This was also an argument adopted by the Greek Stoics, a philosophical school of thought that emerged towards the end of Aristotle's life. The Stoics made contributions to the field of logic, and they embraced reason and the concept of natural law. Stoicism was introduced to the Romans around 200 B.C. and had a profound influence on Roman jurisprudence.

Nevertheless, like many of that time, Aristotle was opposed to interest, which he felt led to unnatural accumulation (Ekelund and Herbert, 1975). And while he felt commerce was necessary, he was suspicious of it; as the Greeks — placing social cohesion above the benefits that might come from trade — felt that the specialization that would result could undermine the common purpose (Polanyi, 2001; Muller, 2002).

Schumpeter (1966) was dismissive of Aristotle's contribution to economics, for while he condemned interest (because of his social concerns), he never tried to analyze why people are willing to charge and pay for interest — the “why” questions that are of importance to economists. Lowry (1979) disagrees, noting the G.L.S. Shackle (1972) definition of economics as a field that reduces incommensurables to common terms, which is something Aristotle did, in fact, do.

Spiegel (1991) notes that the less philosophical Romans contributed significantly less to economic thought, unless one takes into account the importance of Roman law — especially that dealing with contracts and property — that served as a framework for British common law, which supported the emergence of capitalism. Roman jurists adopted from the Stoics the concept of natural law — of great importance to classical political economists — which was “interpreted to embody the all-pervasive reason that governs the world and to reflect the nature of things” (Spiegel, 1991, p. 36). Schumpeter (1966) also gives credit to Roman jurists in contributing to economic thought, albeit in regards to practical purposes, because they often *did* ask the right kinds of questions — the “why” questions.

Schumpeter (1966) also credited many of the Scholastics for asking the right questions. Following the fall of the Roman Empire, discussions of economic issues fell into the hands of

priest-scholars, who attempted to carry on the legacy of Aristotle. Saint Thomas Aquinas (1225–1274) is particularly given credit for trying to reconcile Catholic philosophy with Aristotelian thought. He was a defender of private property, defended the businessman, and held profit as morally neutral. He defined the concept of a “just price” in terms of the prevailing market price, and opened the door to reconsidering prohibitions against usury (Muller, 2002; Schumpeter, 1950; Screpanti and Zamagni, 2001; Spiegel, 1991). Although he defended commerce, Aquinas expressed concerns about people making money for its own sake or to improve their places in the social order (Muller, 2002). Aquinas and the other scholastics were also concerned with the concept of natural law and provided some inklings of a subjective (utility) theory of value (Schumpeter, 1966; Robbins, 1948).

With the demise of feudalism and the emergence of mercantilism in the sixteenth century, one sees an explosion of writing on economic issues, which can be found in hundreds of pamphlets that were written and distributed, thanks to advances in the printing press.* This was a time when the focus was on the consolidation of the nation state; with a mercantilist philosophy that advocated active government intervention to promote the trading dominance of the nation and the accumulation of gold and other forms of wealth in the interest of the state. Intellectuals were more willing to advocate the pursuit of wealth for its own sake and the idea that only through love of one’s self could one benefit others — i.e., that self-interest leads to trade that benefits all of society (Muller, 2002). Because these were radical ideas for the time, many of the pamphlets written on these topics were anonymous (Letwin, 1964). Although most of these pamphlets were focused on practical matters — such as the money supply and usury laws — some of the discussions opened by the mercantilists are with us today, especially in terms of the role and importance of money (gold) in stimulating the economy.

* Schumpeter notes that most of this writing was *not* in English. Commentators from Italy, Spain, France and England contributed to this literature.

Eklund and Hebert (1975) note that the mercantilist writers were very concerned that their writings sound “scientific,” rather than merely self-serving. The most successful, according to Letwin (1964), was Dudley North (1641–1691), who produced the first equilibrium model (although rudimentary) with respect to the money supply and was one of the first to suggest that the interest rate is a price for the use of money, an idea later used by Keynes.

By the seventeenth century, philosophers such as Voltaire (1694–1778), who came to be a wealthy man in his own right, were openly advocating the pursuit of the wealth through the market (Muller, 2002). The early seventeenth century was also the time when the term political economy was used in a book title for the first time: *Traité de l'économie politique* by a French manufacturer named Montchrétien. While the book is not highly regarded, it is important to note that the author used the term political economy to distinguish it from the household economics that was of concern to the ancient philosophers (Screpanti and Zamagni, 2001). Most importantly, the seventeenth century was a time of the emergence of rationalist philosophers such as Descartes and John Locke, who were optimistic in their belief in the power of reason. This optimism was enhanced by discoveries in science, particularly those of Newton, whose work presented the possibility of a knowable universe.

Locke (1632–1704) is particularly important to the history of economic thought. He developed the idea of private property as a natural right and gave a reasonable description of what economists call the quantity theory of money, which suggests that large injections of money into the economy will generally result in higher prices rather than greater output and wealth. This was an idea that ran counter to that of many mercantilists, who often felt that the state could not accumulate too much gold. It remains one of the first modern economic arguments made about the causes of inflation and includes a clear understanding of the velocity of money (Schumpeter, 1966). Locke also discussed the “natural” rate of interest, thus incorporating a natural law concept into the discussion of economics. Further, his deductive method was

adopted by the classical economists and remains a cornerstone of modern economics (Letwin, 1964). Locke also suggested the possibility of a labor theory of value but did not really use it.

Locke was not the only philosopher to make a contribution. Letwin (1964) points out that most British philosophers writing between 1660 and 1850 focused on economic issues — Locke, Berkeley, Hume, Bentham, and John Stuart Mill — an indication of the extreme importance of economic theory to the times. Some were skeptics, however. One was Edmund Burke (1729–1797), who is famous for saying, in response to the French Revolution, that the “age of chivalry is gone. That of sophisters, economists, and calculators has succeeded, and the glory of Europe is extinguished for ever” (Muller, 2002, p. 132). Burke was concerned that rationalism was undermining those social institutions that were necessary for the preservation of social order, a concern that is also expressed by Hegel some years later.

1.2.2 From Petty to Hume

William Petty (1623–1687) was a physician and a contemporary of John Locke. He is often cited as the first of the classical economists for two reasons. Letwin (1964) described his economic treatises — *Treatise on Taxes* and *Political Arithmetik* — as the first truly scientific works in economic theory, citing the internal unity and economy of his analyses, the absence of ad hoc explanations, and his use of basic data to highlight his key points. For Marx in *A Contribution to the Critique of Political Economy* (1859), Petty stood out for his search for “natural value,” recognizing labor as the key source of value, with land playing a smaller role in contributing to value. He acknowledged the importance of the division of labor (anticipating Smith) and had at least some sense of economic surplus (Niehans, 1990; Screpanti and Zamagni, 2001). In the course of his work, Petty derived the concept of National Income, which would become of great importance to modern macroeconomics, and demonstrated an understanding of the possible impact of population growth, long before Malthus. He also introduced many terms to the lexicon of economics; for example,

as far as known, he was the first to adopt the term *ceteris paribus* — all things remaining equal — which is liberally sprinkled throughout economic writing up to the present (Spiegel, 1991). Use of the term suggests scientific inquiry, where one is trying to understand the impact of one variable while holding constant the impact of other possible variables.

Richard Cantillon (1680–1734), a French businessman, is also of interest in having a value theory based on land and labor — but giving more weight to land than Petty — and in the scientific nature of his conceptualizations, most importantly a circular-flow model of the economy. In his *Essay on the Nature of Commerce in General* (1730), he also tried to emulate Petty in attaching a statistical appendix to his work, but it was lost and remains unavailable to this day. Cantillon is also known for a rudimentary theory of population that anticipates Malthus, with a tendency of the wage to converge to subsistence as a result of population growth (Letwin, 1964; Niehans, 1990; Screpanti and Zamagni, 2001). In his monetary theory, Cantillon was the first to recognize that the effect of an injection of money into the economy depends on who are the initial recipients of the cash injection, in what Blaug (2002) refers to as the “Cantillon effect.”

Cantillon had a big influence on the Physiocrats, which Spiegel (1991) describes as the first school of economics with a recognized leader, Francois Quesnay (1694–1774) — a court physician to Louis XV — and a dedicated group of well-connected followers. From Cantillon, Quesnay inherited the circular flow model, which he used to produce his *Tableau Economique*, a one-page model of the economy with flows going through different sectors of the economy, showing the interdependence between various productive processes. According to Niehans (1990), the *Tableau* is a precursor of macroeconomic and general equilibrium models that were to be developed 200 years later, but it was not well appreciated in its time.

The Physiocrats also inherited from Cantillon a bias in favor of the landowning class. They completely rejected a labor theory of value for a theory that makes land the source of all

value. Their point of view reflected an antipathy to mercantilism, an antipathy that was shared by most classical economists, but they failed to see the great potential of industry and the ability of labor to be productive both on land and with machines (Heilbroner, 1999; Canterbury, 1976). They saw land and rural life as superior to industry and wanted to reform the French economy and promote large-scale farming (Spiegel, 1991). This focus ultimately diminished their historical importance, but they did make important contributions to political economy.

First, their *Tableau* and their theorizing suggested an economy that can reproduce itself “naturally.” They are the inventors of the term “laissez-faire,” leave it alone, let the economy operate by its own laws, with a minimum of government interference. According to Screpanti and Zamagni (2001), the Physiocrats studied the economy as if it were a natural organism; the influence of science, Quesnay’s medical training, and natural law philosophy is quite apparent. Second, they introduced concepts that would flow through the classical literature, such as laissez-faire, the designation of productive and unproductive labor, and the concept of diminishing returns. The latter is attributed to another Physiocrat, Anne Robert Jacques Turgot (1727–1781), who is the only other Physiocrat who is remembered in our time.

In spite of Adam Smith’s disagreements with this philosophy, Quesnay — whom he met on a visit to France — was an important influence. The other key influence was Smith’s good friend David Hume. Hume (1711–1776) was a political philosopher who wrote on a number of topics, including economics. Like Locke he criticized mercantilist arguments, but Hume attacked their preference for large trade surpluses, as they would — he argued — lead to increased prices, a loss of competitiveness, and flows of cheaper imports that would just rebalance the trade accounts — a very modern macroeconomic argument, demonstrating a tendency to equilibrium. Hume also made a very modern argument extending the quantity theory of money: while an influx of gold will increase prices in the long run, an increase in the money supply can have an impact on output in the short run (Niehans, 1990). Hume

offered a commitment to natural law, which translated into arguments suggesting a system that moves to equilibrium when unimpeded, in combination with acute observations on how the money supply may affect output.

1.2.3 Adam Smith

Adam Smith (1723–1790) was the first of the classical economists to be a professor. He was a professor not of economics, however, but of moral philosophy.

Schumpeter (1966) pointed out, however, that moral philosophy was a precursor to the social sciences. It was the branch of philosophy that dealt with the science of the mind and society, as distinguished from natural philosophy, which gave birth to the physical sciences and mathematics. Smith's early work focused on moral and ethical issues, and he took up the subject of political economy relatively late in his career. That he did so should come as no surprise; as noted earlier, economic theory was an important issue for British philosophers of that time. (Smith was Scottish.) Smith was also a friend of Hume, Quesnay, and Voltaire, all of whom were engaged with the topic.*

Many people view Adam Smith as an apologist for capitalism, but most economic historians view him as a true scholar concerned about analyzing the prospects for the newly emerging system. He did not believe in accumulation for the sake of accumulation, but as a benefit to society as a whole; as a moral philosopher he was not a crude advocate for self-interest, although his work has been used by others for this purpose (Heilbroner, 1999; Niehans, 1990). Blaug (2002) notes

* Classical political economy involved a relatively small group of scholars who knew each other well. In addition to these relationships of Smith's, John Malthus, James Mill, and David Ricardo, whom we shall discuss shortly, were good friends. Hume and Rousseau were friends of Thomas Malthus' father. Ricardo gave John Stuart Mill (James Mill's son) his first lessons in political economy while he was still a teenager. In later periods, other economists would have economist fathers, including two responsible for important and pathbreaking work in the field: Léon Walras and John Maynard Keynes.

his frequent acerbic comments — that landowners love “to reap where they never sowed” or that entrepreneurs seek “to widen the market and to narrow the competition” — as evidence of his skepticism about the motives of men. There is no doubt that Smith was quite optimistic about the benefits of commerce, however. He lived in a harmonious Newtonian and Cartesian universe and, assimilating the ideas of Locke, imagined an economic system that operated by natural law (Letwin, 1964; Canterbury, 1976; Spiegel, 1991).

These ideas are incorporated into Adam Smith’s seminal book, *An Inquiry into the Nature and Causes of the Wealth of Nations* (1776), which is one of the most profoundly influential books of all time. Some make note of the fact that many of the ideas in the book can be found in the work of precursors to Smith, but Smith is credited for presenting these ideas in a clear, comprehensive, and scholarly manner — unlike anyone before him. He brought all of the threads of political economy together in a masterful synthesis, setting the tone for much of the work that was to follow.*

For example, although the importance of the division of labor in society was known, Smith fully worked out the importance of a factory system based on specialization, demonstrating the great productivity gains that can result. The motive force for this system, however, was competition in combination with self-interest (Heilbroner, 1999). While not justifying self-interest, he, like many of his time, felt that self-interest was the nature of man. He argued that a competitive system could marshal the self-interested behavior of men and push them towards activities that would benefit society as a whole. Someone engaged in trade, who overcharged customers or — because of some advantage — reaped a large profit, would soon find this profit or advantage eroded by competition. Thus an *invisible hand* moved the system toward one where there

* Sir James Steuart (1712–1780) actually published a synthesis, *Principles of Political Economy*, in 1767, almost a decade before Smith. But it was poorly written and lacking in cohesion, resulting in limited success (Spiegel, 1991).

would be a large quantity of goods at the lowest price. Society would benefit from the self-interested behavior of others.

Smith, at a more “macro” level, discussed the accumulation of capital that results from the increasing wealth in society. This accumulation benefits society insofar as it is invested in the production of goods. So the self-interested accumulation of wealth can also benefit society. Serving as a check on the accumulation of wealth, however, is population growth. Increasing wealth results in higher wages, which — by making the lives of the working class more comfortable — encourages population growth. This encourages competition among workers, resulting in decreased wages and a fall in the population. Then the cycle of accumulation begins again. Thus, both his micro-level discussion of competition and the production of goods and his macro-level discussion of accumulation and population growth suggest a self-regulating system that can always right itself if it goes too far in any given direction (Heilbroner, 1999). This depiction fits within Smith’s concern to emulate a kind of Newtonian vision of the economic world.

Smith also discussed a labor theory of value, rejecting the point of view of the Physiocrats. But Smith saw the labor theory of value as only relevant in a barter economy and largely relied on a cost of production theory of value. Only later, with Ricardo, does one find a full statement of a labor theory of value. What he did take from the Physiocrats — other than their natural law conceptions of the economy — is their belief in *laissez-faire*, a term he adopts in his own work. The self-regulating system of capitalism can only work effectively if it is not interfered with by government. The mercantilist ethic of heavy government involvement in the economy had to go.

It should also be noted that Smith was not insensitive to the situation of the working class. He strongly believed in the provision of public education as an antidote to the often mind-numbing factory work that was available to them. But ultimately he felt that the clockwork economy that he depicted would bring them greater benefits than the mercantile system — based on special privileges for the wealthy and well-connected. Canterbury (1976) has also noted that the extreme poverty of the urban slums, as witnessed by Marx, were not

as common in Adam Smith's world, as he lived prior to the Industrial Revolution and the consequent social disruptions that it caused. So his optimism was a reflection of more optimistic times.

Although *The Wealth of Nations* went on to be a highly successful and influential book, it was another 25 years before a well-organized school of thought developed — centered around David Ricardo and his amendments to Smith's work. Prior to David Ricardo, however, Thomas Malthus made a significant contribution to the emerging classical school.

1.2.4 Thomas Malthus

Thomas Malthus (1766–1834) is interesting not only because of his famous work, *An Essay on the Principle of Population* (1798) and because of his friendship with David Ricardo, but because he was the first person to obtain an academic position in political economy (albeit at a college founded by the East India Company), signifying the growing recognition of the need to provide training in political economy (Heilbroner, 1999). As the first professional economist, he was a path-breaker in his own right. Nevertheless, Heilbroner (1999) notes that the academic Malthus was more concerned with pragmatic real world issues, while Malthus' friend, Ricardo, who had a "real world" career (investment banker), retired to devote the remainder of his short life to theory.

Malthus was 32 when he wrote his essay on population and was planning on a career as a parson. His book, challenging the optimistic and utopian theories of men like Godwin and Condorcet, changed the trajectory of his life. Malthus had less confidence in the Age of Reason, arguing that increasing population would erode any of the productivity gains that had resulted. As we have seen, concerns about the negative impact of population predate Malthus; Cantillon (1730) is famous for describing people as capable of reproducing like "mice in a barn." Then Smith described population growth as a check on the accumulation of capital. But although Malthus was not proposing an original idea, his dramatic statement of the problem, as he saw it, had a profound effect.

According to Malthus (1798), economic growth will raise wages and result in increasing population. He then argues that while gains in agricultural productivity increase food production arithmetically, population increases geometrically; thus gains in food production will never keep up with gains in population. It is perhaps this assertion, more than any other, that made Malthus' argument more compelling and alarming than statements made by others on this issue, in spite of the lack of evidence for the assertion. The result of this situation, according to Malthus, will be cycles of famine, disease, and extreme poverty, when the size of the population will outstrip the ability of society to feed people. These disruptive periods will result in population declines and the process will begin again. While this sounds like Smith, the latter did not depict population declines as resulting from such dire circumstances. Interestingly, it is this description — of cycles of famine and disease — that may be corroborated by historical evidence, since Europe was on a number of occasions decimated by famine and plagues, resulting in fairly large swings in population from one century to the next. Knowledge of this history, in combination with the population theories of early political economists, may have informed his work and made his ideas convincing to others as well. Ultimately, however, Blaug (2002, p. 71) found Malthus guilty of constructing an “apocalyptic fallacy,” which he describes as a prediction with an open-ended time horizon, such that it can never be falsified.

Malthus went further and argued against providing any assistance to the poor as that would only encourage the situation. Malthus' policy prescription particularly enraged social activists. It is said that Charles Dickens, in creating Scrooge in *A Christmas Carol* (1843), was referring to Malthus when he depicted Scrooge as being opposed to charity and indifferent to the dire circumstances of the poor. [“If they would rather die,” said Scrooge, “they had better do it, and decrease the surplus population” (p. 19).] Given what happened to Scrooge, one can only guess what Dickens thought would be appropriate for Malthus. In actuality Malthus was not as hostile to the poor as many surmised, but he felt the

consequences of population growth were inevitable, although in subsequent editions of his essay he admitted the possibility that education and birth control could contain the problem (Canterbery, 1976). One person who was affected by Malthus was Charles Darwin (1809–1882), who credited Malthus with influencing his ideas about natural selection and his theory of evolution, which were encapsulated in *The Origin of the Species*, published in 1859 (Spiegel, 1991).

Although Malthus' dire predictions proved false in the West, predictions such as his continue to be made about global population growth. Not surprisingly, these predictions are referred to a Malthusian.

Another area in which Malthus' theorizing was more prophetic was in his discussion of the possibility of general gluts and secular stagnation. For many economists, long-term crises of overproduction or under-consumption were inconceivable in the self-regulating system that they believed capitalism to be, although they recognized the reality of short-term business cycles. Malthus fought a losing battle trying to convince Ricardo and other political economists that the economy could be prone to stagnation. It was left up to Keynes to revive Malthus' reputation in regard to this issue. He is now considered to be one of the earliest thinkers in business cycle theory (Spiegel, 1991), although Blaug (2002) traces this concern to the writings of the Physiocrats who, like Malthus, defended the extravagant spending of the landed aristocracy as contributing to the economy.

1.2.5 Jean Baptiste Say and the Continental Economists

One of the economists most influential in debunking the idea of the inevitability of secular stagnation was Jean Baptiste Say. The Ricardians, rather than accepting Malthus' view, adopted what came to be known as Say's Law. Jean Baptiste Say (1767–1832) was probably the most influential French political economist of his time. His two-volume work, *Traité d'Économie Politique*, published in 1803, was widely read and very influential in Europe and North America. According to

Say's Law, a demand for goods is created by the production process, so that one will balance the other; in other words, aggregate supply and aggregate demand are interdependent. In spite of objections by Malthus and later by Marx, this view of the economy was held by most political economists until laid to rest by the Great Depression and the theory of John Maynard Keynes (1964) that the holding of money in various liquid assets creates a condition of insufficient demand to meet available supply, resulting in an equilibrium with high unemployment, an impossibility in Say's conception. But Say's Law fit well within a natural law conception of the economy as self-balancing and self-correcting.

Say, as Europe's foremost interpreter of Adam Smith, did not adopt the labor theory of value proposed by Ricardo, however. Rather he presented three factors of production: land, labor and capital. His work suggested a subjective theory of value, based on utility, but it was not fully developed (Spiegel, 1991).

It is worth pausing at this time to distinguish between a labor theory of value and subjective theories of value. The latter suggest that value is determined by its utility to individuals; in other words, it is subjectively defined. Ricardo's labor theory of value, in which labor time is the one invariant standard of value, remained the dogma for British economists until the "Marginalist Revolution" of the 1870s, which shall be discussed shortly. It continues to be the theory of value for Marxist economists. But even before Ricardo, as well as during and after his lifetime, subjective theories of value were being expounded by many Continental scholars. So although books on the theory of economic thought often depict subjective theories of value as coming after the labor theory of value, it may be worthwhile listing some of the European economists and mathematicians who proposed some version of a subjective theory value (in addition to Say), during a time when it was unpopular or unheard of in Britain: Daniel Bernoulli (1700–1782), Ferdinando Galiani (1728–1787), John Heinrich von Thünen (1783–1850), Augustin Cournot (1801–1877), Jules Dupuit (1804–1866), and Herman Henrich Gossen (1810–1858). Many of these scholars did not gain recognition

until long after their deaths. One reason for a greater interest in subjective theories of value on the Continent may be the greater mathematical training of many of the Continental scholars and the greater amenability of utility theory to mathematical theorizing. One cannot ignore, however, David Ricardo's charismatic presence and his ability to attract a number of scholars to his position, resulting in a true school of thought that was both committed and cohesive, unlike anything that developed in Continental Europe.

1.2.6 David Ricardo

David Ricardo (1772–1823) was so successful as an investment banker, having made a fortune while still in his twenties, that he was able to retire young and devote himself to political economy. His accomplishments are even more impressive when one considers that he died at the age of 51. James Mill, a British philosopher known primarily for his advocacy of utilitarianism, a philosophy developed by his friend Jeremy Bentham, was an important source of encouragement to Ricardo.

Ricardo published *Principles of Political Economy and Taxation* in 1817, and it soon became a bible for many of those interested in political economy. In contrasting it to the previous political economy bible, *The Wealth of Nations*, one notices a number of important differences. First, it has a more fully developed labor theory of value, which Ricardo does not back away from in the way that Smith did. In fact, Schumpeter has criticized Ricardo for his failure to acknowledge the importance of supply and demand in determining price for the sake of preserving his labor theory of value, in spite of the fact that “the concepts of supply and demand apply to a mechanism that is compatible with any theory of value and indeed is required by all” (Schumpeter, 1966, pp 601). Second, he derived from his labor theory of value a theory of distribution, which was undeveloped in Smith's work. After Ricardo, few would attempt an exposition without a theory of distribution. According to Blaug (2002), the central purpose

of Ricardo's labor theory of value was to explain distribution, not to explain prices.

Using Malthus' theory of population, Ricardo (1817) asserted that wages are generally pushed down to the subsistence needs of workers. Since the value of a product depends fundamentally on labor costs, profits are a surplus that remains after paying for labor. However, as the population expands and more land is put into production to feed it, the price of food rises, and rent accrues to those landowners on the more fertile land. (Those on the more marginal lands that have been brought into production to feed the expanding population do not acquire rents; because of competition, landowners on marginal land only recover their costs of production which are, of course, labor costs.) The rise in rents results in a rise in food prices and a decrease in profits. Thus, Ricardo's theory of distribution consists of subsistence wages for workers, which incorporates rents for landowners on fertile land and a remaining surplus for the capitalist.

In such a system, there is always a tendency for the rate of profit to fall. The concept of a tendency for the rate of profit to fall is consistent with Smith, who saw competition and population checks impinging on profitability, as well. Ricardo has more to say about the encroachment of landlords on profitability, a group Ricardo saw as sucking the life out of the system because of their rents.

Ricardo's theory of distribution also incorporates the concept of diminishing returns. In this case, Ricardo is talking about the diminishing returns to agriculture, which result in increasing rents. But the concept of diminishing returns, or its counterpart, increasing costs, from Ricardo forward, becomes an important component of economic thinking up to the present. According to Blaug (2002), Malthus, Robert Torrens, and Edward West also deserve credit for contributing to the idea of diminishing returns, in addition to the early contribution of Turgot.

Another contribution from Ricardo is his theory of comparative advantage. Ricardo argued that it made more sense for countries to specialize in those commodities that they

produce more efficiently and then engage in trade to obtain the additional products needed, which other countries may produce more efficiently. In other words, countries should focus on areas where they have the greatest comparative advantage. Thus he extends Smith's ideas about the efficiency of the division of labor to include specialization by countries. The policy prescription that comes from this argument is that free trade results in the greatest quantity of goods at the lowest price. This runs contrary to mercantilist theories emphasizing trade surpluses and protectionism. With Ricardo, free trade became fully established as an important premise in liberal political economy. Blaug (2002) credited Ricardo for being the first to emphasize a separate theory of international trade because of the immobility of capital.

Ricardo had relatively little to say about economic growth and development, themes that were developed earlier by Smith (Blaug, 2002). This is one area where Karl Marx's approach may owe more to Smith than to Ricardo.

Finally, Ricardo is credited with making the deductive method a key aspect of economic thought (Niehans, 1990; Spiegel, 1991). Although Smith used deductive theorizing in his opus, it is also full of descriptive anecdotes and philosophizing. One finds no philosophy or unnecessary discussion with Ricardo. In fact, his work could benefit from more explanation in many places. But from Ricardo henceforth this became the method of economics — what Spiegel (1991) refers to as abstract generalizing analysis, often based on heroic assumptions. Schumpeter (1966), a critic, refers to the Ricardian Vice as a “habit of establishing simple relations between aggregates that then acquire a spurious halo of causal importance, whereas all the really important (and, unfortunately, complicated) things are being bundled away in or behind these aggregates” (p. 668). But such often is the result of abstract, deductive theorizing, as Schumpeter would admit; thus the Ricardian Vice became the vice of all economists.

There are many flaws in Ricardo, and he faced many critics. Both Mirowski (1989) and Robbins (2000) suggest that Ricardo was reconsidering the usefulness of the labor theory

of value toward the end of his life in the face of the criticisms. Given his background, he would most likely be shocked at the appropriation of his theory by anticapitalist socialists. Nevertheless, his adherence to the labor theory of value reflects his overwhelming desire to find an invariant standard of value, and labor seemed the most likely candidate. This, again, reflects a preoccupation with natural or universal laws, equivalent to that found in physics (Mirowski, 1989). What better universal law can there be but an invariant standard of value?

Still much of Adam Smith still remains in Ricardo's thinking: the role of the division of labor, competition, the invisible hand, and the importance of laissez-faire. Ricardo represents an addition to Smith, not a replacement. But there were still many gaps in classical political economy that needed filling, a task that was taken on by John Stuart Mill.

1.2.7 John Stuart Mill

John Stuart Mill (1806–1873) was subject to an agonizingly intense education at the hands of his father, philosopher and political economist James Mill. As a result, he became one of the great polymaths of his time. His writing includes books in logic, ethics, political philosophy, and economics, all written while Mill was working full time as a bureaucrat for the British East India Company. He was also one of the earliest proponents of the modern welfare state. His *Principles of Political Economy*, written in 1848, became the bible of political economy in his time; its influence lasted at least 50 years (Blaug, 2002).

Some have regarded Mill as an apologist for Ricardo. He devoted a lot of attention in his *Principles* (1848) to explaining, elaborating, and correcting errors in Ricardo's views. Some also note the irony that a man reared in utilitarian thought should be so resistant to the winds blowing in favor of a utilitarian theory of value and away from Ricardo's labor theory of value. According to Lewin (1996), however, Mill had the foresight to see that utility theory could be misleading in the amount of precision it actually could provide, a continuing source of debate in our own time.

Schumpeter (1966) argued that, given the changes to Ricardo's theory that he made, Mill was no longer truly a Ricardian. Yet his ambiguity remains puzzling to many people. Screpanti and Zamagni (2001) argued that as the Ricardian theory of value was ultimately appropriated by Marxists, and the anti-Ricardians appropriated utilitarianism, neither group really understood Mill, who simultaneously operated in a Ricardian and a utilitarian universe. Mill has his defenders, however. Stigler (1965) has listed a number of contributions made by Mill: a theory of noncompeting groups, the problems of joint production, rent as a cost of production, the first systematic discussion of economies of scale, a discussion of the limitations on Say's Law, and the demand schedule. In regards to the last, Alfred Marshall, who is credited with finalizing the neoclassical theory of supply and demand, credited Mill as his inspiration; much of demand and supply theory can be found in Mill, who only lacked the ability to say in mathematics what he already said in words (including a basic understanding of elasticities).

Mill's recognition of supply and demand was an important step away from the Ricardian system. Mill also ultimately moved away from the Ricardian view when he moved away from the wages fund theory — an extension of classical economists' view of wages as an inflexible fund set by subsistence — to an acknowledgment that labor in combination could raise their wages or that capital could be substituted for labor lowering wages (Spiegel, 1991; Hutchison, 1953). Many classical economists, however, including Smith had recognized the possibility that the definition of subsistence could change over time, resulting in a check on population growth (Blaug, 2002). Spiegel (1991) also noted that Mill was the first to incorporate static and dynamic components into his work and to incorporate institutional analyses as well, both unlikely in a purely Ricardian analysis.

Mill's willingness to include institutional analyses may reflect his willingness to consider inductive methodology as a legitimate form of research, in deference to his respect for Auguste Comte, the father of sociology. Inductive methodology received a full discussion in his book, *A System of Logic* (Mill,

1843). This may appear to be a break from the deductivism of classical economics, yet he continued to maintain that the deductive method was still the most appropriate approach in political economy because of the need to abstract from the great number of variables involved. As a testament to Mill's influence, his book on logic is considered one of the classics in the field.

Mill also recognized the need to expand Ricardo's theory of capital, such as it was. As noted before, Ricardo saw profit as a surplus after extending subsistence wages to labor. This idea was criticized by an economist, Nassau Senior (1790–1868), who wanted to incorporate the return on capital as a cost of production. So Senior proposed the return on capital as payment for the "abstinence" of the businessman, who chooses not to spend his money in order to invest in production. This return is a cost of production as well as labor is. Senior, logically, rejects Ricardo's theory of value and proposes a subjective theory of value. Mill incorporates Senior's abstinence theory while maintaining a labor theory of value, but clearly, in incorporating the return on capital as a cost of production, Mill — intentionally or not — was diluting the labor theory of value.

It should be noted that the classical economists often did not distinguish between the rate of return on profit or the interest rate since, in equilibrium, they should be the same. If the interest on a financial asset exceeds the return on an investment in stocks, for example, then money will flow into the financial asset, and vice versa, resulting in an equalization of returns on all assets.

But Mill's most important movement away from the classical view was his insistence on the importance of government intervention to ameliorate some of the negative consequences of capitalist development. While not accepting the anticapitalist complaints of the socialists, he acknowledged that an even playing field never existed under capitalism, giving advantages to some that are not available to others. Most of the policies advocated by Mill are now incorporated in the Western welfare states: free public education, child labor laws, government ownership of natural monopolies, assistance to the poor, mandated shorter work days (Canterbury, 1976).

Mill was also an advocate for the emancipation of women and during the brief time he served in the House of Commons put forward the first bill to give women the vote (Mill, 1873). As a politician, he was considered a radical, which led to the brevity of his political career.

As a political philosopher, Mill was also an articulate spokesman for liberalism. The liberal agenda was an adjunct to capitalism; just as free markets were considered necessary for the functioning of capitalism, so was political freedom needed in order to fully participate in the system. Mill's essay *On Liberty* (1859) is considered one of the most articulate statements of classical liberalism. Mill was unequivocal in articulating the principle that "the sole end for which mankind are warranted, individually or collectively, in interfering with the liberty of action of any of their number, is self-protection." Otherwise, people must be given complete freedom including "liberty of conscience, in the most comprehensive sense; liberty of thought and feeling; absolute freedom of opinion and sentiment on all subjects, practical or speculative, scientific, moral, or theological" (Mill, 1859, pp. 14–16).

Heilbroner (1999) commented that Mill's optimism and revisionism "removed the pall of Ricardian and Malthusian despair" (p. 133) from political economy. Nevertheless, his focus on government intervention was not enough to satisfy the critique of the emerging socialist movement, which reached its peak in the writings of Karl Marx.

1.2.8 Karl Marx

Hutchison (1953) defined four main pillars of classical economics: the Malthusian population doctrine, the theory of rent with diminishing returns, the wages fund theory, and the labor theory of value. Mill ultimately moves away from the wages fund theory and qualifies the theory of rent, while sticking with the population doctrine (although allowing for birth control)* and the labor theory of value. Marx pretty much abandons

* Mill was arrested as a young man for distributing literature on birth control.

all of these pillars except the labor theory of value. One may question the suitability of including him, or even Mill, as classical economists. Yet in the modern world, Marxists represent the most classical of theorists, in their adherence to a Ricardian theory of value.

Even before Marx, people designating themselves as “Ricardian socialists” were developing theories of exploitation based on Ricardo’s labor theory of value. These Ricardian socialists coexisted with a number of socialist camps: Christian socialists, democratic socialists, followers of William Godwin and Robert Owen, and followers of Fourier and Saint-Simon (Spiegel, 1991). Most were pushing for social reform and institutional change and, according to Heilbroner (1999), many were recruited from the upper classes and intelligentsia.

Marx’s socialism was different in a number of respects. He proposed the inevitability of class conflict and the violent overthrow of the system. He also criticized the idealism of utopian socialism. Marx claimed that his socialism was scientific socialism. It was based on a scientific analysis of capitalism and a theory of historical development influenced by the science of Charles Darwin. That Marx and Malthus, two very different social scientists, may have a connection through Charles Darwin is one of the ironies in the history of economic thought. It is not entirely surprising, however. Marx, like other classical economists, wanted his analysis to be in keeping with the scientific and natural law influences of the age, as did Malthus and Darwin.

As well as borrowing from Ricardo’s value theory, Marx also relied on the Ricardian deductive methodology — a methodology with origins in the natural law philosophers of 200 years before, such as John Locke. Again, in spite of sharp differences in substance from the other classical economists, Marx shared with them an epistemological framework that derived from the Age of Reason and its precursors.

It is interesting, therefore, that he chose Hegelian influences as well. Georg Wilhelm Friedrich Hegel (1770–1831) was truly an idealist philosopher. For Marx, however, it was Hegel’s dialectic theory of history that was of most interest, and he left aside other aspects of Hegelian thought. Further,

Hegel, heavily influenced by Immanuel Kant (1724–1804), was also influenced by natural law thinkers. Nevertheless, Hegelian influences gave a decidedly different slant to Marx's work relative to the other classical economists, most of whom did not have a theory of history. In fact, some feel that one of Marx's most important contributions to economics — whether or not one agrees with his other positions — is his insistence that one must view capitalism from the perspective of history to truly understand it (Schumpeter, 1966), although Smith most certainly incorporates a sense of the historical specificity of capitalism in his work as well (Blaug, 2002).

The best expression of Marx's point of view can be found in *Das Kapital* (1867), the only book in economics as famous as *The Wealth of Nations*; although his *Critique of Political Economy* (1859) is also useful. One cannot mistake the powerful influences emanating from classical political economy. Mirowski (1989), in his book about the importance of the physics metaphor in economics, comments that “one portion of Hegel's bequest to Marx was a skeptical posture toward a slavish imitation of the natural sciences” (p. 175). And yet Marx, like his fellow classical economists, could not resist. In *Kapital* “the comparisons of the law of value to the law of gravity... reveal[s] the profound importance of the metaphor of motion for the inner workings of the value concept” (p. 177).

The strong philosophical influences in Marx's work made his labor theory of value very different than Ricardo's in the final analysis, however. This is well stated by Schumpeter, who noted:

Ricardo, the most unmetaphysical of theorists, introduced the labor quantity theory of value simply as a hypothesis that was to explain the actual relative prices....But for Marx, the most metaphysical of theorists, the labor quantity theory was no mere hypothesis about relative prices. The quantity of labor embodied in products did not merely “regulate” their value. It *was* (the “essence” or “substance” of) their value. (p. 596)

However, as with Ricardo, Marx's theory of distribution emerged from the labor theory of value. Like the classical

economists, Marx saw profit as a surplus — surplus value to be more specific. But he was scathing in his critique of the classical economists' inability to acknowledge the social basis of profit and the exploitation that is implied by it. Capitalists are able to appropriate this surplus because of their control over the means of production. They are able to take this surplus because the relatively powerless workers are unable to prevent them from doing so. This was incorporated into Marx's theory of history, which posits a continuing class struggle between those who control the means of production and those who do not, with capitalism being just one stage in historical development. Ultimately, Marx's dialectic suggested that at each stage in history, class struggle results in the disintegration of one system and the emergence of a new one, which in turn is undermined by its own contradictions.

Marx brought other innovations to classical theory. One of the most important is his recognition of the importance of technological change in giving the capitalist an added advantage in the struggle with labor. Like the classical economists, Marx acknowledged pressures to increase wages as the demand for labor rises and a tendency for the rate of profit to fall. But capitalists rely on labor-saving devices to lower their need for labor and keep the wages of labor low. In addition, capitalists can keep labor costs low by buying up weaker firms and eliminating competition. These larger, more rationalized firms can lower their labor costs through centralization as well as technology. Thus, the classical theory of population is replaced with centralization and technological change. The result is the same, however: an increasingly impoverished working class, subject no doubt to the same diseases and famines, but through no fault of its own.

Ultimately, these strategies do not prevent profits from falling, however. The high productivity of these rationalized firms is not met with sufficient demand. The resulting loss in profits means that retained earnings (surplus value) are insufficient for further investment. This results in large, periodic swings in the economy and a tendency to secular stagnation. With his business cycle theory, Marx truly moved away from the classical position that ultimately expects a harmonious

return to equilibrium. For Marx, things could only get worse until class war and revolution became inevitable, making it much more than a cyclical problem.

Marx's exposition of the importance of technology is a significant contribution to economics. While other political economists incorporated technical change in their discussions, Marx gave it a central role that is still difficult to find in the field, all evidence to the contrary (Blaug, 2002). More surprising is the failure of mainstream economists to come to terms with business cycles until much later. Niehans (1990) cited Marx's theory of unbalanced growth as an important contribution; similarly, Joan Robinson considered his theory of capital accumulation as his most important contribution (Gram and Walsh, 1983). But it took a long time for the macroeconomic implications of his work to be recognized.

The other important contribution from Marx to classical political economy was his attempt to solve the "transformation problem," where he tried to mathematically show the relationship between labor values and prices. As Blaug (2002) noted, he was the only classical political economist to try to follow the labor theory of value to its logical conclusion. The transformation problem has, until this day, proven to be difficult to solve. Adjustments must be made for differences in capital-labor ratios across industries, and it is particularly problematic in the case of joint production. Because of the difficulties involved in solving the transformation problem, some Marxists have settled for more sociological definitions of exploitation, rather than a labor value theory of exploitation (Blaug, 2002).

One could argue that Marx's theory places him outside the optimism of the Age of Reason (Muller, 2002). But in spite of everything, Marx turned out to be a utopian after all, with his expectation of a dictatorship of the proletariat ultimately emerging. His belief that the wealth created by technological change would make this possible was as optimistic a belief in the consequences of the Age of Reason that one can find.

Blaug (2002) found that Marx, like Malthus, also promoted an "apocalyptic fallacy," making an unfalsifiable prediction, with no specific timeline. For many, however, Marx's prediction

of class war ultimately does not pan out, at least in the industrialized West. What may have ultimately undermined Marx's prediction was his failure to assess the implications of a fundamental tenet of the classical economists: the self-interested nature of human beings. Although the classical economists were optimistic, they often had a rather jaded opinion of human nature. It was their hope that the capitalist system could make people better by marshalling their energies for the betterment of all. Although Marx had no problem viewing capitalists as self-interested, he seemed to feel that self-interest was systemic, rather than inherent. But utopias ultimately depend on people cooperating with each other. The criticism of utopian systems made by Karl Popper (1943) hinged on this point. For if people do not cooperate, they must be forced to cooperate; the ultimate result is political repression and the disintegration of the utopian ideal.

For modern Marxists, however, the failure of Marx's prediction is due to the ability of capitalism to expand outward, resulting in the relative enrichment of the Western working class at the expense of those in the developing world, who continue to contribute surplus value to the capitalist system. The development of theories of imperialism, although not solely attributable to Marxist thought, remains an important contribution coming from the Marxist paradigm and will receive further discussion in another section.

The other problem cited by critics was the little attention Marx gave to the question of how to implement socialism. Many other economists did think about this, however, following the marginalist revolution.

1.3 THE MARGINALIST REVOLUTION

1.3.1 Whys and Wherefores

A major shift in the paradigm of economics occurred in the 1870s. Blaug (2002) has questioned whether the marginalist revolution was, in fact, a revolution, given the number of political economists who proposed a utility-based or marginalist-infused theory of value long before the 1870s and given

the long time for the marginalist “revolution” to gain general acceptance. Nevertheless, over time, the labor theory of value was eased out and a subjective theory of value was introduced, becoming a part of what is now considered neoclassical economics. Accompanying this movement was the increasing use of mathematics, particularly differential calculus, in economic models.

One of the reasons given for this change, in fact, is the increasing acceptance of mathematics by economists, or its reverse, in increasing interest in economics on the part of mathematicians. As an example of the latter, Heilbroner (1999) cited the case of Francis Ysidro Edgeworth (1845–1926) — a contributor to the new utility theory — who was drawn to economics not because of the way it explained the world but because it dealt with quantities that could be examined mathematically. In fact, two of the key figures in this change, Jevons and Walras, came from engineering and mathematical backgrounds. But, as noted earlier, a number of economists and mathematicians in Continental Europe tried to introduce marginalist analyses long before the 1870s and were generally ignored.

Another reason proposed is the final triumph of Benthamite utilitarianism, in spite of the resistance of John Stuart Mill, who was sometimes cast as a villain. At the heart of this change is a theory of value that is essentially based on use value; in other words, what is valuable is defined by the individual who seeks to maximize his or her utility (or satisfaction) in the purchase of goods or services. It is an invariant standard of value insofar as it is defined by the preferences of individuals, but there is no one standard. The demand for goods is based on millions of decisions of individuals who are unique in their tastes and preferences.

Since utilitarianism had existed long before, the question arises as to why it became victorious in the 1870s. One explanation is that utilitarianism was adopted in reaction to the success of Marxism. Classical economists, according to this view, were unprepared to deal with implications of the labor theory of value as explicated by Marx. Another view is the opposite: the change reflects a world that proved to be very

different than that discussed by Marx. An ever-expanding middle class made the assumption of an amorphous working class, living at subsistence, increasingly unrealistic. With the marginalist revolution comes the theory of the consumer, so the introduction of utilitarianism was in response to an increasing differentiation of the population which made a value theory based on some average unit of labor untenable. [See Hutchison (1953) for a discussion of many of these explanations.]

From a purely theoretical viewpoint, the classical economists' focus on production and distribution was problematic until Mill's revision. To make price determination a question of costs of production and supply only left an important element out of the theory of prices. Blaug (2002) has noted that the importance of the theory of population and the wages fund was to make wage determination rest solely on conditions of supply. As these preconceptions faded away, the need for a theory of demand became more critical. The labor theory of value, a cost-based approach to value, also contributed to the neglect of demand issues.

One of the most interesting reasons given for the marginalist revolution is that of Mirowski (1989), who argued that the shift in economics represented shifts in physics, particularly the introduction of field theory; in keeping up with the physics metaphor, economists had to change their theory of value. The gravity and motion metaphor, at a time when physicists were exploring energy fields, seemed old hat:

....the fundamental continuity in economic thought between classical and neoclassical economics derives not from laissez-faire or utilitarian traditions...but rather from...the attendant drive to imitate physical theory. The irony of classical and Marxian economics is that just as those theorists thought they had discovered the natural foundations of social exchange, the physicists swept it out from beneath their feet....The rise of field theories was the most decisive influence because it finally provided the definitive epistemic break between classical and neoclassical economics...classical economics had become inextricably identified with the paradigm of substance theories in physics, and therefore its days were numbered." (pp. 197–201)

Basing economic thought on changes in physics may seem like the tail wagging the dog. But this explanation is more palatable if one views changes in physics as resulting from larger societal changes that may affect the worldview of scientists. Both physicists and economists can be affected by these larger social forces. Further discussion of physics and economics in the context of changes in the philosophy of science might be very useful here, as well. For the time being, the explanation for the marginalist revolution may be “all of the above”: historical, ideological, and scientific.

The marginalist revolution is often credited to the almost simultaneous publication of three books: *The Theory of Political Economy* (1871) by William Stanley Jevons (1835–1882), *Grundsätze der Volkswirtschaftslehre* (1871) by Karl Menger (1840–1921), and *Elements of Pure Economics* (1874 for Volume I and 1877 for Volume II, originally in French) by Léon Walras (1834–1910). Although all introduced the concept of utility theory, little evidence suggests that they were influenced by each other. As noted, Jevons and Walras came from math and engineering backgrounds, so that commonality may be important, but Menger did not, and unlike the other two, he used tables rather than mathematics to make his point. But ultimately, the success of the marginalist revolution depended on the efforts of a great number of economists working over a number of years to flesh out the theory. One difference, in fact, between this period and the classical period is the larger number of professional economists involved in the development of this theory of value as a result of the increasing respectability of economics as a university discipline.

1.3.2 Key Innovators

1.3.2.1 William Stanley Jevons

Jevons actually wrote a paper on his theory of value prior to the publication of *Capital* by Karl Marx, which suggests his break was more with the classical economists as a group than with Marxism *per se*. In subsequent writings, Jevons, more than anyone, was fully aware of the break he was making with classical theory and was highly critical of both Ricardo

and Mill. In his book, Jevons introduced the concept of maximizing utility with constrained optimization, now still at the heart of neoclassical economics. He distinguished between total utility and marginal utility. He also introduced the theory of the consumer but did not use marginal analysis to develop a theory of supply. This came later, with contributions from a number of other economists. Further, he did not fully integrate utility theory with a theory of demand; this had to wait for Walras and Alfred Marshall. Jevons also wrote on the methodology of economics and did some work on business cycles. Although very accomplished, he died young, which deprived him of the opportunity to fully develop his work (Niehans, 1990; Spiegel, 1991; Screpanti and Zamagni, 2001).

1.3.2.2 Karl Menger and the Austrian School

As noted, Menger did not use mathematics in his formulation. Although the concept of marginal utility is particularly amenable to analysis using calculus, it can be understood intuitively. Marginal utility is the satisfaction derived from the last unit of a commodity; diminishing marginal utility suggests that the last unit is not as satisfying as the first, as one becomes satiated. Diminishing marginal utility is a cousin of the diminishing returns argument made by classical economists in reference to the returns from agriculture. Thus, marginal utility is not a totally new concept; the classical economists were aware that the impact of a last unit may be different than that of the first, also without mathematics. While Menger is sometimes seen as lesser than Jevons and Walras for his lack of mathematical training, it is sometimes easier to see the connection between his theory and classical theory without it. Menger, like Jevons, saw utility theory as fundamentally involving a maximization problem: the consumer's goal was to obtain the highest level of utility possible.

Menger is also famous for being the “father” of the Austrian School in Economics, which — according to Niehans (1990) — had four generations. The second generation, after Menger, included Eugen von Bohm Bawerk (1852–1914) and Friedrich von Wieser (1851–1926), who extended Menger's

work and made contributions to capital theory (discussed shortly). The third generation included Joseph Schumpeter (1883–1950) — business cycle theorist, economic historian, and a proponent of a theory of entrepreneurship — and Ludwig von Mises (1881–1972), who was perhaps most famous for his argument that centralized socialist planning was untenable. The fourth generation included Friedrich Hayek (1899–1992) — another critic of socialism — and Oskar Morgenstern (1902–1977), one of the founding fathers of game theory.

Members of the Austrian School have been important defenders of the utility theory of value. Menger was also a vociferous critic of the German Historical School, which rejected many aspects of neoclassical economics, advocating instead an inductivist methodology in economics. Menger was very concerned about any movement away from a deductive, theoretical economics.

The concerns expressed by Mises and Hayek against socialism are also an important feature of the Austrian School. They are expressed in a collection of essays edited by Hayek called *Collectivist Economic Planning* (1935). Drawing on the equilibrium analyses that emerged in the early part of the twentieth century, Mises' essay is particularly articulate in pointing out that without market-determined prices, a central planner has no way of knowing how much of a product is needed to optimally provide for everyone in society. In other words, the problem of socialist planning is informational. While dismissed at the time, it was rediscovered at the end of the twentieth century, becoming one of the primary explanations for the eventual fall of the Soviet Union (Steele, 1992).

Bohm Bawerk was also a critic of Marx and, like Senior, worked to develop a theory of capital that justifies a return to the owners of capital. However, Bohm Bawerk wanted to attribute the return to capital to the productivity of capital, making interest the payment for investing in “roundabout” production processes that requires one to forestall present consumption. The capital theory emanating from the Austrian school received additional attention from Irving Fisher, Phillip Wicksteed, and Frank Knight. Ultimately — according

to neoclassical theory — competition would lead to the equalization of the marginal product of capital and the interest rate, since divergences will result in the movement of investment to those assets with the highest yields. Keynes ultimately rejects the neoclassical theory of interest as a payment for forestalling current consumption, posing it instead as the price for holding money.

Yet, in spite of its conservatism, the Austrian School was more likely than the British to discuss the sociological aspects of competitive capitalism (Canterbery, 1976). It also had some early involvement in business cycle theory.

1.3.2.3 Léon Walras

Walras is often considered the most important of the three key figures of the marginalist revolution. Walras came to his academic job in Lausanne, Switzerland, rather late in life after he was frustrated in his attempt to become a mathematician and gave up on an engineering career. Yet he is now considered one of the most important innovators in neoclassical economics. His work was much more ambitious than that of Jevons and Menger, as he created the first general equilibrium model, which involved the solving of a number of simultaneous equations. It is a model of an entire economy, with consumers who are buyers in product markets and sellers in markets for services, as well as businesses that are buyers of services and sellers of products. Consumers seek to maximize their utility, and firms maximize their profits. Final prices emerge to equalize demand and supply in each market. It is a model that was grand in ambition and that has been refined and worked on by economists to this day.

An interesting feature of general equilibrium models is that in spite of being seen as the apogee of neoclassical economics, they have also been of interest to socialist economists, such as Abba Lerner (1946) and Oskar Lange (1938), who were important in popularizing general equilibrium analysis (Blaug, 2002). Obviously, if one can develop a model of an entire economy, central planning can be made easier, but only if one has all the right parameters (which Mises felt were not

available). Walras, while a strong believer in the efficiency of competitive markets, was himself a socialist, but one who believed that the best results can be achieved through free markets and income redistribution (Jaffe, 1980).

Walras openly distinguished himself from the “English” school of political economy; suggesting again a different vision on the part of those from Continental Europe. While Walras’ general equilibrium approach was ultimately adopted in England and the United States, Walras’ political message was left out. It may be that the real inheritors of Walras’ message are European economists, such as Jan Tinbergen (1985),* who adapted general equilibrium analysis to the concerns of social democracy in Europe.

1.3.2.4 Other Innovators

As noted earlier, a number of people contributed to general equilibrium analysis after Walras. Important contributors prior to the Second World War were Vilfredo Pareto, Fisher, and Eugene Slutsky. Irving Fisher also played an important role in the development of capital theory, along with Bohm Bawerk, clarifying the return on capital as a return for productivity. Generally speaking, Fisher (1867–1947) is considered the first of the great American economists.

Ultimately, what emerged from marginal analysis is a theory of distribution based on marginal productivity. Capital and labor earned according to the marginal product they contributed. Class issues were eliminated, and profit was no longer a surplus. The final solution was distribution that was both equitable and efficient since everyone earned according to his or her contribution to the product. Marginal productivity became the universal key to all allocation problems in economics (Hutchison, 1953). Key contributors to marginal productivity analysis included J.B. Clark, Marshall, Edgeworth, Knut Wicksell, and, of course, Walras.

* Tinbergen was one of the first winners of the Nobel Prize in Economics.

The assumptions underlying marginalist analyses were extended and refined over a number of years. The system of the classical political economists was generally based on assumptions that the system was competitive and that people were self-interested and calculating. It was also assumed that the products being produced and the productive services offered were fairly homogeneous. And it was assumed that the system tended to full employment. As the extension of marginalist analysis continued, new assumptions were added: that there is perfect mobility of labor and capital, buyers and sellers have perfect knowledge and are rational (i.e., act according to a clearly defined and ordered set of preferences), and that perfect competition exists (i.e., enough buyers and sellers exist so no one can influence the market price). None of these assumptions necessarily contradicts those of the classical political economists, but the statement of more restrictive assumptions became imperative for the mathematics applied to utility theory to work out.

1.3.2.5 The Marshallian Synthesis

As has always been the case when there is much activity in economics, someone eventually comes along to play a role in synthesizing the paradigm into a coherent whole. Adam Smith did this in the eighteenth century, and John Stuart Mill did this at the mid-nineteenth century. Alfred Marshall (1842–1924) became the key synthesizer for the end of the nineteenth and beginning of the twentieth century. Although not a founder of the marginalist revolution, he became its chief expositor. Marshall's *Principles of Economics* was originally published in 1890 and had gone through its 8th edition by 1920. It was the bible for economics at the turn of the twentieth century and is still widely read.

Like Jevons, Marshall was trained in mathematics and physics, but unlike the former he was not intent on breaking the continuity between classical and neoclassical economics. So part of his synthesis was to draw the two approaches together. According to Screpanti and Zamagni (2001), he was

particularly concerned to retain the Ricardian deductive methodology from classical economics. The utility theory of value was in place, however, as was equilibrium analysis. Marshall preferred partial equilibrium analysis to the multi-market analysis of Walras, however.

Marshall's most important contribution was probably his final working out of supply and demand theory. As noted earlier, Marshall gave John Stuart Mill credit for providing the framework, once again making a connection to classical economics. But it was Marshall who finally integrated utility analysis with demand analysis. And it was Marshall who developed the mathematical and graphical analysis of supply and demand. The intersection of the supply and demand curves, which is a staple of introductory economics courses all over the world, is sometimes referred to as the Marshallian cross, in tribute to its inventor (Niehans, 1990). His analysis of supply and demand is enriched with additional discussions of demand elasticities — the responsiveness of demand to changes in prices — and consumer surplus — the difference between what consumers would pay for a price and the actual price.

Marshall is also credited with introducing the idea of externalities; in Marshall's case, an externality was the effect of overall industry output on the output of a given firm. Marshall also reintroduced the idea of a National Dividend (not unknown to classical political economists), which was a measure of overall social welfare. Both of these concepts were expanded on by Pigou in his development of welfare economics and by Keynes in his *General Theory*, albeit in different directions.

1.3.2.6 Welfare Economics

In developing the field of welfare economics Arthur Pigou (1877–1959) distinguished between the private and social products of an activity. He pointed out that when private and social products coincided, then the outcome was efficient; if they did not coincide, then problems arose. In Pigou's formulation, the social cost (or benefit) over and above the private cost (or benefit) was an externality, thus extending Marshall's

view. Pigou's analysis opened the door to discussions of pollution, for example, whereby the social costs are greater than the private costs of producing a commodity. He made a number of proposals for taxes that essentially make firms pay for any additional social costs from their production processes, and he considered the possibility of subsidies to encourage products with positive externalities (e.g., knowledge).

He appropriated Marshall's National Dividend to examine the idea of an aggregate social welfare function, which opened the door to examining aggregate social utility, thus extending the theory of value to include a "macro" concept. Although problems with this concept put it on the back burner for a number of years, Hutchison (1953) has noted that the idea of using economic theory as a way of bringing the greatest happiness to the greatest number, in its day, had a profoundly liberating effect on those economists concerned about social policy.

What Pigou eventually did with his concepts of social cost and National Dividend was to show how the utility theory of value could be used to engage in social reform and the policy debates of the time. Modern cost-benefit analysis owes its origins to the welfare economics developed by Pigou. Eventually, critics of welfare analysis put its proponents on the defensive, but it remains an important contribution, nevertheless.

1.3.3 Problems with Utility Theory

Earlier it was mentioned that John Stuart Mill was skeptical about the ability of a theory of value based on utility to live up to its promise, and in some respects he proved correct. Eventually, problems arose as to the measurement of utility since it was not an observed phenomenon. This ultimately led to work by Pareto, Edgeworth, Fisher, Allen and Hicks, and Slutsky to develop the concept of ordinal utility. With ordinal utility it is not necessary to directly measure utility, just to establish a ranking among preferences. This seemed to solve the problem for a while. In the 1930s a young Paul Samuelson suggested his theory of revealed preference, which did not require ordinal utility either (Samuelson, 1998) but was based

on empirical observation of behavior as “revealing” what people’s preferences are. It proved difficult, however, to determine a person’s motives from his or her behavior (Lewin, 1996).

In terms of a social welfare function, questions were raised about aggregating utilities when it seemed impossible to make interpersonal comparisons of utility; the utility functions of individuals were not additive. Many suggested abandoning the idea of a social welfare function (Robbins, 1938). Thus, for much of its history, welfare economists have focused on the concept of Pareto optimality as the criterion for making decisions, as it does not require interpersonal comparisons or an additive social utility function. Attributed to Vilfredo Pareto (1848–1923), the optimal solution was characterized as one that raised the utility of one person without diminishing the utility of anyone else. This criterion limits welfare economics, as it does not allow taking into account income inequalities or initial conditions in making social welfare decisions. Even if one accepts Pareto optimality as a criterion, however, it does not produce a unique solution; one can have multiple Pareto optimal possibilities without a way of deciding among them (Screpanti and Zamagni, 2001).

So by the 1930s, many seemed to be abandoning the utility theory of value. Economists were conducting demand analyses without any reference to utility (Stigler, 1965). Others were predicting the death of welfare economics. A new infusion of ideas following World War II changed all of this, and the utility theory of value is still alive and well in our current time. But there were a number of challenges to neo-classical economics in the interim, which is the topic of the next two sections.

1.4 CRITICS AND HERETICS

While the neoclassical paradigm was under construction, a number of critics and heretics disagreed with the shape economics was taking. They can be divided into two groups: those who objected to the methodology of economics and those who felt that the neoclassical view of modern capitalism was

unrealistic. There were also those who wanted to reintroduce a stronger focus on macroeconomics, but these are discussed in the next section.

1.4.1 The Methodology of Economics

It is apparent from previous discussion that, from the beginning, the methodology of economics was primarily abstract and deductive. Three schools of thought challenged this approach: the English Historical School, the German Historical School, and the American Institutionalists.

1.4.1.1 The English Historical School

Even in the classical period, there were a number of economic historians in England who challenged the abstract, deductive method operating in economics — a critique that extended into the neoclassical period. Spiegel (1991) suggests that the critique of this school of historians — influenced by the ideas of Francis Bacon, August Comte, and John Stuart Mill — focused on four issues. First, they argued for the need to bring more empirical evidence into discussions of political economy, as an antidote to armchair theorizing. Second, many of the Irish economists — such as John K. Ingram (1823–1907) — were drawn to a more inductive methodology because of the obvious differences in the conditions of the Irish relative to the English. This required some historical explanation that was not available in the existing paradigm, so diversity of experience became an important critique. Third, those interested in teasing out the psychological and institutional dimensions of economic life — such as Cliffe Leslie (1826–1882) — found the deductive methodology and scope of economics much too restricted. Finally, for those who wanted to document some of the negative aspects of industrial civilization — such as Thorold Rogers (1823–1890) and Arnold Toynbee (1852–1883) — the methodology of economics was out of the question.

But being a historian and a deductivist was not mutually exclusive. Walter Bagehot (1826–1873) was an economist concerned with historical processes but deeply committed to the

abstract approach of political economy. [For example, see *Economic Studies* (1891/1953).] And, as mentioned, John Stuart Mill combined an interest in institutional issues with a deductivist approach to economics. Once again, Mill's willingness to walk the line between opposing camps made it possible for him to entertain both approaches. Ultimately, a critique of the English Historical School came from John Neville Keynes, father of John Maynard Keynes, entitled *The Scope and Methodology of Political Economy* (1890), which defended the deductive approach in political economy and questioned the inductivists' placing their ethical concerns above a more objective methodology (without denying a role for ethical concerns). His treatment of the issue had some influence in lying to rest many of concerns generated by this school (Blaug, 2002).

1.4.1.2 The German Historical School

The German Historical School had many of the same complaints. Its founders included Wilhelm Roscher (1817–1894), Bruno Hildebrand (1812–1878), and Karl Knies (1821–1898). But the most famous member of this school was Gustav Schmoller (1838–1917). Schmoller's prestige in Germany became so great that it was virtually impossible for anyone to obtain a post in economics without his approval. Thus, unlike the case in England, the historical approach became the dominant approach within the prestigious German university system.

Another difference with the English School was the philosophical heritage of the German Historical School, which was largely influenced by Hegel. As a result, these historians, like Marx, were interested in "stages" of development. They also devoted much attention to a critical analysis of the history of economic thought (Spiegel, 1991). It would appear that the influence of Hegel on German scholars resulted in different approaches coming from that country.

Like some of those in the English School, those in the German Historical School were also concerned about social reform. According to Schumpeter (1966), it was this particular

school's willingness to assert personal value judgments — stemming from their social justice agenda — that was of such great concern to Menger. This is an important issue since Menger's concern for a more deductive methodology was also a concern for more objective science than he felt was being practiced in Germany. Menger was also a proponent of “methodological individualism” in economics — in other words, a focus on individual choice as the key issue in economics, as opposed to issues associated with stages of development. But again methodological individualism may be another way of avoiding larger policy questions.

The German Historical School was not without its contradictions as well. Its critique of classical or neoclassical economics focused on the attempt to establish universal laws (Screpanti and Zamagni, 2001). Yet its search for laws of development was no less universalistic.

The biggest problem for this school was that without any propositions to guide it, the results were fact-based, historical monographs with little theory to frame their discussions. This, along with Schmoller's isolation of German academics from ongoing theoretical discussions in the rest of the world, ultimately left it without a clear voice in modern economics (Schumpeter, 1966; Screpanti and Zamagni, 2001).

There were also contextual factors to the debate between Menger and the historical school. With the decline of the Austria–Hungary Empire, the stages of development argument could be easily associated with the rise of German nationalism, with its focus on a special destiny for Germany. Part of the push for reform in Germany was the tremendous drive to catch up with the rest of Europe. The German Historical School (and the English School as well) defended the mercantilist policies of the past in their support for the expansion of the state (Blaug, 2002) — an anathema to most classical economists, but particularly problematic to those intimidated by German nationalism. This could have been very threatening for those in Austria, with its multiethnic heritage and large Jewish population (Spiegel, 1991; Hachen, 2000). Not without reason, as it turned out.

1.4.1.3 The American Institutionalists

There have been two groups of institutionalists: those operating in the first half of the twentieth century and the neoinstitutionalists. The latter are a very different group than the former, who will be discussed in a subsequent section. The early institutionalists had similar concerns to the historical schools discussed above. The slant in America was on developing a theory of evolutionary economics, however, rather than the stages theory of development found in Germany. Influenced by Darwinism, the focus was on adaptation and survival in changing circumstances (e.g., Veblen, 1919).

The American institutionalists were also interested in more multidisciplinary approaches to economic phenomena. According to Screpanti and Zamagni (2001), there was a focus on broadening the field of investigation, looking beyond the market to other institutions that may influence economic growth, and a rejection of methodological individualism. Lewin (1996) credited the institutionalists with wanting to incorporate psychological factors in their discussions. People such as Veblen and Polanyi wanted to broaden economics to consider anthropological descriptions of precapitalist societies (Canterbery, 1976). Institutionalists such as Gunnar Myrdal, a Swedish economist who began as a theorist in the Stockholm School (discussed later), did institutionalist work in the United States, he says, because it was the only way to approach issues such as inequality (Myrdal, 1975), a burning issue of the modern era. Myrdal became famous for his studies of American race relations and economic development issues in Asia. John Kenneth Galbraith wrote about the power of corporate America and the consequences of American affluence, among other things. Generally speaking, American institutionalists gave a great deal of attention to social policy issues.

The institutionalists never developed a coherent paradigm to counter neoclassical economics, however, although they were sometimes successful in drawing attention to limitations in the dominant paradigm (Canterbery, 1976). Only briefly do we find a discussion a different theory of value, from Veblen (1919), when he wrote that “the question of value is a

question of the extent to which the given item of wealth forwards the end of nature's unfolding process" (p. 92). This interesting statement suggests an attempt on Veblen's part to define value in terms of a universal law, such as the law of evolution. But he provides no way of operationalizing the concept so that it can be applied to a concrete situation.

Key members of the institutionalist camp included Wesley Mitchell (1874–1948), Thorstein Veblen (1857–1929), John R. Commons (1862–1945), Karl Polanyi (1886–1964), Gunnar Myrdal (1898–1987), John Kenneth Galbraith (1908–), and Kenneth Boulding (1910–1993).

1.4.1.4 Induction and Empiricism

Because people in all three of these groups favored a more inductive and empirical approach to economics, it may be useful at this point to note how these terms have been conflated in the past. For many in this era, an inductive approach was synonymous with data collecting and empiricism. These ideas changed after World War II, thanks to the work of Karl Popper (2002), when empiricism becomes a technique available to deductivists and inductivists alike. The resolution of the confusion over this issue, among other things, resulted in bringing historical and institutional analysts closer to deductivists and theorists in their perceptions about the methodology of economics. This will be discussed in greater detail shortly.

1.4.2 The Realism of the Paradigm

Attempts to critique or add to the paradigm came from many quarters early in the twentieth century. Of particular interest are the studies focusing in one way or other on the nature of the modern firm, emphasizing issues such as imperfect competition and internal activity within a firm.

1.4.2.1 Imperfect Competition

Since neoclassical economics is based on the premise of competitive markets, it was not surprising that this would come under question during a time of increasing concentration of

power. In 1926, Piero Sraffa (1898–1983) opened the door to a discussion of imperfect competition, suggesting in an article that firms with increasing returns to scale would ultimately become monopolies as one firm may produce enough to swamp the market. This also challenges a fundamental premise in the neoclassical paradigm that firms are price takers, i.e., that they are too small to influence the market price. If this is not the case, then these big firms essentially “know” the demand curve that they face. This observation by Sraffa was developed by Joan Robinson (1903–1983), the first woman to have a major impact on economic theory. Her book *The Economics of Imperfect Competition* (1933) was important in shifting discussion from the industry to the firm and in how the modern firm was visualized. Instead of producing the most efficient solution, the large firm will be able to use its market power to produce a lower quantity of goods at a higher price. In the same year, Edward Chamberlain produced a book on monopolistic competition, which focuses on how firms use advertising and nonprice competition in order to differentiate their products from those of other firms making similar commodities, thus undermining a key assumption in economics that consumers are confronted with homogeneous products in one market, and thus resulting in firms having enough market power to influence the price.

1.4.2.2 Inside the Firm

Other economists explored the actual activities of firms. In 1911, Joseph Schumpeter (1883–1950) proposed taking a closer look at entrepreneurial leadership within a firm, rather than a Spartan focus on cost curves. Schumpeter emphasized the importance of an entrepreneurial elite to the survival of capitalism (Heilbroner, 1999). A similar focus on entrepreneurship can be found in the work of Frank Knight (1895–1973) (Blaug, 2002). In another development, Ronald Coase (1910–) introduced the concept of transactions costs for explaining the nature of the firm, within an article written in 1937. The cost of dealing with contractors and other firms, of supervising staff, and so on influence the size and structure

of the modern enterprise, according to Coase (1937). These costs are in addition to production costs, and the firm seeks ways to minimize them, resulting in specific institutional configurations. Schumpeter, Knight, and Coase attempted to move the field beyond seeing the activity of a firm as a mere abstraction. The ideas of these scholars were incorporated into economics more slowly than were the concerns of Robinson and Chamberlain, but they ultimately contributed to the New Institutional Economics that evolved in the second half of the twentieth century.

1.5 THE REEMERGENCE OF MACROECONOMICS

The reworking of economics using a utility theory of value took a number of years. Almost the entire focus was on microeconomics, focusing on the decisions of individuals or firms. This was not accidental; the utility theory of value represented a turn away from macroeconomic issues and their policy implications. For the Austrian economists, methodological individualism was the only approach to economics; we noted their hostility to the approaches of the German Historical School and its focus on historical change and national aggregates. By the time Keynes reintroduced macroeconomics in a big way, the microeconomic approach was well developed. It included a theory of production and supply, focusing on costs of production, and a new capital theory based on the idea that the marginal productivity of capital determined its return and that the interest rate was a reward for saving. There was a theory of the consumer, not available in the classical schema, where consumers maximizing their utility resulted in a demand for consumer goods, subject to a budget constraint. There was a highly developed theory of supply and demand, which had also been undeveloped in the classical scheme. There was a theory of distribution, but very different than classical theories of distribution, since factors of production — including labor — were rewarded in accordance to their contribution to the product, resulting in a distribution that was both efficient and equitable. Like the classical economists, the neoclassical economists envisioned a system that

operated “naturally,” if there is perfect competition and little interference from government or other entities, such as unions. Concerns raised by Robinson and Chamberlain were incorporated into the paradigm but were not considered a hindrance to the natural workings of the system, as the system was still perceived as competitive in most cases.

The avoidance of macroeconomics proved to be difficult, however. First, there was still money. Economists continued to develop theories about the circulation of money, which brought them into the world of macroeconomics. The tendency was to maintain a relatively simple view about money, focusing on the quantity theory of money, which had been in economic thinking at least since Locke, albeit with a number of refinements. Second, economists concerned about larger policy issues — such as the historical economists, institutionalists or welfare economists — rejected the idea that macroeconomic issues were outside the bounds of economic theorizing. It only had been a matter of time until an attempt would be made to use the utility theory to construct a social welfare function. Third, the business cycle was very difficult to ignore. The large swings in output and employment, and the consequent problems caused by them, became an increasing source of concern and research effort on the part of economists (including the Austrians). The Great Depression, of course, brought macroeconomics and Keynesianism to the forefront. Before discussing Keynes, it may be useful to discuss some of his precursors.

1.5.1 Precursors to Keynes

Although Keynes made important contributions to economics, there was considerable interest in macroeconomics before his major work, *The General Theory of Employment, Interest, and Money*, written in 1936. Of particular importance was the work of Leontief, a great number of business cycle theorists, and what came to be known as the Stockholm School.

1.5.1.1 Leontief

Wassily Leontief (1906–1999) is the father of modern input–output analysis, which maps the flow of goods from one

industry into the next, incorporating both inputs and outputs. If this sounds a little like the Physiocrats' *Tableau Economique*, it can be seen as a modern, more complex version using modern matrix algebra. The input–output table can be conceptualized as a general equilibrium system of equations, such as those produced by Walras, an important innovator in microeconomics (Spiegel, 1991). General equilibrium, however, is based on individual units, while input–output analyses generally focus on interindustry flows. Further, it has been used to explore interregional relationships and even to make global projections (Niehans, 1990), making it an important tool in macroeconomics. It was also adopted by the socialist countries for planning purposes. Leontief's work, conducted mostly in the early part of the century, became all the more important with improvements in data collection, making it a precursor to widely used macroeconomic simulation models.

1.5.1.2 Trade Cycle Theorists

As we have indicated, economists from as early as Malthus' time have been concerned with the business cycle. It also received considerable treatment from Marx. The business cycle had a tendency to call into question the equilibrium analyses of the classical and neoclassical economists, although they were sometimes explained in terms of market imperfections or government intervention. Time and space do not allow a detailed analysis of business cycle theories except to note that some theories focused on the business cycle as the result of underconsumption, while others focused on overinvestment, although one can be considered as a corollary to the other. Some theorists focused on the market for goods while others focused on the market for money. Some were interested in short cycles, while others were interested in long waves. By the time of the Great Depression, as a result of these efforts, considerable evidence indicated that the economies of the industrial West did seem to move in cycles, both long and short. Key individuals involved in this research include some who have already been mentioned such as Veblen, Mitchell, Schumpeter, Fisher, Mises, and Pigou. Other

important contributors were: Mikhail Tugan-Baranovsky, Nikolai Kondratieff, Arthur Spietoff, Ralph Hawtrey, and Dennis Robertson. The latter two were colleagues of J.M. Keynes who influenced his work (Skidelsky, 1992).

One person worth special note is J.A. Hobson (1858–1940). In 1890 he published his first book (with A.F. Mummery), suggesting an underconsumptionist theory of business cycles. Although the book was not well received by economists, he went on in 1902 to publish *Imperialism*, suggesting that underconsumption at home led to imperialism abroad. His work was later picked up by Rudolf Hilferding, Rosa Luxemburg, and V.I. Lenin to develop the Marxist–Leninist view of imperialism. It should be noted, however, that Hobson felt that imperialism only benefited a small clique of people within the British Empire and was, in general, not a cost-effective way of dealing with underconsumption at home (Hobson, 1902).

1.5.1.3 The Stockholm School

Knut Wicksell (1851–1926) and Karl Gustav Cassel (1866–1945) are generally considered to be the founders of the Stockholm School. Both were important innovators in monetary theory (Spiegel, 1991; Screpanti and Zamagni, 2001). Wicksell was one of the first to look at the aggregate supply and demand for money, made improvements on the quantity theory of money incorporating the role of credit markets, and integrated his monetary theory into the a theory of the business cycle. Cassel developed a theory of interest that bears some resemblance to that adopted by Keynes. A second generation of Stockholm economists, such as Gunnar Myrdal and Bertil Ohlin (1899–1979), expanded on Wicksell’s work, exploring conditions of less than full employment and the question of fallible expectations, issues explored by Keynes. There were differences from Keynes, however. The Stockholm school did not have a theory of the multiplier and did not really focus on an economy caught in a period stagnation (Shackle, 1972; Lundberg, 1985; Blaug, 2002). Lundberg (1985) also noted that their focus on cyclical instability and

disequilibrium was not as elegant as Keynes' equilibrium model (although allowing for equilibrium at less than full employment). On the other hand, their analysis was a model for an open economy, while Keynes focused on a less realistic closed-economy approach. Ultimately, the implications of the model produced by the Stockholm school were, according to Heilbroner (1995), more radical than that produced by Keynes. It is not obvious that Keynes knew much about the work of the younger Stockholm economists since much of it was not published in English. Yet it does appear that Keynes' circle and the Stockholm circle were working simultaneously on the same set of issues, at around the same time.

1.5.2 Keynes and the General Theory

John Maynard Keynes (1883–1946) was already a celebrity by the time the *General Theory* came out. When he was a young man, his book *The Economic Consequences of the Peace* (1919), prophetically predicting a breakdown in the reparations agreement between the Axis Powers and Germany following World War I, catapulted him into the limelight. While a lecturer at Cambridge University, he also worked as a journalist, made a fortune speculating in currency markets, consulted with the Department of Treasury, helped Cambridge out of its financial difficulties while serving as bursar, was editor of the *Economic Journal*, was a patron of the arts, and wrote books about probability theory and the economics of money (Skidelsky, 1992).

While many were working along the same lines as Keynes, he was able to make the most convincing case for a return to macroeconomic analysis and for government involvement in the economy, not only because of the power of his theorizing but because, in part, he was so well known as an economist. But he could not do so without attacking several “sacred cows” in neoclassical theory.

According to the traditional theory, in the long run high levels of unemployment are not possible in a competitive economy because a surplus would put downward pressure on wages, encouraging employers to hire more workers. When

the wage was low enough for all of those desiring employment to be employed, the market would clear. In the face of the Great Depression, Keynes (1936) felt that it was impossible to argue that high levels of unemployment were due to the unwillingness of workers to accept lower wages. Keynes was able to draw on his expertise as a monetary economist to link the high rates of unemployment to larger macroeconomic and monetary-related issues, suggesting that a number of intervening variables prevent the system from coming to equilibrium with full employment. As a student and protégé of Alfred Marshall, he was able to take the concepts of a National Dividend and industry externalities to focus on the impact of macroeconomic variables on aggregate outcomes, ultimately rejecting the idea that the individual decisions made by individuals and firms necessarily result in a self-correcting system that fully employs all of its resources. The *General Theory* is ultimately an argument for an inclusion of macroeconomic variables and their integration with the utility theory of value:

So long as economists are concerned with what is called the Theory of Value, they have been accustomed to teach that prices are governed by the conditions of supply and demand...But when they pass...to the Theory of Money and Prices, we hear no more of these homely but intelligible concepts and move into a world where prices are governed by the quantity of money...One of the objects of the foregoing chapters has been to escape from this double life and to bring the theory of prices as a whole back to close contact with the theory of value. (Keynes, 1936, p. 293)

Keynes attempted to integrate macroeconomic variables into the theory of value by taking what he needed from the latter, while discarding the rest. He began his discussion by accepting the marginal productivity theory, which states that the wage is equal to the marginal product of labor, while rejecting the idea that the supply of labor is determined by the marginal disutility of work, with equilibrium arising where the marginal disutility of work is equal to the wage.

The disutility of work has no impact on labor supply, according to Keynes, and laborers have little control over the real wage. Even if they wanted to lower the real wage, they could not do so since the real wage is determined by the overall level of prices.

This “stickiness” in prices flies in the face of traditional theory, going back to the earliest political economists, who always assumed that prices were the equilibrating mechanism in the system. But if the real wage is sticky downward, and the wage is an important component of the price of a product, then both wages and product prices are sticky downward, leaving the system without its traditional mechanism to bring it to equilibrium. Instead of prices adjusting, quantities adjust; the quantities are employment and products (Leijonhufvud, 1968). Thus, equilibrium arrives only as a result of unemployment and a cutback in output.

Keynes went on to suggest, however, that even if workers could lower their wages, this might not be desirable, since this may have an impact on consumption and effective demand. This is because workers have a higher propensity to consume. Insofar as a reduction in the wage leads to a shifting of wealth to the better off, who have a lower propensity to consume, effective demand will be reduced, resulting in lower output and more unemployment. Clearly, then, the overall level of employment is determined by larger forces intervening in the decisions of workers and employers, however much the former may want to work. The discussion of the marginal propensity to consume and the role of effective demand is one of Keynes’ most important contributions to economic thought, although these ideas are not attributed to Keynes alone.

Keynes recognized that the neoclassical response to this argument is that the income that is not consumed by the wealthy will go into investment, thus increasing the demand for labor in the capital goods sector.* But the success of this

* Although Keynes addressed his analyses to those he referred to as “classical economists,” those who used marginalist analyses are all considered neoclassical economists in this paper.

sector in boosting employment will depend on the inducement to invest, according to Keynes.

In discussing the inducement to invest, Keynes accepted several basic postulates from the theory of value. First, the yield on an investment will be equal to the marginal productivity of that particular investment. Second, he agreed with the neoclassical view that competition will force the yield on different assets to equalize in the long run. He rejected the idea, however, that the interest rate is payment for forestalling present consumption or that the rate of interest equilibrates savings and investment. As noted earlier, savings (or its opposite, consumption) is determined by income. Rather he saw the rate of interest as a price for liquidity or the holding of cash balances and contended that the rate of interest equilibrates the supply and demand for money.

The introduction of this idea leads to a number of other innovations. First is the idea of liquidity preference. In spite of people losing out on interest payments by holding cash balances, there are a number of reasons for holding onto cash. First, people need to hold money for carrying out their day-to-day transactions. Second, holding money is a precaution against unexpected events. Third, people desire money in order to make money by speculating. Although the first two motives for holding money may be relatively stable, the last is subject to considerable fluctuation.

The role of expectations is another important innovation, although also addressed by the Stockholm School. Expectations will influence the amount of speculative balances people will want to hold and their willingness to invest in risky projects. If people have low expectations, as Keynes argued that they did in the Great Depression, they will be less willing to invest and will be more likely to hold onto their cash balances or invest in safer or more liquid assets, like bonds. Focusing on a wide portfolio of investment options was also an important addition of Keynes. For while Keynes acknowledged that with competition the yields on all assets would equalize, in a time of uncertain expectations, liquidity and lower risk will matter, resulting in a flight to certain assets.

So not all savings will go into investment as assumed by the classical economists; there can be leakages as people attempt to hold on to their wealth in uncertain times. The interest rate, as the price for liquidity, can be lowered to encourage people to move into riskier investments, but this strategy does not always work. Thus, while Keynes acknowledged the importance of monetary policy in stimulating investment, in a time of low expectations it may not be enough. Fiscal policy may be necessary, although Keynes seems to be less concerned with pump priming than he is with government intervention in investment decisions.

In Chapter 13 of the *General Theory*, Keynes summarized how a number of variables intervene in the success of monetary policy. An injection of money, which should lower the interest rate, may not do so because of a high liquidity preference. A decrease in the rate of interest should increase investment but may not if the return on capital is decreasing faster than the interest rate. An increase in investment may lead to an increase in employment but may not do so if the marginal propensity to consume is falling. Thus, liquidity preference, the rate of return on capital, and the marginal propensity to consume are key determinants of what happens. These variables, in turn, depend on expectations, the wage bargains between workers and employers, and the prospective yield on different assets. Ultimately, however, it is a monetary phenomenon, the interest rate, that has a profound effect on employment, since it sets the standard that the return on capital has to reach, which in turn affects liquidity preference and the inducement to invest. If one incorporates the institutional factors (the monetary system) that may keep the rate of interest artificially high, then the persistence of involuntary unemployment is not surprising.

Keynes also made a significant change in capital theory when he diminished the role of savings. In the neoclassical model, savings cause investment, which results in increased income from the return on investment and increased output. For Keynes, the interest rate stimulates investment, resulting in increased income and, from that, increased savings. As

noted earlier, Keynes argued that too much savings could be harmful to the economy, resulting in the “paradox of thrift.” Since higher income countries, according to Keynes, will consume less and save more, this may result in the secular stagnation of modern economies.

It is important to note that while Keynes also spoke in terms of “equilibrium,” he was not positing the type of competitive equilibrium posed by neoclassical economists. It was an equilibrium that could occur at less than full employment. Further, Keynes did not accept the standard assumptions of neoclassical economists. In Keynes’ world labor is not perfectly mobile, prices are sluggish, psychological and institutional factors affect outcomes, and people do not have perfect information, resulting in expectations that are not always rational. Keynes’ analysis not only spoke to the need for a greater attention on macro-level variables but incorporated some of the concerns of institutionalists for greater attention to psychological and institutional factors.

Blaug (2002) referred to the Keynesian revolution as a true revolution since the complete adoption of Keynesian ideas was completed in about 12 years. This is not to say that there were not objections. In spite of being trained as a mathematician, Keynes used little math and even fewer graphs. A number of attempts were made to make Keynesian analysis more amenable to the conventions of traditional economics. John Hicks (1904–1989) and Paul Samuelson (1915–) are generally credited with incorporating Keynesian macroeconomics into traditional theory, much to the chagrin of die-hard Keynesians such as Joan Robinson. Others, such as Franco Modigliani (1918–), James Duesenberry (1918–), and Milton Friedman (1912–), conducted research on the consumption function that disputed Keynes’ claim that the marginal propensity to consume varies as much as he expected by income, when one examines consumption over the life cycle. This undermined his assertion that there is a tendency to secular stagnation in high-income countries. Nevertheless, until the 1970s, there was a general acceptance of Keynes’ framework. The changes in the 1970s will be discussed in the following section.

1.6 MODERN ECONOMICS

The Keynesian revolution reconnected neoclassical economics to macroeconomics, although it proved to be an uneasy alliance. The uneasy marriage between the two began to fracture in the final quarter of the twentieth century, although there is ongoing work to bring them together again. Microeconomics continued to develop, incorporating more elaborate mathematical models and econometric studies. A new school of institutionalism emerged with closer links to neoclassical economics. Marxists continued to raise issues about class and imperialism. And economic historians continued to explore the nature and causes of the wealth of nations, while also incorporating econometric analyses in their work. Before discussing these new trends, a brief discussion of the important influences shaping economics since the end of World War II will be presented.

1.6.1 The Post–World War II Period

The 1930s and 1940s were a time of profound economic and political crisis in the West. The Great Depression had a profound influence in economics, resulting in the rise of Keynesian macroeconomics and calls for greater government involvement in the economy. On the other hand, those who were affected by the rise of fascism and communism tended to advocate for less government influence and the maintenance of classical principles.

Other than Keynes, another advocate of more government influence was Karl Polanyi, who published *The Great Transformation* in 1944. Polanyi, a Christian socialist, argued that prior to the rise of capitalism, the market was subordinated to society, echoing the concerns of Aristotle that this should in fact be the case. The rise of capitalism resulted in the subordination of society to the market, a development that was justified by the classical political economists and their heirs. It was this subordination of society to the market that, according to Polanyi, resulted in depression and war. One of the factors leading to the Depression, according to Polanyi, was the Western powers' insistence on adhering to the

gold standard when it was obvious that it was choking off economic growth, until it was too late to stem the rise of antidemocratic forces. Traditional economists clung to the gold standard in the name of liberal political economy, the gold standard serving as an important mechanism that moved the system into monetary equilibrium. (While Keynes would have agreed that the gold standard was problematic and was one of the earliest advocates for leaving it, he argued for a more complex view of the issues leading up to the Great Depression.) The answer, according to Polanyi, was to move in the other direction — subordinating the market to serve social ends.

A sharp contrast to this viewpoint is that of Frederick Hayek, who wrote *The Road to Serfdom*, also published in 1944. Hayek argued that any interference in the market would ultimately lead to totalitarianism. For Hayek, there was ultimately no distinction between fascism and socialism; either approach leads to central planning and, ultimately, autocracy. The Fascists in Germany, after all, started out calling themselves National Socialists. As noted earlier, Hayek was also involved in the debate in the 1930s about limitations on central planning, given the information that is needed to efficiently allocate resources — information that is better obtained in the market, according to Hayek. *The Road to Serfdom* became the key tract of libertarian thought, which reached the pinnacle of its influence during the administrations of Margaret Thatcher in England and Ronald Reagan in the United States. Hayek was a major influence on Milton Friedman who, to this day, is an important proponent of libertarian views. His ideas are presented most cogently in *Capitalism and Freedom* (1962), where he proposed vouchers for education as a way of making public education more efficient and opposed antidiscrimination measures as interfering in the market. Friedman has also been an advocate for a negative income tax for the poor to provide aid for those in need without the additional interference of government in their daily lives.

Friedman, along with Anna Schwartz (1963), also argued that the depth of the Depression could have been avoided if

the monetary authorities had acted more quickly and decisively, first to contain the boom in the 1920s and then to stimulate the economy at the onset of depression. For Friedman and Schwartz, the Great Depression represented a failure of economic leadership, rather than a failure of classical political economy. This view is echoed in a different analysis by economic historian Charles Kindleberger (1986) and by Keynes himself, who was highly critical of the actions of monetary authorities in England. Friedman, however, has used this argument to advocate for a monetary approach to managing the economy, to complement his opposition to the intrusion of government by way of fiscal and regulatory policies.

Another important influence was the philosopher Karl Popper. As noted earlier, Popper (1902–1994) — a colleague of Hayek at the London School of Economics — opposed any kind of utopian thinking, as ultimately totalitarianism becomes necessary to make utopia possible. Further, there was a tendency, according to Popper (1943), to give up a role for human agency when one believes in an inevitable future, often a feature of Marxist or fascistic thinking. Popper, unlike Hayek, began as a socialist and was never as opposed to government action as the latter. But he was bitterly disappointed in the socialist left for not doing enough to forestall the rise of fascism in Europe because of their mistaken belief that the crisis in Europe represented the inevitability of class struggle (Hacohen, 2000).

Popper's greatest influence on economics, however, is in the realm of methodology. He began his career as a philosopher of science and wrote his first book, *Logik der Forschung* (Logic of Scientific Discovery) in 1935. Popper — influenced by Kant — confronted the issue of deduction versus induction, arguing that since science engages in a search for universal laws, there is no way of going from induction to generalizations. The scientist must always begin with deduction. This does not mean, however, that a scientist may not be empirical. Popper took great pains to separate induction from empiricism. The deductive theories of scientists must be testable, or in Popper's words, falsifiable. Although limitations in empirical method may limit the extent to which any one can absolutely

prove something to be true, one can attempt to show that something is false or inconsistent with theory. Although any one study is usually not enough to do this, if a number of studies consistently falsify a theory, there is reason for the scientific community to reject the explanatory power of that theory. What Popper did here was to remove the traditional link between induction and empiricism, reject induction, and then link empiricism to deductive thinking through the vehicle of falsification.

Finally, Popper defined his demarcation criteria. A demarcation must be made between what is science and what is metaphysics or philosophy. Theories or hypotheses that can be falsified are a part of science; those that cannot be are metaphysics. This is an extraordinary proposition since there are theories in economics that are not easily testable; for example, Marx's theory of history would be considered philosophy rather than science since it is not easily falsifiable. There are many theories in physics, however, that Popper would consider metaphysical as well if they cannot be tested. Popper, as a philosopher, is not opposed to metaphysics but is clear in his association of science with deduction and falsifiability; essentially demanding of scientists that they should be able to empirically test their ideas if they are to be considered credible, as science.

Unfortunately, time and space do not allow a discussion of some of the criticisms of Popper. The point for this paper is to emphasize the tremendous influence Popper's work has had on economics, which has — more so than any other social science — fundamentally absorbed Popper's message. Friedman described a Popperian approach for economics in his influential book, *Essays in Positive Economics* (1953). Although economists still place a great deal of importance on theorizing, there is a general expectation that hypotheses should be testable in some way.

The post-World War II focus on falsifiability came at a time when great improvements were underway in statistical methodology, data collection, and computers. Thus, there has been an explosion of econometric analyses, focused on testing and attempting to falsify fundamental theories in economics.

Some feel that the explosion of econometric research has distracted economists from the evolution of economic theory or even from an understanding of economics as a theoretical science. But it is unlikely that the rabbit will be put back into the hat. Key innovators in the econometric approach include Edgeworth, Fisher, Henry Moore, Henry Schultz, Paul H. Douglas, and Tinbergen.

In addition to the explosion in econometrics, an explosion has taken place in the role of mathematics in economics. This has been a slower development if one considers that attempts have been made to include mathematics in economics since the time of Cournot (1801–1877). But the expectation that one would approach economics mathematically received a great impetus from economists such as Paul Samuelson, whose book *Foundations of Economic Analysis*, published in 1947, had a profound effect on the field. Unlike Marshall, who put his mathematics in the appendix to his work, the mathematics in *Foundations* takes center stage in Samuelson's description of economic ideas. Samuelson was very clear that he was heavily influenced by his training in physics in developing his approach to mathematical economics. Other people who have been influential in bringing mathematics into modern economics include Fisher, Tjalling Koopmans, Tinbergen, Kenneth Arrow (1921–), and John von Neumann (1903–1957). According to Leonard (1995), von Neumann — one of the founders of game theory (discussed below) — was part of a movement on the part of mathematicians to colonize other fields, suggesting again that the impetus came as much from mathematicians moving into economics as it did from economists moving to math.

1.6.2 Themes in Microeconomics

In 1944, mathematician John von Neumann and economist Oskar Morgenstern published *The Theory of Games and Economic Behavior*, which they hoped would be an alternative to traditional microeconomics. According to Leonard (1995), Von Neumann hoped to move economics away from a focus on classical mechanics, using differential calculus, to one that

was in keeping with changes in natural science: from determinism to indeterminism, to probability, and to discontinuity. The *Theory of Games* (1944) utilized set theory, probability theory, and linear algebra to explore the behavior of small groups. It allowed for actors to act with incomplete information, operating in a context where they have to consider the moves made by other actors, some of whom may have more power than others do. It allowed for coalition building and strategic decision making.

The mathematician John Nash (1928–) also played a role in game theory: he made a distinction between cooperative and noncooperative games, of which the latter proved to be more important in economics, in keeping with the focus in economics on competitive behavior. He defined an equilibrium point in game theory, called the Nash equilibrium, as the point where no actor can improve his position by using an alternative strategy; he set forth the basic axioms for bargaining that would produce a unique solution; and he is generally credited with generalizing game theory so that it can incorporate a large number of players and a complex set of choices and strategies (Leonard, 1998; Myerson, 1999; Nasar, 1994).

One could argue that the contribution of von Neumann may be in keeping with Mirowski's (1989) discussion of the importance of the physics metaphor in economics. Von Neumann made contributions, as a mathematician, to quantum mechanics as well as economics and brought his experience in physics to his work in economics. But Neumann and Morgenstern were also skeptical of modern macroeconomics (Nasar, 1994) — not surprising when one considers that Morgenstern came from the Austrian school, with its focus on methodological individualism. So their push for game theory may also represent an attempt to focus attention again on microeconomics, albeit in a new way, and, as mentioned earlier, Neumann's desire to increase the influence of mathematicians in economics.

In spite of the initial positive response to game theory, innovations in general equilibrium analysis eclipsed game theory in the 1950s. Work by Kenneth Arrow, Gerard Debreu (1921–), and other economists showed that there could be a

unique solution in general equilibrium analysis, solving a problem that plagued Walras's model. Interestingly, Arrow was influenced by Nash's approach to game theory in developing his axiomatic approach to finding a unique solution for general equilibrium analysis (Duffie and Sonnenschein, 1989; Nasar, 1998). According to Myerson (1999), Nash's approach may be just as important as his contribution to game theory, as it has been widely adopted by economists, and brought a new standard for rigor in economics, particularly mathematical economics.

Arrow subsequently incorporated more elements into his model, such as a role for uncertainty and financial markets (Duffie and Sonnenschein, 1989), issues that were a part of Keynes' critique of traditional economics. The general equilibrium model has the potential of explaining the influence of tastes, technology, and the distribution of wealth and resources on the determination of value (Duffie and Sonnenschein, 1989) and does so in a mathematically elegant way. But it has been criticized on a number of grounds: the number of restrictive assumptions that have to be applied in order to obtain a unique solution; the type of competitive economy required is not considered realistic, since imperfect competition is precluded; it leaves out the role of institutions; it is based on the assumption that all decisions are made simultaneously; and it is not useful for forecasting (Shackle, 1967, 1972; Screpanti and Zamagni, 1990). It remains at the heart of modern microeconomics, nevertheless.

Currently, general equilibrium analysis and game theory coexist. The former generally focuses on the decisions of individuals and firms, while the latter generally focuses on small groups and institutions. Economists have found that game theory allows for an incorporation of the role of institutions and a historical and cultural context in the analysis of economic decision making (Leonard, 1995). They have been able to address many of the critiques made of economics in the past, including the concerns of the institutionalists Schumpeter, Knight, and Coase that economics should look inside institutions and consider how the system operates behind the cost curves on which they often focus. Nevertheless, in spite

of the ability of game theory to grapple with more relaxed assumptions about the nature of economic activity, it still has been criticized for the restrictive assumptions that are necessary for the games to work. The interest in game theory can only increase, however, as its applicability to a number of areas also increases. Currently game theory is used in setting up government auctions and in utility regulation, in addressing problems in assigning joint costs, in analyzing collusion and oligopoly, and in a number of situations involving bargaining and side payments.

Von Neumann also played a role in reviving interest in utility theory by developing the concept of expected utility. As noted earlier, the concept of utility has moved through a number of iterations. Von Neumann reintroduced a cardinal measure of utility by assuming that people try to maximize their expected utility, by applying probabilities to various possible outcomes. The expected utility theory, according to Schoemaker (1982), became the major paradigm in decision making since World War II with applications in management science, finance, and psychology, as well as economics. There have been a number of criticisms of expected utility theory, probably the most important involving the problem in assigning probabilities to various outcomes. This has raised questions about the falsifiability of expected utility theory.

Further, expected utility theory is based on several basic assumptions of rationality, which in experiments have often proven to be incorrect. First, it is assumed that preferences are transitive: if a person prefers A to B and B to C, then he or she prefers A to C. But often preferences are not found to be transitive if people are making comparisons within a number of dimensions. Another assumption is that an outcome in between A and B would have a value intermediate between A and B, but tests find that this is not the case. Another assumption is that preferences are invariant to risk. Work by Kahneman and Tversky (1979) — which ultimately resulted in a Nobel Prize — found that people rate certain outcomes much higher than uncertain ones, even when facing reasonable risks. A number of studies have found that people tend to underestimate some probabilities and overestimate others;

depending on the order in which possibilities are presented and how they are presented, the possibilities are “anchored.” Further, people do not seem to react proportionately to low-probability events relatively to high-probability events. Many theorists are increasingly concerned, therefore, that a narrow view of rational behavior is a limitation on expected utility theory and are searching for new models. It should be noted, however, that some of these axioms were developed to ensure that the mathematics used would work.

It is not so much that economists have rejected the concept of rational behavior, however, but many are seeking a more realistic and robust definition of rationality (e.g., Sen, 2002; Schoemaker, 1982). Nevertheless, in spite of the criticisms, the debates about expected utility theory have kept the utility theory of value alive and in the forefront of economic theorizing.

A related issue is welfare economics, which incorporates the utility theory of value to make decisions about social welfare. Again, it was Kenneth Arrow, in the early 1950s, who reopened the debate about social choice theory by showing that a few general rules for democratic voting could not be simultaneously satisfied. Like the debate over interpersonal comparisons of utility, this debate called into question the possibility of making social decisions that were neither arbitrary nor despotic (Sen, 2002). Work by Amartya Sen (2000, 2002) and a number of other economists has focused on those conditions that will in fact make social choice possible. Unlike many other economists, Sen has not been afraid to endorse external criteria for making choices, which goes well beyond Pareto optimality. Sen has also noted the necessity for confronting the problem of social choice since, in the real world, policymakers do in fact make interpersonal comparisons and important social choices, with or without the guidance of economic theory. Once again, the debate in itself has played a role in reviving interest in the utility theory of value, in spite of the problems raised by it.

In the post-World War II period, the utility theory of value has been extended to explore nonmarket decision making, such as the decisions to marry, have children, or commit

crimes. Gary Becker (1930–) has generally been credited with extending the reach of economics beyond the marketplace, although one can argue that the classical economists, with their population theories, had already done so.

But perhaps most interesting is the incorporation of institutional analysis within the purview of microeconomics. The case of game theory has been discussed previously. But the work of Ronald Coase and his followers has also been of importance. As noted earlier, Coase is famous for his introduction of the concept of transactions costs in a firm's economic decision making as important in determining the size and structure of the enterprise. In 1960, he extended this analysis to examine the externality problems posed by Pigou, but arguing that government intervention would not be necessary where there are externalities if the affected parties made bargains, involving side payments, to compensate for the externality or to buy out the offending party (Coase, 1960). This does not mean that government is not necessary since the transactions costs involved in initiating bargaining are often high, requiring the intervention of governments. Coase's point is powerful, nevertheless, since it highlights an important reason for the involvement of institutions in what could be private decisions.

Oliver Williamson (1975, 1985) has played an important role in systematizing and promoting Coase's ideas in the post-World War II period. According to Williamson, the new institutionalism, as well as incorporating ideas from Coase, incorporates influences from mainstream microeconomics, economic history, the economics of property rights, comparative economic systems, labor economics and industrial organization, the old institutional economics, the literature on market failure, Herbert Simon's (1945) work on bounded rationality in the context of institutions, business history [particularly the work of A.C. Chandler (1966)], the work of people such as Schumpeter and Knight, discussed earlier, and some of Hayek's work on the rational economic order. The key issues of the new institutionalists involve the attenuation of property rights and how it affects outcomes, the delegation of

responsibility and the problems that arise therefrom (principle/agent models), moral hazard issues that evolve when the performance of an agent is difficult to observe, adverse selection issues that arise where the cost of measuring performance is high, and the impact of uncertainty on decision making (Eggerston, 1990; Williamson, 1975, 1985). Institutionalists have examined these problems in the context of business firms, government, and the nonprofit sector. But beyond these themes, what has made the new institutionalism more comfortable than the old institutionalism to mainstream economists has been the focus on utilizing deductive, theoretical propositions to frame the discussions. These propositions are not only consistent with economic theory, but the methodology and approach is more consistent with mainstream economics than was the case for the old institutionalists.

1.6.3 Themes in Macroeconomics

Following Keynes' untimely death in 1946 at the age of 63, a number of scholars attempted to expand on his work. An important extension to Keynes' work was made by his friend Roy Harrod (1900–1978). Harrod sought to make Keynes' ideas more dynamic by examining the factors contributing to economic growth and the conditions that would produce a stable growth trajectory at full employment. A similar growth equation was discovered by Evsey Domar (1914–), resulting in the labeling of the growth model as the Harrod–Domar growth model. Analyses of growth became an important component of macroeconomics, with the Harrod–Domar model often used as the relevant model for economic development. Growth theorists have also attempted to measure the impact of technical change on economic growth, focusing on an important gap in economic theory.

Many of Keynes' followers came to be categorized as “post-Keynesians” after his death. Screpanti and Zamagni (1990) divided the post-Keynesians into two groups: that based in England, which was primarily interested in issues of growth and distribution, and that based in the United

States, which was primarily concerned with financial instability. While there is considerable overlap in reality, there were some major differences. Those in Cambridge, England were particularly influenced by Polish economist Michael Kalecki (1899–1970), who came from a Marxist background, and who, according to Screpanti and Zamagni (2001), did not operate with the same doctrinal constraints as the Marshallian Keynes. The Cambridge Keynesians aligned themselves with Kalecki's views and were more willing to incorporate Marxist ideas into their view of Keynesianism. It is thus no surprise that they focused on issues of economic growth, income distribution, and capital accumulation — important issues to Marx. But many of the Cambridge economists, such as Joan Robinson, rejected other aspects of Marx, such as the labor theory of value, and still maintained some attachment to Marshall as well (Gram and Walsh, 1983). Key post-Keynesians in England included Richard Kahn, Nicolas Kaldor, Joan Robinson, Luigi Pasinetti, and G.L.S. Shackle.

In the United States, post-Keynesians focused on a number of issues: they attempted to incorporate credit and other monetary institutions in their analyses; they were also interested in the dual economy approach, which envisioned the economy as divided between a competitive sector and an oligopolistic sector that used mark-up pricing; and they, like the English post-Keynesians, were concerned about income distributional issues implied by Keynes' work (Eichner, 1978). Key post-Keynesians in the United States were Paul Davidson, Hyman Minsky, Sidney Weintraub, and Lorie Tarshis.

Most of the post-Keynesians were uncomfortable with the Hicks–Samuelson synthesis of Keynesian and neoclassical economics, since they felt it led away from Keynes' true message. In the 1970s, neoclassical economists increasingly became disenchanted with it as well. According to Mankiw (1990), the consensus frayed for two reasons. First, the economic problems of the 1970s, in which high inflation rates coexisted with high unemployment, called into question Keynesian ideas. One of these ideas is that inflation and unemployment should move in opposite directions: when the economy is at full employment there are pressures to increase

wages and, therefore, a tendency to inflation; when unemployment is high, even an injection of additional money will not increase inflation because the economy is not operating at its potential and an increase in employment will absorb the impact of a stimulative monetary policy. It should be noted that this idea, encapsulated in the famous Phillips curve, was not explicitly stated by Keynes but can be derived from his work.

The second factor affecting the consensus was the growing chasm between microeconomics and macroeconomics. The microeconomics of the post-World War II period was based on the assumption that people made rational decisions and that markets will clear in a competitive economy. Keynes' model presupposed that people were driven by "animal spirits" and irrational (or at least incorrect) expectations that often led them to make poor decisions and led the economy to a situation where markets did not clear, particularly the labor market, which was prone to unemployment. While this disjuncture always existed between microeconomics and macroeconomics, the success of general equilibrium analysis and the expected utility model only reinforced the differences, as did the debate over the causes of the crisis in the 1970s.

Robert Lucas (1937–) led a movement away from the Keynesian approach. Using work on adaptive expectations developed by others, he argued that even if people have incorrect expectations, they will learn and adapt to their mistakes, so that in the long run they will make rational decisions, or at least most people will, pushing the economy to a long-run competitive equilibrium. This led Lucas and others to pose the more radical proposition that, because of adaptive expectations, public policy will have no impact on economic decisions: people will come to expect the government to take certain actions and will incorporate these expected policies into their decision-making calculus, thus undermining any incentives provided by government. Lucas and his followers, who came to refer to themselves as New Classicals, also argued that business cycles are the result of changes in technology and that fluctuations in employment represented changes in the number of people who wanted to work. Thus,

New Classical is an appropriate appellation since economic theory is collapsed back into a neoclassical microeconomic view, with little room for macroeconomic variables or policies.

This did not result in the death knell of Keynesian economics, however. Mankiw (1990) has noted that the theorizing of academics did not change the usefulness of Keynesian economics to policy makers, who continue to believe in and rely on Keynesian principles. Further, a number of studies called into question the predictions of the New Classics about the importance of government policy (Sheffrin, 1996). A new group of economists, referred to as New Keynesians, has attempted to address the critique of the New Classics that a theoretical disjuncture exists between microeconomics and macroeconomics, while still hewing to important Keynesian principles. Interestingly, the New Keynesians tend to accept the proposition that people do operate with adaptive expectations, thus drawing a link here with microeconomics, albeit in spite of ongoing debate among microeconomists about the true meaning of rationality. But, like Keynes, the New Keynesians reject a number of other assumptions that underlie microeconomics: they tend to reject the idea that markets are perfectly competitive, allowing for monopolistic competition and a dual economy approach at times; they incorporate the effects of labor contracts and transactions costs involved in changing prices, that will make them sticky downward; they examine coordination failures between industries or between jobs and workers; they allow for imperfect information; and, unlike Keynes, they argue that the wage will not equal the marginal product of labor as employers may keep wages artificially high in order to retain their most productive workers (Mankiw and Roemer, 1991a and 1991b).

These initiatives have gone a long way to address some of the concerns expressed about the Hicks/Samuelson consensus. Nevertheless, there are those who still critique the New Keynesians for accepting the assumption of adaptive expectations and for relying too heavily on "supply side" issues, while ignoring Keynes' concerns about the role of effective demand and the need for demand management policies on the part of government (Heilbroner and Milberg, 1995). It

should be noted, however, that it is not obvious that Keynes ever anticipated the degree of government involvement in the economy that exists in our time. Skidelsky (2000) has cited a comment made by Keynes to a young American “Keynesian” economist that he was more “Keynesian” than Keynes. So it is difficult to surmise how Keynes would have viewed the world in which we now live.

1.6.4 Marxists and Neo-Ricardians

Marxists continue to grapple with the labor theory of value and the transformation of values into prices. Although there has yet to be a satisfactory solution to Marx’s transformation problem, there has been some successful work on Ricardo’s transformation problem. In 1960, Piero Sraffa published a small book entitled *Production of Commodities by Means of Commodities: Prelude to a Critique of Economic Theory*. Using linear algebra, he showed how it is possible to create an invariant standard of value — a composite commodity — that will have the properties desired by Ricardo: the composite commodity can be transformed into prices (so prices are, therefore, determined by production), and Ricardian distributional outcomes can be derived from the analysis, with wages set at some level of subsistence and profit as a surplus (Harcourt, 1972). According to Eichner (1978), Sraffa’s system can be integrated with neoclassical theories of oligopoly and can include Keynesian analyses of the level of output, based on effective demand. Thus it can incorporate classical, Keynesian, and Marxist elements. It is not truly Marxist, however, because the composite commodity — while consisting of basic goods that may comprise the basic “wage” of labor — still does not lead to a labor theory of value in the Marxian sense, with its highly developed theory of surplus value and the exploitation of labor. It is for this reason that Sraffa described himself as neo-Ricardian, since Ricardo’s approach was more narrowly focused on labor as a cost of production. Sraffa’s system was a major achievement insofar as it solved a problem that puzzled classical economists for a long time. Unfortunately, though, as Harcourt (1972) noted, Sraffa’s critique

of economic theory is not made specific enough. Further, Sraffa's solution came at a time when it was extremely difficult to convince mainstream economists to reconsider the utility theory of value.

Nevertheless, Marxist economists have continued an ongoing critique of mainstream economics. They question the lack of attention given to the differential power that people have in making decisions and the extent to which their preferences are defined by social class, race, and gender. Marxists are also likely to question the waste of resources that exists in capitalist societies, with their huge expenditures on advertising and marketing to encourage people to buy often useless and unnecessary goods. And, in spite of rising living standards for the working class in the industrialized West, they often argue that people have become alienated from their work and even from their own selfhood as the marketplace comes to dominate every aspect of their lives. Of course, they continue to argue for some form of socialism, although there is great variability on this issue.

Marxists also continue to pursue the issue of imperialism and often argue that rising living standards in the West have been at the expense of people in poorer countries, who provide the natural resources and cheap labor needed to feed the West. The theory of imperialism has been developed and extended as a result of the efforts of such scholars as Paul Baran (1957) and Andre Gundar Frank (1967). Baran introduced the idea that underdevelopment is reproduced and furthered by imperialism. This idea was picked up by Frank and other scholars in what eventually came to be known as "dependency theory," posing an interdependent relationship between "core" countries in the West and poor "Third World" countries in the "periphery," which benefits the former at the expense of the latter. While some Marxists often underestimate the impact of productivity changes in improving living standards in the West, the tremendous gap in living standards across the globe and the increasing power of large multinational companies make their critique of capitalism and their concerns about the encroachment of the West into the economies and political sovereignty of the poorer countries very compelling and difficult

to ignore. They pose a very real challenge to mainstream economists to propose solutions to what seem to be the intractable problems of the developing world.

1.6.5 Economic History

In spite of the importance of economic history to the analyses of key classical economists, such as Adam Smith and Karl Marx, economic historians often feel that their concerns have been pushed aside in the wake of the explosion of research in microeconomics and macroeconomics (e.g., see Parker, 1986). Like their counterparts, economic historians have adopted the new econometric methods of the post–World War II era, applying them to a number of interesting historical topics. Often this has been more difficult for economic historians because of the limitations of historical data.

Like the institutionalists, economic historians have incorporated more traditional economic theory in their analyses and work with the deductive methodology of economics; debates about induction versus deduction that were important in the time of the English or German historical schools no longer apply. Economic historians still critique mainstream economists, however, about the ahistoricism that operates in much of economic thinking. And probably more so than any other group of economists, economic historians try to grapple with the role of technology as a motivating force in the economy (e.g., David, 1986; Mokr, 2002; Rosenberg, 1982).

Perhaps most interesting is the great number of economic historians who continue to ask Adam Smith's first question: what are the nature and causes of the wealth of nations? A number of economic historians have pursued the evolution of capitalism and have tried to identify the key factors that have brought success to the West. Some have focused on the evolution of institutions that ensure property rights (North and Thomas, 1973; Thomas, 1981); others have focused on the evolution of democratic, decentralized, flexible, and pluralistic societies in the West (Jones, 1987, 1988; Rosenberg, 1986); others have focused on technological change (Mokyr, 1990); and others have focused on favorable circumstances and access to

resources (Pomeranz, 2000). But all of these discussions, whatever one's point of view, are expansive in asking the larger questions that are often hidden in economic analyses.

What economics still has not accomplished in spite of the work of a great number of scholars is to adequately answer Smith's first question. This is relevant as the acceptance of economics to people outside of the West may, in fact, rest on the answer to this question. Exactly what are the nature and causes of the wealth of nations?

1.7 CONCLUSION

As indicated earlier, not all economists devote their attention to a specific theory of value, but one is implicit in most of what economists do. For classical economists and Marxist economists, the theory of value centers on labor as the source of all value. Out of this theory of value emerges a theory of distribution and an acknowledgment — even on the part of non-Marxists — that the world is divided into classes of people, who hold different roles in the economy. This theory of value is also a theory of production, which proved to be one of its limitations. The classical economists were very slow to adopt a theory of demand and supply, in part because of their focus on labor as the only source of value.

Utility theory emerged in order to rectify these omissions; but one cannot ignore the greater amenability of utility theory to mathematical analysis and “safer” ideological implications of utility theory in light of the rise of Marxism. The paradigm that emerges from the utility theory of value provides a justification of profits based on marginal productivity, and it provides a theory of distribution that promises efficient and equitable rewards to labor and capital alike. It also adds to economics a well-developed theory of demand and supply, which was lacking in the classical model and which is based on the assumption of rational, calculating economic man.

The utility theory of value also created an uproar, of sorts, in economics because of what it left out. It left out the macroeconomic and policy issues that were of concern to many of

the classical economists, except for a rudimentary theory of money. It was very difficult to go from a model focusing on individual choice to a consideration of overall social welfare, in spite of the many attempts made in that direction. It also left out considerations of the social, cultural, historical, institutional, psychological, and sometimes, technological, factors that provide a context for individual choice and that help to determine the final outcome of those choices.

Keynes and his followers attempted to reintroduce issues relating to aggregate social welfare, economic growth, and employment, which were of interest to the classical economists. Keynes also sparked renewed interest in the theory of money and interest, the role of monetary policy in the economy, and a new interest in the role of various financial instruments that are sources of investment. Keynes' attempt to merge macroeconomics and the utility theory of value was not entirely successful, however, although unlike the situation with some of his followers, this did seem to be his intention. For Keynes, the neoclassical model was useful in explaining the demand for labor and capital, but he also argued that a number of variables intervene in the process that should result in a final equilibrium between supply and demand, with full employment, but that often does not. The distribution of income, insofar as it affects the marginal propensity to consume, becomes an important component of Keynesian analysis. Psychological variables, insofar as they affect liquidity preference and the inducement to invest, are also important. In Keynes' view, people can make the wrong choices because of inaccurate or irrational expectations.

In the post-World War II period some economists tried to abandon a synthesis between microeconomics and macroeconomics in light of the differences that persist between the two approaches. But this only reintroduced the disparities between theory and reality that Keynes was attempting to address. Others have attempted a new synthesis between microeconomics and macroeconomics, a process that is still underway, by focusing on market imperfections and by relaxing some of the more rigid assumptions that are a part of

traditional neoclassical economics. The link that is being forged between microeconomics and macroeconomics is the assumption of an economy that consists of rational, maximizing decision-makers who nevertheless encounter a number of impediments to making the best possible decisions — such as imperfect competition, transactions costs, or asymmetric information.

At the same time, microeconomics has greatly expanded, addressing many more types of questions — such as those dealing with the functioning of institutions — and has become more mathematical — including expansion into new types of mathematical analyses such as those involving probability theory and linear algebra. Throughout these changes, the assumption of rational, economic man not only persists but has been enhanced as the result of additional axioms that have been added to the paradigm in the name of logical and mathematical precision.

As a result of these developments, the utility theory of value and its centerpiece — rational, economic man — has had to bear an increasing burden to support an ever-increasing breadth of analyses underway in economics. It is of no surprise, therefore, that many scholars — both inside and outside the discipline — have come to question this most fundamental of assumptions, which has been with economics since the Age of Reason: that people are rational. Further, if it is accepted that people are rational, how can rationality be defined in an imperfect world full of imperfect people? Finally, how can this assumption of rationality help us to explain some of the great questions that continue to puzzle us?

Of course, one can always ask the counterfactual question: how does it help us if we assume that people are not rational? Without rationality would there be any way to explore important economic issues at all? The answer is probably no. In order to develop models of human behavior, it is necessary to assume some coherence to that behavior. The discussion really revolves around the parameters and limitations to rationality, those factors that influence rationality, which may help or impede rational decision-making. And, after a long disquisition on the history of economic thought,

it is what we must come to terms with. It is a question that economists have often avoided for the sake of their economic models, and that is at least as old as the Age of Reason that gave birth to political economy in the first place.

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Basic Economics of Fiscal Decentralization

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2.1 INTRODUCTION

Fiscal federalism is the study of the financial relationships between multiple levels of government. In the United States, this commonly is considered to be the relationship between the federal, state, and local governments, with each level of government having specific rights and obligations. However, from a global perspective, fiscal federalism often is considered a specific case of the more generalized study for fiscal decentralization and thus, eliminates the constraints imposed upon the latter by the federalist form of government.

Much of the underlying theory of fiscal decentralization is based upon Richard Musgrave's (1939) functions of government. In his seminal piece, Musgrave defined the economic role of government as threefold. First government must stabilize prices, preventing excessive inflation and ensuring full employment. Second, governments need to ensure efficient allocation of resources, either in the market or through government provisioning. Finally, governments must ensure that socially acceptable levels of wealth distribution and market access are maintained and, if they are not, redistribute the wealth. These three functions are performed in the following ways:

- *Stabilization* is the government's role in maintaining stable prices and employment. This goal can be addressed through both monetary and fiscal policies. Monetary policy — setting interest rates and regulating the money supply — is done at the central government level. For obvious reasons, it makes little sense for regional or local governments to print and issue currency. Such actions would result in uncertainty of currency valuation and create inefficiencies in interstate trade. Fiscal policy also can be utilized to manage economic stability. By adjusting the levels of government taxes and expenditures, economic growth can be either stimulated or constrained. Again, use of fiscal policy to manage economic stability is usually best done at the central government level. When fiscal policy is utilized at the regional or local level, economic spillovers are often realized across decentralized jurisdictions resulting in economic distortions. For instance, when one state lowers tax rates, this action tends to stimulate that state's economy at the expense of the neighboring states.
- *Allocation* is the second function of government. This function ensures that goods and services are allocated in sufficient quantities either through the market or through government provisioning. For some goods and services, such as missile defense, there is agreement

that they should be provided by the central governments — as there is little incentive for private markets to provide such “public” goods at efficient levels (Olson and Zeckhauser, 1966). However, the issue of allocation is further complicated by the diversity of preferences across decentralized jurisdictions. A good or service provided by the central government is often uniform across all jurisdictions regardless of the preferences of a particular jurisdiction. Such preferences may extend to both the quantity and quality of the good or service provided. As an example, a jurisdiction in Arizona may prefer an above-average number of community swimming pools for its population, while communities in Alaska would prefer reduced levels of these goods in exchange for a lower tax rate.

- *Distribution* of wealth is the third function of government. In a market economy, a degree of wealth equality must exist among consumers. If the wealth of the consumer population contracts, the market for goods and services also contracts, which leaves open the possibility of market failure for various classes of goods. To prevent market failure, government may need to redistribute a portion of its population’s wealth. Because local jurisdictions set different social standards for wealth equity among their citizens, incentives are created for wealthy citizens to move out of jurisdictions that have a high effort of redistribution and for poorer citizens to move into such a jurisdiction. Thus, redistribution efforts are generally considered most appropriate at the central or regional government level.

Wallace Oates (1972) argued that in a fiscal system of governments, these three functions of government are not equally suited for all levels of government and that efficiencies are realized if the appropriate function is properly matched to the appropriate level of government. In general, he argued for central government control over monetary and fiscal policy in the quest for price and employment stability. Likewise, the

function of distribution is best handled at the central government level. Allocation, on the other hand, depends on the good or service being allocated. The central government is best suited for providing a uniform, public good, if a minimum of diversity in preferences exists. However, decentralized jurisdictions are more efficient at providing goods and services when preferences vary from jurisdiction to jurisdiction.

The study of fiscal decentralization is generally from the perspective of three components of the fiscal system: revenues, expenditures, and intergovernmental grants. From the revenue perspective, the primary issue deals with the type of tax a given governmental level should use to ensure an equitable and efficient tax system. From the expenditure perspective, the primary issues are determining what expenditures should be made at each level of government to ensure that the expenditure system is operating equitably and efficiently. Decisions on revenue and expenditure assignment are usually made independently of each other. This can often result in a mismatch of revenues to expenditures at one or more levels of government. The third component of fiscal decentralization is the system of intergovernmental grants. Intergovernmental grants are utilized primarily to maintain an efficient and equitable revenue and expenditure system and at the same time correct the mismatch between collection of revenues and disbursement of expenditures. This chapter will consider all three of these systems and how each of the systems can be designed to optimize efficiency and equity across a decentralized fiscal system.

2.2 GOVERNMENT FINANCE: WHO TAXES WHAT?

Generally, taxes are considered to be either of the benefit type or of the ability-to-pay type. Benefit taxes are taxes in which the taxpayer receives a benefit for the taxes paid. An example of a benefit tax is the federal fuel tax. This tax is levied as a consumption tax on fuels with the proceeds going for development of transportation services such as roads, mass transit,

runways, and other related transportation projects. Benefit taxes have the characteristic of linking revenue to expenditures in a direct manner. Those who pay for the tax also receive the benefits of the tax proceeds.

Property taxes are another form of taxation that is often, albeit not always, referred to as a benefits tax when combined with local zoning ordinances (Hamilton, 1975; Fischel, 1992; Mieszkowski and Zodrow, 1989). Local jurisdictions utilize property taxes to signal citizens the cost of goods and services provided by the jurisdiction. The higher the tax rate, the more expansive the services provided by a jurisdiction. This is referred to as the Tiebout Model (Tiebout, 1956), and under this model, citizens select into the jurisdiction whose mix of services and tax rates best meets their preferences. Citizens desiring extended services will select into communities with higher tax rates, and citizens who prefer lower taxes will select communities with minimal services.

The other major type of tax is the ability-to-pay tax. The progressive income tax is an example of such a tax. Ability-to-pay taxes attempt to match the tax rate with the fiscal capacity of the taxpayer. Taxpayers with similar incomes and in similar circumstances are expected to pay the same tax rate. Taxpayers with lower incomes would pay lower rates, and taxpayers with higher incomes would pay higher tax rates. The rate would be in line with their "ability to pay."

From the perspective of fiscal decentralization, the question that must be answered is which tax should be used for which level of government. This is commonly referred to as the tax assignment problem (McClure, 1983). Taxation theory has suggested that decentralized governments should avoid the use of nonbenefit taxes on mobile factors. In order to understand the full logic of this conclusion, it is important for the reader to be aware of the assumptions behind the argument. The theory is based on the assumption that mobility of consumers, suppliers, goods, and resources is limited and costly between national jurisdictions, but that the mobility increases as the size of the jurisdiction decreases. Under such a set of assumptions, mobility at the local level would be assumed virtually costless.

Mobility across jurisdictions results in problems of tax distortions when taxpayers shift their transactions to jurisdictions with the lowest tax rates. Such distortions are primarily the result of a local jurisdiction taxing nonbenefit goods, services, and resources that are mobile. For example, if two adjacent local jurisdictions both levy a consumption tax, but one jurisdiction's levy is higher, consumers from both jurisdictions will purchase goods in the jurisdiction with the lower tax rate. This suggests that local governments should structure their tax codes to avoid taxation of nonbenefit taxes on mobile goods and services.

At the same time, it should be clear that the central government, with limited mobility between other national governments, is in the best position to levy taxes on mobile goods, services, or economic resources. Because tax distortion due to mobility is of less concern at the central government level, the central government can easily levy nonbenefit taxes that are based on the ability to pay. This is commonly done by a central government in the form of a progressive national income tax. Because the rate remains the same across all subnational jurisdictions and because mobility is limited and costly across national boundaries, there is little incentive or opportunity for economic resources to relocate to jurisdictions with lower tax rates.

Of course as globalization of the world economy increases, so does the mobility of economic resources. In such an environment, the central government must be cognizant of tax rates of other central governments to prevent loss of its tax base to jurisdictions with lower tax rates.

2.2.1 Tax-Base Assignment

Determining where a tax should be levied has received much discussion in public finance literature. Further complicating the matter, the specific implementation of the tax may make it more or less acceptable for one level or another. Richard Musgrave (1983) established six criteria to be used in determining the level to which a specific tax type should be assigned. Depending on the characteristic of the tax, it is assigned to

one of three jurisdictional levels: central government, regional government or local government, as follows:

1. Regional and local jurisdictions should tax those bases with the least interjurisdictional mobility.
2. Personal income taxes with progressive rates should be taxed by those jurisdictions within which the global base can be most efficiently implemented.
3. Progressive taxation, which is designed for redistributive objectives, should be taxed primarily at the central government level.
4. Taxes suitable for stabilization policy should be taxed at the central government level and taxes in lower-level jurisdictions should be cyclically stable.
5. The central government should levy taxes on tax bases that are distributed unequally among decentralized jurisdictions.
6. Benefit taxes and user fees are appropriate at all levels.

Following the various considerations of the previous criteria, it would appear to be appropriate that the central government be assigned taxes on income, consumption, natural resources, as well as user fees. Taxes that seem to be the most appropriate for regional governments include income, destination-based consumption, natural resources, and user fees. Finally, taxes most appropriate for local government are taxes on property, payroll, as well as user fees. Naturally, the specifics of implementation have much to do with the efficiency of a given tax at a given level.

2.3 GOVERNMENT EXPENDITURES: EFFICIENT ALLOCATION OF GOODS AND SERVICES

In a unitary government, the question of responsibility for provisioning public goods and services is relatively straightforward; however, as the levels of government (and *governance*) increase, the question of provision responsibility becomes more complex. With a unitary government, decisions on provisioning are limited to whether the good or service is provided by the central government or a regional office of the

central government and, in either case, the policy associated with the good or service will almost always be uniform across regional offices. On the other hand, when multiple levels of government or governance with varying degrees of autonomy exist, the question of which level is to provide a public good or service quickly becomes much more complex.

The European Union, when faced with issues of providing public goods and services in the Maastricht Treaty, elected to abide by the *principle of subsidiarity*. The principle of subsidiarity states that if reasonably possible, goods and services should be provided by the level of government that is closest to the people. When goods and services are provided by the level of government that is closest to the people, they can be better tailored to meet the preferences of citizens.

Typically, subsidiarity demands that services be provided at the local level. Bahl and Linn's survey of 29 localities in developing countries (1992, 20–22) shows that the core, primary functions provided by local governments include fire protection, abattoirs, street cleaning, street lighting, garbage collection, cemeteries, minor disease prevention, and libraries. However, it must also be noted that substantial variation existed among governments as to other types of services provided. Other services found on a more sporadic basis in developing countries included local transportation, housing, health services, and education. To a much greater extent, these services are also found in industrial nations.

2.3.1 Conceptual Construct for Expenditure Analysis

Within a country, there exists a blend of preferences that the citizen has for various public goods and services. At the central-government level, determining the preference of the citizen is not a simple matter, as no "market-type solution" exists and, indeed, the optimum solution usually is a political one (Musgrave, 1939). Even then, rational citizens will often understate their preference for public goods or services because of the collective consumption characteristic of a public good. For example, a national missile defense is not diminished

when additional citizens are benefited and, hence, citizens may express a lower preference for such security knowing that they will benefit nonetheless. This is commonly referred to as the *free-rider* problem.

At the local-government level, it has been suggested that citizen-voters make their preferences known by “voting with their feet.” In other words, citizens choose the community that has the mix of services (and taxes) that best meets their preferences (Tiebout, 1956). Where there are a large number of local communities, citizens will be better able to match their preferences; likewise, the fewer communities, the poorer the match to citizen preferences for services. Each community will strive to add new residents and industry until it reaches the optimal size needed to achieve the minimum-average cost relative to the bundle of services offered.

2.3.2 Optimal Jurisdictional Size

For each public good or service, there exists an optimal size of government for the provision of the good or service (Oates, 1972, 31–53; Fisher, 1988, 87–88). When a nonrival public good or service is consumed jointly, the per capita cost of the good decreases as the number of consumers increases. Figure 2.1 illustrates the cost savings realized by increasing the number of citizens consuming a joint good or service with the curve OC. In cases where the governmental jurisdiction is

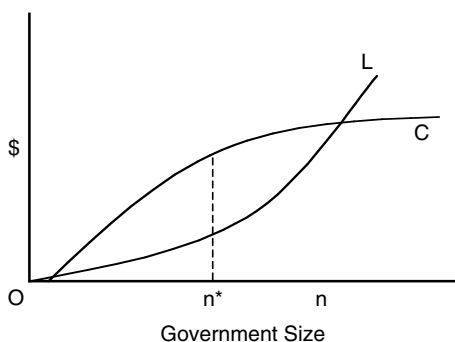


Figure 2.1 Optimal government size for a good or service.

smaller than the area receiving the benefit, a benefit spillover occurs. Consider a municipality that builds a center for the performing arts. Although citizens of the municipality benefit from the center, the benefits also spill over to citizens from outside the municipal jurisdiction. The idea that the size of a government should correspond to the area that receives the benefits of the government expenditure is known as the correspondence principle.

However, offsetting this cost savings is an increase in consumer dissatisfaction. As the size of government increases, the dissatisfaction with the quantity and quality of goods and services offered by the government also increases due to the increase in diversity of preferences. This is represented in Figure 2.1 by the curve OL. To optimize the size of government to perfectly match the preferences between the citizen and the bundle of services requires separate provisioning for each individual and this is, of course, the definition of a free market. However, because the market fails to provide for public goods and services due to an appropriate pricing mechanism, these goods and services must be provided via alternate means, namely the government. This requires that the good or service be provided at an average preferred quantity and quality. Thus, most, if not all citizen preferences for a particular good or service are not perfectly met. As the number of citizens increases, the ability to meet citizens' preferences decreases.

The optimal size of a jurisdiction for a public good or service is found at the maximum difference between the cost savings realized and the loss due to dissatisfaction of the bundle of goods provided. Figure 2.1 illustrates this graphically at n^* . From a theoretical perspective, this exercise may be informative, but it is not practical to maintain separate jurisdictions for each public good or service. However, grouping or clustering the goods and services with similar optimal sizes will secure most of the efficiency of an optimal-sized jurisdiction and at the same time minimize citizen dissatisfaction. Figure 2.2 illustrates the process of clustering where the optimal sizes for the goods or services, A through F, are shown by the vertical bar above the corresponding letter. The clustering process, in this case, groups the goods and services

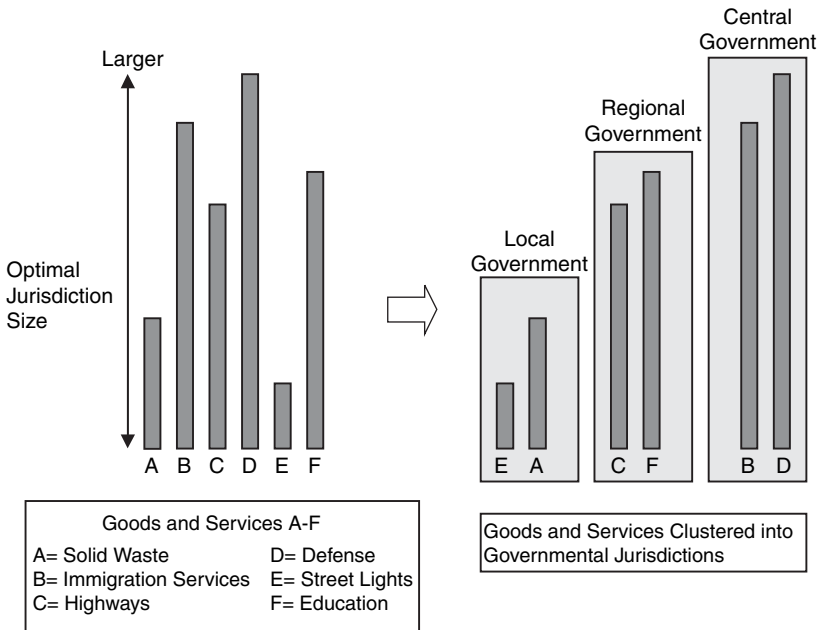


Figure 2.2 Optimal size jurisdictions for goods and service clustered into governmental units.

into three clusters representing a local government, a regional government, and a central government. The choice of three clusters is arbitrary but not uncommon.

2.3.3 Expenditure Assignment

The theory of expenditure assignment is framed within the previously discussed constructs of optimal jurisdiction size. Still, other factors mitigate the level at which an expenditure should occur. The following are several primary factors Anwar Shah (1994, 10–11) identified that must be considered when determining the most appropriate level of government at which an expenditure is made:

- *Economies of scale* — Both the production and the provision of public goods may receive increased benefits as the volume of the good or service increases. On the

production side, benefits may accrue when purchasing raw materials in bulk or making extended production runs. Likewise, distribution of a good or service may also benefit from a larger distribution area. Thus, when the benefits accrued to economy of scale exceed the benefit determined by the optimal size, the expenditure assignment should be handled at the next higher level of government. It is important to note, however, that by delinking production from provisioning, economies of scale for production can be readily achieved while still maintaining an optimal size jurisdiction.

- *Administrative and compliance costs* — Centralizing administrative and compliance functions often leads to lower costs. If the benefits from centralizing these costs exceed the benefits derived from maintaining an optimal size jurisdiction, then it may be appropriate to assign the expenditures to a higher level of government. However, these cost savings must be tempered by the importance of maintaining responsiveness to local issues and minimizing red tape.
- *Regional (horizontal) equity* — The net benefits of expenditures for citizen-voters in regional (or even local) jurisdictions often will vary across the jurisdictions. Wealthier regions will be able to provide a higher level of benefits at a lower tax rate, while poorer regions have fewer benefits at a higher tax rate. In the interest of equalization across regions, provision of what would normally be a local good may be supplemented or even supplanted by a higher-level jurisdiction. For example, although education often is considered a local or regional expenditure, central governments often attempt to equalize the per-pupil expenditures across regions.
- *Policy alignment with higher jurisdiction* — Policy conflicts often exist between lower-level and higher-level jurisdictions. To force lower-level jurisdictions to abide by the higher-level jurisdiction's policy, matching grants are offered to entice compliance.

- *Spatial externalities* — Spatial externalities occur when nonresidents of a jurisdiction realize the costs or benefits of public services provided. It is preferable to limit both costs and benefits of a service to those citizen-voters within the jurisdiction. Nonresidents who realize benefits of another jurisdiction are referred to as free riders.
- *Redistribution* — Redistribution of wealth is often considered to be one of the functions of government. Generally speaking, redistribution is best performed at the central government level. However, the redistribution function may be split, with revenues generated at the central government level and expenditures controlled at the state or local government levels. Medicaid is one example where the central government actually collects the revenue but then allocates funds to the states for operating the program. In this way, the expenditures can best be matched to the needs and preferences of citizens in the specific states — instead of a one-size-fits-all program that the central government funds.
- *Economic stabilization* — Generally it is argued that the central government should be responsible for economic stabilization. Economic stabilization can be accomplished through either fiscal policy or monetary policy. Although there has been some success using a subnational fiscal policy to maintain economic stability, monetary policy must be handled at the central government level (or higher, as seen in the European Union).
- *Subsidiarity* — It is always preferable to implement expenditure policy at the lowest level possible. Not only do local governments have a greater awareness of problems facing a locality, but they also are usually in a better position to resolve those problems without unnecessary bureaucracy. Additionally, because the good or service is being provided closer to the citizenry, there is increased transparency in the provisioning, which encourages greater accountability and efficiency.

2.4 INTERGOVERNMENTAL GRANTS IN AID

In a decentralized governmental system, one finds three primary reasons for a central government to provide grants to a subnational government. First, grants can be utilized to improve efficiency of provisioning that may otherwise result in inefficiencies due to externalities and spillovers that result from subnational government structures. This situation can arise when nonresidents of a subnational jurisdiction would benefit from provisions provided by another subnational jurisdiction. However, without a grant subsidy, the jurisdiction providing the good or service will likely not provide an efficient level of the service. This is often referred to as a Pigouvian subsidy (Pigou, 1932). To illustrate this point, consider two jurisdictions located on a river. Jurisdiction A discharges wastewater into the river, contaminating jurisdiction B's drinking water supply. Jurisdiction A has no incentive to clean the wastewater discharge beyond that mandated by its citizens or by the law. Clearly, jurisdiction B benefits from filtration and cleaning of jurisdiction A's wastewater, yet there is no incentive for jurisdiction A to do so. If on the other hand, jurisdiction A were provided a grant to further clean its water, jurisdiction B would reap the benefit from the spillover effects of jurisdiction A's wastewater treatment. If wastewater treatment were a national responsibility, it is unlikely that this situation would occur; however, because wastewater treatment is the subnational government's responsibility, a subsidy is required to obtain an efficient level of treatment.

Grants can also be utilized to redistribute resources from one region or jurisdiction to another. For example, a state may desire to provide equal educational opportunities to all citizens of the state. If, however, education is funded substantially through local government initiatives, wealthier school districts would have a greater fiscal capacity than poorer school districts would. Additionally, the taxpayers of the wealthier community would pay a lower tax rate than would those in the poorer district. The state could equalize the fiscal capacity between the wealthy and poor school districts with grants to the poorer school districts. This has the effect of

raising the poorer school districts' fiscal capacity towards the same fiscal plateau as that of the wealthier districts. While redistributing funds collected by a statewide tax will have an effect on the districts, it is not redistribution to individuals. To clarify this point even further, some of the poorer district's wealthier citizens will be the recipients of the transfer of wealth from poorer citizens in the wealthier district. Attempting redistribution of income by utilizing grants to jurisdictions is not as effective as redistribution to individuals via a negative income tax. However, governments often utilize this method of redistribution for various public services such as education (Inman and Rubinfeld, 1979). Only with geographical differential taxing can grants be utilized efficiently for redistribution to individuals (Oates, 1972, 80).

Finally, grants provide an important mechanism for macroeconomic stabilization of subnational governments. Large subsidies from a central government to subnational governments can help prevent wide swings in government expenditures due to economic cycles. Thus, grants may also provide a measure of economic protection to subnational jurisdictions.

2.4.1 Characteristics of Grants

Four characteristic features generally define grants. These features determine their administration and the impact on the grantor's targeted policy choices and the grantee's fiscal decisions. The first feature is grant type, which classifies a grant as either a categorical grant (also known as specific grants) or a general grant. Categorical grants must be utilized for activities specified by the grant. Block grants are a form of a specific grant that has broadly defined categories and allows considerable discretion by the recipient government in how the funds are used.

One example of a categorical grant was President Clinton's 1994 Community Oriented Policing grant designed to put an additional 100,000 police on America's cities' streets. Categorical grants target a specific policy area that the grantor deems important. Funds from a categorical grant can be used for a specific purpose only; however, as discussed later,

that is not always the actual outcome. A general grant has no stipulation for specific use and, as such, it can be applied to any program the grantee government deems appropriate.

The second grant characteristic, the method of fund allocation, recognizes two basic methods: *formula* and *project*. With the formula method, the grant amount allocated is tied to a specific allocation statistic (such as population or income). For example, a state may allocate grant proceeds to school districts based on the number of students or the number of school attendance days. Formula grants are a desirable means of increasing allocation efficiency when some measure of performance exists and it is tied to the granting jurisdiction's objective. The *project* method allocates funds based on the project. This method is best utilized for a clearly defined project. Often project-allocated grants are considered one-time allocations, such as for capital projects. In fact, project-allocated grants are a primary means of multiple jurisdictions participating in projects such as sports stadiums and civic centers.

Another characteristic is the grant participation requirements: grants can be either *matching* or *nonmatching (lump-sum)*. Matching fund grants require the grantee to participate in the funding process, while the grantor agrees to match a specific dollar amount for every dollar the grantee contributes to the project. This, in effect, reduces the local price of the good or service for the participating jurisdiction's citizens. Consider a central government that matches \$0.75 for every dollar a local government spends on wastewater treatment. This has the effect of reducing the cost of wastewater treatment to the local jurisdiction's taxpayers. The new price can be calculated using Equation (2.1), where P is the new price and R is the rate at which the local funds are matched, or \$0.75 in this example.

$$P = \frac{1}{1 + R} \quad (2.1)$$

This simple calculation shows the local jurisdiction only paying 57 cents for every dollar invested in the wastewater treatment (approximately 57% of the total cost).

The final characteristic of a grant is the grantor's limit on total funding provided. In some cases, the grantor will cap or limit the total funds available. These funds are referred to as closed-ended grants, while grants without a total limit imposed are open-ended grants.

2.4.2 Theories of Grant Utilization

Economic theory can help illuminate when and where a specific characteristic of a grant is most useful and appropriate. Lump-sum and matching grants tend to produce different incentives for grant recipients. The effects of lump-sum and matching intergovernmental grants on the recipient government's decision making are influenced by two factors: the *income effect* and the *substitution effect*. The additional income from a lump-sum grant will cause the demand curve to shift out as shown in Figure 2.3. The price of additional goods or services remains at P_1 , but the additional funds from the lump-sum grant increase the amount of the good or service from E_0 to E_1 . The additional funds allow the government to provide more of the good or service than it could otherwise and is referred to as the income effect.

A jurisdiction will find that a matching grant will reduce the marginal price of the good or service resulting in a new price, P_2 , and the amount of goods or services demanded will increase from E_0 to E_2 . Like the lump-sum grant, the matching grant also has an income effect. That is, the cost of providing

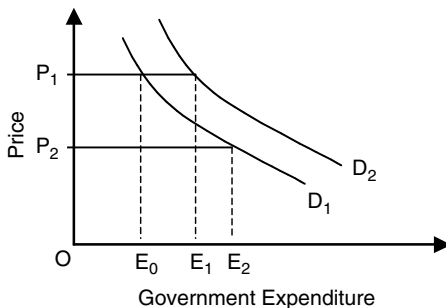


Figure 2.3 Income and substitution effects of a grant.

the good or service is reduced by the grant's matching portion and thus the income effect is realized. However, as Figure 2.3 shows, matching grants tend to be more stimulative than lump-sum grants. This is due to the substitution effect that accompanies a matching grant. The substitution effect results when the price of one good or service is reduced relative to other goods and services. As the price falls relative to other prices, there is an incentive to shift expenditures of other more expensive goods and services to the now less expensive good or service subsidized by the matching grant. Hence, grants utilizing matching funds tend to be more stimulative than lump-sum grants.

When grants are utilized to correct for inefficiencies because of an externality or spillover, conditional matching grants in the amount of the externality are generally considered the most appropriate means to correct the inefficiency. However, before resorting to grants, using a voluntary collective action should be explored. Often both positive and negative externality issues can be resolved voluntarily through contractual arrangements (Coase, 1960).

As discussed previously, grants also are utilized to correct for fiscal inequalities across jurisdictions. Thus, matching grants can be utilized to equalize revenue capacity. By applying matching grants to revenues raised by poorer jurisdictions, a central government can equalize revenue capacity (Feldstein, 1975; Nechyba, 1996).

Still, lump-sum grants from the central government to decentralized jurisdictions generally are the preferred approach for creating equalization across fiscally diverse jurisdictions. Although the United States does not make extensive use of lump-sum grants for equalization purposes, many other countries (including Canada, Germany, and Australia) utilize these grants as a major component of their intergovernmental finances (Oates, 1999). Often the question asked is whether these central government grants actually enhance the recipient jurisdiction's service or merely lower that jurisdiction's tax rate by using the grant to offset taxes. This logic is referred to as the "*veil hypothesis*," which argues that a grant from a central government to a local government

is really nothing more than a veil for a central government tax cut. However, current evidence has found that an additional \$1 lump-sum grant has a greater expenditure effect than a \$1 increase in individual incomes. This has been referred to as the “*flypaper effect*” in that grant money tends to stick in the public sector.

Whether a grant is conditional or unconditional may have less impact than expected. One study has shown that welfare and educational grants do increase expenditures in those areas, but also have the effect of increasing expenditures in other areas — including a decrease in state taxes (Craig and Inman, 1985). This is due to the “leakage” of grant monies from the targeted area to other areas. When jurisdictions receive lump-sum grants, they often allocate fewer funds to the targeted area than they would have without the grant. Conditional grants are indeed fungible, with a high likelihood that funds will be shifted away from areas with grant receipts and toward areas without them.

2.5 CONCLUSION

Using the three functions of government — stabilization, allocation, and distribution (Musgrave, 1939) — as a framework, this chapter has explored the basic economic concepts of fiscal decentralization from the three perspectives of revenue policy, expenditure policy, and intergovernmental grant policy. Stabilization and distribution generally are best performed at the central government level, while the allocation locus is more dependent on the characteristics of the good or service being allocated.

From the revenue perspective, it was learned that benefit taxes generally are more efficient and induce less distortion to the local economy, whereas ability-to-pay taxes are useful when redistribution of resources is necessary for market efficiency. Additionally, economic distortions from revenue levies are influenced substantially by mobility of factors across jurisdictions. Because of these distortions, certain taxes (such as income and consumption) are better levied at the central government level and other taxes (such as property and payroll)

are best levied at the local level. Benefit taxes are appropriate at any level of government.

From the expenditure perspective, the reader was introduced to the optimal jurisdiction size theory, which argues that individual preferences for specific goods and services bundles can be grouped spatially or geographically. Such groupings minimize the spillover effects and improve efficiency of goods and services. Other factors — such as economies of scale, administrative costs, regional equity, policy alignment, redistribution, and stabilization — can also influence the level of government where a specific expenditure should take place.

While grants are not a necessary component of a decentralized fiscal system, they do provide important mechanisms that can correct for externalities and inequitable fiscal capacities. For externalities, matching sums were shown to be the most efficient grant form, allowing the central government to lower the externalities' marginal cost and enticing the local government to achieve an efficient service level. Typically, lump-sum grants are the approach used for equalization. Finally, central government grants might not be fully used for the purposes originally intended due to leakages to other types of expenditures, including tax reduction. Even still, some of the grant money allocated to a project tends to remain in that project.

No one right approach in designing a decentralized fiscal system exists; instead, several interacting principles should be adhered to for maximum efficiency. Conflicts may even exist, at times, between these principles; however, it must be kept in mind that the objective of fiscal decentralization is to provide an optimum mix of goods and services at the most efficient and equitable price.

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Voting and Representative Democracy

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3.1 INTRODUCTION

We have learned about the imperfections of market decision making in coordinating production and exchange among individuals. Government can play a constructive role by improving situations where the market fails. The collective decision making process, though, is not a flawless mechanism that automatically corrects the inefficiencies brought on by market failure. A disturbing lesson of history is that government action often does not have the hoped-for or planned-for results. Even well-designed programs based on humanitarian principles sometimes fail to meet their initial objectives.

Traditionally, economists have focused on market failure and what ideal public policy might do to minimize or prevent failures. In the process, they have virtually ignored the actual operation of the public sector. This traditional neglect has become less and less acceptable. The reality is that approximately two-fifths of our national income is channeled through various governmental departments and agencies. The federal government, in addition to holdings of state and local governments, owns one-third of the nation's land. In addition, the government's regulatory framework establishes the "rules of the game" for the market sector. The government's role in defining property rights, enforcing contracts, fixing prices, and regulating business and labor practices has a major impact on the economy. To understand the economy, we need to understand government decision making.

This chapter analyzes the political process and how it connects with economic issues. The political process is simply an alternative method of making economic decisions. Like the economics of the market, it too has defects. When we evaluate the costs and benefits of public sector action, we must also realistically compare the likely results of collective action with the expected outcome of market allocation.

Most political decisions are made legislatively. We will focus on a system in which voters choose legislators, who in turn institute public policy. We will explore what the tools of economics reveal about the political process. Some economists perceive the political process as an outgrowth of individual behavior (called individual choice). Individual choice-makers shape and mold group action as well as private affairs. By way of the tools of economics, theories are developed to explain how the political process works. Real-world data are used to test the theories. Such theories analyze political behavior under alternative decision rules (for example, simple majority, legislative procedure). Using the individual as the foundation of analysis, economists develop theories concerning special interests, logrolling, and the types of activities that are most likely to be provided through the public sector — which we will explore in this chapter.

3.2 ECONOMIC EFFICIENCY

We need a criterion by which to judge alternative institutional arrangements — market and public policies. The concept is direct. It means that for any given level of effort (cost), we want to get the largest possible benefit. A corollary to this is that we want to get any specific level of benefits with the least possible effort. Economic efficiency means getting the most out of the available resources.

3.2.1 Why Would the Invisible Hand Fail?

Four situations can limit the ability of the invisible hand to perform efficiently:

Lack of competition is one of those situations. Competition is critical to the proper operation of the pricing mechanism. Competition drives consumer prices down to the level of their cost. Similarly, competition in markets for productive resources prevents (a) sellers from charging exorbitant prices to producers and (b) buyers from taking advantage of the owners of productive resources. The existence of competition reduces the power of buyers and sellers alike to rig the market in their own favor.

Modern production techniques, marketing, and distributing networks generally make it possible for a large-scale producer to gain a cost advantage over smaller competitors. In several industries, automobiles, aircraft, and aluminum, for example, a few large firms produce the entire output. Because an enormous amount of capital investment is required to enter these industries, existing large-scale producers may be partially insulated from the competitive pressures of new rivals.

3.2.2 Ideal Economic Efficiency

Remember from our earlier discussion that the economic role of government is critical. Government defines the rules of the game. It sets and defines property rights. Government sometimes uses subsidies to encourage production of some goods while it applies special taxes to reduce the availability of

others. In some cases, government becomes directly involved in the production process — especially in the cases of mail service, electric power, and education.

Because of the economic role of government, it is important that we understand how government works and the circumstances under which it contributes to the efficient allocation of resources. In the next section, we examine the shortcomings of the market and the potential of government policy as an alternate means for resolving economic problems.

We need a criterion by which to judge alternative institutional arrangements — market and nonmarket policies. The central idea is straightforward. For any given level of effort (cost), we want to obtain the largest possible benefit for whom, e.g., utilitarian or special interest. A corollary to this is that we want to obtain any specific level of benefits with the least possible expenditure/use of resources. Economic efficiency is simply getting the most out of the available resources, that is, making the largest pie from the available set of ingredients. And for whom — do all people like apples or is the pie peach or pecan?

But why efficiency? Economists acknowledge that each individual does not have the efficiency of the economy or the community as a primary goal. Instead, each person wants the largest possible “piece of the pie.” All may agree that a bigger pie is preferred, however, if, along with others who care about it, they will probably get a piece of the pie as a result. Not only will most people agree that economic efficiency is good in the abstract, but a pragmatic alternative that is more efficient can potentially make more people better off than an inefficient but elegant alternative would, for two reasons.

First, undertaking an economic action will be efficient if it produces more benefits than costs for the individuals of the economy. Such actions result in gain-improvement in the well-being of at least some individuals without creating reductions in the welfare of others. This is especially true when those individuals choose to create benefits that encompass the values of the community at large. Failure to undertake such activities means the potential gain has been forgone.

Second, undertaking an economic action will be inefficient if it produces more costs than benefits to the individuals.

When an action results in greater total costs than benefits, somebody must be harmed. The benefits that accrue to those who gain are insufficient to compensate for the losses imposed on others. Therefore, when all persons are considered, the net impact of such an action is counterproductive.

3.3 PARETO CRITERION

When either one or two is violated, economic inefficiency results. The concept of economic efficiency applies to each and every possible income distribution, although a change in income distribution may alter the precise combination of goods and services that is most efficient. Positive economics does not tell us how income should be distributed. Of course, we all have ideas on the subject. Most of us would like to see more income distributed our way. For each kind of income distribution, though, there will be an ideal resource allocation that will be most efficient. Such a condition is defined as Pareto Optimal.

3.3.1 Supply and Demand

A closer look at supply and demand when competitive pressures are present will help illustrate the concept of efficiency. The supply curve reflects the producer's opportunity costs. Each point along the supply curve indicates the minimum price for which the units of a good could be produced without a loss to the seller. Each point along the demand curve indicates the consumer's valuation of an extra unit of the good, that is, the maximum amount the consumer of each unit is willing to pay for each unit. Any time the consumer's valuation exceeds the producer's opportunity cost — the producer's minimum supply price — producing and selling more of the good can generate mutual gain.

3.4 VOTING AND REPRESENTATIVE DEMOCRACY

3.4.1 Voting

Each year there are elections in the United States — public elections for mayor, city council members, state representatives,

and the like; private elections for officers of unions, clubs, corporations, and universities, etc. These are votes for candidates to represent the eligible voters in some decision making process. An election might also include a referendum vote on a local issue, such as whether a state should float a \$50-million bond issue to build a new prison. Finally, there are votes by legislative bodies on the particular laws and regulations that will govern a state, city, university, or union.

All this voting expresses individual choice. In this section, we explore why government does what it does. We look closely at the behavior of governments to try to understand behavior of consumers and firms. Models and principles exist that help explain why governments make the economic and political choices they do. In this section, we will also explore some of the principal tenets of individual choice.

In a democracy, of course, elections are the basis of government behavior, but there are many more layers of government to examine. Broadly speaking, government is made up of three groups — voters, politicians, and bureaucrats, each with its own set of goals and ambitions. Voters generally seek services. Politicians and bureaucrats may pursue (re)election, money, power, job tenure, etc. They may have strong feelings of altruism and of selflessly serving the country. In fact, many public sector behaviors are inexplicable unless we consider altruism as a major motivating factor.

A democracy is formed so that the government will provide for the wants and needs of citizens. This provision occurs in the “political market.” This market is one in which citizens vote for what they desire in the form of public goods and services. They vote for politicians who will enact legislation and hire bureaucrats to actually provide the services. Unless corruption or bribery occurs, no money prices or transactions take place in the political market. Here, in the “voting market,” the currency is votes.

According to the principles on which our country was founded, the system should be direct, efficient, and responsive. However, in reality, complicating issues affect how the system actually works. One key issue is the quality of information in the political market. In economic markets, prices

and price changes provide information about what consumers want and whether their demands are being met. But do votes in the political market really reveal what the electorate wants, or are the votes mere proxies?

Another key issue is efficiency. How do the electorate's demands correspond to what is economically efficient (or is efficiency secondary to electorate demands for effectiveness)? A final issue is implementation. Will politicians support services at levels demanded by the electorate, and can they control bureaucrats so that they efficiently carry out intended programs?

To answer these questions, we must analyze the behavior of voters, politicians, and bureaucrats to see whether we can model or predict various outcomes in the political market. We start by developing a simple voting model. We will consider the situation in which residents in a small town are voting in a town meeting on the size of the school budget. We will derive a voting equilibrium; that is, we will determine how the size of the school budget is determined as a result of the voting process. Then we will ask whether this outcome, the voting equilibrium, is economically efficient. Finally, we will examine the effects on voting outcomes of making some simple changes in our model.

3.4.2 Representative Democracy

From voting models, we turn in the following section of the chapter to the more general world of representative democracy. Here we vote for elected officials (president, governors, mayors, etc.) and representatives who will participate in the legislative–bureaucratic process on many levels. The electorate is a shifting pool of the portion of citizens who actually bother to vote. There is an even smaller pool of citizens who are well informed about the issues on which they are casting their votes. Elected officials and bureaucrats interact in a complex manner as they try to determine what voters want, what they must give the voters to stay in power, and what benefits they individually can get from the system. In a sense, each group is a constraint on the other two, as we will see later in the chapter.

Let us consider the following situation. Voters in a very small town are voting on the size of the school budget, and we want to see how they arrive at a decision, that is, at a voting equilibrium. To simplify our analysis, we will make several assumptions. First, all citizens come to the town meeting and vote. The number of students in the town is constant, so a larger budget will translate into more and better teachers, better programs, and better extracurricular activities. All the voters understand this relationship. Finally, the school administrators will carry out whatever the voters decide. In making these assumptions, we can measure education “quality” for the district by the size of the budget. In this simple position, we want to determine equilibrium in the political market. What size budget does the electorate “demand,” and is the size that is demanded efficient? The assumption here is that electorate demand is seeking economic efficiency and not effectiveness.

3.5 THE MARKET FOR VOTES

To answer the questions raised above, we start by noting what is efficient. Then we turn to what each voter wants and what happens in the voting market. To analyze the market process, we limit the situation to only a few players. We will suppose only three voters (demanders) exist in the town; the generalization to hundreds of voters is direct, where supply and demand for education and equal as illustrated in Figure 3.1.

Each voter has a demand curve for public services, in this case, the size of the school budget. At each price (to be derived later), given the marginal utility of school quality compared to other goods, a voter wants a particular level of quality. MB_L , MB_M , and MB_H illustrate the demand curves for our three voters in Figure 3.2, where L, M and H represent voters Dr. Low, Mr. Medium and Ms. High.

We treat the high school budget as a public good. Therefore, because this is a public good and not a private good, we sum up the three demand curves vertically to obtain society’s demand for this public good, denoted by ΣMB . That is, if Dr. Low, Mr. Medium, and Ms. High are willing to pay \$0.50,

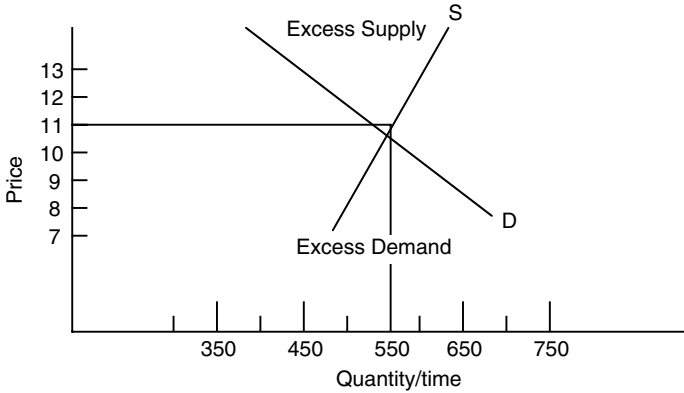


Figure 3.1 Supply and demand for the public good of education.

\$1.00, and \$1.25, respectively, for an addition to schooling quality, collectively, they are willing to pay \$2.75 for the addition. Given society’s demand, ΣMB , what is the size of the socially efficient budget? The answer is: that depends on the marginal cost. In this case, that is clear. The MC of an extra \$1 for the school budget is simply \$1. The socially efficient size of the budget is G_s , which occurs at point A where MC intersects ΣMB .

3.5.1 What Each Voter Wants

What voters want depends on the price they perceive they will have to pay for the school budget. This is not always one to one; e.g., wants expressed publicly are often voted down in private. The school budget is usually financed by taxes, and each voter perceives an individual tax price that would be his or her share of the budget. Suppose, in this case, the three voters share equally in the taxes raised. For each additional \$1 of school budget, their taxes rise \$0.33, an equal share. Given the tax price of \$0.33, in Figure 3.2, Dr. Low, Mr. Medium, and Ms. High would like g_L , g_M , and g_H of public services at points A, B, and C, respectively, where their demand curves intersect the tax price line of \$0.33. With the same tax price, what each voter wants increases as individual demand curves

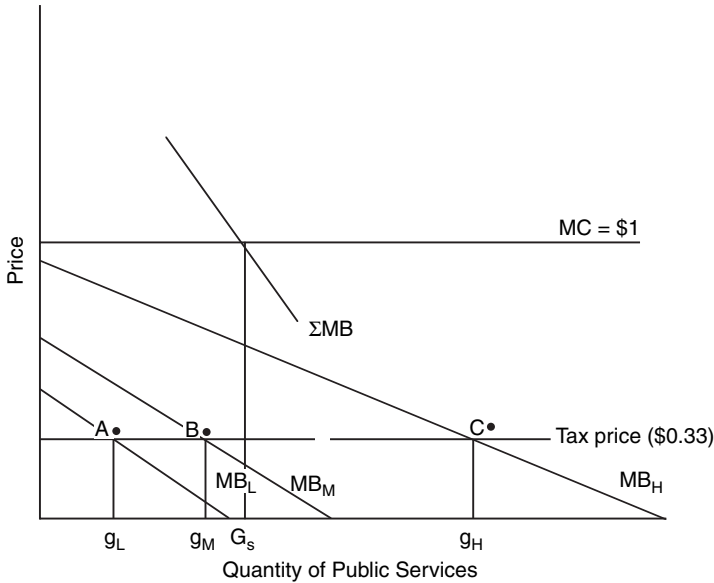


Figure 3.2 Individual demand for a good public education.

shift out. Yet, each voter wants a level different from that of the others, and from the efficient level, G_s . Only one quantity can be chosen. What will it be? The tax price to a voter of an additional unit of public services is the amount by which that voter's taxes will rise if public services increase by one unit.

Before proceeding, note that equal sharing of the tax burden is unusual. Typically, we are looking at financing by means of income, sales, or property taxes. With income taxes, for example, if all taxpayers have the same income, there is equal financing. However, incomes usually differ and total income taxes paid rise with income, so individual tax prices will also rise with income. That is, if you have more than average income, you pay more than average taxes and more than average tax price. Despite this relative difference, the analysis of the voting process is carried out exactly in the same fashion whether financing is equal or not. Only the exact level of public services chosen will differ according to the method of financing.

3.6 THE MEDIAN VOTER MODEL

Suppose our three voters, Dr. Low, Mr. Medium, and Ms. High, all sit together in the town hall meeting and have successive rounds of voting until a dominant voting outcome is reached. A dominant voting outcome is defined as an outcome that cannot be beaten in a majority vote by any other proposed outcome, explained below. This may not be precisely the voting procedure you are familiar with, but over a period of months or years, something very much like this does happen in the political marketplace.

3.6.1 Voting Outcome

In the simplified situation, the voters choose between two budget levels at each round of voting. The winner of each round is determined by majority vote. By having only two items voted on in each round by three voters, we ensure a majority-vote winner in each round, as opposed to a tie or a plurality winner (with less than 50% of the votes).

In round 1, the town votes between, say, a \$13,000 and \$15,000 budget. Suppose \$15,000 wins by two votes to one. In round 2, a voter proposes a budget of, say, \$18,000 to be voted on, against the winner of the previous round, \$15,000. Assume \$18,000 wins round two. In round 3, another voter proposes \$14,000 to be voted on against the previous winner of \$18,000. Assume \$18,000 wins against round three. The rounds of voting (between two proposed budget levels) continue until a dominant voting outcome is obtained. A *dominant voting outcome* is one that cannot be beaten by another proposal. So if the dominant outcome is, say, \$19,000, a \$19,000 budget beats any other budget proposal by at least a two-to-one vote. It is the voting equilibrium, the equilibrium in the political market. What is the dominant outcome in Figure 3.2?

To see this, we measure the benefits, or utility, to each voter from different levels of public services (in this case, funding for public schools). Consider Mr. Medium in Figure 3.2. At a tax price of \$0.33, his most preferred level of public services is g_M , based on point B where his marginal willingness-to-pay curve MB_M intersects his tax price. At point B,

funding for schools is at a level at which Mr. Medium's satisfaction, or utility, will be maximized. If we increase public services beyond g_M and move to the right of B, MB_M falls below the tax price, reflecting an excess of marginal tax costs over marginal willingness-to-pay. As public services increase, the gap between the tax price and MB_M increases, indicating that Mr. Medium is worse off. That is, each unit increase in public services beyond g_M reduces Mr. Medium's well-being or overall utility by the gap between tax price and MB_M at that service level. Similarly, if we move to the left of g_M at B, MB_M exceeds the tax price, so each reduced unit of public services also reduces utility.

In Figure 3.3, we plot Mr. Medium's utility as related to the level of public services. The maximum point is at B with g_M , his most desired level of public services. Based on the analysis in Figure 3.2 of what happens to Mr. Medium's well-being as we increase or decrease public services relative to g_M , Figure 3.3 shows a continuous decline in utility as we move in either direction from g_M . In this case, preferences are single-peaked. If individuals do not have single-peaked preferences, there may be no dominant voting outcome, as we will see later. With typical tax systems, such as income, sales, or property taxes, preferences on such issues as a school budget's size will be single peaked, and we can readily apply our voting model.

Single-peaked preferences are those for which utility declines continuously as consumption moves further away in any direction from the desired level.

When preferences are single peaked, the dominant voting outcome is the level demanded by the median voter. If all voters are ranked by their most desired level of public services, from low to high, the median voter is the one in the middle. Fifty percent of the voters want more and 50% want less. In this case, the median voter is Mr. Medium and the dominant voting outcome is G_M . Why does this dominate?

The median voter is the voter who demands the middle ranking of public services, when all voters are ranked from low to high by service level demands.

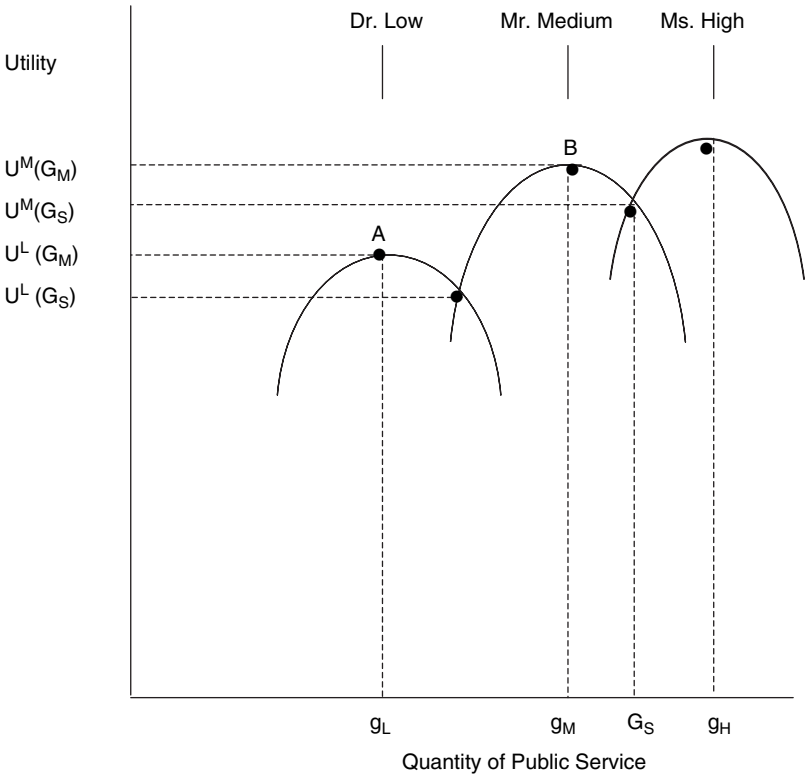


Figure 3.3 Individual utility as related to level of public service.

Consider any other proposal, such as a higher level of public services, say at G_S in Figure 3.3. At G_S , Mr. Medium is worse off than at G_M because in moving from G_M to G_S , we move further down Dr. Low's utility curve. So Dr. Low and Mr. Medium prefer G_M to G_S , and in fact prefer G_M to any public service level to the right of G_M . Because Dr. Low and Mr. Medium form a majority, they would vote in favor of G_M over any proposed level of public services *greater* than G_M . Similarly, you can see that Dr. Low and Mr. Medium would vote in favor of G_M over any level of public services *less* than G_M . Consequently, the dominant outcome will be G_M , because

a majority will always prefer it to any other proposal. Mr. Medium's preferences dictate the voting outcome. As the median voter, he gets exactly what he wants, but no one else does.

In general, the median voter's choice will only be efficient if the choice is unanimous, that is, if all voters want the same public services, so that all voters are essentially the median voter. You may say this would be impossible; theoretically, however, unanimity may happen in two instances:

The first takes place if voters are "identical"; all voters in the town hall have the same demands and the same tax bases (assuming horizontal equity, they all live in identical condominiums), they face the same tax prices, and all want the same level of output. That output is G_s , because at that output, each person's demand curve intersects the tax price (say, \$0.33 in Figure 3.2) at the same point. When demands are summed up to ΣMB , ΣMB intersects MC at the same point, since tax prices also sum up to MC .

The second situation that produces a unanimous choice involves nonidentical voters but is a peculiar one. If tax prices vary with demands in such a manner that each person's tax price intersects his or her Demand Curve at exactly the same level of output as every other person's, everyone votes for (wants) the same level of public services. As with identical voters, at this output level the entire demands and tax prices sum up to ΣMB and MC , respectively, which in turn also intersect at that output level.

With a balanced public budget, unanimous choices are efficient ones. However, with nonidentical voters, tax prices never vary precisely with demands so that they all intersect at the same output level. However, the degree of variation in quantities demanded by voters can be small.

3.7 THE EFFECT OF POLITICAL PLATFORMS

The voting model describes a situation in which voters keep voting for public-service levels, two at a time, until a dominant outcome is reached. In uncomplicated conditions, this dominant outcome is reached in the regular electoral process. For

example, instead of two proposals, consider a political system with two parties, Republicans and Democrats. Each party announces a platform regarding the proposed school budget. Assume for the moment that either party, if elected, wants to, can, and does enact the proposed budget. That is, the legislative and executive branches combine to legislate the proposed budget upon election and the bureaucracy implements it. Clearly, these are strong assumptions.

The party that supports G_M in Figure 3.3 will have the dominant outcome, in the sense that the other party cannot beat it. If you announce a public-service level different from G_M , you can be beaten. Political competition thus forces both parties to try to fashion their platforms to correspond to G_M , even though that means both parties offer virtually the same thing. This is middle-of-the-road politics. In a two-party system, both parties tend toward the middle, to try to guess and offer what the median voter wants. Because both parties tend toward the same middle ground, which of the two is elected becomes less important. In middle-of-the-road politics, both candidates in an election try to offer the services demanded by the median voter, because that middle position is the dominant one.

3.8 VOTING EQUILIBRIUM VERSUS EFFICIENCY

In Figure 3.3, the efficient level of services, G_S , and the equilibrium level, G_M , clearly differ from each other. Generally, this gap is to be expected. There is no reason why G_S should correspond exactly to what Mr. Medium wants. The resulting disparity between G_S and G_M points to a basic problem with making public decisions by voting (although any other mechanism may ultimately result in far worse problems).

3.8.1 Intensity of Preference

The voting rule of one person—one vote does not allow for differences in *intensity* of preference. In the example, Ms. High really likes (demands) public services; this drives G_S outward (because it shifts ΣMB upward). But whether Ms. High

demands a little or a lot more than Mr. Medium has absolutely no impact on G_M , which is chosen by Mr. Medium alone. In the private market for goods and services, the intensity of individual preferences can be expressed because higher demanders can spend more dollars; in the political market, each citizen has only one vote to spend.

To reflect intensity of preferences, Ms. High (remember there are only three people in the town meeting) could “bribe” Dr. Low and Mr. Medium to vote for higher levels of public services. That is, she could supplement votes with dollars. Remember that in Figure 3.2, Ms. High was willing to pay more than her \$0.33 tax price up until g_H at point C, which leaves Ms. High room to bribe or compensate Dr. Low or Mr. Medium to vote for more public services than G_M . In a regular voting situation, there are too many voters for widespread bribing or side payments to work out. However, even with fair voting, Ms. High’s cause may not be lost. Later in the chapter, we will see vote trading among elected representatives and other ways of influencing votes. Suppose that Dr. Low, Mr. Medium, and Ms. High represent different congressional districts, each demanding a different level of national defense. Ms. High may be able to get the other districts to vote for more than G_M in defense by vote trading, that is, by supporting higher levels of *another* service more highly valued by them, such as education.

3.8.2 The Efficient Level of Public Expenditures

Of course, in any one election, a party may make an error and stake out a position far from G_M . If the Democrats make a big error, then the Republicans do not have to choose G_M to win a particular election. They just have to pick the level of public services preferred by a majority to what the Democrats are proposing. In later elections, the losing party will then try to correct its error to reestablish itself as a viable opponent. So in the long term, or on average, both parties will offer something close to G_M .

An entrepreneur is a dynamic force in the private sector. The entrepreneur attempts to gain by undertaking potentially

profitable projects. In the competitive market process, business entrepreneurs produce commodities that are intensely desired relative to their supply. In the same way, the political supplier (politician) is a dynamic force in the collective decision-making process. The political supplier seeks to offer voters an image and a bundle of political goods that will increase the chances of him or her winning elections. Those who are successful and survive may achieve private power, fame, and fortune. These goals are as important in the political arena as they are in the private sector. To increase the chance of being elected, the political supplier must be alert to the political goods and services that can attract the most voters. Put another way, politicians have a strong incentive to supply political goods, when the costs, measured in votes lost, are smaller than the benefits, that is, the votes gained.

Voters win elections, but rationally uninformed voters must be convinced to “want” a candidate. Perceptions, not just realities, influence decisions. What is required to win the support of voters? Both the candidate’s positive attributes (for example, honesty, compassion, and effectiveness) and his or her position on issues are important. But candidates must bring their strengths to the attention of the voters. Money, staff, and expertise are required to promote a candidate among the voting population.

John Kenneth Galbraith stressed the important roles of product advertising and the media in determining consumer preferences. Since voters have little incentive to acquire information on most issues before voting, the impact of advertising and the media is more important in affecting voter decisions than private-sector market decisions. Or is it public versus private market decisions. The buyer or seller in a market personally reaps the benefit from a more informed decision and must live with the results of each choice, because it is decisive for the individual. In the public sector, by contrast, advertising and favorable attention in the media are more important because of the strength of the rational ignorance effect.

What does this discussion suggest about the motivation of political decision makers? Are we implying that they are highly selfish, that they consider only their own pocketbooks

and ignore the public interest? The answer is no. When people act in the political sphere, they may genuinely want to help their fellow citizens. Factors other than personal political gain, narrowly defined, influence the actions of many political suppliers. On certain issues, one may feel strongly that one's position is best for the country, even though it may not be currently popular. The national interest as perceived by the political supplier may conflict with the position that would be most favorable to reelection prospects. Some politicians may opt for the national interest even when it means political defeat. None of this is incompatible with an economic view of political choice.

Although the potential for political suicide exists, it does not overpower the preference of most politicians for political life. There is a strong incentive for political suppliers to stake out positions that will increase their vote total in the next election. A politician who refuses to give major consideration to electoral gain increases the risk of replacement by a more astute (and possibly less public-minded) politician. The competition of vote-maximizing political candidates presents the most public-spirited politician with a strong incentive to base his or her decisions primarily on political considerations. Just as neglect of economic profit is the route to market oblivion, neglect of potential voters is the route to political oblivion.

3.9 CONFLICT BETWEEN GOOD ECONOMICS AND GOOD POLITICS

What reason is there to believe that political action will result in economic inefficiency? Current economic and political research is continually yielding knowledge that will help us answer this question more definitively. Three important characteristics of the political process are (1) rational ignorance, (2) special interests, and (3) shortsightedness.

3.9.1 Rational Ignorance

Less than one-half of the American electorate can correctly identify the names of their congressional representatives and where they stand on various issues. Why are there so many

citizens who are ignorant of the simplest facts regarding the political process? The explanation is not that the citizen lacks intelligence. The situation is caused by the incentives confronting the voter. Because most citizens recognize that their individual votes are unlikely to resolve the issue at hand, citizens have little incentive to seek costly information that will help them cast intelligent votes. Economists call this the rational ignorance effect.

The rationally ignorant voter is merely exercising good judgment as to how his or her time and effort will yield the most benefits. There is a parallel between the voter's failure to acquire political knowledge and the farmer's inattention to the factors that determine the weather. Weather is probably the most important factor determining the income of an individual farmer. Yet it makes no sense for the farmer to invest time and resources attempting to understand atmospheric science. An improved knowledge of how weather systems work will seldom enable the farmer to avoid their adverse effects. So it is with the average voter. The voter stands to gain little from acquiring more information about a wide range of issues that are decided in the political arena. Since the resolution of these issues generally, like the weather, is out of the individual voter's hands, he or she has little incentive to become more informed.

Because of this fact, most voters simply rely on information that is supplied to them freely by candidates and the mass media. Conversations with friends and information acquired at work, from newspapers, from television news, and from political advertising are important because the voter has so little incentive to spend personal time and effort gathering information. It is not surprising then that few voters are able to accurately describe the consequences of raising tariffs on automobiles or of abolishing farm price support programs. In using their time and efforts in ways other than studying these policy issues, voters are merely responding to economic incentives.

3.9.2 Special Interest Issues

A special interest issue is one that generates substantial personal benefit for a small number of constituents while

imposing a small individual cost on a large number of other voters. A few gain a great deal individually, whereas a large number lose a little as individuals.

Special interest issues are very attractive to vote-conscious politicians, (that is, to those most eager and most likely to win elections). Voters who have a small cost imposed on them by a policy favoring a special interest will not care enough about the issue to examine it, especially if it is so complex that the cost is difficult to identify. Because information seeking is costly, most of those harmed will not even be aware of the legislator's views on such issues. Most voters will simply ignore special interest issues. Those representing the special interest, though, will be vitally concerned. They will let the candidate (or legislator) know how important an issue is to them. They will give financial and other help to politicians who are receptive to their ideas and will oppose those who are not.

What would you do if you wanted to win an election? Support the special interest groups? Use their financial resources? And use those resources to "educate" the uninformed majority of voters to the fact that you support policies of interest to them? You would have an incentive to follow this route even if the total community benefits from the support of the special interest were less than the cost. The policy might cause economic inefficiency, but it could still be a political winner.

Why stand up for a large majority? Even though the total cost may be very large, each person bears only a small cost. Most voters are uninformed on the issue. They do not care much about it. They would do little to help you get elected even if you supported their best interests on this issue. Astute politicians will support the special interest group if they plan to be around for a long time.

The political process tends to work in favor of special interest groups. This means that a conflict sometimes exists between good politics (winning elections) and ideal public policy.

3.9.3 Shortsightedness

Politicians seeking to be reelected have a strong incentive to support policies that generate current benefits in exchange

for future costs, especially if the future costs will be hard to identify on Election Day. Public sector action will thus be biased in favor of legislation that offers immediate (and easily identifiable) current benefits in exchange for future costs that are complicated and difficult to identify. Simultaneously, a bias exists against legislation that involves immediate and easily identifiable costs (such as higher taxes) while yielding future benefits that are complex and difficult to identify. Economists refer to this bias inherent in the collective decision-making process as the shortsightedness effect.

The nature of democratic institutions restricts the planning horizon of elected officials. Positive results must be observable by the next election, or the incumbent is likely to be replaced by someone who promises more rapid results. Policies that will eventually pay off in the future (after the next election) will have little attractiveness to vote-seeking politicians if those policies do not exert a beneficial impact by Election Day.

The complexity of issues makes it hard for voters to identify the future benefits and costs. Will a tax cut reduce the long-run rate of unemployment? Are wage-price controls an efficient means of dealing with inflation? Can pro-union legislation raise the real wages of workers? These questions are complex. Few voters will analyze the short-run and long-run implications of policy in these areas. Instead, voters will have a tendency to rely on current conditions and the short-term impact of decision choices. To the voter, the best indicator of the success of a policy is "How things are currently."

When only production and exchange affect the buyer and seller, competitive markets directed by the forces of supply and demand are efficient. Figure 3.4 shows why this is true. Suppliers of a good, DVD players for example, will produce additional units as long as the market price exceeds the production cost. Similarly, consumers will gain from the purchase of additional units as long as their benefits, revealed by the height of the demand curve, exceed the market price. Market forces will result in an equilibrium output level of Q_1 : all units for which the benefits to consumers exceed the costs to suppliers will be produced. The first condition is met; all potential

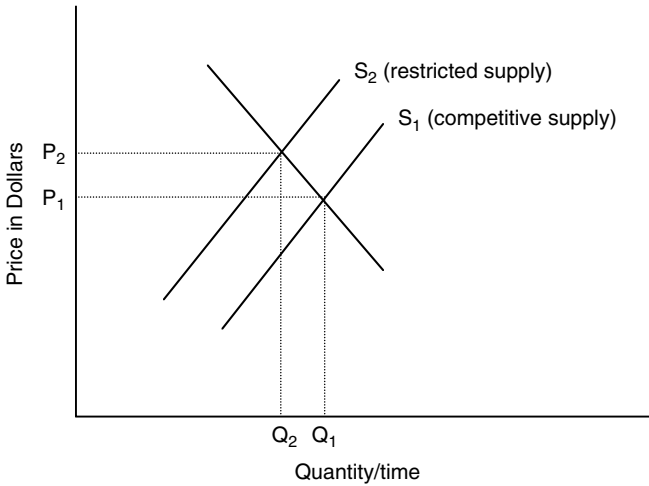


Figure 3.4 Supply and demand for DVD players.

gains from exchange (the shaded area) between consumers and producers are fully realized. Production beyond Q_1 , however, will prove inefficient. If more than Q_1 DVD players are produced, condition two is violated; consumers value the additional units less than their cost. With competitive markets, suppliers will find it unprofitable to produce units beyond Q_1 because the cost of the additional units will exceed revenues.

Since competition is the enemy of high prices, sellers have a strong incentive to escape from its pressures by differentiating or even colluding rather than competing. Competition is something that is good when the other guy faces it. Individually, each of us would prefer to be loosened from its grip. Students do not like stiff competition at exam time, when seeking entry to graduate school, or in their social lives. Similarly, sellers prefer few real competitors.

Figure 3.4 illustrates how sellers can gain from collusive action. If a group of sellers could eliminate the competition from new entrants to the market, they would be able to raise their prices. The total revenue of sellers is simply the market price multiplied by the quantity sold. The sellers' revenues may well be greater, and their total costs would be lower, if

the smaller, restricted output Q_2 were sold rather than the competitive output Q_1 . The artificially high price P_2 is in excess of the competitive opportunity cost of supplying the good. The price of the good does not reflect its actual level of scarcity.

It is in the interest of consumers and the community that output be expanded to Q_1 , the output consistent with economic efficiency. It is in the interest of sellers, though, to make the good artificially scarce and raise its price. If sellers can use collusion, government action, or other means of restricting supply, they can gain. However, the restricted output level would violate condition two. Inefficiency would result. There is a conflict between the interests of sellers and what is best for the entire community.

When there are only a few firms in the industry and competition from new entrants can be restrained, sellers may be able to rig the market in their favor. Through collusion, either tacit or overt, suppliers may be able to escape competitive pressures. What can the government do to preserve competition? Congress enacted a series of antitrust laws, most notably the Sherman Antitrust Act and the Clayton Act, making it illegal for firms to collude or attempt to monopolize a produce market. Congress also established the Federal Trade Commission, which prohibits "unfair methods of competition in commerce," such as false advertising, improper grading of materials, and deceptive business practices.

For the most part, economists favor the principle of government action to ensure and promote competitive markets, but there is considerable debate about the effectiveness of past public policy in this area. Few economists are satisfied with the government's role as a promoter of competition. Tiebout has developed a model of a way of achieving the efficient provision of public goods and has characterized the specific conditions under which it would work.

3.10 THE TIEBOUT MODEL

Suppose that you oppose a particular U.S. policy, say on national defense. It would be unusual for you to be told that you should leave the country because of the government's

policy on national defense. Because of the large financial and psychological costs of leaving, a more realistic approach is to remain in the country and work to change the policy. On the other hand, according to Tiebout, most citizens are not strongly attached to their local communities. If you do not like the policies being followed in Cleveland, Ohio, the easiest thing to do is to move a few miles away to Akron, Ohio. In this part of the chapter, we discuss the relationship among intercommunity mobility, voluntary community formation, and the efficient provision of public goods.

We know that markets are imperfect. As such, they do not provide public goods efficiently. The basis of the problem is that the market does not demand that individuals reveal their true preferences for public goods. Everyone has an incentive to be a free rider. The usual conclusion is that some type of government intervention is needed.

The ability of individuals to move among jurisdictions produces a market-like solution to the local public goods issue. Individuals vote with their feet and locate in the community that offers the bundle of public services and taxes that best meets their situation. If Ms. Smith satisfies her demand for private goods by purchasing them on the market, she satisfies her demand for public services by the appropriate selection of a community in which to live and pays taxes for the services. In equilibrium, people live in various localities based on their need for public services. Each individual receives her/his desired level of public services and cannot be made better off by moving. Therefore, the equilibrium is Pareto efficient and government action is not required to achieve efficiency.

Tiebout's objective was to think of a way of achieving the efficient provision of public goods and to characterize the specific conditions under which it would work. Tiebout's mechanism is as follows. One factor individuals consider in choosing in which community to live is the tax and service package in that community, that is, the tax burden a resident will bear and the preferred benefits from public services a resident will enjoy. If many localities are available, each with a different tax/service package, individuals will select the one that gives

them the greatest satisfaction. Presumably, they will choose the one for which taxes and services are the closest to their desired amount. Basically, individuals “shop” among localities and “buy” the best for them. This analogy with private markets is important because it suggests that individuals can choose just what they want in the public sector and need not compromise through voting.

According to Tiebout, a quasi-market process can fix the public goods problem. This requires finding an exact set of sufficient conditions under which the ability of citizens to vote with their feet results in the efficient provision of public services.

The assumptions of the Tiebout model are:

- First, government activities produce no externalities.
- Second, individuals are completely mobile. That is, each person can move to a jurisdiction in which public services are best suited for that individual. The location of the individual’s place of employment places no restriction on where that person lives and does not affect the person’s income.
- Third, individuals have perfect information with respect to each community’s public services and taxes.
- Fourth, there are enough different communities so that each individual can find one with public services meeting his or her demands.
- Fifth, for every pattern of community services set by, say, a city manager who follows the preferences of older residents of the community, there is an optimal community size.
- Sixth, communities below the optimum size seek to attract new residents to lower average costs. Those above optimum size do just the opposite. Those at an optimum try to keep their populations constant.

Tiebout concludes that under these conditions consumers will locate in the community that best satisfies their preferences. Further, if the production of public goods exhibits constant returns to scale and if enough communities exist, then

consumers will move to the community that exactly satisfies their preferences. With constant returns to scale, communities of even one person can provide services at a minimum average cost, and community size becomes irrelevant.

Tiebout (1956) pointed out that "this model is not even a first approximation of reality. It is presented to show the assumptions needed in a model of local government expenditures, which yields the same optimal allocation that a private market would."

Assumptions one, two, and five parallel the standard assumptions of a perfectly competitive market. Consumers with complete knowledge of price and quality differences face many sellers of each produce and make consumption choices in order to obtain the greatest possible satisfaction. According to Tiebout, of these three, the requirement of many communities may be the most troublesome. Because there must be enough jurisdictions to satisfy every preference, it is possible that as many communities as individuals may be required. Such one-person governments mean, of course, that public goods would be consumed as private goods. But that effectively leaves out government and collective consumption that would regenerate the efficiency problems for which government was created. Still, the number of different local communities in a given area or region is often large. Therefore, desires for many different combinations of public services can be accommodated, at least in large metropolitan areas. The choice of 100 to 150 local governments and at least 50 different school districts is common even in medium-sized metropolitan areas.

In responding to this set of location choices, there is very little doubt that consumers do consider local government taxes and services in deciding where to live. Often the first question that a new or transferred employee will ask is "How are the schools around here?" Whether individuals have complete or even good knowledge about interjurisdictional tax and service differences is more problematic because collecting information is not without cost. One private sector market, the real estate business, however, does specialize in gaining and providing that information to prospective residents.

Other, less formal networks to acquire and provide such information to prospective residents also exist.

The assumption of no employment restrictions on residential mobility removes several potential problems including any difference in transportation cost between job location and alternative residential locations and the new costs created by the need to change job location for whatever reason. Tiebout anticipated someone living on capital income so that the amount of income was independent of where one lived. With that exception, and possible one for certain types of self-employed individuals, this assumption will not be met in reality. But certainly some actual situations come closer to meeting this assumption than do others. For any given job and job location, individuals may have a choice of several or even a number of different communities in which to live, with equal transportation cost to that job. This is reflected in traditional urban economics models with a central business district or job center circled by suburbs at different distances. To the extent that a good number of such choices providing different tax/service packages exist in a given metropolitan area, this assumption may be approximated.

The most important assumptions for the economic efficiency implications of the Tiebout model and the most troublesome are the absence of externalities or fiscal spillovers. Externalities or spillovers are harmful or beneficial side effects in the processes of production, distribution, or consumption of certain goods. The side effects of ordinary economic activity are called external or spillover benefits when the effects are beneficial and external costs when they are harmful. According to Tiebout, "There are obvious external economies and diseconomies between communities." Indeed, the existence of externalities is a major reason why individual consumers should group together for collective consumption of public goods. If those externalities extend across jurisdiction boundaries and if the amount of public service selected in each community is efficient for that community, those amounts will not be efficient from the overall society's viewpoint.

The inefficiency caused by interjurisdictional externalities can be corrected in several ways. Two are:

1. Externalities can be eliminated if governments are bigger (geographically and with larger population). If all those who benefit or pay for a public service are members of the same government, then there is no externality. However, governments large enough to eliminate externalities may be too large to include only individuals with the same preferences for public service. This creates a potential trade-off of these two factors.
2. Intergovernmental grants can be used to induce local governments to change their quantity of public service to that which is socially efficient. This can be accomplished without altering the size of those recipient governments.

There are two points that can be made to show the allocative results of the Tiebout model. First, changes in the costs of one of the public services will cause changes in the quantity produced. Second, the costs of moving from community to community should be recognized. These two points are illustrated through the following example.

Let us suppose that lifeguards throughout the United States organize and succeed in raising their wages. Total taxes in communities with beaches will rise. Now, residents who are largely indifferent to beaches will be forced to make a decision. Are the savings from this added tax worth the cost of moving to a community with little or no beach? Obviously this decision depends on many factors, among which the availability of and proximity to a suitable substitute community is important. If enough people leave communities with beaches and move to communities without beaches, the total amount of lifeguard services used will fall. This model, unlike the private sector counterpart, has mobility as a cost of registering demand. The higher this cost, *ceteris paribus*, the less optimal the allocation of resources.

The cost of registering demand comes through the introduction of space into the economy. Yet space affects the allocation not only of resources supplied by local governments but of those supplied by the private market as well. Every

time available resources or production techniques change, a new location becomes optimal for the firm. Indeed, the concept of a shopping trip shows that the consumer does pay a cost to register his or her demand for private goods.

On the production side, it is assumed that communities are forced to keep production costs at a minimum either through efficiency of city managers or through competition from other communities. Given this, "each individual, in seeking as a competitive buyer to get to the highest level of indifference subject to given prices and tax, would be led as if by an Invisible Hand to the grand solution of the social maximum position."

3.11 SUMMARY

Economic efficiency, that is, creating as much value as possible from a set of resources, is a goal by which alternative institutions and policies can be judged. Two conditions need to be met to achieve economic efficiency:

1. All activities that produce more benefits than costs for the individuals within the economy must be undertaken.
2. Activities that generate more costs than benefits to the individuals must not be undertaken.

If only the buyer and seller are affected, production and exchange in competitive markets are consistent with the ideal-efficiency criterion.

Public goods are a problem for the market to handle because nonpaying customers cannot easily be excluded. Since the amount of a public good that each individual receives is largely unaffected by whether he or she helps pay for it, most individuals will contribute little. The market will thus tend to undersupply public goods.

The public sector is an alternative means of organizing economic activity. Public sector decision-making will reflect choices of individuals acting as voters, politicians, financial contributors, lobbyists, and bureaucrats.

Successful political candidates will seek to offer programs that voters want. Voters, in turn, will be attracted to candidates who reflect the voters' own views and interests. In a democratic setting, voters will turn to collective action for two major reasons:

1. To reduce waste and inefficiency from noncompetitive markets, externalities, public goods, and economic stability
2. To alter the income distribution

Public sector action sometimes may improve the market's efficiency and lead to an increase in the community's welfare, all individuals considered. However, the political process is likely to conflict with ideal economic efficiency criteria when (a) voters have little knowledge of an issue, (b) special interests are strong and/or (c) political figures can gain from following shortsighted policies.

DISCUSSION QUESTIONS:

1. Some people have suggested that political voting and voting with one's feet simultaneously apply in determining the amounts of local public services to provide. Discuss how this might happen. How might the limitations of the assumptions of the Tiebout model contribute to a role for voting?
2. What are the five assumptions of voting models? Briefly discuss possible outcomes if these assumptions are violated.
3. What is rational ignorance? What are its ramifications? How can platforms and other information be useful in containing these effects?
4. Do political suppliers ever have an incentive to deceive voters about the cost of legislation? If so, when? Can you give any examples of cases in which this can happen?
5. Do you think special interest groups exert much influence on local government? Why or why not? As a test, check the composition of the local zoning board

in your community. How many real estate agents, contractors, developers, and landlords are on the board? Are there any citizens without real estate interests on the board?

6. Do you believe that real-world politicians adopt political positions to help their election prospects? Can you name a current political figure that consistently puts “principles above politics”? If so, check with three of your classmates and see whether they agree.

4

Bureaucracy and Bureaucrats

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4.1 INTRODUCTION

In American culture the term *bureaucracy* has a very negative connotation. I asked a class of undergraduate students to use one word to describe bureaucracy. Their responses included waste, inefficiency, red tape, rules, paperwork, formality, unresponsiveness, idleness, and rigidity. These negative descriptions of bureaucracy are not limited to students. This animosity towards the bureaucracy is deeply rooted in American culture. It even extends to the American cinema (Lee and Paddock, 2001). It is relatively easy to find examples of evil bureaucrats in American films. William Niskanen, a professor of economics at the University of California, Berkeley, has consistently argued that government bureaucracies are

too large and must be curtailed (Niskanen, 1994). In Niskanen's opinion, the bureaucracy tends to produce more services than the public needs. In addition, he argues that government is a monopoly; therefore, it has no incentive to improve service quality.

Niskanen's suggestions to improve the performance of the bureaucracy include privatization, increased competition among agencies, and tighter legislative and executive oversight. Nevertheless, Niskanen is skeptical that either legislative or executive reviews are likely to successfully improve the efficiencies of government bureaucracies. He strongly recommends privatization because it fosters competition and will result in a more efficient delivery of public services. Many politicians have also been critical of the bureaucracy. President Reagan, President Clinton, and President George W. Bush pledged to change the way the bureaucracy works. There are many examples to support these negative descriptions of the bureaucracy; however, it is interesting to note that about 100 years ago the word bureaucracy actually meant something positive. It meant a rational, efficient model of organization (Osborne and Gaebler, 1992). Public administration scholar Charles Goodsell conducted a survey of American citizens in which he explored bureaucracy in American government (Goodsell, 2002). He found that Americans generally dislike the bureaucracy but have a very positive view of their experiences with individual bureaucrats. Goodsell concludes that American government bureaucracies work very well but do not get the credit they deserve.

This positive view of the bureaucracy is not new. As early as 1922, Max Weber, a German sociologist, conducted a systematic study of organizations in various cultures. Weber concluded that bureaucracy was the most efficient and rational method of organization (Weber, 2000). Burns et al. (2003) argued that compared to those of other nations, American bureaucracies are much gentler and less oppressive. Herbert Kaufman (2001) applauded the work of the bureaucracy and concluded that bureaucracies are major players in the American governmental system. Charles Perrow (1986), in his book

Complex Organizations, defended the bureaucratic model of organization and suggested that bureaucracy is such an integral part of an organization that it would be extremely difficult to replace.

Government bureaucracies have been essential in the building of economies both in market and nonmarket economies. They provide essential services that capitalist economies need to perform well. These essential services include a stable constitutional order, a system of mass education, a network for public health, and means for protecting the environment. In addition to provision of services, the economic role of the bureaucracy involves the regulation of the private sector. Max Weber (1950) suggested that government bureaucracies are preconditions for capitalist economic health. The elements of the bureaucratic model of organization such as vertical hierarchy, formal rules, and impartial treatment provide a sanctuary for the private sector to develop and thrive (Weber, 1950). Nevertheless, many modern political economists differ with Weber on the usefulness of the bureaucracy in the market economy (Buchanan, Downs and Tullock, 1962). In their view, government bureaucracies advance self-centered behavior, which corrupts the natural functioning of the market (Simmons, 2003).

This chapter examines various aspects of the bureaucracy. Topics include definitions, characteristics, functions, sources of power, and mechanisms in place to control its behavior.

4.2 DEFINITION

The word *bureaucracy* emerged from eighteenth century France, initially referring to the cloth covering the desks of French government officials (Pinkerton, 1995). Today, the term bureaucracy has many meanings. In a broad sense, *bureaucracy* denotes the large formal structural and procedural arrangements of large complex organizations. In this context, bureaucracy is not limited to government but also includes large private and nonprofit organizations such as Wal-Mart, Texaco and the United Way. The term bureaucracy, however, is primarily used in connection with government.

Bureaucracy also refers to the totality of offices in the executive branch at the federal, state, and local levels of government. Finally, the term frequently refers to all elected, appointed, and selected employees of the government in the United States.

4.3 BUREAUCRATS

In the purest sense of the word, bureaucrats are employees in large complex organizations, which may be public, private, or nonprofit. In terms of public organizations, bureaucrats are employees who work in the executive branch at the state, federal, or local levels of government. Bureaucrats hold a huge variety of jobs, but most bureaucrats are white-collar workers, such as secretaries, clerks, lawyers, inspectors, and engineers. They include career civil servants as well as political appointees. According to the 2003 Employment and Trends of Federal Civilian Workforce Statistics, approximately 57% of bureaucrats in the federal government are male and 43% are female; about 73% are white and 27% are minorities. Although minorities are well represented in the federal bureaucracy, women and nonwhites are clustered in the lower-rank jobs.

Citizens as well as elected officials often question the motivations of bureaucrats. Public choice theorists describe bureaucrats as essentially acquisitive, busily maximizing their budgets and expanding their powers (Buchanan et al., 1962; Niskanen, 1994). Critics of the public choice theory argue that the motivations of the bureaucracy are varied (Balla and Gromley, 2004). Many bureaucrats might be motivated by personal gains, but many are equally motivated by altruistic values such as pursuit of the public interest and love of country.

Anthony Downs (1967), a prolific writer in the field of public administration, has divided bureaucrats into five distinct groups: climbers, conservers, zealots, advocates, and statesmen. Climbers focus on acquiring and maintaining power, income, and prestige, while conservers' priorities are convenience and job security. Zealots, advocates, and statesmen are loyal employees but the extent of their loyalty differs. While zealots are loyal to specific policies, advocates are loyal

to the organization as a whole. Statesmen are loyal to society as a whole and are generally motivated by altruism.

4.4 CHARACTERISTICS OF BUREAUCRACY

Max Weber has identified several common characteristics of ideal bureaucracies. The key characteristics are:

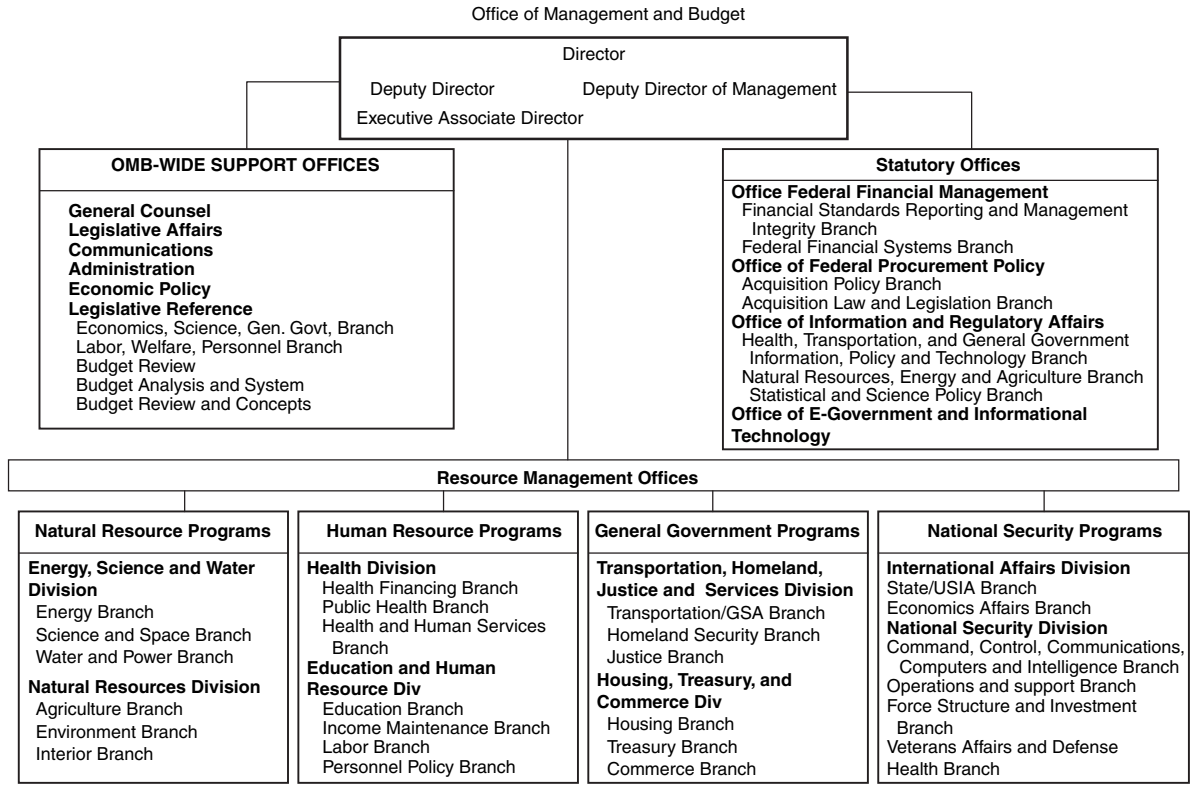
4.4.1 A Well-Defined Hierarchy of Positions

The ideal bureaucracy has a vertical hierarchy that defines the chain of command in the organization. The purpose of hierarchy is to create a clear reporting structure from the top of the organization to the bottom. Each position is subordinate to the one above it and superior to the one below it. Each employee in the organization receives instructions only from his or her immediate supervisor. The United States Office of Management and Budget (OMB) hierarchical structure is illustrated in Figure 4.1. The OMB assists the President in the development and execution of policies and programs. At the top of the OMB is a director who reports to the President. Below the director are two deputy directors who report to the director. Immediately below the deputy directors is an executive associate director who reports directly to the deputy directors.

4.4.2 Division of Labor and Specialization

Responsibilities are well defined in the formal bureaucracy. Work is divided among several units, persons, or offices with clear areas of responsibility for each entity or individual. For example, the work of the Office of Management and Budget (see Figure 4.1) is divided among three offices, which are divided into several programs. The three offices of the OMB are OMB-Wide Support Offices, Statutory Offices, and Resource Management Offices. Each office has its own functional area of responsibility.

Division of labor allows employees to become experts and specialists in their areas of responsibility. It also allows them to complete jobs faster and more efficiently. Job specialization has certain disadvantages, however. Employees can develop



Source: <http://www.whitehouse.gov/omb/omb>

Figure 4.1 Organizational chart for Office of Management and Budget.

overly narrow and parochial viewpoints and lose sight of the goals and objectives of the organization as a whole. Job specialization can also reduce the challenges of many jobs, leading to reduced performance, absenteeism, and alienation (Merton, 1957). The three most common alternatives to job specialization are job rotation, job enlargement, and job enrichment.

4.4.3 Formal Written Rules and Procedures

Ideal bureaucracies operate according to a consistent system of formal abstract rules and standard operating procedures. This practice fosters consistency, predictability, and fairness in tasks performed in the organization. Formal rules are designed to ensure that:

1. Employees receive the information necessary to keep the workflow in the correct order.
2. Employees are consistent in dealing with outsiders, especially clients.
3. Supervisors treat employees fairly.

When these rules are not followed, employees may be disciplined or terminated (Wilson, 2003). Usually, the rules are written down in manuals that are easily accessible to all employees. Notwithstanding, formal rules have weaknesses. Although formal rules are intended to prevent chaos in an organization, they can lead to excessive red tape, rigidity, and slow response to problems. Merton (1957) argued that bureaucracies constantly exert pressure on employees to blindly conform to the rules of the organization without considering the ultimate goals of the organization.

4.4.4 Impersonal Relationships

Impersonality is a significant characteristic of the ideal bureaucracy. Supervisors maintain social distance with their subordinates. This distance between supervisors and subordinates makes it more likely that decisions are based on rationality, not favoritism. Employees are expected to have an impersonal relationship with clients to foster evenhanded

treatment. Maintaining an impersonal relationship has a negative side, however. It makes organizations appear inhumane and mechanical. Many administrations have attempted to reorganize the bureaucracy to have citizens feel more connected to the government (Sowa, 2003). Most recently, President Clinton introduced the National Performance Review, which was designed to make the federal bureaucracy more responsive to its “customers” by cutting red tape and improving responsiveness (Osborne and Gaebler, 1992).

4.4.5 Maintenance of Formal Records

Formal record keeping of all its activities is one of the distinguishing features of a bureaucracy. Records are kept to ensure that actions taken are consistent with past actions in similar situations. Typically, complete files are kept of all clients; however, access to those files is jealously guarded. The activities of the organization, such as meetings, memos, directives, managerial decisions, employee time sheets, and job descriptions, are also recorded and maintained in files.

4.4.6 Professionalization

A professional career system is essential in a formal bureaucracy. Hiring is based on merit as opposed to political patronage. Employees are also full-time and are paid a regular salary with appropriate fringe benefits. In the United States, employment in the federal government (except for a small number of political appointees) is covered by a civil service system. This system began in 1883 with the passing of the Civil Service Reform Act, known as the Pendleton Act. It created a new approach to staffing government, one based on competence and merit (Watson, 2001). Under the civil service system, exams and job-related skills are used to hire and promote qualified individuals. The Office of Personnel Management (OPM) is responsible for hiring in most agencies of the federal government. States and the majority of local governments have civil service systems and special offices dedicated to managing the workforce of their entities.

During the 1950s and 1960s, several writers predicted the end of the bureaucratic model as the dominant form of organization (Waldo 1952; Bennis, 1966; Thompson, 1961). This has not happened yet, however. In fact, the majority of large organizations in the United States closely resemble Weber's characterization of the bureaucracy. Bureaucracies appear to be alive and well and remain the dominant model of organizations. Nevertheless, many organizations are paying more attention to the human side of the organization and are rewarding employees for initiative and creativity.

4.5 FUNCTIONS OF THE BUREAUCRACY

The main functions of the bureaucracy are implementation, rulemaking, and administration (Jansson, 2003). Implementation is the process of putting laws into practice, and it is the core responsibility of the bureaucracy. As implementers, the bureaucracy executes the decisions of Congress, the president, and the courts (Wildavsky, 1994). Once Congress passes a law, the bureaucracy takes the legislation and translates it into programs that work. Sometimes the bureaucracy does not implement the law as Congress intended because of inadequate resources, poor program design, or vague wording of the law.

Some government agencies exist to regulate some aspects of the private sector. Congress gives these agencies extensive powers to issue and enforce rules in their area of responsibility. Nevertheless, Congress reserves the right to change the rules when they violate congressional intent. The basic rule-making process is:

1. Law is passed.
2. Law is sent to appropriate agency to develop rules.
3. Agency develops preliminary rules.
4. Proposed rules are placed in the digest for comments.
5. Rules are finalized.
6. Rules are enforced.

The Interstate Commerce Commission (ICC), for example, makes the rules pertaining to the nation's radio and television networks. When the bureaucracy administers programs, it

undertakes activities such as issuing directives, disbursing funds, awarding grants and contracts, analyzing programs, and taking corrective action.

Many view this delegation of rulemaking responsibility to the bureaucracy as an abdication of responsibility by the Congress (McCubbins, 2002). Conservatives argue that the bureaucracy should be very mindful of overregulating industries because it raises prices and stifles economic growth. On the other hand, liberals suggest that regulations are necessary to protect the environment and individuals from the powerful.

4.6 THE ORGANIZATION OF THE FEDERAL BUREAUCRACY IN THE UNITED STATES OF AMERICA

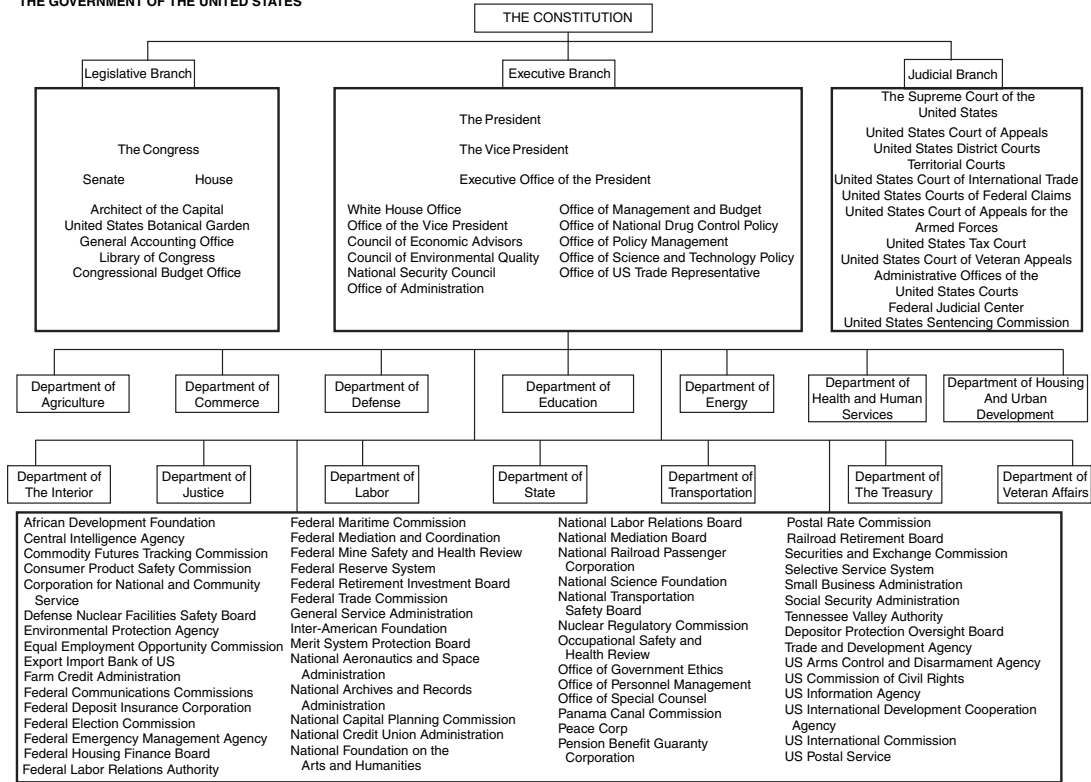
The executive branch of the federal government is referred to as the federal bureaucracy. It consists of approximately 2.7 million civilian employees and 1.4 million in the armed forces. These employees are organized into three groups:

1. Executive Office of the President
2. Cabinet-level departments
3. Independent agencies and public corporations

The cabinet-level departments employ the majority of federal employees. They have approximately 1.7 million employees, representing nearly 63% of the workforce of the workforce of the executive branch. Independent agencies and government commissions account for approximately 36.7%, while the Executive Office of the President employs less than 1% of the federal government's workforce.

4.6.1 The Executive Office of the President

The Executive Office of the President (Figure 4.2) works directly with the president in the preparation and implementation of major policies (Grubbs and Denhardt, 2003). It is made up of several offices. The main offices of the Executive



Source: US Government Manual. Washington, D.C: US Government printing Office, 2002.

Figure 4.2 Organization of the United States Government chart.

Office of the President are the Office of Management and Budget (OMB), the National Security Council (NSC), and the Council of Economic Advisers (CEA). The OMB assists the president in preparing the budget. The main function of the NSC is to advise and assist the president on national security and foreign policies. It is the president's principal office for coordinating policies among various government agencies. The NSC is made up of the president, vice president, and secretaries of state and defense and is directed by the national security advisor. The CEA conducts economic studies and advises the president on a wide range of domestic and international economic policy issues.

4.6.2 Cabinet-Level Departments

The Cabinet consists of 15 departments. They are the Departments of State, Treasury, Defense, Justice, Interior, Agriculture, Commerce, Labor, Transportation, Housing and Urban Development, Health and Human Services, Energy, Education, and Veterans Affairs and the newly created Department of Homeland Security (2002). The Departments of State, Treasury, Defense and Justice were the first to be created, and jobs in these departments carry much prestige. These four departments were started in 1789, when the first legislative session was held (Garvey, 1992). A secretary heads each department except for the Department of Justice, which is headed by the attorney general. Below the secretaries are undersecretaries, deputy undersecretaries, and assistant secretaries.

The heads of each department are chosen by the president and approved by the Senate. Each department is subdivided into smaller units with an array of designations, such as bureaus, offices, services, programs, and administration. Within the Department of Justice, for example, are the Drug Enforcement Administration, Community Relations Service, and Foreign Claims Settlement Commission, as well as the Office of Violence against Women. The departments with the greatest number of employees are Department of Defense, Department of Veterans Affairs, Department of Homeland Security, and Department of Justice (Firstgov.gov).

4.6.3 Independent Establishments and Government Corporations

Independent agencies exist outside the structure of the Cabinet departments and carry out a myriad of functions (Milkovich, 2004). There are two groups of independent agencies:

1. Independent agencies that regulate aspects of the private sector
2. Independent agencies that perform special functions

A board of approximately seven to nine individuals usually heads each independent agency.

The rationale for establishing independent agencies is (Watson, 2002):

1. To avoid them being captured by their clients
2. To avoid the politics that accompanies traditional departments

Although the President appoints the heads of independent agencies, they are somewhat more independent than cabinet secretaries. In some cases, the term of the head of the independent agency is longer than that of the president who appoints him or her. For example, Alan Greenspan, the current chairman of the Federal Reserve System, was appointed by President Clinton and is currently serving under the Bush administration.

The Interstate Commerce Commission (ICC), National Labor Relations Board (NLRB), Federal Communications Commission (FCC), and Federal Reserve Board (FRB) are examples of regulatory agencies. The FRB is the most independent and influential of the independent agencies. It regulates the economy and the stock market and sets interest rates. The ICC, the oldest of the regulatory agencies, regulates railroads and trucking. The NLRB regulates labor–management relations (Firstgov.gov).

Examples of independent agencies that are not regulatory agencies are the National Science Foundation, National Aeronautics and Space Administration (NASA), Office of Personnel Management (OPM), General Service Administration (GSA). The National Science Foundation supports scientific

research, and NASA administers the United States Space Program. The OPM monitors the civil service system in the federal government, while GSA operates and maintains federal properties, supplies, and purchasing.

Government corporations are a blend of private corporation and government agency; however, their operations are closer in resemblance to those of a private entity than those of a government entity. Unlike other government entities, government corporations are designed to run like a business in many aspects. Typically, they charge for their services, though at a cheaper rate than the consumer would pay in the private sector. The United States Postal Service and AMTRAK, for example, are expected to generate profits. The Tennessee Valley Authority (TVA) and the Federal Deposit Insurance Corporation (FDIC) are also examples of government corporations.

Like private corporations, government corporations are headed by boards of directors who are legally responsible for the acts of the organization. Nevertheless, government corporations are still controlled by the government, so they are not true private corporations. They have more control over their budgets than other agencies do and can decide how to use their earnings. Bureaucracies in state governments and many local governments are organized in similar ways to the federal government. The Executive Branch in the state of New Jersey, for example, has 15 departments and several independent agencies and public corporations.

4.7 POWER OF THE BUREAUCRACY

The bureaucracy and its employees are very powerful. In fact, the bureaucracy has been called the fourth branch of government (Bardes, 2000). Three reasons the bureaucracy is powerful are its access to information, extensive expertise in various fields, and ability to use discretion in rulemaking (Rourke, 1984). Additional power derives from the political support the bureaucracy receives from various constituencies and employment tenure.

Congress has many sources of information such as legislative staff, interest groups, and private citizens; nevertheless, it depends on the experts in the bureaucracy for accurate information and technical advice to make informed decisions. The bureaucracy develops expertise in specialized areas because its employees are able to give full-time attention to specific issues (Rourke, 1984). It is interesting to note that sometimes the bureaucracy uses its specialized knowledge to shield itself from the close scrutiny of Congress and the chief executive (Garvey, 1992).

The bureaucracy is also a powerful entity because of its ability to use discretion in decision making. Congress passes vague laws and gives considerable discretion to the bureaucracy to flesh out the legislation. In some instances, Congress defers to the bureaucracy because of its expertise. Although many writers suggest that the bureaucracy has too much discretion, others view discretion as necessary for administrative effectiveness. Woodrow Wilson, the father of public administration in the United States, argued that the bureaucracy should be granted “large powers and unhampered discretion” (Wilson, 1887). It was his view that the bureaucracy is better equipped than the legislature to make decisions in the public interest. The decisions of the legislature tend to be in the interest of their constituents, which frequently conflicts with the public interest.

The power of the bureaucracy also lies in the political support it receives from various constituencies. Sources of political support include the legislature, clientele groups, interest groups, and the chief executive. Milakovich and Gordon (2004) suggested that most agencies cultivate support from the committees in the legislature that oversee their work by using four methods:

1. Responding promptly to requests for information
2. Effectively promoting and managing programs in which legislators are known to have an interest
3. Cooperating administratively with legislators’ electoral needs
4. Anticipating legislators’ preferences regarding the operations of particular programs

Another source of power for the bureaucracy is the support it receives from client groups. Many client groups, especially the larger ones, use their resources and political savvy to market agency programs to the legislature and the president. In exchange, agencies are expected to consider the needs of the clients when they make rules or deliver services. Frequently, the bureaucracy reciprocates by using its rule-making power to serve, protect, and promote the interests of the client groups (Lemay, 2001). In fact, much has been written about the interdependent relationship between the regulatory agencies and their client groups. Sometimes, the agencies become so beholding to the client groups that they have difficulty regulating them.

Employment tenure provides the bureaucracy a certain degree of power. Approximately 90% of all federal employees come under the civil service system, which provides tenure for its employees after they have completed a probationary period. There is a prevailing sense that job tenure removes the incentives for high productivity and accountability. This seems paradoxical because granting of tenure to bureaucrats was conceived as a way to promote efficiency and effectiveness in public service. Tenure makes it extremely difficult to remove employees even when abuse is documented. Before termination, employees must be given advance notice and the opportunity for a hearing. An employee can appeal dismissal, and this process can take a very long time. At the state and local levels, removing employees is even more difficult than at the federal level. Despite the power of the bureaucracy, accountability is enforced through several channels, both formal and informal.

4.8 CONTROL OF THE BUREAUCRACY

A number of institutions exert considerable power over the bureaucracy. Some institutions have formal control while others have informal control. The institutions exercising formal control of the federal bureaucracy are Congress, the chief executive, and the courts. Interest groups and the media exert informal control over the bureaucracy. Although much of the

following discussion pertains to the federal government, many state and local governments operate in essentially the same way. The bureaucracy is dependent on Congress for its funding, staffing, and its continued existence (Bardes 2000). A government bureau cannot hire, fire, build, or sell without going through procedures set down by Congress.

4.8.1 The Bureaucracy and Legislative Constraints

Congress uses several mechanisms to control the bureaucracy, including:

1. Legislation
2. Legislative oversight
3. Fragmentation of job assignments
4. Congressional confirmation of top bureaucrats selected by the president
5. Resource allocation

4.8.1.1 Control by Legislation

Legislation in place to control the bureaucracy includes: (a) the Administrative Procedure Act of 1946, (b) the Freedom of Information Act of 1966, (c) The Privacy Act of 1974, (d) the Government in the Sunshine Act, and (e) sunset laws.

- *The Administrative Procedure Act of 1946* — The main purpose of the Administrative Procedure Act (APA) is to ensure that the public has the opportunity to participate in the formulation and revision of government regulations (Gromley and Balla, 2004). President Truman signed this act at a time when there was criticism of the bureaucracy's lack of fairness in its rule-making procedures. The APA requires that agencies not only keep the public informed of new regulations but also make provisions for public participation and written comments. Although the APA covers the majority of agencies of the federal government, certain agencies and functions are exempt, including the military and the navy during wartime, and court martial and military commissions (ombwatch.org/articleview/176/167).

- *The Freedom of Information Act of 1966* — The main objective of the Freedom of Information Act (FOIA) is to make information the federal bureaucracy collects more accessible to the public. This law requires federal agencies to disclose their records to the public in the *Federal Register*. Examples of information pertaining to agencies found in the *Federal Register* are agency structure, procedures, functions, decision-making processes, forms, and policies. The FOIA, however, does not apply to a few federal institutions such as Congress, federal courts, and the Executive Office of the President (archives.aclu.org/library/foia.html).
- *The Privacy Act of 1974* — The Privacy Act helps to curb the power of the bureaucracy. It requires agencies to keep confidential the personal records of individuals. Agencies are prohibited from sharing information about individuals with other agencies without written consent of the individual. The Privacy Act also requires that agencies give individuals opportunity to correct false information (Bushkin and Schaen, 1975).
- *The Government in the Sunshine Act* — The Government in the Sunshine Act requires that most federal agencies open their meetings to the public and the press. Another provision of the Sunshine Law is that agencies advertise meetings within prescribed timelines. The Act was enacted in 1976 as part of Congressional efforts to ensure that the public has accurate information about the decision-making processes of the federal government. These laws apply to all federal agencies in the executive branch with a few exceptions. Interestingly, the Sunshine Law does not cover government entities that are headed by a single administrator such as the Environmental Protection Agency. The majority of states have laws similar to the federal Sunshine Law. For example, New Jersey's Open Public Meeting Act requires government to conduct its affairs in the open with a few exceptions. An example of an exception is a situation in which disclosure would compromise public safety or a situation that the court has ruled confidential.

- *Sunset laws* — Sunset laws give legislators the power to automatically terminate a government entity or function on a certain date. Congress must pass a new bill to allow the agency to continue existing beyond that date. The main objective of sunset laws is to prevent the continuation of agencies that are no longer fulfilling their mission and whose goals no longer serve the public interests. Sunset laws seem to be a rational way to end ineffective programs but, in practice, there are only a few examples where agencies were terminated using this mechanism (McKinley, 2000). Frequently, as sunset dates approach, the bureaucracy mobilizes client groups to fight termination. The Civil Aeronautics Board (CAB) is an example of an agency that was terminated using sunset laws. This independent agency of the federal government was established in 1938 to regulate the airline industry; however, it was terminated by Congress in 1985. One reason given for its termination is that it overregulated and restricted the entry of new firms into the industry.

The APA, FOIA, Privacy Act, Government in Sunshine Act, and sunset laws have succeeded in opening government to greater public scrutiny but they have not been as effective as expected. There is growing concern that the use of computers to store information makes it easier to share information about individuals, which violates the individual's right to privacy. The proliferation of e-mail correspondence within all levels of government poses a threat to the Government in the Sunshine law. The question is: Does e-mail correspondence between public officials constitute a meeting? Should an e-mail correspondence between government officials be subjected to the Freedom of Information Act? Is an e-mail a public record? Concerns have begun to be raised about these perplexing questions.

4.8.1.2 Control by Congress

The tendency of Congress not to give a single agency the total responsibility of a policy area helps to curb bureaucratic

power. This fragmentation of responsibility prevents any single agency from dominating a particular policy arena. For example, drug trafficking is the concern of several agencies. Federal agencies that share the responsibility for policing drug trafficking are the Customs Service, the Federal Bureau of Investigation (FBI), the Drug Enforcement Administration, the Border Patrol, and the Defense Department. The disadvantage, however, is that everybody's business is sometimes nobody's business. Fragmentation of responsibilities often leads to disagreement among agencies and sometimes inhibits the responsiveness of government. Congress can also control an agency by curtailing funding or simply refusing to appropriate funds for a proposal.

Another method Congress uses to control bureaucratic power is legislative oversight. At all levels of government, the legislature monitors and evaluates the performance of the bureaucracy on a regular basis. Legislative oversight includes public audits, face-to-face interviews, and hearings. There are two forms of oversight: (1) police patrol and (2) fire alarm. When members of Congress use the police patrol strategy they behave like police officers on the beat. They actively seek out agencies that are misbehaving. In the fire alarm strategy, members of Congress investigate agencies after citizens report problems (Ogal and Rockman, 1990). Congress may punish misbehaving agencies by reducing their appropriations, manipulating the structure and design of the organization, or rewriting legislation.

4.8.1.3 Control by the Chief Executive

The President controls the bureaucracy through various mechanisms. The president appoints all secretaries of departments as well as approximately 3000 other employees in the executive branch. This appointment privilege gives the president the opportunity to impose preferences on the agencies. Another mechanism the president uses to control the bureaucracy is executive orders often referred to as "the power of the pen" (Mayer, 2002). Executive orders are presidential directives to require or authorize some action within the executive

branch. They are legal means to modify or create laws while circumventing Congress. Executive orders carry the full legal authority of laws passed by Congress (Grubbs and Denhardt, 2003). Presidents have used executive orders to create agencies, reorganize agencies, and abolish agencies. In 1939, President Roosevelt used an executive order to establish the Executive Office of the President. Most recently, in October 2001, President George W. Bush used an executive order to create the Department of Homeland Security.

The president also uses budgetary authority to control the bureaucracy. The Budget and Accounting Act of 1921 gives the president the authority to propose the Budget. Before 1921 bureaus and departments submitted their own budgets directly to Congress (Mikesell, 2003). The president may show disapproval with an agency by cutting its funding in the proposed presidential budget. The president also uses the budget to reward agencies that support the president's priorities.

4.8.1.4 Control by the Judiciary

The courts also exercise formal control over the bureaucracy. They routinely oversee and review the work of the bureaucracy. The courts frequently hear cases dealing with alleged overstepping of bureaucratic authority. Sometimes the courts overturn bureaucratic decisions because they fail to give interested parties adequate opportunity to comment on proposed rules.

The courts may even issue injunctions against agency actions before they happen. When an agency's action is in violation of a law or constitution the courts frequently order the agency to correct the problem. For example, the New Jersey Supreme Court ordered the New Jersey Department of Education to provide adequate funding to low-income school districts because the department's funding formula violated the "thorough and efficient" clause in the state constitution (Abbot v. Burke, 1994).

4.8.1.5 Control by Interest Groups

Interest groups do not have legal control over agencies; nevertheless, they have mechanisms that exert a certain degree of

informal control over the bureaucracy. Interest groups scrutinize agencies very closely and frequently bring good and bad news to the attention of Congress and the press. This fear of negative publicity or the possibility of positive publicity helps to keep the bureaucracy in check. Agencies rely on interest groups to gather and share information that they will need to formulate rules and to defend their programs when they are threatened.

The Environmental Protection Agency, for example, uses information gathered by the Sierra Club to defend expansion or continuation of its programs. This dependency often leads interest groups to put pressure on agencies to interpret policy in ways that are favorable to them, often resulting in contradictions (Helco, 1978). Interest groups also testify at hearings on behalf of agencies, hold press conferences, undertake advertising campaigns, solicit media support, and mobilize grass-roots followers. The media also has the ability to expose and publish information unfavorable to agency interests.

4.9 SUMMARY

In the purest sense of the word, bureaucracy refers to any large complex organization. Although many citizens view the bureaucracy as inefficient and wasteful, some organizational theorists defend the bureaucratic model of organization for its efficiency and emphasis on impartiality. The key characteristics of the ideal bureaucracy are a well-defined vertical hierarchy, division of labor and specialization, a clear set of written rules, impersonal relationships, maintenance of formal records, and professionalization.

Today, many bureaucracies fall short of the ideal, but many of the characteristics are evident. Some of the reasons the bureaucracy is so powerful are its enormous expertise, access to information, ability to use discretion, political support, and employment tenure. Notwithstanding the power of the bureaucracy, a variety of formal and informal mechanisms to control its actions are in place. Formal controls include laws such as the Administrative Procedure Act, Freedom of Information Act, Privacy Act, Government in the Sunshine Act, and sunset laws.

The chief executive, Congress, and the judiciary have formal powers and a variety of tools for controlling the bureaucracy. The tools that Congress uses to control the bureaucracy include legislative oversight, fragmentation of responsibilities, budget appropriations, and confirmation of top bureaucrats. The chief executive controls the bureaucracy through appointments, executive orders, and budget allocations. The courts use orders and injunctions to control the bureaucracy. Interest groups and the mass media exert informal control over the bureaucracy.

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Part II

Theory of Public Goods

Public Goods

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5.1 INTRODUCTION

Public goods are both unique and fascinating because it is virtually impossible to allocate a pure public good through market mechanisms. For all other goods, markets have emerged as the dominant means of allocation and distribution, and the current trend is toward even greater dependence on markets to allocate goods. At the beginning of the third millennium, markets have been almost universally embraced as the most efficient way to allocate resources, and free markets have emerged as the prevalent world ideology. Even the Chinese Communist Party, which once viewed itself as the guardian of the purest form of Marxism, has replaced state

allocation and planning with market mechanisms under the rubric "market socialism."

Only public goods have withstood the persistent trend toward market allocation. Across time and across cultures, public goods have been almost universally provided by governments. Even Adam Smith, the founder of classical economics who first developed the argument in favor of free markets, argued for the provision of public goods by government rather than through markets. Smith maintained that the first two primary functions of government are to provide two public goods, national defense and a legal system, and he suggested both should be paid for from the public treasury (Smith, {1776} 1991, p. 471).

The propensity of societies to provide public goods through the public treasury is surprisingly consistent across time. Dwight Waldo, one of the founders of public administration, surveyed the history of government administration from its very beginnings and identified the three core functions carried out by even the earliest of governments: defense, courts, and the inevitable tax system needed to pay for them (Waldo, 1980, p. 38). Waldo also observed that, to this very day, organizations are considered governments only to the extent that they fulfill these same three functions. Public goods, such as national defense, must be purchased through the public treasury because they are inherently difficult to supply through markets. Without public provision, such public goods would be undersupplied, if they would be supplied at all. Although markets are usually considered more efficient than government, government is the most efficient way, and often the only way, to deliver public goods. By providing public goods, government becomes an important contributor to economic efficiency and the public welfare.

The first part of this chapter will define public goods and lay out the criteria that can be used to identify public goods and to differentiate them from other types of goods. The second part of the chapter will look at the purest public goods, which are conveniently called pure public goods. The third part of this chapter will discuss why the characteristics of

these purest of public goods make it extremely difficult to provide them through markets.

5.2 DEFINITION OF PUBLIC GOODS

The concept of public goods appears under several different terms in academic literature, including pure public goods, collective consumption goods, and social goods. Public goods, however, is the most commonly used term.

5.2.1 Origins of the Terms

“Public” comes from the Latin term *publicus*, a word meaning adult, which in our context conveys the idea of pertaining to the people (Webster, 1942, p. 2005). The English word “public” means belonging to a nation, state, or community at large (Webster, 1942, p. 2005) or maintained by or used by the people or community as a whole (Webster, 1995, p.895). The opposite of public is “private,” which comes from the Latin word *privare*, which means to deprive (Webster, 1942, p. 1969). The English word “private,” in keeping with its Latin root, means not available for public use, apart from the state, or peculiar to an individual (Webster, 1995, p. 880). Thus the word public conveys the idea that things that are public are available to all.

“Good,” as an adjective, comes from the Anglo-Saxon word *god*, which was pronounced with a long “o” like “goad” and means pleasing or fitting (Webster, 1942, p. 1078). When the word is used as a noun, it refers to commodities and personal property (Webster, 1995, p. 480). The original meaning of goodness in the adjective still influences its meaning as a noun. For example, “goods” have sometimes been differentiated from “bads” such as pollution (Musgrave, 1999b, p. 41; Hyman, 2002, p. 136). Thus the word “good” has a positive connotation and conveys the idea of a benefit. When we put the words public and goods together, “public goods” conveys the idea of benefits that are available to all people or to the community as a whole.

Caveat emptor. (Let the buyer beware.) The discussion that follows will present what appears to be the emerging consensus. Economists have yet to reach a consensus on all the terms that will follow or the concepts that should be used to differentiate them. The economic literature is much younger than the English language. Economists have yet to develop a common vocabulary; they sometimes coin their own terms and create their own definitions. Economists occasionally create confusion when they use different terms for the same concept and even more confusion when different economists use the same term for different concepts. This chapter will identify the most prevalent terms and the concepts around which a consensus appears to be emerging. It will also alert you to some of the alternative terms you may encounter if you dig deeper into the economic literature.

The areas of greatest agreement in the literature on public goods are the concept of public goods and its polar opposite, private goods. Common examples of public goods include national defense, lighthouses, and fireworks displays. At the opposite end of the spectrum, examples of private goods include a pair of socks, a can of soda, and a stick of gum. When one ventures beyond the polar opposite categories of public and private goods, the consensus is still emerging. So the discussion of public goods and its polar opposite, private goods, is the safest place to start.

“Public goods” is the most frequently used term for such goods as national defense (Buchanan, 1967, p. 11; Rosen, 2002, p. 55; Hyman, 1990, p. 136; Holcombe, 1996, p. 96; Gwartney and Stroup, 1997, p. 94; Stiglitz, 2000, p. 128; Bruce 2001, p. 56; Ulbrich, 2003, p. 67). Alternative terms are sometimes used interchangeably with “public goods”; one example is “collective goods” (Buchanan, 1967, p. 14; Weimer and Vining, 1999, p. 75). Some authors use different terms altogether, such as “social goods” (Musgrave, 1986, p.41), to represent a very similar concept. The terms “collective goods” and “social goods” have advantages in that they add connotations of joint use and evoke images of goods that are used simultaneously. Although each of these terms used to describe

public goods evokes slightly different images, all convey the same underlying idea of benefits that are available to the community as a whole.

There are at least two definitions for public goods. The first is loose, casual, and imprecise but immediately easy to understand. The second is precise and abstract, and it requires subsequent additional definitions to clarify. Therefore, the casual definition is the best place to start.

5.2.2 Casual Definition of Public Goods

The casual definition is that public goods are those goods and services that are provided through the public sector (Holcombe, 1996, p. 98; Heikkila, 2000, p. 103; Ulbrich, 2003, p. 67). Public provision does not necessarily mean public production (Musgrave, 1986, p. 41). For example, private companies usually produce fighter planes, but the planes are purchased with public tax dollars.

This casual definition, while usually correct, is not entirely accurate, as governments may also supply some private goods to individuals (Buchanan, 1970, p. 30; Musgrave, 1999a, p. 68; Stiglitz, 2000, p. 136). An example of a publicly provided private good is public housing. Despite the term “public” in public housing, both the tenants and management of those units are likely to consider each apartment as a private living space set aside for personal use rather than a public space open for use by the general public. It is also interesting that when governments provide private goods, they often act like private firms in that they charge for services (Buchanan, 1970, p. 30). Public housing charges each tenant rent, public universities charge tuition to each student, and the postal service charges postage for each letter. Therefore, while the rule of thumb that governments must supply public goods is almost always correct, the converse, that all goods provided by governments are public goods, has more exceptions.

Another exception to the casual definition may arise in those rare instances where a private entity may provide a public good. This rarely occurs with a pure public good but

may happen when a public good can be coupled with a private good. For example, a private firm may sponsor a public fireworks display. While a fireworks display is a common example of a public good, it is a good that can be mixed with a heavy dose of advertising, which is very much a private good. Thus the fireworks become an impure example of a public good, for which private entities may be willing to pay because of the advertising value they receive from the event.

As superficial as it sounds to define public goods as those provided by public sector, this casual definition does draw attention to the difficulty of markets to provide public goods, especially in their purest form. This difficulty is a consequence of the public-ness of public goods. The abstract definition, which follows, will identify the characteristics that make a good public. These same characteristics will help us identify critical differences between public and private goods, which will help us explain why it is difficult to provide public goods through markets.

5.2.3 Abstract Definition of Public Goods

The abstract definition is that “public goods” are goods and services that are nonrival in consumption and are nonexcludable (Anderson, 2003 pp. 56–57; Bruce, 2001, p. 56; Holcombe, 1996, p. 108; Hyman, 2002, p. 134; Mikesell, 1995, p. 4; Stiglitz, 2000, p. 128; Ulbrich, 2003, p. 67; Weimer and Vining, 1999, p. 74). Although this definition is precise, it also requires definition of two key concepts, rivalry and excludability, before it can be understood.

5.2.3.1 Rivalry

A good is “rival” in consumption when the act of one person consuming it precludes another person from enjoying the same good (Stiglitz, 2000, p. 128; Weimer and Vining, 1999, p. 75). A pair of socks is an example of a rival good, because when one person puts on a pair of socks, another person is precluded from wearing them at the same time. “Nonrival” goods, on the other hand, can be enjoyed simultaneously by

many people (Bruce, 2001, p. 56; Hyman, 2002, p. 135; Mikesell, 1995, p. 3; Stiglitz, 2000, p. 128). Another way to envision the concept of nonrivalry is the term “joint use” (Mikesell, 1995, p. 4). For example, many people can simultaneously enjoy fireworks. Our ability to enjoy a fireworks display is in no way diminished when an additional person observes the fireworks. Once you produce a nonrival good for one person, it is available for everyone. Public goods are nonrival in consumption.

The term “nonrival” is not universal. This same general concept has also been labeled as “collective consumption” (Holcombe, 1996, p. 97), and “joint consumption” (Gwartney and Stroup, 1997, p. 94). Although the terms collective consumption and joint consumption are less common, they have the advantage of evoking images of goods being enjoyed by a group or a community. Despite the imagery evoked by these less frequently used terms, for communication purposes it is preferable to use the most commonly used term, “nonrival.”

5.2.3.2 Excludability

A good is “excludable” when it is feasible to exclude individuals from enjoying a good unless they pay for it (Stiglitz, 2000, p. 128; Weimer and Vining, 1999, p. 75). A can of soft drink is an example of an excludable good, as a vending machine can easily prevent people who do not pay from obtaining the soft drink. A good is “nonexcludable” when it is not feasible to exclude those who do not pay (Bruce, 2001, p. 56). A fireworks display is nonexcludable, as there is no feasible way to exclude those who do not pay from seeing the fireworks. Public goods are nonexcludable.

5.2.4 Public Goods Can Be Differentiated from Alternative Categories

Public goods are those that are both nonrival and nonexcludable. The concepts of rivalry and excludability allow us not only to define public goods but also to differentiate them from other categories of goods. For simplicity, some economists treat rivalry and excludability as dichotomous variables

TABLE 5.1 Taxonomy of Goods

| Rival in Consumption | |
|--|--|
| No | Yes |
| Excludable | |
| Toll goods Examples: toll road, cable TV, movie theater, college course | Private goods Examples: chewing gum, can of soda, pair of stockings |
| Nonexcludable | |
| Public goods Examples: National defense, lighthouse, fireworks display, radio waves | Common goods Examples: Fish in the sea, common pastures, clean air, clean water |

(Mikesell, 1995, p. 4; Weimer and Vining, 1999, p. 80). A good is either rival or nonrival, and it is either excludable or nonexcludable. These two dichotomous variables create four possible combinations, which are represented in Table 5.1 as a simple taxonomy with four quadrants:

Public goods, which would appear in the southwest quadrant, are both nonrival in consumption and nonexcludable (Bruce, 2001, p. 56; Mikesell, 1995, p. 4). Examples of public goods include fireworks displays; lighthouses; national defense (Buchanan, 1970, p. 25; Mikesell, 1995, p. 4); a system of justice (Buchanan, 1970, p. 25; Mikesell, 1995, p. 4); mosquito control (Mikesell, 1995, p. 4); regulation, such as air traffic control (Buchanan, 1970, p. 27); environmental protection (Buchanan, 1970, p. 26); and even radio signals (Holcombe, 1996, p. 97). Public goods may also be called “collective goods” (Buchanan, 1970, p. 23). Such alternative terms may help prevent us from overlooking the possibility of nongovernment provision of such goods (Holcombe, 1996, p. 97). In each example, these goods can be used by many individuals simultaneously or are collectively consumed. It is not feasible to exclude those who do not pay from enjoying these goods, which makes it extremely difficult for private producers of public goods to get reimbursed for their costs.

Private goods (northeast quadrant) are the polar opposite of public goods, in that they are both rival in consumption and excludable (Mikesell, 1995, p. 4; Weimer and Vining, 1999, p. 81). Examples include food and clothing (Mikesell, 1995, p. 4). A can of soft drink is a good example of a private good. The can is rival in consumption, as when one individual drinks from the can, that act usually precludes another person from enjoying the same can of soft drink. A can of soda is also excludable, as a soft drink machine can easily exclude people who do not pay from obtaining a can. Most goods purchased in markets are private goods (Bruce, 2001, p. 57). These goods are ideally suited to markets, as excludability assures that producers of these goods will get paid for their efforts, and rivalry in consumption reduces the likelihood that consumers will try to enjoy someone else's goods rather than buying their own.

Common goods (southeast quadrant) are rival in consumption but are not excludable. This term is not universal; such goods are sometimes called common pool resources (Mikesell, 1995, p. 4) or common resources (Mankiw, 1998, p. 227). Examples include aquifers and petroleum reserves (Mikesell, 1995, p. 4), the environment (Mankiw, 1998, p. 227), and fish in the ocean (Mikesell, 1995, p. 4; Mankiw, 1998, p. 227). These goods are large and accessible from many locations, which makes them nonexcludable. Common goods are different than public goods, however, because they are rival in consumption. For example, the fish in the ocean are rival in consumption, as a fish caught by one person is not available for use by any other person. The use of a common good by one person may preclude another person from using it.

Toll goods (northwest quadrant) are those goods that are nonrival in consumption but still excludable (Mikesell, 1995, p. 4; Weimer and Vining, 1999, p. 80). An alternative term is natural monopolies (Mankiw, 1998, p. 227). Examples of toll goods include turnpikes (Mikesell, 1995, p. 4; Mankiw, 1998, p. 227); toll bridges (Mikesell, 1995, p. 4); motion pictures (Mikesell, 1995, p. 4); and cable television (Mankiw, 1998, p. 227). These goods are nonrival. For example, the viewing of a cable television program by one person in no way

detracts from the ability of millions of other persons, in homes across the country, to enjoy the same program. These goods are excludable, however. For example, the cable system can deny programs to those who do not pay. The excludability creates an incentive for viewers to pay for cable television. Those payments, in turn, allow providers of cable programs to get paid for their labor.

The strength of theory is that it simplifies the real world to its essential elements, but the weakness is that in simplifying it makes assumptions that are not completely true (Solow, 1956). The simple taxonomy, as a graphical representation of theory, is a good example of those advantages and limitations. The strength of this simple taxonomy of goods is that it allows us to identify public goods and to differentiate public goods from goods in three other categories. The weakness of this simple taxonomy is that the clean, discrete lines between rival and nonrival and the neatest demarcation between excludable and nonexcludable, which exist in theory, are hard to find in the real world. Many goods would straddle the boundaries between categories.

5.3 PURE PUBLIC GOODS

Pure public goods are a rare anomaly in a world in which most goods are either partially rival or partially excludable. *Pure public goods* are those goods and services “for which there is no rivalry in consumption and for which exclusion is impossible” (Stiglitz, 2000, p. 128). Public goods in which the characteristic of nonrivalry or nonexcludability is compromised to some degree are called impure public goods. The pure examples of public goods are helpful to allow us to clearly envision the dynamics of providing public goods.

5.3.1 Degrees of Rivalry and Excludability

The simple taxonomy of goods oversimplifies when it treats rivalry and excludability as dichotomous yes/no alternatives. Rivalry and excludability are rarely absolute but are usually a matter of degree (Holcombe, 1996, p. 100; Ulbrich, 2003, p. 71).

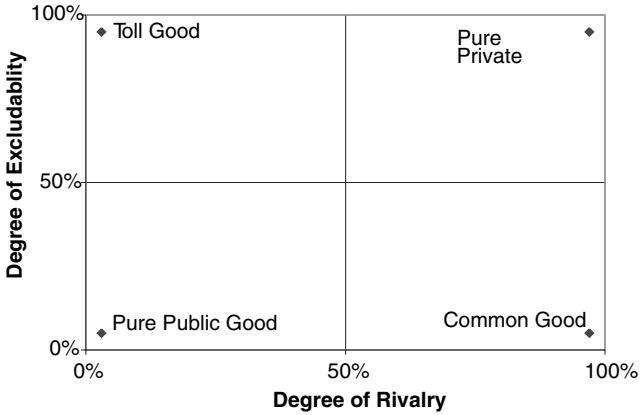


Figure 5.1 Revised taxonomy of goods with degrees of rivalry and excludability.

Some economists (Holcombe, 1996, p. 110; Stiglitz, 2000, p. 133; Hyman, 2002, p. 143) visualize characteristics such as rivalry and excludability as continua, with varying degrees. If rivalry and excludability are on continua, the taxonomy of goods would be replaced by a two-dimensional graph (see Figure 5.1), which can accommodate varying degrees of rivalry and excludability.

5.3.1.1 Degrees of Rivalry

In the real world, few goods are either totally rival or totally nonrival. Most goods stand somewhere between those two extremes. At the nonrival end of the continuum is national defense. National defense is totally nonrival for all citizens, as each citizen receives the entire benefit of national defense, regardless of the number of citizens. As a consequence, there is no additional cost in delivering the exact same level of protection to an additional citizen. On the opposite end of the continuum are goods that are totally rival. A hat is totally rival as it can only be worn by one person at a time. As a consequence, there is an additional cost to providing a hat to each additional person.

A vast middle ground lies between the two extremes. This middle ground arises because of externalities. *Externalities* arise whenever an action of one person imposes costs or confers benefits on another person. *Positive externalities* occur when one person's actions confers benefits on another person. *Negative externalities* occur when one person's act imposes costs upon another person.

A public roadway is in large part public, so one might assume it is nonrival. A road approximates a purely nonrival good at three o'clock in the morning, when no other cars are on the road. Late-night traffic is so scarce in some cities that the normal progression of green, yellow, and red traffic lights gives way to blinking red and yellow lights. Yet later in the morning, rivalry will appear as additional cars enter the roadways. A road is fundamentally different than a totally nonrival good like national defense. With a pure public good such as national defense, all citizens share an identical position under a nuclear umbrella. With an impure public good such as a road, a certain degree of rivalry prevents people from sharing the exact same position. Two automobiles cannot share the same space on the roadway, and any attempt to violate this principle will result in a traffic accident.

During rush hour, the rivalry of roads escalates to a new level. Each additional car slows travel on the road, increasing travel times and imposing costs on other drivers. Thus the road, while still nonexcludable, becomes more rival in consumption as additional cars clog the road. In rare instances, a road may become totally impassable, a condition that approaches complete rivalry. During rush hour, most drivers will find the streets are somewhat, but not totally, rival in consumption.

Externalities can also modify the rivalry of goods that are theoretically rival. For example, a dose of vaccine for a contagious disease is rival in that only one person can receive it. If only one person was vaccinated, the recipient of the vaccine would enjoy all the benefit of the inoculation. If, however, a significant portion of the population were vaccinated, other individuals who were not vaccinated would also enjoy

a benefit in the form of a reduced risk of exposure to a contagious disease. If all people were vaccinated, it might be possible to eradicate the disease altogether. For example, an international smallpox vaccination program virtually wiped out that disease (Stiglitz, 2000, p. 131). In this instance, not only did each recipient receive a private good of immunity from the disease, but all future generations also received a public good of the eradication of the disease.

While a few purely rival or purely nonrival goods may exist, most goods exert at least some externalities that make them neither purely rival nor purely nonrival. In the real world, most goods gravitate toward the middle of the continuum.

5.3.1.2 Degrees of Excludability

Like rivalry, excludability is rarely absolute. A few totally excludable and nonexcludable goods still exist at the far ends of the continuum. A rare example of a totally nonexcludable good is national defense, as it is not feasible to defend citizens who pay for the service without also defending those who did not pay. A can of soda, on the other hand, is an example of a good that is easily made excludable by putting it in a soft drink machine.

Many goods fall in the middle ground between excludability and nonexcludability. City streets may be nonexcludable, as there is a driveway from virtually every city lot onto the street. It is not feasible to post a toll-taker at every driveway. The cost of collecting the toll would exceed the revenue that would be collected, so the city would be better off to not attempt to collect a toll. On freeways, however, the entrance and exit points are often miles apart, making it much more feasible to charge tolls at those points and to deny entrance to those who do not pay. Toll roads, on the excludable end of the continuum, show that some highways can be designed to make the collection of tolls efficient.

When one contemplates both the rivalry and excludability of public roads (see Figure 5.2), it is clear that public roads occupy not a single point on the two-dimensional continuum but a far-reaching curve that stretches almost from one corner

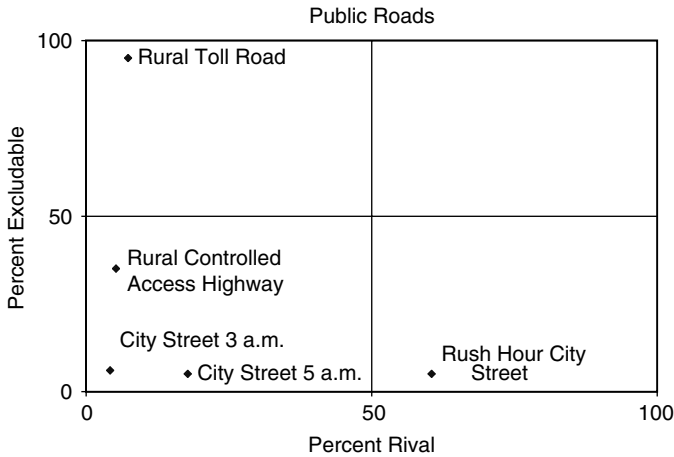


Figure 5.2 Roads on two-dimensional continuum of rivalry and excludability.

of the graph to the opposite corner. These characteristics are transitory and not immutable. For example, excludability can change with technology. Adam Smith thought it would be feasible to charge tolls to horses and wagons using public roads and bridges. The automobile increased speeds of travel and made toll collection a greater source of disruption and congestion to the traffic flow. Future technology may make it possible to electronically charge tolls to passing cars without necessitating a stop at the tollbooth similar to the passes used on the east coast. In the future it may become feasible to charge tolls on all types of roads, including city streets. Toll taking may even reduce congestion by encouraging motorists to travel during off-peak hours, when lower tolls would be charged.

5.3.2 Differentiating Pure Public Goods from Alternative Categories

Over time, economists have looked more intensely at the task of differentiating goods and have made even finer distinctions. The vast gray area between pure public goods and pure private goods has grown in size and importance (see Figure 5.3).

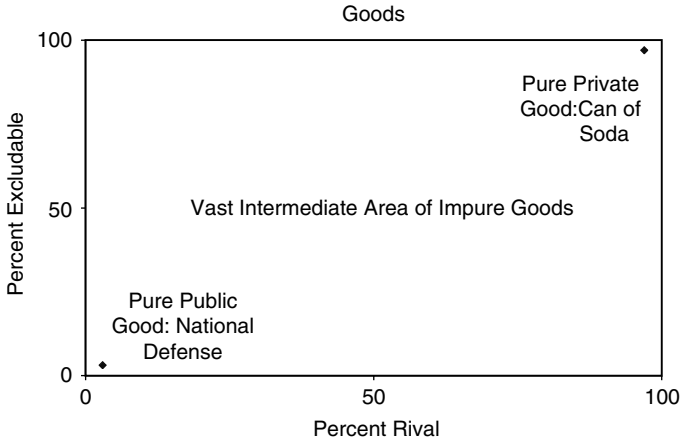


Figure 5.3 Two-dimensional continuum of rivalry and excludability.

In the southwest corner of the continuum lie pure public goods, with rivalry and excludability of zero percent. In the northeast corner lie pure private goods, with 100 percent rivalry and excludability. No goods or services completely meet the polar definitions (Buchanan, 1999, p. 48). Pure examples of public goods rarely, if ever, occur in the real world (Musgrave, 1986, p. 49; Rosen, 2002, p. 57). At the other end of the continuum, very few pure private goods exist that are totally excludable and have no externalities. Outside of pure public goods and pure private goods, whose position on the two-dimensional continuum is clear, economists may place other goods in slightly different places. Economists sometimes even use slightly different terms and criteria to differentiate between categories in the vast intermediate area. The terms pure public good, and its opposite pure private good, have become fairly common, so a discussion of these two pure types is a logical place to start.

5.3.2.1 Pure Public Goods

The term “pure public good” is used far less frequently than the term “public good.” *Pure public goods* are those goods that are completely nonrival and completely nonexcludable

(Stiglitz, 2000, p. 128; Bruce, 2001, p. 57). As a consequence of complete nonrivalry, there is no additional cost to adding an additional user. (Bruce, 2001, p. 57; Stiglitz, 2000, p. 132). No cost, to an economist, not only implies that there would be no additional cost to the new user but also no costs imposed upon the existing users. Likewise, for a completely nonexcludable good, it would be impossible to exclude a nonpaying customer at any cost (Bruce, 2001, p. 57; Stiglitz, 2000, p. 132).

The actual existence of pure public goods appears still open to debate, with some suggesting pure public goods exist only in theory. National defense is probably the closest approximation of a pure public good (Buchanan, 1999, p. 48). Very few goods, with the possible exception of national defense, are completely nonrival (Buchanan, 1967, p. 18; Musgrave, 1986, p. 49; Stiglitz, 2000, p. 132). Over time, technology has made it possible to exclude nonpaying individuals from using goods once considered nonexcludable. For years, a lighthouse has been a classic example of a non-excludable good. However, it may become technologically feasible to exclude those who do not pay from the benefits of a lighthouse. If ships on the horizon can be identified, the lighthouse could remain on for ships that have paid but turned off for ships that have not paid. Such complex systems might, however, break down in whenever a paying and a nonpaying ship both appeared on the horizon simultaneously.

Other economists have relaxed the assumption of impossibility of exclusion for pure public goods. Nonexcludability is rarely a question of impossibility but one of feasibility. Transaction costs include those of contacting users of a good and the costs of excluding those who do not pay. If the potential payment is greater than the transaction cost, there is an incentive to make the effort to exclude (Ulrich, 2003, p. 68). The converse would also be true; if the cost of exclusion exceeds the potential payment, it is not economically feasible to exclude. Some economists consider a good nonexcludable enough to be a pure public good if the cost of exclusion is too high (Hyman, 2002, p. 142).

While pure public goods by definition are nonexcludable geography can place practical limits on nonexcludability. Pure

public goods are therefore sometimes divided into groups according to their geographical coverage. International public goods serve all people worldwide, so they are nonexcludable in theory and in practice. National public goods serve all people within a nation, so although no one is excluded for not paying, some may be practically excluded by geography. Local public goods serve all the people in a locality at the time, so while there is no exclusion for not paying, a person can practically enjoy the local public goods in only one location at a time.

5.3.2.1.1 *International Public Goods*

The pure public goods with the most universal geographical coverage are *international public goods*, as no inhabitant of this planet is excluded. International public goods include international security, knowledge, the environment, and economic stability (Stiglitz, 2000, p. 734). Knowledge is perhaps the most nonrival of goods, as it is disseminated throughout the entire world. Millions of people simultaneously use innovations, such as fire, the wheel, or double-entry bookkeeping. Such knowledge is also nonexcludable, as people use this knowledge without paying for the privilege. In this way knowledge is probably the purest example of a pure public good. International public goods automatically benefit all people, anywhere on earth, without price.

5.3.2.1.2 *National Public Goods*

National public goods are pure public goods that are nonexcludable, but only within a nation's borders. National public goods include national defense, a legal system, and sometimes even efficient government (Stiglitz, 2000, p. 149). These goods are nonrival and nonexcludable for those within a country. When I am in the United States, I benefit from U.S. national defense, but if I travel to Russia, I temporarily enjoy the benefits of Russian defense spending. These benefits are nonexcludable, but I can only enjoy one country's defense spending at a time. There may even be some positive spillovers that may extend the benefits of national public goods beyond

national borders. For example, nonnuclear countries such as Japan benefited for years from the U.S. nuclear umbrella, although they did not contribute to U.S. defense spending. Yet sometimes the benefits of national public goods are less universal than those of international public goods. For example, defense spending of one country, such as North Korea, may not benefit inhabitants of other countries and may actually make inhabitants of other countries feel less secure. National public goods automatically benefit all people inside a nation, without price.

5.3.2.1.3 *Local Public Goods*

Local public goods are pure public goods as they are nonrival and no one is excluded for not paying. But their benefit is limited to a small geographical area. For example, an open-air concert is a pure public good, but its music can extend at most a couple of hundred yards from the stage. Many of the best classical examples of public goods, such as lighthouses and fireworks, are nonexcludable because we do not have to pay to enjoy them, but to enjoy these goods we will have to travel to them. Transportation costs often make it economically irrational for us to enjoy the benefits of local public goods in distant places. Local public goods are available to all people without price, but people have to come to the good to enjoy it.

International, national, and local public goods are pure public goods, as it is infeasible to exclude nonpayers. Geography may create practical limitations on our ability to take advantage of these goods. The limited geographical benefit area of national public goods does not prevent economists from using national defense as the most commonly cited example of a pure public good. Other classical examples of goods that are completely nonrival and completely nonexcludable, such as lighthouses and fireworks displays, are local public goods. So local public goods are theoretically pure public goods because they are totally nonrival and nonexcludable, despite the practical travel costs some people may incur in coming to use them.

5.3.2.2 Pure Private Goods

At the opposite end of the continuum we find pure private goods, which are completely rival in consumption and for which it is easy to exclude people who do not pay (Bruce, 2001, p. 57). Examples of pure private goods include a stick of chewing gum, a can of soda, a pair of socks, and an earring. Each of these products is rival in consumption, as it can be used by only one person at a time, and each is excludable, as one must pay to enjoy these goods, either at a vending machine or a store. Pure private goods are available only to those who pay the price.

Most economists would also maintain that a pure private good would also have no externalities. An *externality* occurs when a transaction between two parties imposes a cost or confers a benefit on a third party. For example, there are no visible externalities in a person's decision to purchase socks or an earring, because one person's decision to wear socks or an earring imposes no costs and bestows no benefits on other people.

Any externality would violate the rivalry or excludability of a private good. A positive externality violates the assumption of complete rivalry, as some can enjoy without paying. A negative externality violates assumption of complete nonexcludability, as someone can enjoy the goods without paying all the costs. The opposite of private goods, public goods, may be viewed as an extreme case of externalities (Stiglitz, 2000, p. 136).

5.3.2.3 Impure Public Goods

Impure goods occupy the vast area between pure public goods and pure private goods. There are both impure public and impure private goods. The concept of impure public goods is more common, so it is a logical place to start.

Economists have proposed several alternative categories for less-than-pure public goods, not all of which are compatible with each other. Alternatives include "impure public goods"

(Rosen, 2002, p. 56; Stiglitz, 2000, p. 132) “near public goods” (Gwartney and Stroup, 1997, p. 777), “mixed public goods” (Bruce, 2001, p. 68) and mixed cases (Musgrave, 1986, p. 49). Each of these less-than-pure public goods violates, to some degree, the assumptions that public goods are non-excludable or nonrival. Different types of impure public goods include excludable public goods, congestible public goods, and mixed public goods.

5.3.2.3.1 *Excludable Public Goods*

An *excludable public good* is a public good that can be made excludable (Bruce, 2001, p. 68; Hyman 1002, p. 141). A television broadcast signal is a local public good, as it is nonrival and nonexcludable, at least for televisions within about 50 miles of the television transmitter. But that same program can be made excludable by putting the program on cable (Bruce 2001, p. 69). Excludable public goods resemble the toll good category from the simple taxonomy of goods in that both are nonrival but excludable and occupy the corresponding northeast area on the two-dimensional continuum.

One interesting example of an excludable public good is club goods. *Club goods* are non-rival goods that are made available to members only. Some club goods, such as swimming pools maintained by a homeowners association for its members, country clubs (Holcombe 1996, p. 122) or gated communities (Rosen, 2002, p. 475) appear very private. Club goods share some characteristics with public goods, however, as they can be enjoyed jointly by many people, and they are large and require a large number of people to support them.

Some club goods look deceptively like local public goods, and even use the word public or the name of the locality in their name. Some city beaches require a local resident sticker to park in the parking area (Ulbrich, 2003, p. 76). Local public schools almost invariably require residency in the locality. Such residency requirements ensure that use of the school is reserved only for community members. Residency requirements exclude people who have not paid the property tax, either directly as homeowners or indirectly as tenants of landlords

who pay property taxes. The distinguishing characteristic between local public goods and club goods is that local public goods are open to anyone who wants to enjoy them, whereas a conscious effort is made to limit access to club goods to members who pay to support the project. A quick rule of thumb to distinguish club goods from local public goods is that local public goods are available to all, even tourists. Club goods, however, are available only to members.

5.3.2.3.2 *Congestible Public Goods*

Congestion violates the assumption that public goods are nonrival in consumption. A *congestible public good* is a public good that is nonrival under moderate use but becomes congested under heavy use (Ulbrich, 2003, p. 77). With congestion, each additional user imposes costs on the other users (Weimer and Vining, 1999, p. 80; Hyman 2002, p. 139; Bruce, 2001, p. 70). Congested public goods are sometimes also called ambient public goods (Weimer and Vining, 1999, p. 84). A highway is a good example of a congestible public good. During nonpeak hours it resembles a public good, but it may become congested during rush hour.

5.3.2.3.3 *Mixed Public Goods*

Public goods can also be mixed with other types of goods, resulting in an impure good. A common example is mixing radio programs and radio commercials. Radio programs are public goods, as they are nonrival and nonexcludable. From the radio listener's perspective, radio programs are nonrival, as any number of people can listen without interfering with existing listeners. They are also nonexcludable, as anyone with a radio can tune in for free. Radio commercials are clearly private goods as they are both rival and excludable. Radio ads are rival, from the perspective of advertisers. Two radio spots cannot occupy the same time slot. They are also excludable, as a station will not air an ad unless the advertiser pays for the time. A mixed good is created by coupling a good that is private for advertisers with a good that is public to radio

listeners. Advertisers, by purchasing the airtime, indirectly pay for a public good, radio programming.

5.3.2.4 Impure Private Goods

This category is the least commonly used. Some economists (Hyman, 2002, p. 141) consider goods that are neither pure public nor pure private as impure public goods. But impure private goods have more similarities to pure private goods. Pure private goods are both totally rival in consumption and totally excludable. A private good becomes impure when either of these two characteristics is compromised.

5.3.2.4.1 *Private Goods with Externalities*

Externalities occur whenever a transaction by two parties either imposes costs or confers benefits on a third party who is not a participant in the original transaction. In the case of a positive externality, the leakage of benefits to a third party violates the complete rivalry assumption of a pure private good.

In the case of a negative externality, a cost is imposed on a third party, who is not a party to the original transaction. Thus the parties to the transaction do not pay the full cost, violating the complete excludability assumption of pure private goods. Negative externalities are a justification for government intervention, either to control the negative impact of the externality on injured parties or to compensate them for their injuries. Therefore a transaction with externalities is no longer purely private.

5.3.2.4.2 *Mixed Private Goods*

Mixed private goods are similar to mixed public goods, except they start out as private goods. They may differ from private goods with externalities when the externality is an intended part of the good. For example, the international campaign to eradicate smallpox consisted of many individual vaccinations, which are private goods as each vaccine dose is rival and excludable. But an important outcome of universal vaccination

was the eradication of the disease (Stiglitz, 2000), which is a public good as it is nonrival and nonexcludable.

One can see the progression from a pure private good, to a private good with externalities, to a mixed private good, among different types of vaccinations. A vaccination for a non-contagious disease, such as tetanus, is a pure private good. It is rival in consumption, as each customer requires one dose. It is excludable, as it is feasible to exclude people who do not pay by refusing to administer the vaccination. There are no benefits to parties not receiving the vaccine. A tetanus shot is, therefore, a pure private good.

A vaccination for a contagious disease is still a private good, but it has externalities for people not receiving the vaccine, in the reduced incidence of the disease, reduced exposure to the disease, and reduced risk of contracting the disease. A flu shot would have a small externality, as the flu is a common ailment to which third parties will probably still be exposed, and the consequences of exposure are usually not serious. Therefore, use of a flu vaccine is left to the discretion of individuals.

The eradication of smallpox, while accomplished with rival and excludable individual vaccinations, is a mixed good, for which the public good is an integral part. Most of the benefit comes to subsequent generations, the members of which have not been vaccinated. The administration of the vaccine was therefore not left to individual discretion, which instead was subsidized and universally administered worldwide.

5.3.2.4.3 *Publicly Provided Private Goods*

In rare cases governments provide goods that are essentially private goods to their citizens (Stiglitz, 2000, p. 136). Housing is an example. Housing is a very private and in most cases a pure private good. It is rival in consumption, as the enjoyment a tenant would receive from his or her apartment would be greatly diminished if members of the general public appeared in the living room, kitchen, bedroom, or bath. Housing is also excludable. The doors have locks, and people do not receive keys to those locks unless they pay rent. So while housing is

clearly a private good, some communities provide public housing with subsidized rents to those who cannot otherwise afford housing. Public involvement in a private good such as housing is done under the premise that the public also derives some value or utility from knowing the least fortunate of its citizens have the basic necessities. An alternative way to meet the same need is for government to subsidize the rent to privately-owned housing to those who otherwise could not afford roofs over their heads.

As we see, the impure goods are impure because they have characteristics of more than one type of good. Some of these impure goods may resemble more than one type of impure good. We differentiate pure public goods from these impure categories so we can use the pure examples when thinking about the challenges of providing public goods in a market economy.

5.4 THE CHALLENGE OF PROVIDING PUBLIC GOODS

Although public goods are needed in market economies, the provision of those public goods presents difficult challenges to those markets. Markets are very efficient at producing private goods because such goods are both rival in consumption and excludable. Markets face enormous difficulties allocating resources to the production of public goods because public goods lack both these qualities. One way to understand the difficulty markets face in producing pure public goods is to identify the mechanisms that allow the market to effectively produce pure private goods and to identify how differences between pure private and pure public goods short-circuit those market mechanisms.

5.4.1 Markets Use Rivalry and Excludability to Allocate Goods

Rivalry and excludability are critical for market provision of goods for several reasons. Rivalry allows producers to accurately gauge demand for their products, and excludability

allows producers to get paid for their goods. These features, along with the assumption of rational self-interest, cause the efficient and possibly even the optimal allocation of existing resources.

Adam Smith, in his classic book *The Wealth of Nations* (1776), suggests that markets act as an invisible hand to coordinate the actions of individuals, each voluntarily acting in his or her own self-interest, to serve the common good. Yet we do not rely on the benevolence of the butcher or the baker to provide food for our tables, but on their self-interest (Smith, 1991, p. 20). A baker, wanting to earn his own living, will bake the goods that people want.

5.4.1.1 Rivalry Causes Customers to Reveal Preferences

Each individual has little choice but to reveal his or her own preferences when purchasing rival goods. Bread is a good example of a good that is rival in consumption. A slice of bread eaten by one person is not available for enjoyment by any other person. Nor can one person vicariously enjoy the taste of bread eaten by another. Therefore, each individual faces incentives to make his or her preferences transparent by buying the kind of bread he or she really likes. The baker, looking out for his or her own self-interest, in turn has an incentive to bake the kind of bread the customers want. Thus the baker shifts resources from the production of breads that do not sell well to the production of breads that customers want.

5.4.1.2 Excludability Allows Providers of Goods to Earn a Living

Excludability removes the opportunity for consumers to use goods without paying. The incentives to customers to pay, or risk going without, makes it possible for the producers of excludable goods to recover their costs and be paid for their efforts. If bakers were not paid, they could not afford to buy wheat, yeast, and other ingredients to make bread. They

would also not be able to afford to devote so much time to bread baking because they must support their families. While a baker may have chosen that profession due to the love of baking, it is rational self-interest and the reasonable expectation of being paid for baked goods that keep him or her at the oven. If not for the excludability, the production of bread would soon cease.

5.4.1.3 Market Mechanisms Improve Welfare

Adam Smith suggested that markets act as an invisible hand to guide people to voluntarily cooperate. Rational self-interest creates an incentive to serve the needs of others.

5.4.1.3.1 *People Make Only Those Trades That Make Them Better Off*

Because market transactions are voluntary and people act out of rational self interest, they will make those trades they believe will make them better off.

5.4.1.3.2 *People Trade Until They Reach Pareto Efficiency*

People have an incentive to continue trading until there are no more possible trades that make them better off. Economists generally assume individuals are rational economic actors who try to maximize their well-being, or utility, by making trades in markets. Trades in the free market are voluntary, so individuals also avoid trades that reduce their welfare. In theory, individuals will continue to trade until no more trades that will make them better off exist. When all mutually beneficial trades are completed, a free market will reach Pareto efficiency. *Pareto efficiency* is an ideal distribution of resources in a market economy and is reached when no remaining trades remain which would make anyone better off, without making at least one person worse off (Due and Friedlander, 1973, p. 2). Markets effectively coordinate the voluntary activities of free individuals to increase total welfare.

5.4.1.4 Price Incentives Efficiently Allocate Resources

Markets and the price mechanisms of supply and demand tend to serve several important functions in efficiently allocating goods. Among these are allocating goods to those who want them most, driving prices to their lowest sustainable level, and preventing the over- or undersupply of goods.

5.4.1.4.1 *Prices Allocate Goods to Those Who Want Them Most*

Markets place goods in the hands of the people who most want them. If one person highly values a good and is willing to pay the market price, that individual is free to purchase the good. On the other hand, if another person places a lower value on the same good than the market price, that individual is not compelled to buy it. Thus markets place goods in the hands of those who value them most. Individuals, in an effort to maximize utility, make those purchases that most increase their utility, at the lowest cost.

5.4.1.4.2 *Competition Limits Prices*

Individuals, in their role as producers, seek to increase their own income by producing those products that people want. Competition by other potential producers limits prices to their natural price. The *natural price* is the average price of a good sold in competitive markets, the lowest price at which producers can afford to sell the good for a long time, and the level to which prices will settle in the long run (Smith, 1991, p. 59). If the price becomes too high, competitors, seeking to maximize their own welfare, will begin producing the same product, and the increase in supply will drive prices down.

5.4.1.4.3 *Prices Prevent Overallocation or Underallocation of Resources*

The prices producers receive help allocate resources to where they are needed most. Prices fluctuate to prevent over- or

underallocation of resources to the production of traded goods. For example, if more bread is produced than people want, it cannot all be sold at the natural price. To sell all the bread before it spoils, the price will have to be reduced. As prices fall, the reduced price will encourage producers to avoid taking a loss on producing bread by shifting their resources to the production of alternative goods that are needed more and that will allow them to recover their full costs (Smith, 1991, p. 60). If, however, there is less bread than people desire, some customers will be temporarily willing to pay more than the natural price. Producers, motivated by self-interest, will shift resources to the production of bread. As a result, the supply of bread, and its natural price, will be restored.

5.4.2 Difficulties Providing Public Goods through Markets

Since pure public goods and pure private goods are polar opposites, the reasons that markets are so effective at providing private goods are the same reasons they are ineffective at providing public goods.

5.4.2.1 Nonrivalry Creates Incentives for Individuals to Hide Their True Preferences

People can enjoy a nonrival good produced for their neighbors. Therefore, a person may have an incentive not to voice his or her true appreciation for nonrival goods funded by voluntary donations, such as music in the park, in order to avoid being asked to contribute. Therefore, the demand for public goods may be hidden, and voluntary market organizations may decide not to attempt to offer public goods they perceive as unwanted.

5.4.2.2 Nonexcludability Creates Incentives Not to Contribute to Public Goods

The characteristic that public goods are nonexcludable allows people to enjoy them without paying. This creates a perverse

incentive to become a free rider. A *free rider* is an individual who enjoys a good without paying.

5.4.2.2.1 *Free Rider as a Flaw in Human Nature*

The free rider phenomenon may be seen as a flaw in human nature. David Hume, in his *Treatise on Human Nature*, observed the free rider phenomenon in the early 1700s. He observed that two neighbors might drain a meadow they hold in common because they perceive their failure to participate would result in the cancellation of the whole project. But it is impossible to get a large number of people to participate in a similar project, as each seek pretext to save themselves the trouble and expense and would rather lay the burden on others (Hume {1739} 2000, p. 345; Musgrave 1999b, p. 38–39).

5.4.2.2.2 *Free Riders as Rational Utility Maximizers*

Being a free rider is also consistent with the economist's picture of rational economic man as a utility-maximizing individual. It is in the individual's best interest to look for the combination of public and private goods that will maximize his or her welfare. Since each dollar an individual spends on public goods is one less dollar available for private goods, there is a disincentive to contribute one's fair share to public goods. Consider the simplified example of an economy in which there are only two goods: food and defense. Food is a private good, and defense, a public good. Individuals have two options, to spend a majority of their income on food or to spend a majority on defense. If an individual contributed most of his or her income to the public good, national defense, that person's family would experience a noticeable reduction in their diet but an imperceptible improvement in the level of national defense. However, if the same individual spent a majority of his or her income on food, higher food spending would make a noticeable improvement in the family's diet but only an imperceptible reduction in national security. On the individual level, it would appear rational to contribute less

than one's fair share to national defense. Each individual thus faces a temptation to become a free rider and rely on the contributions of others for public goods such as national defense. On the collective level, millions of individuals choosing to be free riders would lead to a serious underprovision of public goods.

5.4.2.2.3 *Free Riders Prevent Pareto Efficiency, as Public Goods Are Underprovided*

Pareto efficiency is not reached with the voluntary funding of public goods because public goods would be underfunded, if they were provided at all. Society as a whole would be better off by trading some of its private goods for a greater level of public goods, but no individual has the incentive to do so. There is nothing any one individual can do, acting individually in a market, to overcome the structural incentive to all other citizens to be free riders. Therefore, attempts to provide pure public goods through market mechanisms are doomed to failure by structural problems caused by the nonrivalry and nonexcludability of pure public goods.

5.4.2.3 Alternatives for Provision of Public Goods

5.4.2.3.1 *Voluntary Provision*

One alternative way to provide public goods is to rely on voluntary provision and tolerate the underprovision of public goods. Underprovision would be more tolerable for nonessential services than for essential core functions. It would also be easier to get donations for impure public goods than pure public goods. Nonprofit organizations often solicit donations to provide public goods. One example is public television. Public television is provided whether or not all individuals contribute. But public television also demonstrates the weaknesses of voluntary provision. The time and effort devoted to pledge drives and the interruption of regular programming

illustrate the high transaction costs required to prompt people to voluntarily contribute to a public good. Furthermore, pledge drives alone are insufficient to cover the cost of programming. Corporate donors also sponsor programs, not in exchange for commercials exactly like those seen on commercial television, but for a spot in which the company name and an announcement of what good or service they produce, is tastefully presented. Voluntary provision carries the risk of underprovision or no provision in some areas.

5.4.2.3.2 *Mixing Goods*

The attempt at voluntary provision may mutate, as in the previous example, to the provision of mixed goods. Radio signals are a public good, as they are nonexcludable and nonrival. Radio stations became commercially viable after 1922 when a New York radio station, WEAf, allowed a company to tell about its real estate in exchange for money. Thus a private good, a commercial, is mixed with a public good, radio programming, to create a commercially viable mixed good.

This causes some reduction in the public good. The radio signal is no longer a pure public good from the perspective of the radio listener. The broadcast is no longer totally free, as the radio listener pays for the broadcast with time, through interruptions in the normal programming during which listeners are exposed to commercial announcements. In a similar way, free Web sites become mixed goods when combined with advertising, sometimes in the form of annoying pop-up ads, which interfere with the user's use of the site.

5.4.2.3.3 *User Fees*

A more transparent way to collect fees is to, whenever possible, use a user fee. If the potential payment is greater than the transaction cost, it is reasonable to make the effort to exclude (Ulbrich, 2003, p. 68). Some nearly pure public goods, such as fire protection, are provided with fees.

5.4.2.3.3.1 *User Fees and Pure Public Goods.* Fire protection is a nearly pure public good, as it is nearly completely

nonrival, as the same department protects all the community. Only in the rare instance that there is more than one fire would rivalry arise, as the number of trucks at one fire could reduce the number available at another. The service is to some degree nonexcludable, as one downtown building cannot burn to the ground without endangering all those around it. Fees may be collected from residents for fire protection by selling fire numbers resembling license plates for citizens to visibly display on their property. Fees can also be charged for the costs of putting out a fire after the fire is extinguished.

The use of fees can also result in the underprovision of public goods because the user fee will exceed the marginal cost, which is zero for a pure public good, and near zero for a near public good. In economic theory, the most efficient level of production is when marginal revenue equals marginal cost. The mismatch between the price and the cost suggests economic inefficiency.

An example can help illustrate why it might be Pareto inefficient to charge more than marginal cost. Again we will use the example of fire protection. The fixed costs in creating the capacity to respond to a fire, such as building a fire station and purchasing fire trucks and equipment, are very high. The additional cost to respond to a fire alarm is comparatively small. The marginal cost of protecting one more home is zero or close to zero. Most years there will no fire calls to that house. Even in those rare years that a fire truck responds to an alarm, the truck would probably drive to the site in response to a call before the fire department can determine whether the homeowner has purchased a fire number. If buildings are close together, the department may need to put out the fire to protect neighboring buildings, whether or not the owner has paid (Stiglitz 2000, p. 131). Thus the marginal cost of protecting one more building if not zero, is near zero.

Charging a price for a good that is nonrival prevents some people from enjoying the good, even though the good may have no marginal cost (Stiglitz, 2000, p. 129). When a citizen forgoes fire protection, the total utility in the community is diminished. If many citizens forgo fire protection, the high fixed costs are spread over fewer citizens, driving unit

costs for those who do purchase fire protection much higher. Therefore, the mismatch between the price and the marginal cost will increase, and even more citizens will be tempted to forgo fire protection. Imagine if it cost \$100,000 to protect the half of the town that paid for fire protection and \$101,000 to protect the entire town. The remaining citizens would probably gladly pay the difference to expand fire protection. Charging a fee is a lose–lose proposition. Many citizens lose fire protection, while the fire department loses a little revenue.

5.4.2.3.3.2 User Fees and Congestible Public Goods. Fees may increase efficiency for congestible public goods. This occurs whenever the fee charged for a congestible public good approximates the cost that one individual's use of the good imposes on others. Fees have the following effects:

- *Potential advantages of fees.* Imagine there are 100 drivers on a busy bridge between two cities. Each additional vehicle on the bridge increases the time required by all other drivers to cross the bridge by 6 seconds. Thus each driver entering the road will impose a total cost of 10 minutes on other drivers. If the average driver earns \$12 an hour, 10 minutes of time is worth about \$2. On a free public bridge, a person who values the trip across the bridge at only \$1 will use the bridge because it is free and makes the individual better off. The individual does not consider the externalities of his or her action, which in this case is the cost imposed on others. If the bridge were a toll bridge, however, and the toll were set at the marginal cost of using the bridge, which is \$2 worth of time, the person who only values the trip across the bridge at \$1 would not use the bridge, saving the time of others and increasing the overall welfare of the community.
- *Potential negative externalities introduced by fee process.* The collection of tolls can sometimes impose additional costs. Collecting tolls to compensate for congestion may increase that very congestion (Stiglitz, 2000, p. 135). When Adam Smith recommended financing bridges through the use of tolls, people traveled

slowly using horses and wagons, and the collection of the toll was a minor inconvenience. The advent of the automobile, and the disruption caused by slowing from a high speed to a stop to pay a toll, may in itself cause serious congestion. The use of future technology may allow computer chips to identify cars and charge tolls as cars pass, without the need to stop. (Ulbrich, 2003, p. 68) similar to the passes used on the east coast. The feasibility of toll collection varies with technological advancement.

5.4.2.3.4 *Public Provision through Tax Revenue*

Market structures are unable to reveal citizen preferences for public goods because of game playing. People face perverse incentives to deny their true preferences and rely on others to provide the desired public goods. For example, if national defense were supplied through voluntary contributions, the number of people claiming to be pacifists and refusing to contribute for conscience reasons would probably rise. This is a type of market failure, as markets are unable to deliver the level of public goods that citizens feel will maximize their welfare. If market mechanisms fail to reveal true preferences, then a political process can be substituted for market mechanisms (Musgrave, 1959, p. 10; Stiglitz, 2000, p. 168). Voting eliminates the temptation to hide one's true preferences, as the voter knows the election outcome will be binding on all people.

The median voter model, although imperfect, might be a closer approximation of a Pareto-efficient allocation of public goods than is available though the game playing associated with free riders and voluntary contributions.

The public provision of pure public goods through tax revenue looks theoretically more Pareto efficient than voluntary provision, as marginal cost equals marginal revenue. For example, the marginal cost of a new citizen accepting fire protection from the city is near zero and so is the price. Therefore, more people avail themselves of fire protection. The

high fixed cost of fire protection is spread over many more people, and the cost of providing fire protection per person is greatly reduced. The advantages and disadvantages of this form of provision are as follows:

- *Allocation advantages of public provision.* The Pareto efficiency of the public provision of public goods is most obvious in the case of pure public goods. An outdoor concert is a good example of a pure public good. There is no additional cost in allowing one more person to listen to an outdoor concert. If the concert is moved indoors and admission charged, it may reduce total welfare by discouraging some people from enjoying the concert. Since the cost of the concert is fixed and it costs nothing for an additional person to listen, and since each additional listener derives some enjoyment from the concert, total utility is increased as additional listeners come to the concert. Thus not charging admission maximizes total utility, and the result of not charging approximates Pareto efficiency.
- *Problems related with the public provision of public goods.* Public provision may solve underprovision of public goods, but it may introduce other problems. Problems may include overprovision, the tragedy of the commons, and separate negative consequences associated with paying for public goods.
- *Danger of overprovision.* Public provision may lead to overprovision of public goods. The median voter model, where voters have an opportunity to vote on individual expenditures, is rarely used, and then in rare cases of direct democracy where expenditures are voted on in annual town meetings. In most other cases, people elect representatives who determine expenditure levels. President Eisenhower's Farewell Address (1961) warned about the military-industrial complex, as an example of a constellation of interests that had undue influence and caused excessive spending in some programs that distorted both the balance of spending between programs, and the

balance between public and private spending. Anthony Downs (1967) theorized that all public officials face incentives to maximize their budgets and gather around them a constellation of interests that would support their claims in the legislative process. Mancur Olson (1971) examined the incentives of public officials, interest groups, and the general public. He suggested that individuals who receive concentrated benefits, such as public officials and their suppliers, have a big incentive to lobby for increased expenditures. Members of the general public, however, have dispersed costs and do not find it worthwhile to lobby to reduce those expenditures. Therefore, a structural imbalance in the public provision system causing overexpenditure exists, just as a structural imbalance exists in the voluntary provision of public goods causing underexpenditure.

- *Loss of utility due to the tax.* Using taxes to finance pure public goods will allow optimal use of pure public goods. The separate process of paying for the public goods and the process of collecting taxes may, however, impose costs that reduce total welfare. There are two areas of reduced welfare, the tax itself and the excess burden caused by the tax. To the degree an efficient amount of the public good is provided, the cost of the tax is compensated by the benefit of the good. Excess burden is another matter. *Excess burden* is the loss of utility in addition to the cost of the tax caused by the change in behavior in response to the tax.
- *Excess burden.* Excess burden can best be illustrated by an example. Imagine a worker prefers to work overtime before the imposition of an income tax. That is because the money earned increased his utility more than the loss of free time. If a tax were imposed on income, the individual would have to recalculate whether the additional pay is still worth the loss of free time. If the worker decides to no longer work

overtime, the tax distorts his behavior. This is a lose–lose proposition, as not only does the worker lose the income he would have earned in the pretax example, but furthermore no tax money is collected. Excess burden causes both taxpayer and the state to lose because the tax changes behavior.

The tax system can also reduce welfare in other ways. One way to avoid excess burden is to use taxes that are not contingent on behavior, such as a head tax. A *head tax* is a uniform tax, where the same amount is required from all individuals. The disadvantage of such taxes that are not contingent on behavior is that they are regressive because they consume a bigger percentage of the income of the poor. Theoretically, the person with fewer dollars will value each of them more highly, so the head tax causes a great reduction in the utility of the poorest individuals. The few dollars saved by charging all individuals the same amount means less to the wealthy. Thus a regressive tax would reduce the utility of the poor to such a great extent that total utility is diminished. Therefore, while the provision of pure public goods through tax revenue is most efficient, the process of collecting the taxes may introduce its own inefficiencies.

5.5 CONCLUSION

Public goods are both nonrival in consumption and nonexcludable. Perhaps the purest example of a public good is national defense. Once public goods are provided for one person, they are available for all, and it is difficult, if not impossible, to exclude people who do not contribute from enjoying the good. Nonrivalry and nonexcludability create major difficulties to attempts to provide public goods through voluntary market transactions. People face the temptation to be free riders and enjoy the goods paid for by others. Therefore almost all societies, even market economies, opt for public provision of public goods through tax revenue.

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6

Provision and Production of Public Goods

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We begin this chapter with a common question in economics and public finance: Which goods and services should the public sector provide, and in what quantities? To address this question, this chapter focuses on defining the issues at hand: what a good is, what services are, what a public sector good is, and what quantities of these goods and services should be provided.

6.1 DEFINING GOODS

Let us begin with the one of the most important concepts: What is a good? “Goods” can mean several things. To begin

with, we can see that a good can describe tangible* objects that have some use/value: a pencil I own is a private good; a highway built with governmental funds and usable by all is a public good. We can also define a good theoretically as “that which is, or is considered to be, good.” For instance, the fact that we feel secure and safe in our neighborhoods may be a public good; that we spent an evening in lively conversation together might be an instance of a private good. In these cases, the good in question is clearly not an object with use/value. In economic terms we tend to see goods as those that are tangible and contain the properties of use/value. Thus, for purposes of this chapter, we will define a good as a tangible object with the property of having some use/value.

6.2 WHAT IS A SERVICE?

Let us now consider a second concept: What is a service? There is no consensus on the definition of a service. To some extent, a service can be defined by considering what it is not. Services are neither the same as the organization (or organizations) that delivers the service, nor should they be confused with documents that either describe the service (e.g., Web pages) or are used in transacting the service (e.g., application forms). We might be able to clarify a definition of a service through the defining of a public service. A public service is a service necessary for the common, as opposed to individual, good. Some examples include policing, fire protection, health care, national defense, and road and sewer construction.

None of these public services can be provided effectively or entirely by private business on a profit-making basis without impacting their purpose or mission. As an example, let us look at the public provision of sewerage. If the sewage disposal service were provided wholly by a private business entity, each individual would be required to pay for the service. However, the lack of sewage disposal by those who could not afford to buy it would menace the health of all.

* A good that has physical substance or form.

6.3 WHAT ARE PUBLIC GOODS?

Now that we have both a good and a service defined, we can understand the provision and production of public goods. To begin our discussion about the provision of public goods, we need to define a pure public good. A pure public good has two properties. The first property is that it is nonrival in consumption. Nonrival means that once a good is provided, the additional cost of another individual consuming the good is zero. The most commonly used example is a lighthouse. Once the initial costs associated with illuminating the beacon of light are incurred, an additional ship using the beacon of light for guidance does not increase the cost of illumination. Intuitively, my consumption of the service provided by the lighthouse does not diminish your ability to use the services provided by the lighthouse. This stands in sharp contrast to a private good, such as pencils. It costs additional resources to provide you with an additional pencil.

The second property of a pure public good is that it is nonexclusionary. The notion of exclusion addresses the question of whether it is possible to exclude any individual from the benefits of the public good without incurring great costs. Returning to our lighthouse example, it is not feasible, practical, or cost efficient to exclude a ship that is sailing past the lighthouse from using the benefits provided by the lighthouse. In this way, we can see that if exclusion is impossible, then the use of a price system is impossible because individuals have no incentive to pay. This is in direct contrast to a private good that enjoys the property of excludability; individuals can be excluded from enjoying the use of a pencil unless they pay for it.

In general, we can say that private goods possess the properties of rivalry in consumption and excludability, while public goods are characterized as nonrival in consumption and nonexcludable. Goods that are both nonrival in consumption and for which exclusion is impossible are pure public goods. To extend the discussion on public goods, we will examine the properties of nonrivalry in consumption and nonexclusion in greater detail. This detail will provide the backdrop for why these two properties can lead to market failures,

providing us with a rationale for the public provision of public goods.

6.4 PUBLIC GOODS AND MARKET FAILURE

To isolate the roles that excludability and rivalry in consumption play in the provision of goods, we consider instances in which a good has one property but not the other. With some goods, consumption is nonrival but excludability is possible. As an example, the marginal cost of an additional individual turning on his or her television set and watching a show is zero; one of my favorite shows is the social satire, *The Simpsons*, but regardless of how many times I watch the show, it does not detract from the number of times you can watch the show. Thus, the good is nonrival. However, exclusion in the good of television is possible as we see in Pay-Per-View TV through the scrambling of signals.

The television example leads us to an interesting inefficiency. Since the good is nonrival, there is no motivation for exclusion from the standpoint of economic efficiency. Charging a price for a nonrival good does prevent some individuals from enjoying the good; however, as noted earlier, their consumption of the good would have no marginal cost. Therefore, when we charge for a nonrival good, this inefficient behavior results in the underproduction of the good. This is visible when we consider the fact that the marginal* benefit is positive, while the marginal cost of an additional person watching the TV show is zero. The underconsumption of the show is a form of inefficiency found when we consider the idea that the marginal cost is zero, but if we charge a price for the TV show, fewer individuals will watch the TV show (underconsumption).

The quandary is that if there is no charge for the nonrival good, there is no incentive to provide the good. This case leads to another inefficiency — the undersupply of the good. To understand this undersupply occurrence think of the market economy. If you are the producer of a TV show and there is

* Marginal analysis is the study of costs or benefits in terms of the effects that would occur if the costs or benefits were changed by a small amount.

no charge to the individuals watching the show, would you spend your money producing the show? The underconsumption and undersupply of the nonrival good are two basic forms of market failure associated with public goods. These are the results of nonrival goods: exclusion is not desirable due to the resulting underconsumption, and without exclusion, there is a problem with undersupply.

6.5 PROVISION OF PUBLIC GOODS

To derive the conditions in which efficient provision of a public good is obtained, let us review private good production. Assume a society in which there are two individuals, Hanzel and Gretal. There are two private goods, gingerbread cookies and bread crumbs. In Figure 6.1a, the quantity of cookies (c) is measured on the horizontal axis, and the price per cookie (P_c) on the vertical axis. Hanzel's demand curve for cookies is denoted as D_c^H . The demand curve indicates the quantity of cookies that Hanzel would be willing to consume at each price, *ceteris paribus*. Similarly, D_c^G in Figure 6.1b is Gretal's demand curve for cookies.

To derive the market demand curve for cookies, we simply add together the number of cookies each person demands at each price. In Figure 6.1a, at a price of \$2, Hanzel demands one cookie, the horizontal distance between D_c^H and the vertical

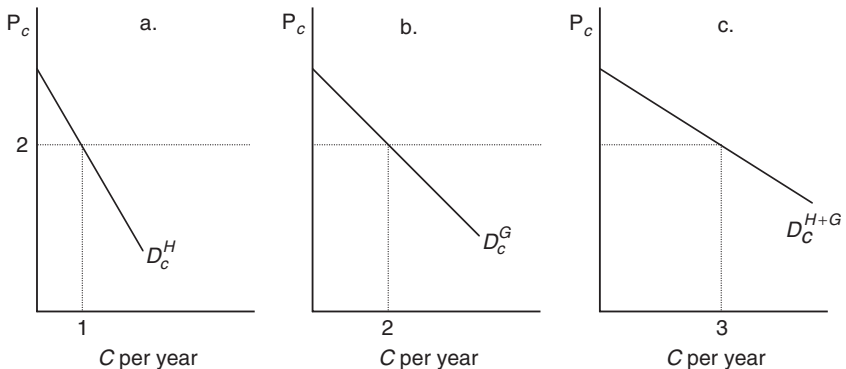


Figure 6.1 Horizontal summation of demand curves.

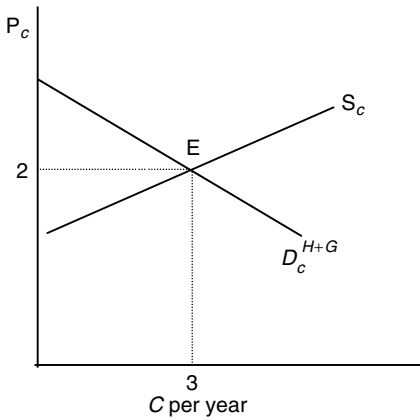


Figure 6.2 Efficient provision of a private good.

axis. Gretal's demand for cookies at a price of \$2 is shown in Figure 6.1b. The total quantity demanded at the \$2 price is Hanzel's and Gretal's demand summated. The total quantity demanded is therefore three cookies, labeled D_c^{H+G} in Figure 6.1c.

As we have just shown, the point at which price is \$2 and quantity demanded is three lies on the market demand curve. In this way, finding the market demand at a given price on the vertical axis involves the summation of the horizontal distance between each of the private demand curves. This process is referred to as horizontal summation.

To explore the efficient provision of a private good, we need to superimpose Figure 6.1c on the market supply curve, labeled S_c , as illustrated in Figure 6.2. Equilibrium* in the market, noted as E , is the price at which supply and demand are equal. This occurs at the price of \$2 for cookies with demand equal to three cookies. At this price, as we illustrated in Figure 6.1, Hanzel is supplied the one cookie he demands while Gretal is supplied the two cookies she demands. Importantly, there is no reason to expect that Hanzel's and Gretal's

* The point at which the marginal benefit and the marginal cost both equal the price of the product. Thus, the marginal benefit equals the marginal cost, which is precisely the condition required for economic efficiency.

consumption levels are equal. Differences in taste, income, and other characteristics affect the individual demand for cookies from both Hanzel and Gretal.

The equilibrium in Figure 6.2 has an important property: the allocation of cookies is Pareto efficient.* Let us explore Pareto efficiency further. In consumer theory, if Gretal is a utility-maximizing individual, she will set her marginal rate of substitution** of cookies for bread crumbs (MRS_{cb}) equal to the price of cookies (P_c) divided by the price of bread crumbs (P_b) or $MRS_{cb} = P_c/P_b$. Since only relative prices impact rational choice, the price of bread crumbs can be simply set at $P_b = \$1$. This allows simplification in the mathematics without having any negative impact on the derivation of utility maximization by reducing the condition for utility maximization to $MRS_{cb} = P_c$. The price of cookies therefore measures the rate at which Gretal is willing to substitute cookies for bread crumbs. Gretal's demand curve for cookies (D_c^G) now shows the maximum price per cookie that she would pay at each level of cookie consumption. In this way, the demand curve also shows the MRS_{cb} at each level of cookie consumption. Similarly, we could compute Hanzel's MRS_{cb} using D_c^H .

Now let us take a look at the supply curve, S_c . This curve shows how the marginal rate of transformation of cookies for bread crumbs (MRT_{cb}) varies with cookie production.*** As shown in Figure 6.2, Hanzel and Gretal both set MRS_{cb} equal

* Pareto efficiency is the condition in which a resource allocation has the property that no one can be made better off without someone being made worse off. This was named after the Italian economist and sociologist Vilfredo Pareto (1848–1923). This is what economists normally mean when they talk about efficiency.

** This is the rate at which an individual needs to substitute one commodity for another in order to maintain constant total utility from the commodities taken together.

*** This can be demonstrated if we remember that under competition firms produce up to the point in which price equals marginal cost. In this way the supply curve S_c shows the marginal cost of each level of cookie production. In giving consideration to the role of welfare economics, $MRT_{cb} = MC_c/MC_b$. Because $P_b = \$1$ and price equals marginal cost, then $MC_b = \$1$, and $MRT_{cb} = MC_c$. Thus, we identify the marginal rate of transformation with marginal cost, which is the same as the supply curve.

to two, and the producer also sets MRT_{cb} equal to two. As a consequence, at equilibrium:

$$MRS_{cb}^{Hanzel} = MRS_{cb}^{Gretal} = MRT_{cb} \quad (6.1)$$

The necessary condition for Pareto efficiency is Equation (6.1). With a competitive marketplace that is functioning properly, the Fundamental Theorem of Welfare Economics* assures us that this condition will hold.

Now that we have reviewed the conditions for efficient production of private goods, let us look at the case of public goods.** We will begin by exploring the efficient conditions through intuitive reasoning before deriving them graphically. Let us say that both Hanzel and Gretal enjoy fireworks displays. Hanzel's enjoyment clearly does not diminish Gretal's enjoyment. We can say that fireworks displays are a public good. We know that individuals do not buy public goods. We can, however, ask a simple question relating the pricing concept for public goods: How much of a public good would be demanded if an individual (either Hanzel or Gretal) had to pay a given amount for each extra unit of the public good (fireworks)? Although this is a hypothetical question, it is not that farfetched, since as expenditures increase on public goods (Fourth of July fireworks displays), so do individuals' taxes. The extra payment that the individual has to make for each additional unit of the public good is termed the tax price. As we proceed, we make the assumption that the government has at its discretion the ability to charge different tax prices to different individuals.

* The Fundamental Theorems of Welfare Economics state that every competitive economy is Pareto efficient and every Pareto-efficient resource allocation can be attained through a competitive market mechanism, with the appropriate initial redistribution.

** Not everything that is good for the public is a public good. For example, education is good for the public. However, an individual benefits from his or her own education. Education is only a public good to the extent that I enjoy "free-rider" benefits when you are educated. If individual incentives are sufficient to achieve the optimal production of something, then it is not a public good.

Let us label this individual tax price as t ; accordingly, for each unit of the public good the individual must pay t . We can state the individual's budget constraint in the following manner:

$$C + tG = Y \quad (6.2)$$

where C is the individual's consumption of private goods, G is the total amount of public goods provided, and Y is the individual's income. The budget constraint is a representation of the combination of goods this individual can purchase, here public and private goods, given that person's income level and tax price. Illustratively, Figure 6.3 shows the budget constraint as the line PP . Looking at the budget constraint, if government expenditures are higher, consumption of private goods decreases. We assume that individuals will maximize utility;* that is, they will obtain the highest utility possible given their budget constraints. Individuals are willing to give up some private goods if they get more public goods. The quantity of private goods a particular individual is willing to give up to get an extra unit of public goods is that person's marginal rate of substitution. As the individual receives more public goods, the amount of private goods he or she is willing to forego to receive an extra unit of public goods becomes smaller; that is, the individual has a diminishing marginal rate of substitution. Graphically, the marginal rate of substitution is the slope of the indifference curve. As a person consumes more of public goods and less of private goods, the indifference curve becomes flatter.

The highest level of utility for an individual, utility maximization, is the point of tangency between the individual's indifference curve and the budget constraint, denoted in

* Economists sometimes refer to the benefits an individual gets from consumption as the utility that person receives from the combination of goods he or she consumes. The concept of utility is only a useful way of thinking about the benefits that an individual gets from consumption. There is no way of measuring utility (other than indirectly through willingness to pay) since we cannot ascertain what "utility" an individual derives from eating a cookie or listening to the radio.

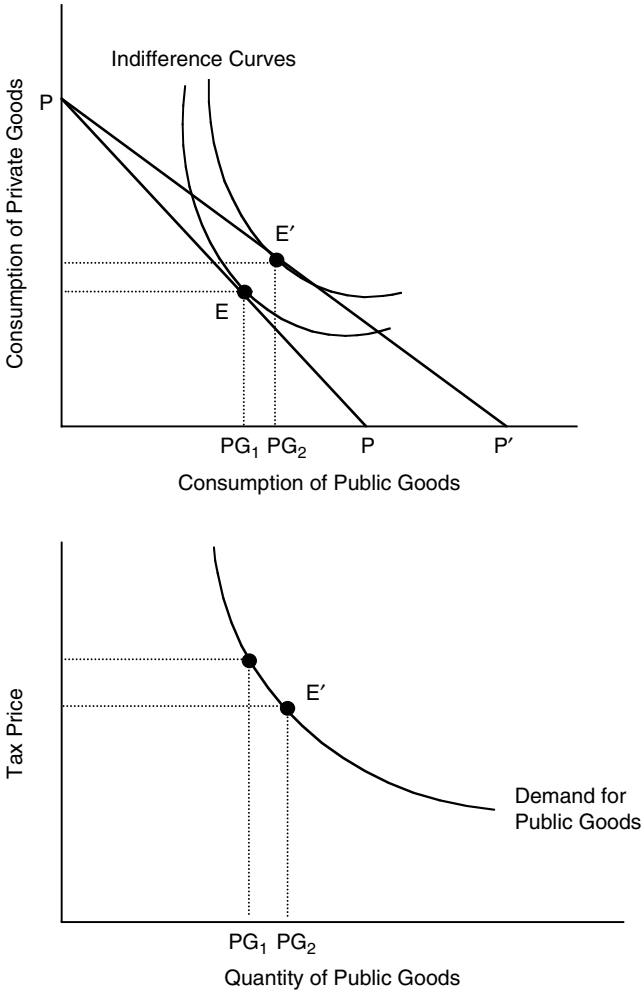


Figure 6.3 Individual demand curve for public goods.

Figure 6.3 as E. This point defines the point at which the slope of the indifference curve and the slope of the budget constraint are identical. Intuitively, the slope of the budget constraint indicates how much in private goods the individual must give up in order to realize a gain of one more unit of public goods, which is simply equal to the individual's tax

price. The slope of the indifference curve tells us how much the individual is willing to give up to receive one more unit of public goods. We can then use this information to arrive at point E, which is the individual's most preferred point and an indicator of the amount that the individual must be willing to give up to receive one more unit of the public good. As illustrated in Figure 6.3, as the price of the public good (the tax price) is lowered, the individual realizes a shift in the budget constraint from PP to PP', with the individual's preferred point moving from E to E'. As shown in Figure 6.3, this leads to an increase in the individual's demand for public goods.

To trace out the demand curve for public goods, we can lower and raise the tax price. The lower graph in Figure 6.3 shows the quantity of public goods demanded at tax prices PG_1 and PG_2 , which correspond to points E and E'. We could continue this process by shifting the budget constraint further.

Now that we have seen the trade-off between public and private goods through the use of a budget constraint, how do we know how many fireworks to display in total? To derive this result, we will say that Hanzel and Gretal really enjoy fireworks; in fact, both prefer more fireworks to fewer fireworks, other things being equal. We know that the fireworks display contains 29 fireworks and to expand the fireworks display costs an additional \$5 per firework. Hanzel says he would be willing to pay an additional \$3 for another firework added to the display. Gretal says that she is willing to pay \$7 for an additional firework added to the display. Is it efficient to increase the number of fireworks in the display?

To assess this efficiency, we must compare the marginal cost to the marginal benefit. In calculating the marginal benefit, we must remember that this is a nonrival good. Both Hanzel and Gretal can consume the 30th firework added to the display. We can say that given the property of nonrivalry in consumption, the marginal benefit of the 30th firework is the sum of what both Hanzel and Gretal are willing to pay, which is \$10. Since we know that the marginal cost of adding a firework is \$5, it pays to add the 30th firework to the display. We can generalize this example by saying that if the sum of

individuals' willingness to pay for an additional unit of the public good is more than the marginal cost, efficiency requires that the additional unit be supplied. If the marginal costs exceed the sum of the marginal benefits to the individuals, the unit should not be supplied. Efficient provision of the public good requires that the sum of each person's marginal valuation (benefit) for the last unit be equal to the marginal cost of producing that unit.

To graphically show this intuitive result, consider Figure 6.4. The figure shows both Hanzel's demand for fireworks (D_f^H) and Gretal's demand for fireworks (D_f^G). The graphical representation shows the price on the vertical axis and the number of fireworks on the horizontal axis. Note that the price that Hanzel is willing to pay (\$3) and the price that Gretal is willing to pay (\$7) for the 30th firework in the display are both indicated on the vertical axis. Recall that to find the collective demand curve for cookies — the private good — we summated the horizontal axis for each person's demand. Horizontal summation allowed Hanzel and Gretal to consume different quantities of cookies at the same price. For the private good, horizontal summation is fine. In the case of a public good, the services made available by the fireworks must be consumed in equal amounts. If Hanzel consumes a 30-firework display, Gretal must also consume a 30-firework display. Thus, it is not practical to try to summate the quantities of a public good that each individual would consume at a given price. So how do we find the collective willingness to pay for the 30th firework — the public good? We add the prices that both Hanzel and Gretal would be willing to pay for the 30th firework. The bottom graph in Figure 6.4 shows their collective demand (D_f^{H+G}) and the summation of the prices each individual was willing to pay (\$10) for the 30th firework to be added to the display.* Vertical summation is appropriate since a pure public good is necessarily provided in the same amount to all

* D_f^{H+G} is not a conventional aggregated (collective) demand schedule since it does not indicate the quantity demanded at each price. However, for uniformity with the private good case, this notation is useful.

individuals. Rationing is not feasible or desirable, since Hanzel's viewing of the public good does not detract from Gretal's enjoyment of the public good (the fireworks display).

Let us think about the public good demand curve. If we remember that this is each person's willingness to pay for the public good, the demand curve can be thought of as a "marginal willingness to pay" curve.* The public good demand curve says how much the person is willing to pay for an extra unit of the public good. In our fireworks example, Hanzel was willing to pay \$3 and Gretal was willing to pay \$7 for the additional firework in the display. The vertical summation is just the sum of their willingness to pay or the total amount that both Hanzel and Gretal together are willing to pay for an additional firework to be added to the fireworks display. This is equivalent to finding the total marginal benefit provided by the additional unit of public good because each point on the demand curve of an individual represents that person's marginal rate of substitution at that level of government expenditure. By adding the demand curves vertically, we simply obtain the sum of the marginal rates of substitution (the total marginal benefit provided by the extra unit of public goods). This result is the collective demand curve illustrated in Figure 6.4.

To assess the efficiency of public goods provision, we can add the supply curve as we did in our illustration of the private good (cookies in Figure 6.2). In Figure 6.5, the supply curve has been added to the collective demand curve illustrated in Figure 6.4. Figure 6.5 shows that for each level of output, the price represents how much of the other goods must be foregone to produce one more unit of public goods. At the output level where the collective demand equals the supply, E^c , the sum of the marginal willingness to pay (sum of the marginal rates of substitution) is specifically equal to the marginal cost of production of the public good (marginal rate of transformation).

* Professor Joseph E. Stiglitz offers this interpretation of the public good demand curve.

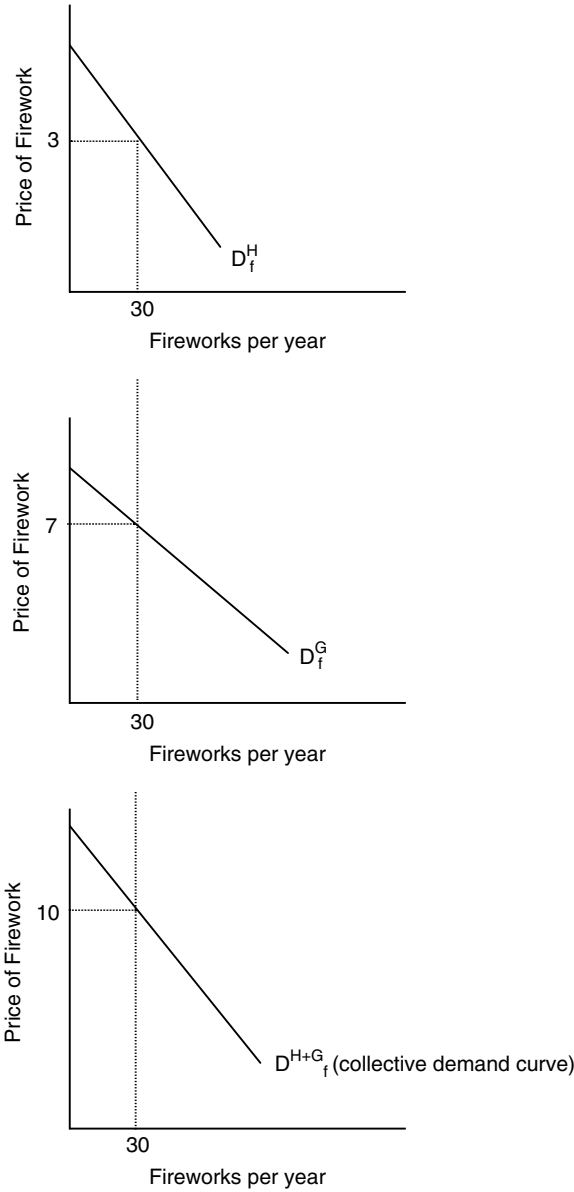


Figure 6.4 Vertical summation of public good demand curves.

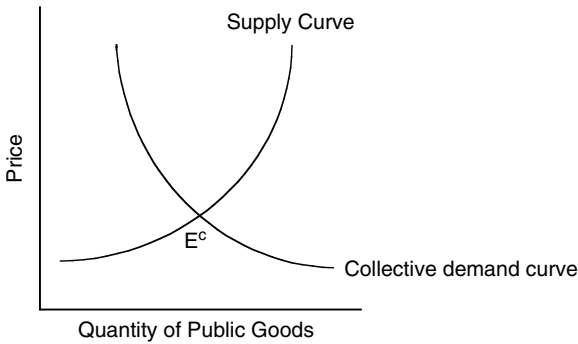


Figure 6.5 Efficient production of public goods. This can be demonstrated if we remember that under competition firms produce up to the point in which price equals marginal cost. In this way the supply curve S_c shows the marginal cost of each level of cookie production. In giving consideration to the role of welfare economics, $MRT_{cb} = MC_c/MC_b$. Because $P_b = \$1$ and price equals marginal cost, then $MC_b = \$1$, and $MRT_{cb} = MC_c$. Thus, we identify the marginal rate of transformation with marginal cost, which is the same as the supply curve.

It is at this point, where the sum of the marginal rates of substitution equals the marginal rate of transformation (the intersection of the collective demand and the supply curve), that a public good is Pareto efficient.

Throughout our discussion of public goods provision, the assumption is that we know Hanzel's and Gretal's demand curve for public goods. This assumption is analogous with our construction of the private demand curve, but some distinctions between the two need to be made. We know that market equilibrium occurs at the point where the demand and supply curves intersect. With the public good equilibrium, we have offered little reasoning as to why the supply of public goods should occur at E^c . We know that if this were the production level of public goods it would be Pareto efficient, but we know very little about how this decision (to supply this level of public goods) would occur. Decisions about the provision of public goods are made by governments and not at the individual level. Therefore, the level of production of the public good is

predicated on a political process and not on the individuals' desire as in private goods production. In a competitive market for private goods, all individuals face the same price, with the amount of consumption (the quantity desired) reflecting individual preferences for that good. This differs from the pure public good since provision of a public good is at the same quantity to all affected individuals, with our hypothesis that each individual faces a different tax price for access to the public good. Intuitively, let us assume that we could tell everyone what his or her share of the costs of public goods would be. We could say that Hanzel is to bear 5% of the costs, while Gretal is to bear 2% of the costs. Thus, Hanzel would pay \$.50 and Gretal would pay \$.20 for an item that costs the government \$10.00. This characterization of the Pareto-efficient level of expenditures on public goods corresponds to a specific distribution of income. But the property of nonexcludability introduces a new problem, the free-rider problem.

6.6 FREE-RIDER PROBLEM

In our discussion of the provision of public goods, we have assumed that we could discover each individual's preference for public goods. We assumed that Hanzel's preference differed from Gretal's, and each individual would disclose his or her preference to the public goods provider (in our case the government). But with public goods provision there is an incentive to hide your true preferences. Let us return to our fireworks display that has the property of nonexcludability. Hanzel may claim that he is not interested in fireworks at all. If he can get Gretal to foot the entire bill for the fireworks display, he can still enjoy the show without assuming any of the costs and have extra money to buy more cookies. The incentive to let other people pay for public goods while you enjoy the benefits is known as the free-rider problem. Of course, Gretal can behave in a similar way to Hanzel.* This

* Samuelson (1955) noted that a person can try to selfishly take a public good in a way that is not possible in the private market due to self-policing and the competitive nature of a private goods market.

“free-riding” incentive may produce the undesirable outcome that the efficient amount of the public good will not be produced. This underproduction of the public good would be due to many individuals free riding instead of contributing their preferred tax amount (price). Therefore, no automatic tendency (such as a pricing mechanism) exists for markets to allocate the efficient amount of public goods.

It must be emphasized that free ridership is not a fact — it is a hypothesis based on the assumption that people will maximize a utility function that depends only on their own consumption of goods. In fact, many examples have been shown in which people will act collectively without government coercion. As an example, most voluntary churches, museums, libraries, and other such facilities raise money through fund drives that maintain the established organization. This idea of money leads us to the next section, in which we will explore the relationship between public good provision, Pareto efficiency, and income distribution.

6.7 INCOME DISTRIBUTION AND PARETO EFFICIENCY

Pareto-efficient resource allocations have infinite variations. Since Pareto-efficient allocations are available on any point on the utility possibilities curve*, the market equilibrium (in the absence of a market failure) is just one of those points. Similarly, there is not a unique Pareto optimal supply of public goods. Point E^c in Figure 6.5 is just one of these Pareto-efficient points, while the other possible points have different distributional implications.

Let us see how the efficient level of public goods depends on the distribution of income in our Hanzel-and-Gretal society. Assume that the government transfers \$10 to Gretal from Hanzel. Normally, this would shift Hanzel’s demand for public goods, regardless of the price, downward while shifting Gretal’s

* A graph showing the maximum amount of one person’s utility given each level of utility attained by another person.

demand upward (recall Figure 6.3). The transfer of income changes the Pareto-efficient level of public goods to a new point. Although we have shifted the Pareto-efficient point through an income distribution change, efficiency still requires that the sum of the marginal rates of substitution equal the marginal rate of transformation. This is equivalent to saying that each point on the utility possibilities curve may be characterized by a different allocation of public goods, but at each point the sum of the marginal rates of substitution must equal the marginal rate of transformation. This leads to an important finding with respect to the efficient level of public goods provision: distributional considerations and the supply of public goods cannot be separated in efficiency considerations. This indicates that public policy, such as changes in income tax structure, must be accompanied by a corresponding change in the efficient level of public goods production.

6.8 IS THE INTERNET A PUBLIC GOOD?

Many of the benefits provided in cyberspace have features similar to public goods. Recall that a public good is defined by two characteristics. First, it is to some degree nonrival: Hanzel's consumption of the good does not reduce the amount available to Gretal. Second, a public good is to some degree nonexcludable in that it is difficult or impossible to exclude individuals from benefiting from the good: Hanzel receives the benefits of a national defense system regardless of whether he pays taxes.

Although everyone in a group may be made better off by the provision of a public good, that in no way guarantees that it will be produced. Since excluding others from consuming the public good is difficult or impossible, there is the temptation to free ride on the efforts of others, such as enjoying fireworks (a public good) without contributing to their production. If everyone tries to free ride, the good will not be produced and everyone suffers.

The characteristics of providing public goods create two important challenges. The first is motivation — getting individuals to contribute to the provision of a public good despite

the attraction of free riding. The decision not to contribute can be seen as a function of the desire to take advantage of someone else's efforts (commonly referred to as greed). On the other hand, an individual may be willing to cooperate but deems that there is not much of a chance that the good will be successfully provided and so does not want to waste his or her efforts. The second challenge is one of coordination: if a group of individuals is motivated to contribute toward a public good, the members of the group will need to coordinate their efforts, which will involve its own set of difficulties and costs.

Because the costs and benefits of providing some types of public goods change radically in online environments, so too do the dynamics of motivation and coordination. If we follow a strict practice (in economic terms) that a public good is a good that, once provided to one person, is available to all persons (such as national defense), then the Internet must meet the two criteria of nonrivalry and nonexcludability. We could say that the Internet has the property of nonrivalry up to some point (this implies that the correct price for its use is zero, according to economic doctrine). The next property, nonexcludability, may or may not hold based on the given perspective. It is possible to charge prices cheaply enough, given the technology, for Internet usage if you look at the Internet as a tool. However, something with zero marginal cost, like the Internet, could still be privately financed; however, according to standard economic theory it would be inadequately provided. If a private provider charged an average cost to generate some profit, this would imply too small of an Internet facility. Nevertheless, that does not equate necessarily to no Internet at all.

In principle, the government could subsidize the Internet up to the point where additional users implied some marginal cost for maintenance. At that point, a fee could be assessed to cover the marginal costs. Whether the fee and maintenance are provided directly by the government or a private corporation licensed by the government has no bearing of relevance from the standpoint of standard economic theory.

Using this principle, there would also be a fee for congestion that has nothing to do with maintenance. The point

of the fee would be to reduce crowding — to price the most casual or lowest-value user out of the system. Here again whether the government or a private firm administers the fee does not matter.

Although the Internet has some of the characteristics of a public good, it appears that the Internet does not neatly fit into the criteria of public goods until we move from the concept of the Internet as a tool to an information media concept. In the realm of information, assuming that information is a societal good, the Internet represents access to electronic information. If one goal of a democratic society is a well-informed citizenry, then it could be argued that government should provide access to that information; in other words, the government should provide the Internet. The issue is based on the idea that some types of knowledge cannot be the province of an individual or a corporation. Traditionally, knowledge of this type has qualified for subsidy as a public good.

As an example, drug companies currently receive government subsidies for research and development of new drug products. This subsidy provides a commercial advantage from patents that allow drug companies to charge inefficiently high prices that restrict use of the product. From an efficiency standpoint, the cost of the drugs should be approaching zero, given their subsidized costs of production. The problem that arises is how to acquire the research from the private sector at minimal cost and how to prevent private parties from collecting the rents from publicly financed research. As with the Internet, the difficulty stems from the uncertain nature of the product, *ex ante*. Herein lies one problem with public goods theory — it does not address facilities associated with innovation, where all of these costs and benefits are murky (this could easily be argued in the case of the Internet).

6.9 GLOBAL PUBLIC GOODS

In our ever-changing world, globalization has become an important aspect for both government and private production. To make the concept of a global public good tangible, consider,

for example, the obliteration of smallpox. Once the eradication of smallpox is accomplished, all of humanity benefits — people in all parts of the world, regardless of wealth or generational considerations. Much the same holds true for well-functioning international markets that secure intergenerational as well as geographically widespread benefits, although people in various parts of the world might benefit in different ways. Global publicness can be observed in international systems such as those for civil aviation, postal services, and international acknowledgment of a document such as a passport.

At the national level, governments often step in to facilitate the collective action needed to avoid overproduction of public bads or underprovision of public goods. Internationally, there is no such institution. Yet if global public goods do correspond to national needs and self-interest, nations do manage to reach agreement on coordinated action. Traditionally, international cooperation has primarily been concerned with relations between countries and at-the-border issues. The global public goods concept would challenge countries not to let public bads spill across their borders and turn from national public bads into global public bads. This objective requires behind-the-border policy management and instigates additional demands on a country's willingness to cooperate. International cooperation is increasingly a global give and take, which can make bargaining difficult.

Global public goods have similar difficulties in determining "publicness" as did our earlier discussion of public goods. In this way, it is essential to recognize that the publicness of a good does not automatically imply that all people value it in the same way. Underprivileged people may not place the highest value on an international passport system since they cannot afford to travel abroad. Instead, the underprivileged may give preference to ensuring global health or truly free trade so that their goods can also find new markets. Other people may rank the control of international terrorism highest. This may truly be a change here in the United States due to the September 11, 2001 attacks. Stability of international financial markets may be the highest considerations for people

in hyperinflation countries. In establishing a global public goods agenda, it is therefore important to ensure that the top priorities of different population groups are being considered equitably.

Equity infers that global public goods must not be allowed to further exacerbate existing inequities. Although public, some goods may not be accessible to the poor. The Internet, as we noted earlier, poses this challenge. And others, such as free trade management in an unequal world, may give rise to a winner-take-all condition. The willingness of a nation to cooperate may be driven by concerns such as these.

Beyond global public goods' instrumental value, it could be argued that equity itself is a global public good. It is nonrival, in the sense that if one person is being treated equitably that does not reduce the chance of another person being treated equitably. Equity is nonexcludable if it is accepted as a norm. Norms, by definition, apply to all peoples in all places.

Also contributing to the provision of global public goods — from human rights to technical norms — are nongovernment actors such as business. Nongovernment actors often draw attention to the importance of balancing the globalization of private activities with that of public goods. Due to the territorial definition of nation-states, government actors seem to be more constrained. Most notably, the linking of global public goods closely to national interests can provide the atmosphere for international forums in which state actors as well as nonstate, transnational actors can jointly debate how to balance private goods with public goods. The normative argument would be that markets could not function without public goods, including global public goods. To function efficiently, markets need property rights, legal institutions, nomenclature, educated people, peace, and security.

6.10 THE PUBLIC GOOD OF EFFICIENT GOVERNMENT

One of the dominant topics of the last several decades is the management of government in an equitable and efficient

manner. We can easily see that one of the most important public goods is the management of government. We all benefit from more efficient and responsive government. Simply put, good government has the characteristics of a public good: it is undesirable, difficult, and virtually nonsensical to exclude any individual from the benefits of a better government. If the government can increase services through efficiency without an increase in taxes and fees, everyone benefits.

Managers and politicians who succeed in providing an increase in governmental efficiency get some return, but this return is only a fraction of the benefits accrued to their constituents. Think of it this way; if I did not vote for the politician and/or manager I gain as much as those who voted for that individual. Moreover, those who did not vote and free-rode off of the successful politician and/or manager gain at the same level as those who voted do. In this way, those who benefited from the change in governmental efficiency far outweigh those who brought the efficiency about.

6.11 SUMMARY

In this chapter we defined a class of goods called public goods. In some respects just using the word public to describe goods that are nonrival in consumption may prejudice the idea that these goods should be produced. In fact, we could argue whether or not production of the public good is in fact a necessity. In our description of public goods, two important properties are predicated: nonexcludability and nonrivalry. Although a few examples of a pure public good were presented, many publicly provided goods do not meet the strict definition of a pure public good since excludability is possible, although it is usually prohibitively costly.

In the production of public goods, the private market either will not supply the good or will provide an inadequate amount of the pure public good. We saw that in the production of the public good, free riding arises when individuals enjoy the benefits of the public good while others pay for the public good. This is an important problem associated with the voluntary provision of public goods.

We described the Pareto-efficient condition that requires a public good to be supplied at the point where the marginal rate of substitution just equals the marginal rate of transformation. We saw that income distribution will affect the Pareto-efficient level of public good production. By looking at public goods and production, we saw that the Internet has some of the characteristics of a public good; however, these characteristics are limited by the defining of the use/value of the Internet.

In our discussion of global public goods, the smallpox virus was used as an example. It is possible that many other global public goods exist in our ever-changing environment. It will be up to you to determine what future goods meet the criteria of a public good.

Part III

Collection, Allocation, and Distribution of Resources

Tax Systems and Structures

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7.1 INTRODUCTION

Taxes are the primary source for funding government services in the United States. At the federal level, less than 4% of revenues are from sources other than taxes (U.S. Office of Management and Budget, 2004). For state and local governments, taxes constitutes 69.75% of general revenues and

45.12% of total revenues* in 1997 (U.S. Census Bureau, 2000). Taxpayers frequently complain about the amount of taxes that they pay and the coercive nature of taxes. It is important, however, to remember that many vital services, such as public safety/national defense, education, Social Security, and social and regulatory programs, are provided through tax dollars. As Justice Oliver Wendell Holmes said, "Taxes are what we pay for a civilized society" (as quoted in Adams, 1999, introduction).

This chapter will discuss the tax structures of governments in the United States. An overview of current tax sources will be provided, followed by consideration of issues related to equity and efficiency in taxation. The three major types of taxes will then be evaluated, including their current uses as well as proposed reforms. Important trends and implications for the future will precede the final conclusions regarding our nation's tax systems.

7.2 CURRENT TAX SOURCES

Three major categories of taxes are used in the U.S.: income, sales and excise, and property taxes. Each of these taxes is a different form of affluence. "Taxes on income apply to the amounts of different types of income earned during the defined tax period. Taxes on wealth apply to accumulated value regardless of the time period; real property is considered wealth, for example. Consumption taxes apply to purchasing transactions, such as retail sales" (Lee and Johnson, 1998, pp. 59–60). Every major type of government uses taxes, but a great deal of variety exists across governments in the type of taxes used and the reliance on one versus another type of tax. In addition, as will be discussed later, the base against which a given tax is applied varies widely across governments; for example, the list of goods and services included in the retail sales tax is different in each state.

* General revenues exclude utilities, liquor stores, and insurance trust revenues (such as unemployment compensation and employee retirement).

TABLE 7.1 U.S. Government Revenues, 2002

| Source | Quantity (Billions of Dollars) | Percent of Total |
|---------------------------------|-----------------------------------|---------------------|
| Individual income tax | 858.3 | 46.3 |
| Corporate income tax | 148.0 | 8.0 |
| Social insurance and retirement | 700.8 | 37.8 |
| Excise taxes | 67.0 | 3.6 |
| Estate and gift taxes | 26.5 | 1.4 |
| Customs duties | 18.6 | 1.0 |
| Other | 33.9 | 1.8 |
| Total | 1853.2 | |

Source: Office of Management & Budget, Budget of the United States Government Fiscal Year 2004, Analytical Perspectives, Table 4-1.

The United States federal government relies primarily on income taxes (see Table 7.1). Income taxes on individual taxpayers comprised 46.3% of the government's total revenues in 2001. This was followed by social insurance and retirement receipts, at 37.8%, which primarily fund the Social Security program through a payroll tax on employees and employers. Income taxes on corporations are 8% of the total, with excise taxes and other sources making up the final 7.9%.

State governments, as seen in Table 7.2, are very different from the federal government in use of taxes. In 1996–1997, almost one-half of state tax revenues were from sales and gross receipts taxes, whereas the federal government does not have a general sales or consumption tax. Individual income taxes accounted for about 33% of total state taxes, with corporate income taxes comprising almost 7%. Property taxes are used slightly by states (2.3% of total taxes), with other taxes making up 9% of total taxes in states.

Notice the contrast between taxes used by state versus local governments. Property tax is the largest tax source for local governments (73%), while it is the smallest tax for states. Sales and gross receipts taxes account for 16% of local government taxes. Income taxes are used much less by local governments than by states or the federal government: about

TABLE 7.2 State and Local Government Tax Sources as Percentages of Total Taxes, 1996 to 1997

| Type of Government | Tax Source | | | | |
|-----------------------|------------|--------------------------|-------------------|------------------|-------------|
| | Property | Sales and Gross Receipts | Individual Income | Corporate Income | Other Taxes |
| State governments | 2.32 | 48.72 | 32.63 | 6.92 | 9.41 |
| Local governments: | | | | | |
| County | 69.44 | 22.26 | 3.26 | 0.00 | 5.04 |
| Municipality | 48.70 | 28.86 | 11.25 | 3.29 | 7.90 |
| Township | 92.40 | 0.53 | 2.68 | 0.00 | 4.40 |
| Special district | 76.48 | 16.86 | 0.00 | 0.00 | 6.66 |
| School district | 96.85 | 1.13 | 0.90 | 0.00 | 1.12 |
| All local governments | 73.32 | 15.93 | 4.96 | 1.09 | 4.69 |

Source: U.S. Census Bureau, 1997 Census of Governments, Volume 4, Government Finances, Table 2. Summary of State and Local Government Finances by Level and Type of Government: 1996–97. Issued December 2000. <http://www.census.gov/prod/gc97/gc974-5.pdf>.

5% of local taxes are from individual income taxes, and only 1% from corporate income taxes.

Viewing the total of taxes for all local governments obscures the significant variation between different types of local governments. School districts rely on property taxes for 97% of their taxes, while municipalities receive slightly less than one-half of their taxes from this source. On the other hand, sales taxes comprise 29% of municipal taxes but only 1% for school districts. Municipalities are also the primary local government that uses income taxes: individual income taxes are 11% and corporate income taxes 3% of total municipal tax revenue.

There are a number of reasons for the variation in tax systems across governments. Some historical patterns of development have been noted; for example, local governments in the Northeast are more reliant on property taxes than are governments that developed in a later period. Resources

within a state are also important, such as in Alaska, which receives large amounts of revenue from oil reserves and therefore has not needed either an income or sales tax to fund state government. States also heavily regulate the revenue sources that local governments can use, which has led to dissimilarities. For example, sales tax is not permitted for local governments in New Hampshire but is heavily used in states such as Colorado, Oklahoma, and Alabama. Local income tax is authorized in a minority of states, such as Ohio (Bartle, 2003). Other patterns, and trends such as tax limitations and school equity concerns, will be discussed later.

Relative to other industrialized countries, taxes in the U.S. are actually low. U.S. taxes as a percent of Gross Domestic Product (GDP) were about 28% in 1998, compared to an average in the Organization for Economic Cooperation and Development countries of 37%. The U.S. is higher than average in the share of taxes derived from income and property but lower than average on tax shares from sales taxes and Social Security taxes (Mikesell, 2003).

7.3 EVALUATION OF TAX SYSTEMS: EQUITY VERSUS EFFICIENCY

How does one decide what is a “good” tax or tax system? A number of criteria are often used to evaluate taxes (see for example, Musgrave and Musgrave, 1989; Mikesell, 2003; Stiglitz, 2000). One necessity for an individual tax source is its *adequacy*. It does little good to impose a tax that will bring in insufficient revenue. For example, a rural community with no retail stores might not fare well with a general sales tax. The amount of tax received (the yield) by a government depends on both the tax base (what exactly will be subject to the tax) and the tax rate (how much will be charged on each item in the base). Thus, the same amount of money can be raised in a variety of ways from a given tax. For example, the base can be very broad, with few exceptions (e.g., a sales tax without exemptions for food, clothing, services, etc.); this allows for a lower overall tax rate to be charged. Conversely, the more exemptions, the smaller the tax base, and the higher

the tax rate will need to be in order to raise the same amount of revenue.

In addition, the *costs of collecting the tax* need to be considered. Tax administration and enforcement efforts can be expensive. Real property taxes, for example, require governments to hire assessors to determine the value of the property, and to calculate and send out individual tax bills. Part of the cost to government is in enforcing the tax laws. People have found ways to evade payments of imposed taxes throughout the history of civilization; this is considered by some to be a major cause of the decline of the Roman Empire, for example (Adams, 1999). Taxpayers also incur costs for such things as record keeping and hiring accountants and lawyers. In fact, taxpayer costs have been estimated to be at least five times greater than the collection costs to government (Stiglitz, 2000).

Transparency is another important feature of a good tax system. This means that the process and rules should be open and clear to the public. Taxpayers should be able to determine how much they pay rather than having hidden taxes, the rules should be applied consistently, and provisions should be made for hearings and appeals. The complexity of the federal income tax, for example, reduces its transparency.

Although adequacy, collection costs, and transparency are significant, however, this chapter will focus primarily on the two criteria that are usually at the heart of discussions about tax structures: *equity* and *efficiency*. Governments strive for systems that are both equitable and efficient, but these may conflict with each other. Experts do not always agree on the best way to measure these standards, much less how best to achieve them.

7.3.1 Equity

Most people think that taxes should be “fair.” What exactly does that mean? Is it fair if people all pay the same dollar amount or the same proportion of their wealth or income? Should the wealthy pay a greater proportion of their wealth than the poor do? Or should people all pay based on the

benefits they receive from the government? Each of these options measures equity in a different way. "Indeed, the complex political undertaking of applying equity principles to practical situations has occupied philosophers and government officials since civilization began. Disagreements abound, generally centering on questions about who should be treated as equals, who should not, and what to do about those differences" (Steuerle, 2002, p. 257).

The first basic distinction to be made is between taxes that are based on the benefits that a taxpayer receives and those that are based on one's ability to pay taxes. A *benefits-received* tax is possible in some situations; for example, there is arguably some relationship between the amount paid in gas tax and the benefits received from public highways. However, regardless of one's opinion of the desirability of the benefits-received principle, its application is not always possible. "The principle of benefit taxation is clear, but its implementation is difficult. Government, to charge benefit taxes, must know how individuals value the benefits they receive from public services, that is, the price they would be willing to pay to obtain them. That premise, unfortunately, is unrealistic" (Musgrave, 2002, p. 12).

An *ability to pay* approach, on the other hand, is based on a belief that those who are better able to pay for government goods and services should bear more of the weight of the taxes. One might then want to ensure that *horizontal equity* and *vertical equity* in the structure of the tax are present. With horizontal equity, people in the same position would be treated similarly; for example, two families living next door to each other in perfectly comparable houses would pay the same amount of property tax. With vertical equity, individuals in different situations are treated dissimilarly. "Since a dollar means less to wealthy persons than poor persons, equalizing burdens requires that more dollars be taken from the former than the latter" (Winfrey, 1998, p. 66). Again, though, this sounds more straightforward than it is in practice. "A household with \$100,000 income presumably should pay more tax than a household with \$50,000 income. Should the payment by the higher-income household be twice that of

the other, somewhat more than twice, or somewhat less than twice? In other words, should the distribution of income after tax be different from the distribution of income before tax and, if so, in favor of what income group should redistribution occur?" (Mikesell, 2003, p. 290).

The answers to these questions are determined by the structure of the specific tax, which can be designed to be *progressive*, *proportional*, or *regressive*. Let us relate this to an income tax. A progressive tax is one in which those with greater incomes pay a higher percentage of their income in tax than do those with lower incomes; this is the basic design of the federal individual income tax system with higher tax rates at higher income levels. A proportional tax is one in which everyone pays the same percentage of his or her income in tax; for example, some states have an individual income tax with one flat tax rate. A regressive tax is one in which those who have greater wealth pay a lower percentage of their income in taxes than do the poor. The Social Security payroll tax has a regressive structure because employees are taxed only up to a given salary level.

The tax base becomes important in determining the actual structure of a tax. Many taxes have exemptions or deductions of some sort. These features reduce the base that is subject to taxation. In doing so, they also can affect the progressivity or regressivity of a tax. For example, sales tax tends to be regressive because poor families spend a greater share of their income on taxable items than do wealthier families. Some states, however, exempt groceries from sales tax, which reduces the regressivity of the tax, since the poor spend a disproportionate share of their income on groceries.

Another important equity consideration is the *tax incidence*. Incidence refers to the bearer of the ultimate burden of the tax. Some taxes can be shifted from the initial individual or business that pays the government, to others. "Taxes initially falling on businesses must all eventually be shifted to individuals. The final burden may fall on consumers (in the form of higher prices), on employees (in the form of lower wages), on suppliers of other inputs (in the form of lower prices

or rent), or on stockholders (in the form of lower dividends or stock values)” (Winfrey, 1998, p. 56). Incidence depends on the *elasticity* of demand and supply or the relative flexibility of the buyers and sellers in a market. If buyers have little flexibility to substitute other goods for the one taxed, the tax is likely to be borne by them through higher prices for the good. For example, the demand for cigarettes is relatively inelastic; higher prices have little impact on the behavior of smokers (Schiller, 2003). Therefore, even if a cigarette tax is initially imposed on the manufacturer, the consumer will bear most of the ultimate burden of the tax through higher prices.

Equity, then, is a difficult concept to determine, for various reasons. It can be defined in a variety of ways, and the incidence is often unclear. Even if everyone agreed that a progressive tax structure is the most fair, people may disagree on the actual base that should be used for a tax or the degree of progressivity desired. In addition, equity may conflict with other concerns, such as efficiency.

7.3.2 Efficiency

In an efficient world, resources will be allocated to their most valued use. Taxes increase the price of the thing that is taxed, such as goods or property. This causes taxpayers to make different choices with a tax, leading to inefficiency. “When the tax is introduced, people are forced to adjust their behavior and consume a different quantity of the taxed good than they would have otherwise chosen. Because the tax causes changes in behavior, it also causes economic well-being, alias welfare, to be reduced” (Anderson, 2003, p. 274). Examples of taxes that distort behavior exist throughout history, such as the window tax used in Great Britain in the 1700s: “Taxpayers resorted to all kinds of avoidance devices, like boarding up windows until the assessors finished and then opening them up again. In Edinburgh, a whole row of houses was built without a single window in the bedrooms” (Adams, 1999, p. 259).

The existence of the tax itself affects efficiency. The specific provisions of the tax can also have significant effects on

the behavior of individuals and businesses. As noted earlier, the U.S. income tax code treats different types of income differently and has numerous exemptions and deductions. “For instance, the large number of Arabian and other very expensive breeds of horses in the United States has been attributed to a peculiar loophole in the tax structure. The special treatment of gas and oil may have led to excessive drilling” (Stiglitz, 2000, p. 458).

Taxes, then, are more efficient if they minimize changes in behavior between choices such as work and leisure and between savings and consumption. However, this can affect the balance between equity and efficiency. The most efficient tax would be a lump-sum or “head tax” that imposed the same amount of tax on everyone and would not affect choices between various economic activities (Musgrave and Musgrave, 1989). However, this would not be considered fair on either a benefits-received or ability-to-pay basis of equity. The next section will focus more specifically on the design of major taxes and questions related to equity and efficiency.

7.4 MAJOR TAX SOURCES

Three primary types of taxes are used in the U.S.: income and payroll, sales, and property taxes. This section will provide some historical overview of these taxes and will discuss the current tax bases and rates used by federal, state, and local governments. In addition, issues and current reform efforts will be outlined.

7.4.1 Income and Payroll Taxes

As noted above, income and payroll taxes are by far the largest source of federal tax revenues. Income taxes are also a large portion of state tax revenues. Individual income taxes will be discussed first, then corporate income taxes, followed by payroll taxes.

The federal government primarily relied on tariffs on imported goods and excise taxes in the nineteenth century. During the Civil War, an income tax was imposed that lasted

until 1872. A second attempt at income taxation was made in 1894 but was declared unconstitutional before collection began. The Sixteenth Amendment was ratified in 1913, beginning the modern income tax. At the start, though, only the most wealthy individuals paid the tax, and the rates were graduated from 1 to 6% of income. It was not until World War II that the individual income tax became broad based, through the reduction in personal exemptions; the number of taxpayers increased from 4 million in 1939 to 43 million in 1945 (Ventry, 2002).

The federal individual income tax base includes salaries and wages, commissions/tips, earned interest and dividends, alimony, rent, and unemployment compensation. Some forms of income are not taxed, however, such as food stamps, disability retirement, and Workers' Compensation. The individual income tax at the federal level is progressive in design; the tax is graduated, with six marginal rates (see Table 7.3). A single individual pays 10% in tax on the first \$7,000 of taxable income, then 15% on the amount of taxable income between \$7,001 and \$28,400, etc. Therefore, individuals with greater incomes pay a higher percentage of their income in tax.

The complexity of the federal income tax stems from the large number of items that may be deducted from income taxes and the way in which some of the deductions are defined.

TABLE 7.3 Revised Federal Individual Income Tax Rate Schedules, 2003

| Tax Rate (%) | Single Income Range (Dollars) | Married Filing Jointly Income Range (Dollars) |
|--------------|-------------------------------|---|
| 10 | \$0–\$7000 | \$0–\$14,000 |
| 15 | \$7001–\$28,400 | \$14,001–\$56,800 |
| 25 | \$28,401–\$68,000 | \$56,801–\$114,650 |
| 28 | \$68,801–\$143,500 | \$114,651–\$174,700 |
| 33 | \$143,501–\$311,950 | \$174,701–\$311,950 |
| 35 | Over \$311,950 | Over \$311,950 |

Source: Internal Revenue Service, Revised 2003 Tax Rate Schedules.

These “tax expenditures” reduce the income tax base. A few of the larger items and estimated amounts of revenue loss for 2002 include deductibility of mortgage interest on owner-occupied homes (\$63.6 billion), deductibility of state and local property tax on owner-occupied homes (\$21.8 billion), child credit (\$22.2 billion), deductibility of charitable contributions (\$30.9 billion), and exclusion of pension contributions and earnings (\$129.0 billion) (U.S. Office of Management and Budget, 2003). Some of the deductions are for equity purposes, for expenses beyond an individual’s control, such as medical expenses. Others allow deductions for expenses that are related to earning income, such as reimbursement for job-related activities. There are also a number of deductions that are the result of public policies to encourage specific behaviors, such as charitable contributions (Mikesell, 2003).

Tax expenditures can have a number of negative consequences. According to one expert, “The deductions largely subsidize activity that would have occurred anyway. They complicate tax filing and enforcement. They erode the tax base and thus require higher tax rates than would otherwise be necessary. They are regressive: only about 28% of all taxpayers itemize but 90% of households with income above \$75,000 use the deductions, compared with less than 10% with income below \$30,000. And of course high-income households claim larger deductions than low-income households.... Why should homeowners, merely because they have a large mortgage, be able to deduct charitable contributions or use a tax-deductible home equity loan to buy a car, when renters with similar income cannot?” (Gale, 1997, p. 4).

The mortgage interest exemption is just one example of income tax provisions that can change individual behavior. “Income taxation may affect the length of time an individual stays in school by affecting the after-tax return to education, the choice of jobs (because for some jobs a larger fraction of the return comes in untaxed ‘benefits’), whether an individual enters the labor force or stays at home to take care of children, the number of hours a taxpayer works (when he or she has discretion over that), whether he or she takes a second job and the effort put into the job, the amount that the individual

saves and the form savings take (the choice between bank accounts and the stock market), the age at which an individual retires, and whether he or she works part-time beyond the age of 65" (Stiglitz, 2000, p. 459). These decisions result in reduced economic efficiency. For example, a 10% increase in income tax has been estimated to result in a labor supply decrease of 1.5 to 3.0%, as individuals trade leisure for work at higher tax rates (Schiller, 2003). In addition, taxation of interest earnings can encourage current consumption rather than savings, which can reduce long-term economic growth that is dependent on savings and investment for increased capital (Mikesell, 2003).

There has been a great deal of discussion about replacing the current individual income tax with a "flat tax" with one single tax rate. Flat tax proponents argue that it would be more transparent, less costly to administer, and fairer than the current system because everyone would pay the same percentage of his or her income in tax, without all the exemptions and deductions in the current system. In addition, it is argued that this would increase economic efficiency, as individuals and businesses would not make decisions based on the tax code (Hall and Rabushka, 1985).

On the surface, this would be a proportional tax, rather than the current progressive tax. However, under most proposals, the flat tax would apply to salaries and wages but not to other forms of income such as interest, dividends, and capital gains. Because these exempted forms of income are more likely to be earned by wealthier individuals, the flat tax would actually be regressive and regarded by many as inequitable (Winfrey, 1998). In addition, the flat tax would substantially reduce the tax rate paid by the wealthy, who currently pay the majority of income taxes, which would require other taxpayers to pick up the slack. Proposals include exemption of the first several thousand dollars of earnings; this would protect low-income taxpayers to some extent, which means that the incidence of the flat tax would be with middle-income taxpayers. "The major consequence of moving to a flat rate is a downward shift in the tax burden from the upper end to the mid-upper range. With nearly 50% of the

current tax base, and 60% of revenue, accounted for by the top 10% of returns, the resulting shift to the middle of the income spectrum would be substantial” (Musgrave, 2002, p. 19).

States also rely heavily on the individual income tax. Only nine states do not use this tax: Alaska, Florida, Nevada, New Hampshire, South Dakota, Tennessee, Texas, Washington, and Wyoming (Mikesell, 2003). Many states “piggyback” on the federal tax system in their individual income tax structure. For example, the state may use the federal tax base, with the state tax owed being a percentage of the federal tax paid. State income taxes are much less progressive than the federal tax, however. In most states, the highest tax rate is 4 to 5%. In addition, “nineteen states impose income taxes on taxpayers at or below the federal poverty level; six states require families of four with income at one-half of the federal poverty level to pay income tax” (Brunori, 2002, p. 207). Some local governments also use an income tax (approximately 3500); most of these are in the state of Pennsylvania (Mikesell, 2003).

The federal corporate income tax applies to net profits, with provisions for deductions of some things such as capital depreciation. This tax is graduated, from 15 to 35%. This tax is controversial. Some portion of corporate income would escape taxation without the tax, but some income is double-taxed because individuals pay income tax on corporate dividends. In addition, little is known about the incidence of this tax. “There is wide disagreement among economists as to who actually bears the burden. Some studies claim that most of the corporation income tax is passed on to consumers in the form of higher prices. This would indicate that the tax is regressive.... Other studies claim that corporations have not raised prices in response to tax increases, and therefore, the burden must reside with the owners” (Winfrey, 1998, pp. 60–61).

Other equity and efficiency issues with the corporate income tax exist. As with the individual income tax, certain tax breaks are included in the tax code. One study of 250 large corporations found a wide divergence in the portion of profits paid in taxes over the period 1996–1998. Forty-one of the companies, rather than paying taxes, actually received

rebates from the federal government during this time. Petroleum companies in the group paid an overall effective tax rate of 12.3% in this period, while publishing companies paid a rate of over 30% (Institute on Taxation and Economic Policy, 2000). In addition to these differences, which can shift resources between segments of the economy, this tax discourages savings and investment, which results in lower economic growth. Most states have a corporate income tax similar to the federal tax. One difficulty with the state tax is that many corporations do business in more than one state, which requires the use of formulas to determine the amount of tax owed in each state (Mikesell, 2003).

The Social Security tax is a federal payroll tax that applies to wages and salaries and funds the insurance system. This tax is regressive: it does not apply to other forms of income, which are more likely to be received by the wealthy, and there is a cap on the amount of income to which it applies. In 2003, the Social Security portion of the payroll tax is 6.20% paid by the employee, with an equal amount paid by the employer, on maximum earnings of \$87,000* (Social Security Administration, 2003). So, for example, an individual who earns a salary of \$150,000 will pay \$5,394, or 3.6% of earnings, compared to someone who earns \$50,000, who will pay \$3,100 or 6.2%. Although the payroll tax is paid equally by both employers and employees initially, most studies have found that employers shift their portion to employees with lower wages, so that the burden is actually on the employees (Winfrey, 1998).

7.4.2 Sales Tax

The federal government does not currently use a general sales tax (although it does have selective excise taxes on specific goods such as fuel, alcohol, and tobacco). However, as noted earlier, sales and gross receipts taxes constitute almost one-half

* The Medicare portion of the payroll tax is an additional 1.45% of earnings each for the employee and employer, but there is no limit to the earnings subject to this part of the tax.

of state taxes and almost 16% of local taxes. General sales taxes were initiated in West Virginia and Mississippi in the 1930s during the Depression when the property tax was not sufficient for state spending needs. Only five states do not utilize a general sales tax: Alaska, Delaware, Montana, New Hampshire, and Oregon. Approximately 33 states allow localities to levy a sales tax (Mikesell, 2003).

Although everyone pays the same statutory tax rate on items subject to the sales tax, the tax tends to be regressive on an annual basis. The poor spend a higher percentage of their income on taxable items than do the wealthy, so they also spend more of their income on sales tax. "The very poor pay a disproportionate amount; the combined effect of sales and excise taxes is over 17% of income. At the other end of the scale, those with incomes over \$500,000 pay less than 1% of income" (Winfrey, 1998, p. 60).

However, there is tremendous variation in the sales tax base across states. For example, as of 1998, groceries were exempt from sales tax in 27 states, and prescription drugs were exempt in 44 states. These types of exemptions may reduce the regressivity of the sales tax, since the poor spend a large portion of their income on these items. However, these items also reduce the sales tax base, thus requiring higher tax rates (Brunori, 2002). States are estimated to lose 20 to 25% of sales tax revenue by exempting food (Due and Mikesell, 1994). A number of states also exempt clothing from the sales tax base, which increases regressivity because the poor spend less of their income on clothing. The wealthy are estimated to receive a benefit from this exemption that is 4½ times greater than for the poor (Mikesell, 2003).

Another thing that affects the equity of the sales tax is that it has historically been a tax on goods rather than services, which made sense in the 1930s when the economy was primarily manufacturing and agricultural. Services are now a major part of our economy, comprising 44% of total household purchases in 2001, up from 31% in 1970 (Mazerov, 2003). As the sales tax base has shrunk, states have increased sales tax rates; 36 states raised their rates between 1979 and 1994,

while only one decreased its sales tax rate (Fox, 1997). Services remain largely untaxed. One 1996 study found that, out of a list of a possible 164 services, 27 states taxed between 1 and 50 services, 17 states taxed between 51 and 100, and only six states taxed more than 100 of the services (Federation of Tax Administrators, 1997). Estimates are that states that currently have relatively low use of service taxation could increase their sales tax revenue by about 25 to 30% by taxing the full range of identified household service purchases (Mazurov, 2003). "The major obstacle has been the political problem of taking on large interest groups that are opposed to expansion of the base to their particular service" (Fox, 1997, p. 12).

Another problem for the sales tax base is the increasing purchase of goods through mail order catalogs and the Internet. Two U.S. Supreme Court decisions made collection of taxes from these sales difficult;* the decisions reflected Constitutional concerns about interstate commerce. Use taxes are required to be collected by vendors with a physical presence in a state (e.g., a store) for purchases that will be delivered in that state. Other vendors do not have to collect or remit these taxes, though; purchasers of these goods are supposed to pay a use tax themselves, but this rarely happens and enforcement is very difficult except for items that have to be registered in the state such as vehicles (Mikesell, 2003). The effects of these shifts in purchasing behavior vary widely across states; purchases in California are much more likely to be made in state versus those in Rhode Island, for example, resulting in a greater impact on revenue in Rhode Island (Fox, 1997).

Estimates are that Internet sales are reducing sales tax revenues by up to \$14 billion per year. States have joined together on the Streamlined Sales Tax Project to try to simplify the sales tax definitions and rules across the 7600 state and local governments that levy this tax. Thirty-four states

* National Bellas Hess v. Department of Revenue (386 U.S. 753 1967) and Quill v. North Dakota (112 S Ct 1904 1992).

have signed an agreement on this subject, which next needs to be approved by the state legislatures. The goal is to reduce the difficulty to retailers in collecting sales tax so that the states can then ask Congress to lift its current moratorium on Internet taxation (Swope, 2003).

Taxation of purchases by businesses raises efficiency issues with the sales tax. Experts generally agree that the sales tax should be on final consumption rather than on purchases by businesses that will be used in the production process. Taxing businesses gives incentives to businesses to do things in house that might be better done through an outside vendor. In addition, as discussed earlier, the ultimate burden of business taxes is on some group of individuals. However, while some business purchases are exempt from sales tax, they still comprise up to 40% of the sales tax base. "Business purchases are taxed because significant revenues can be raised, political advantages can be realized since tax burdens are hidden from voters, and it can be administratively difficult to decide whether certain purchases are for final consumption or for intermediate purposes" (Fox, 1997, p. 11).

Some experts believe that the federal government should move from taxation of income to a consumption tax. The argument is that this would provide incentives for increased savings rather than consumption, leading to economic growth. Also, a consumption tax allows individuals to make decisions about the amount of tax they pay through their purchasing choices. Most other industrialized countries use a centralized value-added tax (VAT), which applies the tax to each stage of the production process (as opposed to the retail sales tax used by U.S. states that only applies to the final purchase). Each business pays a tax on its purchases but then is reimbursed for this payment when it sells a product in the next stage; the final consumer bears the ultimate burden of the tax (Mike-sell, 2003).

7.4.3 Property Tax

Property tax is a little-used tax at the state level but accounts for 73% of total local government taxes. This tax can be a tax

on personal and/or real property and therefore is based on accumulated wealth rather than current income or consumption. Personal property taxes may be assessed on tangible property such as vehicles, boats, furniture, and machinery, as well as on intangible property such as stocks and bonds. There are significant enforcement difficulties with taxation of some types of personal property because they are difficult to value and/or can be easily moved. This accounts for the fact that personal property tax is only about 10% of the total property tax base nationally, although there is variation across states; although nine states do not tax personal property at all, it comprises about 42% of the property tax base in West Virginia (Fisher, 1996).

The primary base for this tax is real property: homes, land, farms, and businesses. The tax for residential property is based on market value in most states, as determined by a property assessor (the institutional location of the assessment function varies by state; in some states, this is done centrally, while in others it is done on a countywide basis, and in others it is even more decentralized). The basis for nonresidential property may be either market value, cost (which includes the value as well as the cost of improvements), or income (used for property such as apartments, this estimates the value of future income to the owner).

Tax rates are then set by government jurisdictions, generally as part of the annual or biennial budget process. In some cases, the governing body has the authority to set the tax rate, but in others tax rate increases or extensions of the tax rate beyond a certain period of time require a public referendum. In most places, the tax rate is the same for all real property. In about 19 states, though, tax rates or assessment ratios can vary for different groups of property (for example, residential versus nonresidential property). This classification system allows for certain types of property owners to bear more or less of the tax burden than would otherwise occur (Mikesell, 2003).

There is debate among experts about the incidence and efficiency of the property tax. The “benefit view” sees the property tax as being related to the benefits received by those

who pay the tax. "People are willing to pay more, other things equal, to live in communities with comparatively good services and low taxes, and this translates into higher prices for local properties" (Oates, 2001, p. 22). This relationship between taxes and benefits, based on this theory, leads to relatively efficient allocation of resources. However, this tax has traditionally been seen as being regressive because poorer families spend a larger share of their income on housing.

The "new view" of the property tax takes a different perspective, and "sees the tax as a levy on capital that leads to certain kinds of distortions both in housing markets and in local fiscal decisions. Since the tax base includes structures and other improvements to land, the tax discourages building and other activities by inflating their cost" (Oates, 2001, p. 22). Proponents of the new view see property tax as leading to inefficient allocation of resources. On the other hand, these theorists argue that property tax is progressive because it is a tax on capital, which is disproportionately held by the wealthy. Empirical evidence is not clear on which view is more accurate, and some experts believe that both may be valid to some extent (Oates, 2001).

A number of other concerns with the property tax exist. Vertical and horizontal equity requires that assessed valuations be done regularly and that they accurately reflect the market value (or other basis for assessment). Many governments do not have the resources for frequent revaluations, so assessed values may not be kept up to date; since the value of one neighborhood may change at a different rate than that of another, this results in inaccurate valuations and some property owners paying more than they should, while others pay less. Uniformity of assessed valuation has historically been a major difficulty with the property tax (Fisher, 1996).

In some cases, current market value is not the basis for residential property assessments. Since the passage of Proposition 13, California has used a system where properties are reassessed only upon sale. Florida and Michigan have similar rules. "This structure of reassessment only on sales disrupts the property market (because prospective buyers would face a different property tax than would the prospective seller),

creates a property record substructure of sales without recorded deeds as individuals seek to avoid property tax adjustments that would accompany a recorded sale, and causes similarly situated properties to pay widely different property tax" (Mikesell, 2003, p. 397). This then creates both inefficiencies and inequities in property taxes.

Another issue relates to the relationship between the value of the property and its use. For example, farmers frequently complain that they are paying more in taxes than their land is worth to them. As urban areas expand toward farms, the market value of the farmland increases, even though the farmer's earning ability from the land has not changed. For this reason, most states have methods of easing the burden for farmers, such as through reduced tax assessments. There are also other forms of protection for certain types of property taxpayers. Properties owned by nonprofit organizations and government are usually exempt from property taxation. Partial exemptions are also available in most places for the elderly and veterans. In addition, most states include "circuit breaker" programs to help individuals whose tax bills comprise a large portion of their income; these programs involve a reduction in the state income tax (Fisher, 1996).

Inequities also exist in the fiscal capacity across taxing jurisdictions. This has been a major issue in recent decades for school financing. "Critics argue that the property tax is inherently unfair because large disparities in tax bases across school districts lead inevitably to large differences in spending" (Evans et al., 2001, p. 209). The constitutionality of education finance systems has been challenged in 43 states, and as of 1999 courts had overturned systems in 19 states. This has resulted in changes in state aid patterns and a shift to larger reliance on state funding of public schools (Evans et al., 2001).

The property tax has a long history of controversy. "It is impossible to cite another tax that was accepted so widely with so little protest as was the American property tax. On the other hand, it is difficult to think of one that has been criticized so passionately" (Fisher, 1996, p. 122). This is due to a variety of factors, such as the assessment inequities cited

above. In addition, this tax is one of the most visible taxes; homeowners receive a property tax bill each year, so they know exactly how much they are paying (Oates, 2001), and it is often paid in one or two lump sums, unlike other major taxes, which are paid more regularly throughout the year. However, the property tax persists as a primary source of local government revenue. Property taxes "...are unpopular with the electorate, with enlightened and craven politicians alike, and with many academic observers — but they endure because they produce reliable, stable, independent revenue for the governments closest to the people and there is no clearly superior alternative for providing fiscal autonomy" (Mikesell, 2003, p. 390).

7.5 TRENDS AND IMPLICATIONS

After looking at individual taxes, what can one say about tax systems as a whole? This section will address this question as well as implications of several trends in taxation. The discussion will first focus on the equity of tax systems, followed by revenue diversification trends. Economic development initiatives at the state and local levels will then be reviewed. The section will conclude with an overview of the current fiscal situation.

7.5.1 Equity of U.S. Tax Systems

As noted throughout this chapter, wide disagreement exists about how to define equity or what the appropriate level of equity would be for tax systems. However, one can discuss the degree to which the current structures are progressive or regressive, and how that has changed over time. Federal taxes have become less progressive since the 1960s. The top marginal tax rate for the individual income tax was 90% in 1963, down to 33% in 1986; this rate has fluctuated somewhat since then and is currently 35%. The payroll tax rate has increased from 7.25% in 1964 to 15.3% in 1990 (combined employer and employee shares). The corporate income tax rate decreased from 52% in 1963 to 38% in 1994 and is currently at 35%. At

the same time that wealthy taxpayers had their tax burdens lessened, the gap between income levels for the rich and poor was increasing; the wealthiest 5% of families had a 33% increase in the share of total income between 1968 and 1998, while the poorest 20% of families had the greatest decrease in their share of total income (Ventry, 2002). On the other hand, there have been some attempts to reduce the burden for poorer families through the Earned Income Tax Credit and lower tax brackets. In addition, the arguments for reducing the level of progressivity are that it would increase efficiency and economic growth, which benefits everyone. The extent to which this is the case is unclear, however.

One way to look at overall progressivity is to compare the proportions of income by income groups to their portion of tax payments. Those in the top 1% of income earners receive 13% of total income, while they pay 26% of the total federal income taxes. The income tax, then, is somewhat progressive. However, the picture changes slightly when looking at total federal taxes. Social Security and excise taxes are highly regressive, as noted earlier, so including these taxes in the calculation reduces the progressivity of the federal system. These top earners who receive 13% of total income pay 18% of total federal taxes. Overall, then, the federal system can be said to be proportional or very slightly progressive (Schiller, 2003).

What about state and local taxes? One recent study found that the majority of state and local systems are regressive. When comparing the portions of income paid by different groups of income earners, “only four states require their best-off citizens to pay as much of their income in taxes as middle-income families have to pay. Only eight states tax their wealthiest residents at effective tax rates as high as the poorest taxpayers are required to pay” (McIntyre et al., 2003, p. 1). Families in the top 1% of income pay 7.4% of their income in taxes, compared to 9.9% for families in the middle 20% and 11.4% for the poorest 20% of families. Most states allow a deduction for federal income tax itemized deductions, which makes the picture even more regressive. State and local taxes have been found to be increasingly regressive over the past

decade, largely due to the increase in sales and excise taxes (McIntyre et al., 2003).

However, the finding of regressivity in state and local taxes is the subject of some dispute. The previous study was based on annual income levels. Many economists argue that this method biases tax incidence studies because people may not reduce their spending patterns if they have temporarily low income in a given year. "For example, temporary unemployment will reduce income but may have relatively little impact on spending; the result is a temporarily high tax burden" (Reschovsky, 1998, p. 173). Studies that look instead at tax burdens over a person's lifetime find both sales and income tax to be progressive. However, the lifetime studies require some major assumptions, which may not be accurate either. The real result, then, may be somewhere in between.

Can any general conclusions be reached about the structure of the overall tax system? "For the economy as a whole, the net effect of the federal, state, and local taxes on income distribution is not substantial. If one accepts the arguments that the corporation and property taxes are progressive, the incidence of taxes overall is slightly progressive. Under other assumptions, the incidence of all taxes combined is roughly proportional but regressive for the very poor and the very rich" (Winfrey, 1998, p. 61).

7.5.2 Diversification

Tax systems have changed dramatically over time in this country. As noted earlier, the individual income tax at the federal level did not affect most Americans until after World War II. States received over one-half of their tax revenues from the property tax at the beginning of the 1900s (Bartle, 2001), with no use of a general sales tax or income tax; that pattern has completely reversed, with property tax constituting about 2% of state tax revenues. Local governments still rely heavily on the property tax, but its use has declined, and other taxes now comprise 27% of total local taxes. There is a continued effort at diversification of revenue sources; some of this involves shifts away from taxes to sources such as user

charges (Bartle, 2002), but there have been some major shifts in the use of taxes as well. Diversification efforts have been particularly intense at the local level and to some extent at the state level. What factors have been driving these changes?

One issue has been the court cases and concerns regarding school funding equity. As discussed earlier, heavy reliance on the property tax to fund elementary and secondary education has resulted in large spending variations across school districts within a state due to disparities in property wealth. This has resulted in an increased use of state aid to school districts (paid primarily through state tax sources of income and sales tax), and reduced reliance on the property tax. Evidence from studies shows that on average the shifts to state aid have resulted in increased equity across school districts (Evans et al., 2001).

In addition, tax and expenditure limitations have been popular since the 1970s. By 1995, only four states, for example, did not have some form of tax or spending limitation on at least one type of local government (ACIR, 1995). Limitation measures have been initiated by citizen referendum in some cases and by state legislatures in others. Some are more binding on governments than others are; for example, a property tax limitation that restricts growth in property tax rates but not growth in assessed valuation may have less of an effect than limits that restrict growth in both rates and value. Studies have shown that property tax limitations on local government have led to reductions or reduced growth of property tax revenues (Preston and Ichniowski, 1991; Shadbegian, 1998). Property taxes have been replaced in large part by state aid (at least initially) and user charges (Shadbegian, 1999; Johnston et al., 2000), but states have not always continued this support over time (Mullins and Joyce, 1996). Over the long run, though, at least one study has found that local property tax reliance has not been reduced after imposition of limitations (McCabe, 2000).

A third factor in the changes in revenue patterns has been a push for increased diversification of revenue sources for financial management purposes. Organizations such as the National Advisory Council on State and Local Budgeting and

the Government Finance Officers Association have encouraged balancing revenue sources to avoid reliance on one main source. This can help governments to weather economic downturns, as some revenue sources will be affected more than others will. Diversification can also be helpful for balancing costs of government among various groups of taxpayers (GFOA, 2002; Ebdon et al., 2002).

An additional trend affecting revenue structures has been the devolution of functions from the federal government to state and local governments and from state governments to local governments. For example, federal aid to local governments has decreased since the 1970s, and state aid as a percentage of state spending has also been reduced in recent decades. Local governments have thus been forced to either cut services or increase their own revenues to make up for these losses. This reduces reliance on the income tax, which may be more progressive, and increases reliance on other sources, such as property tax, sales and excise taxes, and user fees, that may be less progressive (Krane et al., 2003). Musgrave (2002) has discussed the difficulty that lower-level governments have in using progressive tax systems because of the potential for individuals and businesses to move to lower-taxing areas. "Progressive taxation is therefore impeded, especially since capital is the more mobile factor, and capital income weighs more heavily when moving up the income scale. Devolution of expenditure functions, if combined with federal grants, need not have this effect, but devolution of the taxing function inevitably retards progressive taxation" (p. 22).

What are the implications of these changes for tax systems? On the one hand, governments have authority to levy an increasing array of taxes. For example, in 1950, only one state allowed local governments to levy a sales tax; by 1997, this option was available in 33 states, and sales tax is now the primary source of revenue for local governments in six states (Krane et al., 2003).

On the other hand, control over revenues has been reduced by limitation measures and other ballot initiatives as well as school finance equity concerns (Sheffrin, 1998; Sokolow, 2000). California is an extreme case; voters have

passed a series of initiatives that have drastically reduced the flexibility of state and local governments over taxes and budget allocations. The state, for instance, is now required to spend 40% of its general fund on elementary and secondary education. These measures, in addition to the authority that Proposition 13 gave to the state over local property tax distribution, have affected state aid to local governments. Local governments in the state now have significantly less control over their revenues. School districts controlled 54% of their total revenues in 1978, down to 6% in 1995; with counties, the reduction was from 50 to 20%, and cities decreased from controlling 66 to 43% (Greenblatt, 2002).

The shift in sources also has equity and efficiency implications. User charges, which have increasingly replaced taxes at the state and local levels, are more efficient because they are based on benefits received. Consumers make choices based on the utility they receive from the good or service, and this price mechanism leads to a more efficient allocation of resources. However, those who support an ability-to-pay measurement of equity may be concerned by the regressivity of user charges. Sales and excise taxes, which also tend to be more regressive than other taxes, are also increasing in use; as noted earlier, this has reduced the progressivity of state and local tax systems. The future adequacy of sales tax is also an issue, due to the decline in the sales tax base discussed earlier.

7.5.3 Economic Development

A focus on economic development in recent decades has led to high levels of competition among state and local governments. These efforts to attract and retain businesses have affected tax systems. States have instituted tax policies to give “breaks” of various sorts, such as tax credits for capital investment or increased jobs. Local governments also have some tools available for these purposes, such as property tax abatements and tax increment financing for development projects (Mikesell, 2003). In recent years, an emphasis has been placed on targeting these incentives towards specific types of businesses; for example, states are trying to attract

businesses that are more mobile and have substantial out-of-state sales, believing that this will increase state revenues and economic activity (Enrich, 1998).

Many experts agree that these programs are not good tax policy. First, taxes appear to be a factor in business location decisions within a region but are not significant in inter-regional movement, so the premise of many of these programs may be faulty (Mikesell, 2003). Second, these programs are economically inefficient if they do induce businesses to make decisions that they otherwise would not. Third, incentives that are targeted toward specific sectors are particularly harmful in that they provide inducements for movement of capital investments towards tax-favored sectors and away from more valued sectors (Enrich, 1998; Mikesell, 2003). Finally, reductions in state and local tax revenues that result from these programs have to be subsidized by other taxpayers. Overall, “the economic benefits that they purport to generate are highly questionable, and the costs they entail, with respect to both state revenues and the national economy, are quite substantial” (Enrich, 1998, p. 74).

From a political standpoint, however, these programs are popular and as long as some states compete, others feel compelled to play the game as well. The fear of losing residents and businesses to other states also affects other tax policy decisions. “The most powerful limitation on the ability of states to tax progressively is the widespread perception that business and household mobility make progressive tax structures unworkable” (Brunori, 2002, p. 193). This partially explains the movement towards more regressive state and local tax structures noted earlier. However, little evidence exists to support the idea that more progressive tax structures will result in flight to other states. For example, greater economic growth in the past two decades has been experienced in states with higher income tax burdens (Brunori, 2002).

7.5.4 Fiscal Stress

The recent downturn in the economy has led to significant fiscal stress for governments. After experiencing surpluses for

several years, the federal government is projecting deficits in the \$400 to 500 billion range, due to a combination of the economy, tax cuts, and war in Iraq. States and local governments are experiencing their hardest time in decades, in spite of setting aside reserve funds during the boom years of the 1990s. California's budget crisis is even considered a major factor for the recall election of Governor Gray Davis.

States have been very hard hit by the recession, which has had a lasting effect on budgets. Tax revenues decreased by 6.3% between fiscal years 2001 and 2002 (Jenny and Nathan, 2003). The picture remained bleak after the first quarter of 2003: "This is the seventh straight quarter with a decline in revenue after adjusting for inflation and enacted tax changes. This means that states are steadily losing ground on the revenue side of their budgets, even before we consider factors such as population growth and its attendant increases in demand for state services" (Jenny, 2003, p. 3). The impact has been felt more heavily in states with greater reliance on personal income tax because individual income losses have been larger among the wealthy. Sales tax has also been affected, although to a smaller extent because this tax is less elastic than income tax (Jenny, 2003).

Local governments are also suffering. In some respects, diversification of revenue sources may have hurt these governments, however, rather than helped. For example, property tax has historically been a more stable source that is less dependent on the economy than are income and sales tax. Governments that have increased reliance on sales or income tax in recent decades may have more difficulty coping with this downturn. In addition, states have partially dealt with their own problems by reducing aid to local governments.

The long-term implications of the current crisis on tax systems remain to be seen. Sixteen states enacted tax increases for fiscal 2003 (Jenny and Nathan, 2003). States have increased taxes five quarters in a row, in stark contrast to the tax cuts that occurred over the previous seven years (Jenny, 2003). The extent of tax changes and the effects of increases on the equity and efficiency of tax systems are not yet clear.

7.6 CONCLUSIONS

Income tax and general sales taxes were not even in use in this country a century ago. Today, it is difficult to imagine life without these major taxes, along with the third leg of the tax stool, the property tax. Each of these has undergone significant changes in recent decades, from the types of government that use the tax to the base that is taxed. The property tax has come under increasing attack, resulting in decreased use relative to other taxes, but it remains the primary tax for local governments. Sales tax is also under some pressure. While it is more popular with the public than other taxes are, and its usage by state and local governments has increased, the sales tax base is shrinking due to the movement towards a service economy that is largely untaxed and the increase in currently untaxable Internet purchases. The income tax has undergone significant changes since the 1980s also, particularly at the federal level where the highest tax rates have been reduced and increased provisions have been made to protect low-income individuals.

Changes in tax systems often require tradeoffs between equity and efficiency. For example, some argue that the recent federal income tax cuts were inequitable because the wealthy were disproportionately favored. Others, though, believe that these cuts will improve efficiency by encouraging savings and investment; ultimately, if this is true, everyone will be better off in the long run than we are now, although disparity in incomes will be greater. These are complex issues, made more difficult because we do not always understand the actual incidence of the tax, and it is not easy to sort out the effects of tax changes. In addition, there is lack of agreement as to the ideal level of equity desired in a tax system.

“Whoever hopes a faultless tax to see, hopes what ne’er was, is not, and ne’er shall be” (Alexander Pope, as quoted in Adams, 1999, p. 257). Each tax has weaknesses. One benefit of diversifying tax sources is that the weaknesses of one tax may be offset to some extent by the strengths of another. For that reason, the entire tax system for a government should

be evaluated, rather than basing conclusions on a portion of the tax revenues.

We have focused our discussion on the application of economic principles to tax systems in the U.S. Tax policy is not made in a vacuum by economists, though; it is made as part of the political process by elected officials. In a discussion of how decisions are made regarding the use of taxes by various levels of government, Bird noted, "The tax assignment that actually prevails in any country inevitably reflects more the outcome of political bargaining in a particular historical situation than the consistent application of normative principles" (as quoted in Krane et al., 2003, p. 19). This is equally true of other decisions related to tax policy. However, this fact does not reduce the importance and necessity of understanding the probable consequences and implications of these decisions on our tax systems.

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Fiscal Characteristics of Public Expenditures

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8.1 INTRODUCTION

Public expenditures help educate children, keep our streets safe, help people get to and from work, and provide medical treatment to the elderly and poor, to name just a few things. They are also the playing fields for politicians. They reflect compromise, negotiation, and the interpretation of public preferences made in the halls of our capitals and state and local governments. They are part of the budgeting system that must match the revenues derived from myriad sources. Essentially, the decision to allocate public expenditures determines who gets what from government.

Several economic issues are involved in the allocation of public expenditures in our federal fiscal system. Public expenditures can be defined as money allocated by governments for the provision of public goods and services. According to the U.S. Census definition, general expenditures include all expenditures with the exception of those for government utilities, liquor stores, and employee retirement funds. For the purpose of this chapter we will utilize this definition.

When discussing the economic impact of public expenditures, we cannot view them in isolation. Public expenditures are part of the budgetary process. At the federal level, this means that for every tax dollar collected, there can be at least a dollar increase in government spending, also known as deficit spending (or the accumulation of debt). At the state and local government level, expenditures must match revenues because budgets are required to balance. If a state has budget shortfall of \$38 billion dollars (such as California in 2003), the state must find a way to balance its books. This means cutting services, raising taxes, or a combination of both. Either way, the choices are painful.

It is also important to understand that both positive and negative consequences occur when the government taxes and spends citizens' dollars. Unsurprisingly, tax increases have a negative economic impact because they represent a reduction in a citizen's disposable income. The more an individual citizen pays in taxes, the less that citizen can spend on goods and services. Likewise, all proposed public expenditure projects show positive economic impacts. However, in the realm of politics, it is not unusual for proposed legislation to simply deal with one side of the equation or the other. A tax cut may be proposed without reductions in expenditures, and expenditures may be proposed without an increase in revenues (Sims, 2003, 1255).

When discussing public expenditures from an economic perspective, we must also note that the composition of government spending is important. Not all government expenditures have equal economic effects. Some types of expenditures, such as K-12 education, are labor intensive and regionally acquired. They produce a relatively high local employment

effect. They also improve the productivity level of the overall workforce in that region. Expenditures such as highway construction also produce different facets of economic growth. Initially, the hiring of construction workers and materials stimulates the local economy, but in the long run, the highway may also contribute to the economy by providing a reduction in regional transportation costs. Finally, other types of expenditures such as corrections produce local jobs but could arguably contribute little to the overall economic climate of the region (Sims, 2003, 1255).

8.2 THE GROWTH OF PUBLIC SECTOR EXPENDITURES

Public expenditures in general increased 60-fold during the twentieth century, while per capita spending increased nearly 20 times during this period (Winters, 1996). Government expenditures were only 13% of personal income in 1927, but then grew rapidly during WWII, reaching 45% of personal income in 1946. Changes have been somewhat modest over the last few decades. In the 1970s, spending generally rose slightly, while it rose more rapidly in the 1980s due to the buildup in defense expenditures, the rapid growth of Medicare and Social Security, and the mounting interest bill on the nation's debt. Expenditures had been relatively flat through the 1990s, settling in at about 47% of personal income (ACIR, 1995). A decade later, government spending is once again increasing due to the recession and the war with Iraq.

All levels of government — national, state, and local — are responsible for such unabated growth. Buchanan (1977) argues from a public choice perspective that population growth, urbanization, income elasticity of demand for public goods, and a lack of productivity improvements in the labor-intensive delivery of government services (Baumol's disease) all contribute to at least half of the explanation of the growth in the size of government. The rest could in part be explained by the motivational structure of government, such as electoral incentives and the voting of bureaucrats for larger government (Buchanan, 1977).

8.3 FISCAL FEDERALISM

Before we begin to describe and analyze expenditure patterns across the U.S., it is first important to understand how expenditure patterns are driven by our political system. Expenditures in the U.S. are best described as complex intergovernmental arrangements marked by specialization and diversity. Due to our unique system of federalism, each level of government in the U.S. “specializes” in the allocation of resources to specific areas. Our federalist system is a unique arrangement created by the Founding Fathers, who envisioned citizens as actors who give their consent to the Constitution. The Constitution then modestly allocates powers to both national and state governments. The national government possesses delegated powers such as those listed in Article I, Section 8, where the Constitution grants Congress the power to coin money, regulate commerce among states and foreign nations, and declare war. Powers that are “not delegated to the United States” government are reserved to the states via the Tenth Amendment. Powers are never spelled out but they are protected in other ways. For example, Article IV promises that state boundaries will be inviolate and guarantees a republican form of government. It is then the Supreme Court’s job to oversee such relationships and to act as the final arbiter in the arrangement (Wright, 1990).*

Primarily redistributive programs, such as Social Security and healthcare, drive the federal government’s expenditures. The federal government also spends a considerable amount of resources on national defense, homeland security, and interest payments on its current debt. At the state level, budgets are required to balance, and expenditures for public programs are an interesting mixture of both redistributive

* Originally the federal government and state governments operated in separate spheres, or what is known as dual federalism largely shaped by early landmark Supreme Court decisions under Supreme Court Justice Marshall. Eventually dual federalism eroded and gave way to a more modern version of federalism known as “marble cake federalism,” where both spheres overlap and boundaries between the state and federal governments are blurred (Wright, 1990).

and developmental expenditures. The 50 state governments, in the aggregate, spend their money on education, highways, health and human services, corrections, and welfare. The story at the local government level is quite different; local governments are creatures of the state and have very little incentive to provide redistributive expenditures such as welfare and healthcare. Instead, they focus on spending their resources on economic development, specifically education, infrastructure, and public safety (Peterson, 1995).

Although the provision of public services (and therefore expenditures) in the United States is often determined by the type of government (such as postal services by the federal government), the provision of public services also occurs cooperatively in many other policy areas. Completely independent operation of these levels would produce politically unacceptable results. In some areas, provision of public services and goods independently without cooperation between governmental entities would inflict severe burdens on some unluckily placed individuals and businesses and leave some lower-level governments in chronic fiscal crisis. Such problems produce the need for joint provision of services by multiple governments (Mikesell, 2003, 508). In multilevel fiscal relationships, grants typically transfer spending power or the command over resources from one government to another. Grants can compensate for spillover costs to nonresidents, encourage fiscal equity in a region, help smaller governments develop new programs, and promote new management practices (Mikesell, 2003, 519). The following section of this chapter will describe and compare the most recent expenditures and trends at each level of government followed by a brief discussion on budgeting and planning for those expenditures.

8.4 U.S. EXPENDITURE PATTERNS COMPARED TO OTHER NATIONS

In comparison to those in most other industrialized nations, government expenditures in the United States are relatively small. To compare across nations, we use the percentage of Gross Domestic Product (GDP). Real GDP is defined as the

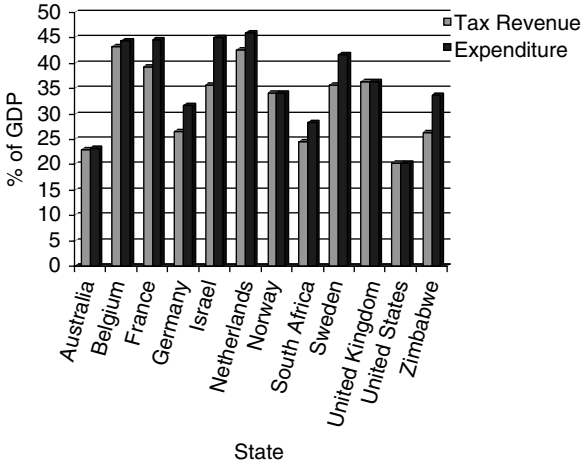


Figure 8.1 1998 Percentage of GDP by revenue and expenditure for selected states. *Source: The World Development Report 2000/2001.* (2001). New York: Oxford University Press.

output of goods and services produced by labor and property located in a particular country* (U.S. Department of Commerce, 2003). The World Development Report of 2000–2001 demonstrates that government revenues and expenditures in the U.S. are about 20% of the GDP. (See Figure 8.1.)**

This is remarkably less than other industrialized countries such as Belgium (with tax revenues of 43% and expenditures of 44% of GDP), France (tax revenues 39%, expenditures 44% of GDP), Germany (tax revenues 26%, expenditures 31%

* Real GDP is an important indicator to track because it provides a greater and broader sectoral detail than any other series. Data reflect income as well as expenditure flows. Sectoral coverage includes durable and nondurable goods, structures, and services. Also, price data by sector are available for detailed subcomponents. Because of the detail available in the GDP reports, this series provides comprehensive information on supply and demand conditions, including information for various types of developing imbalances over the business cycle (U.S. Department of Commerce, 2003).

** The author would like to thank Gary Mitchell for his help with the figures and tables.

of GDP), Israel (tax revenues 35.5%, expenditures 45%), the Netherlands (tax revenues 42.5%, expenditures 45.5%), Norway (tax revenues 34%, expenditures 34%), Sweden (tax revenues of 35%, expenditures 41%) and the United Kingdom (tax revenues and expenditures 35.5%). Even South Africa (tax revenues 24.5%, expenditures 27% of GDP) and Zimbabwe (tax revenues 25.5%, expenditures 34%) have higher levels of revenue and expenditure in comparison to GDP. Notice that Australia is the only industrialized nation close to the U.S., with the total percentage of GDP by tax revenues of 22% and 23% for expenditures. It is also interesting to note that in 1998, most nations were running budget deficits, where their expenditure outlays were greater than their revenues with the exception of the U.S., the U.K., and Norway, where revenues and expenditures reported were roughly equal.

8.5 FEDERAL EXPENDITURES

Richard Musgrave (1959) described essentially three roles for government: allocation, stabilization, and distribution. The first role, allocation of society's resources, occurs when market failure exists and the private market is not efficient. Government steps in to correct for the market inefficiency. An example would be the provision of national defense. Stabilization is the second role of government, according to Musgrave. Stabilization pertains to macroeconomic concerns about policy areas such as inflation, the monetary system, interest rates, and the overall employment rate. The third and final role of government according to Musgrave is distribution. This is primarily concerned with the division of income and other resources such as in-kind aid among citizens (Musgrave, 1959). It typically involves redistributing resources from the wealthy to the poor. Examples of redistribution at the national level are the Social Security and Medicare programs, which provide a safety net for elderly people who, prior to the programs, were overrepresented among the poor. As mentioned before, federal, state, and local governments have different expenditure responsibilities. Overall, federal expenditures are concerned with all three roles of government and have

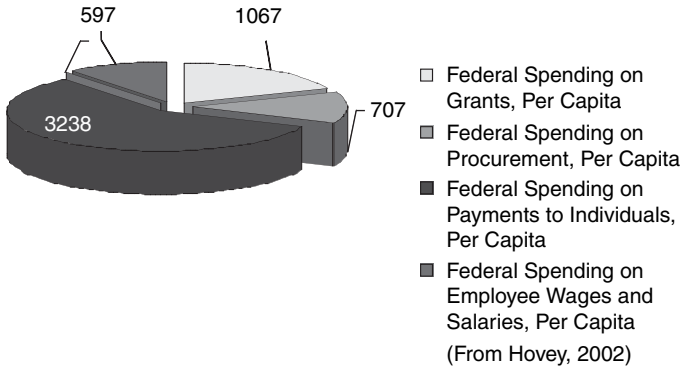


Figure 8.2 United States federal government spending by major category, per capita, 2000. *Source:* K. Hovey and H. Hovey. 2002. *State Fact Finder*. Washington, D.C.: CQ Press, pp. 120–127.

evolved over time into a patchwork of programs and regulations. The federal government spends money on national defense, foreign affairs, Social Security, Medicare, interest on public debt, and payments to state governments for Medicaid and other welfare programs. State and local governments do not typically pay for the national defense, nor do they pay for Social Security and Medicare.

To better understand how the federal government allocates its expenditures, we will first look at most recent per capita average expenditures nationwide and their subsequent breakdown into four basic categories. (See Figure 8.2.) In 2000, the federal government spent on average \$5,609 per capita. This amounts to over one quarter of all economic activity in the United States (Hovey and Hovey, 2000, 132). A total of \$3,238 per capita went to individuals (almost 58%), making this the highest expenditure category overall. This category includes food stamps, federal pensions, Social Security, and Medicare. To demonstrate how much of this category is dominated by entitlement spending for the elderly, Medicare and Social Security make up \$2,326 of the \$3,238, leaving only approximately 28% of individual payments being allocated to other individual payment programs (Hovey and Hovey, 2000).

Entitlements are a specific type of government expenditures for which the federal government has set eligibility criteria. Examples of this type of program are Medicare and Social Security, where eligibility is determined by age. If an individual meets the criteria, that individual is “entitled” to money.

Federal entitlement programs are mandatory and therefore to some degree uncontrollable in the federal budgetary process. This is not only because these programs are famous for being politically sacred but because the money allocated to these programs cannot be changed from year to year unless Congress makes a proactive change in the legislation. This is different from discretionary expenditures, which are only good for one year and must be renewed by Congress through its appropriations process (Fisher, 2003, 437). Entitlement expenditures have grown substantially since the 1960s. In 1962, entitlement spending only accounted for about 31% of the federal government’s total expenditures. As mentioned before, in 2000 entitlement expenditures constituted almost 58% of the federal budget. The bulk of this growth occurred between 1966 and 1976 when entitlements doubled in relation to the size of the economy, growing from 5.4% of the GDP to 11.3%. During this period, Medicare, Medicaid, and food stamps were introduced and Social Security benefits were greatly expanded (Fisher, 2003, 438). In 2000, Social Security benefits alone constituted the most expensive federal program ever by paying out an estimated \$387 billion in benefits to the retired, disabled, and those eligible by death of an insured worker (OMB, 2001).

Payments to individuals as a category of federal expenditures is followed by federal grants to state and local governments. Grants to state and local governments with an average per capita expenditure of \$1,067 make up about 19% of total federal expenditures. Intergovernmental grants involve assigning federal expenditures to subnational governments. The revenue from the federal government is primarily derived from the federal income tax, and then the money is used to offset inequities across state and local governments. Federal grant money funds a variety of programs, including Medicaid, highway construction, and social service programs

(Hovey and Hovey 2000, 119). Federal grant money is often used to encourage state and local governments to spend their own sources of revenue on programs by providing matching grants. Federal grant money is different from direct payments to individuals because the grants are administered through state and local government agencies.

The third-largest category of federal expenditures is allocated for procurement (the purchase of goods such as tanks and space shuttles) with an average expenditure of \$707 per capita or about 16%. The largest subcategory in procurement is primarily spent on military installations and defense (Hovey and Hovey, 2000, 119). Finally, federal employee wages and salaries (civilian and military) comprised the smallest expenditure, of \$597 per capita, less than 11% of federal expenditures.

8.6 STATE AND LOCAL GOVERNMENT EXPENDITURES

The purpose of this section is to explain the variation and diversity of state and local government expenditures. Each state or local government is unique. Each reflects a diversity of public choices. For this reason, state-to-state expenditures and city-to-city or county-to-county expenditures are not uniform. For example, in states like Alaska and Hawaii, state governments play a major role. In other states such as Florida, New Hampshire, and Texas, local governments account for the majority of state and local expenditures (Fisher, 1996).

Table 8.1 demonstrates this diversity by examining total state expenditures (see columns 1 and 2). In fiscal year 2000, California, the most populous state (population almost 34 million), spent \$134 billion in public expenditures. This differs considerably from a small state such as Wyoming (population 493,782), which spent only a little over two billion dollars in fiscal year 2000. However, if we control for population and look at per capita expenditures, we get a very different picture. California now ranks twelfth in expenditures instead of

TABLE 8.1 State Total Expenditures, FY 2000

| State | Total Expenditure (in Thousands of Dollars) | Total Population | Per Capita Expenditure | Rank |
|----------------|---|---------------------|---------------------------|------|
| Alabama | 14,399,604 | 4,447,100 | 3,238 | 32 |
| Alaska | 5,972,185 | 626,932 | 9,526 | 1 |
| Arizona | 15,283,545 | 5,130,632 | 2,979 | 40 |
| Arkansas | 8,966,540 | 2,673,400 | 3,354 | 28 |
| California | 134,203,791 | 33,871,648 | 3,962 | 12 |
| Colorado | 12,485,324 | 4,301,261 | 2,903 | 43 |
| Connecticut | 14,855,976 | 3,405,565 | 4,362 | 7 |
| Delaware | 3,912,687 | 783,600 | 4,993 | 3 |
| Florida | 42,485,698 | 15,982,378 | 2,658 | 48 |
| Georgia | 23,091,711 | 8,186,453 | 2,821 | 45 |
| Hawaii | 5,975,493 | 1,211,537 | 4,932 | 4 |
| Idaho | 4,038,683 | 1,293,953 | 3,121 | 39 |
| Illinois | 36,895,333 | 12,419,293 | 2,971 | 41 |
| Indiana | 19,187,811 | 6,080,485 | 3,156 | 36 |
| Iowa | 10,520,387 | 2,926,324 | 3,595 | 20 |
| Kansas | 8,417,471 | 2,688,418 | 3,131 | 38 |
| Kentucky | 14,196,788 | 4,041,769 | 3,513 | 25 |
| Louisiana | 14,765,628 | 4,468,976 | 3,304 | 30 |
| Maine | 4,850,079 | 1,274,923 | 3,804 | 16 |
| Maryland | 17,342,654 | 5,296,486 | 3,274 | 31 |
| Massachusetts | 26,821,422 | 6,349,097 | 4,224 | 9 |
| Michigan | 39,003,752 | 9,938,444 | 3,925 | 13 |
| Minnesota | 19,674,542 | 4,919,479 | 3,999 | 11 |
| Mississippi | 10,049,045 | 2,844,658 | 3,533 | 24 |
| Missouri | 15,837,256 | 5,595,211 | 2,831 | 44 |
| Montana | 3,324,887 | 902,195 | 3,685 | 19 |
| Nebraska | 5,536,622 | 1,711,263 | 3,235 | 33 |
| Nevada | 5,369,012 | 1,998,257 | 2,687 | 47 |
| New Hampshire | 3,884,463 | 1,235,786 | 3,143 | 37 |
| New Jersey | 28,160,194 | 8,414,350 | 3,347 | 29 |
| New Mexico | 7,985,407 | 1,819,046 | 4,390 | 6 |
| New York | 81,370,941 | 18,976,457 | 4,288 | 8 |
| North Carolina | 27,241,758 | 8,049,313 | 3,384 | 27 |
| North Dakota | 2,568,668 | 642,200 | 4,000 | 10 |
| Ohio | 36,143,917 | 11,353,140 | 3,184 | 35 |
| Oklahoma | 8,788,311 | 3,450,654 | 2,547 | 50 |
| Oregon | 13,154,826 | 3,421,399 | 3,845 | 15 |
| Pennsylvania | 41,936,697 | 12,281,054 | 3,415 | 26 |
| Rhode Island | 3,987,382 | 1,048,319 | 3,804 | 16 |

TABLE 8.1 (CONTINUED) State Total Expenditures, FY 2000

| State | Total Expenditure (in Thousands of Dollars) | Total Population | Per Capita Expenditure | Rank |
|----------------------|---|---------------------|---------------------------|------|
| South Carolina | 14,194,639 | 4,012,012 | 3,538 | 23 |
| South Dakota | 2,227,744 | 754,844 | 2,951 | 42 |
| Tennessee | 15,821,917 | 5,689,283 | 2,781 | 46 |
| Texas | 53,832,163 | 20,851,820 | 2,582 | 49 |
| Utah | 7,956,320 | 2,233,169 | 3,563 | 22 |
| Vermont | 3,067,606 | 608,827 | 5,039 | 2 |
| Virginia | 22,608,544 | 7,078,515 | 3,194 | 34 |
| Washington | 21,950,637 | 5,894,121 | 3,724 | 18 |
| West Virginia | 6,490,829 | 1,808,344 | 3,589 | 21 |
| Wisconsin | 20,645,476 | 5,363,675 | 3,849 | 14 |
| Wyoming | 2,254,058 | 493,782 | 4,565 | 5 |
| United States | 963,736,423 | 280,849,847 | 3,432 | N/A |

Source: Adapted from Hovey and Hovey, 2000.

first, with a per capita average of \$3,962. Wyoming now spends considerably more (\$4,565 per capita) and ranks fifth.

Among local governments, there is really not a single structure that is duplicated. Therefore the quantity and quality of expenditures for certain programs vary tremendously. The one thing that all local governments have in common is they are creatures of the state. In other words, local governments are dependent upon their respective state governments for authority. For this reason, another way to look at subnational expenditures is to view them in combination. Once local governments have been figured into the equation, expenditure rankings change again. Table 8.2 demonstrates that per capita expenditures vary again. California, our twelfth state in expenditures, now moves up to number nine, and Wyoming has moved to third.*

What drives state and local expenditures? There are several explanations. First and foremost, the national economy

* The authors acknowledge the data are from different years, 2000 and 1999. Combined state and local data for the year 2000 were not yet available.

TABLE 8.2 State and Local Total Expenditures, FY 1999

| State | Total Expenditures (in Millions of Dollars) | Per Capita Total Expenditures | Total Expenditures as a Percentage of Personal Income | Rank Per Capita |
|----------------|---|-------------------------------------|--|-----------------------|
| Alabama | 23,378 | 5,350 | 24.3 | 34 |
| Alaska | 8,085 | 13,041 | 47.1 | 1 |
| Arizona | 24,062 | 5,036 | 21.4 | 41 |
| Arkansas | 11,752 | 4,607 | 21.8 | 50 |
| California | 217,970 | 6,576 | 23.6 | 9 |
| Colorado | 23,503 | 5,795 | 19.8 | 21 |
| Connecticut | 22,262 | 6,783 | 18.2 | 5 |
| Delaware | 4,889 | 6,484 | 22.2 | 11 |
| Florida | 80,663 | 5,338 | 20.1 | 35 |
| Georgia | 41,057 | 5,272 | 20.6 | 36 |
| Hawaii | 7,789 | 6,573 | 24.5 | 10 |
| Idaho | 6,195 | 4,948 | 23.0 | 45 |
| Illinois | 69,283 | 5,713 | 19.2 | 23 |
| Indiana | 29,540 | 4,971 | 19.9 | 44 |
| Iowa | 16,138 | 5,625 | 22.7 | 26 |
| Kansas | 13,366 | 5,036 | 19.7 | 42 |
| Kentucky | 20,421 | 5,155 | 23.2 | 40 |
| Louisiana | 23,810 | 5,446 | 24.4 | 30 |
| Maine | 6,963 | 5,557 | 23.7 | 28 |
| Maryland | 27,941 | 5,402 | 17.7 | 32 |
| Massachusetts | 40,986 | 6,637 | 20.0 | 7 |
| Michigan | 57,058 | 5,784 | 21.7 | 22 |
| Minnesota | 31,874 | 6,674 | 22.9 | 6 |
| Mississippi | 14,299 | 5,164 | 26.0 | 39 |
| Missouri | 26,585 | 4,862 | 19.2 | 47 |
| Montana | 4,739 | 5,367 | 25.3 | 33 |
| Nebraska | 9,983 | 5,992 | 23.2 | 17 |
| Nevada | 10,848 | 5,997 | 20.9 | 16 |
| New Hampshire | 5,890 | 4,904 | 16.7 | 46 |
| New Jersey | 51,265 | 6,269 | 18.5 | 12 |
| New Mexico | 10,578 | 6,079 | 28.8 | 14 |
| New York | 160,937 | 8,844 | 27.5 | 2 |
| North Carolina | 42,198 | 5,515 | 22.0 | 29 |
| North Dakota | 3,783 | 5,967 | 26.1 | 18 |
| Ohio | 63,475 | 5,639 | 21.6 | 25 |
| Oklahoma | 15,682 | 4,670 | 21.2 | 49 |
| Oregon | 21,911 | 6,608 | 25.7 | 8 |
| Pennsylvania | 70,689 | 5,894 | 21.5 | 19 |
| Rhode Island | 6,137 | 6,192 | 22.2 | 13 |
| South Carolina | 21,159 | 5,445 | 24.4 | 31 |
| South Dakota | 3,552 | 4,846 | 20.4 | 48 |
| Tennessee | 30,641 | 5,587 | 22.9 | 27 |

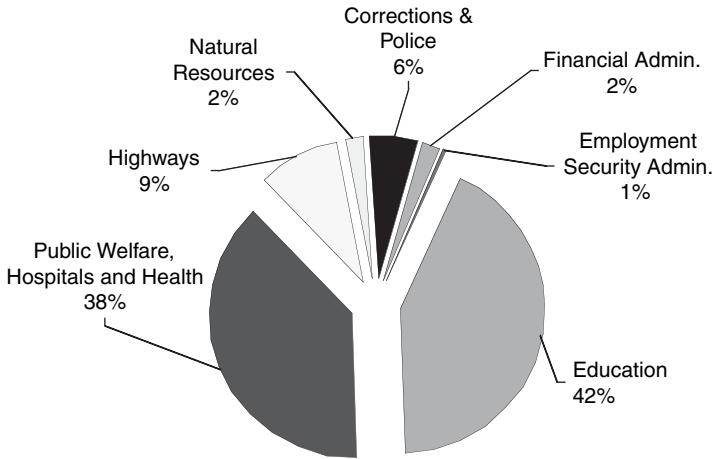
TABLE 8.2 (CONTINUED) State and Local Total Expenditures, FY 1999

| State | Total Expenditures (in Millions of Dollars) | Per Capita Total Expenditures | Total Expenditures as a Percentage of Personal Income | Rank Per Capita |
|----------------------|---|-------------------------------|---|-----------------|
| Texas | 100,327 | 5,005 | 19.7 | 43 |
| Utah | 12,370 | 5,807 | 26.4 | 20 |
| Vermont | 3,352 | 5,643 | 22.9 | 24 |
| Virginia | 35,499 | 5,165 | 18.4 | 38 |
| Washington | 40,177 | 6,980 | 24.7 | 4 |
| West Virginia | 9,389 | 5,196 | 25.6 | 37 |
| Wisconsin | 31,673 | 6,033 | 23.1 | 15 |
| Wyoming | 3,542 | 7,379 | 29.6 | 3 |
| District of Columbia | 6,273 | 12,087 | 31.9 | N/A |
| 50 states | 1,619,666 | 5,951 | 22.0 | N/A |
| United States | 1,625,939 | 5,963 | 22.0 | N/A |

Source: Adapted from Hovey and Hovey, 2000.

affects state and local fiscal decisions. Periods of growth, recession, and inflation all contribute to how states allocate their resources. Federal aid is also another substantial influence. Larger than the revenue from any single state tax, such as sales or income tax, federal aid to state government makes up approximately one-quarter of state revenue sources. When the federal government cuts back on aid or increases aid, this inversely affects public expenditures at the state level. Likewise, when a state government holds back aid to local governments, it also affects expenditures at the local level. Some federal aid also goes to local governments directly, and cuts in aid also directly impact local government expenditures. Local governments either turn to the state level for funds, raise local taxes, or cut service levels.

Within a particular region, shifts in economic activity and changes in demographics also affect expenditure decisions. The aging of a state population may cause the state to spend more money in the area of health services, while the influx of a young immigrant group may drive states' educational expenditures (Fisher, 1996).



Source: Adapted from *The Book of States*, Vol. 34
 Total Spending for FY 2000 = \$963,736,423 (in thousands).

Figure 8.3 General expenditures of states by major functions (in thousands of dollars). *Source:* Adapted from *The Book of States*, Vol. 34. The Council of State Governments, 2003, Lexington, KY.

When we look at the general expenditure patterns across states by major functions, several patterns emerge. (See Figure 8.3.) Education constitutes the largest expenditure category. This is followed by public welfare, hospitals, and healthcare. The third largest expenditure category is highways. Corrections and police is the fastest-growing sector of state expenditures. Finally, financial administration, natural resources, and employment security administration make up the final categories.

8.7 CURRENT TRENDS IN PUBLIC EXPENDITURES: THE DEVOLUTION REVOLUTION

The most recent phase in the evolution of the American federal system that directly impacts expenditures is what is called the “Devolution Revolution.” The core concept of devolution involves turning back federal domestic programs to

state and local governments with an emphasis on the rearrangement rather than the reform or diminution of public authority. Devolution as a part of political rhetoric has taken on many meanings. Devolution, or defederalization, in its purest form, means state and/or local governments will now be responsible for the financing, implementation, and responsibility of specific programs. In other versions, devolution can mean as little as the decrease in federal grants-in-aid without removing federal mandates. The author of this chapter views devolution as the reduction of authority, resources, and legitimacy of the federal government and as an opportunity for state and local governments to inherit or take over the authority, resources, and legitimacy of domestic programs. The political ramifications of this definition of devolution also mean a more limited interpretation of the “enumerated powers” and a broader interpretation of the Tenth Amendment by the Supreme Court (Leland, 2001).

In the 1990s, legislation passed to expand state discretion over transportation expenditures, drinking water standards, and highway safety. But perhaps the most revolutionary example of devolution is welfare reform. Welfare reform is the most recent example of the transfer of authority, resources, and legitimacy from the federal government to the states. National legislation signed into law in 1996 abolished a 60-year tradition of federal aid to the poor (Donahue, 1999, 27). Freestanding state programs replaced federal programs. Known as The Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA), this legislation shifted Aid to Families with Dependent Children (an open-ended matching formula grant) to Temporary Assistance to Needy Families, a federal block grant. This change in jurisdiction was intended to provide states with more flexibility in constructing and administering their welfare benefits. It has broken the long tradition of federal administration of safety net programs.

Another example of how devolution could potentially affect expenditure patterns at the federal, state, and local levels is the passage of a law prohibiting the imposition of

unfunded mandates. The intention of the act, promoted by then-Speaker of the House Newt Gingrich and the 104th Congress, was to limit the federal government's power to adopt federal mandates for state and local governments without paying for the costs. This was promise number eight in the Contract with America. As is true for most legislation, the final product looks different from the original intention. And although the Clinton administration publicly claimed to have welcomed the Unfunded Mandates Reform Act, its acceptance of the bill came at great cost. In order to pacify the concerns of several environmental and public interest groups, the bill was weakened substantially. While the act establishes a procedure that is supposed to make it more difficult to enact mandates, huge loopholes remain. First and foremost, the act does not apply to existing unfunded mandates. However, it was the burden of such mandates that states and localities fought for in the first place. Second, the act exempts certain categories of new unfunded mandates including those that enforce the constitutional rights of individuals; those that prohibit discrimination on the basis of characteristics such as race, sex, age, and disability; and those that are designated as "emergency legislation" by the president and Congress. Third, when new federal mandates are proposed, the act only applies to bills that have been reported out of a Congressional committee. Yet bills that are not reported by committee can still be considered on the floor. Also, usually the time between the conference committee vote and the final vote by the entire Congressional body is too brief to calculate accurate cost estimates of the mandate. These loopholes mean that the costs of federal mandates often will escape close scrutiny. While the act provides for a point of order in either the House or Senate for new unfunded mandates, a simple majority in either house can vote to override the veto. For a mandate that has a lot of support, this is not a very cumbersome procedural hurdle. In sum, the Unfunded Mandates Reform Act is really what some call a "Toothless Tiger"—a law with little power and therefore little impact on our nation's expenditure patterns (Nathan, 1997).

8.8 CONCLUSIONS

This chapter has examined and analyzed public expenditures across our federal fiscal system. The purpose of this chapter was to provide a comprehensive overview of the diversity and complexity of federal, state, and local government public expenditures in the U.S. It was also intended to provide a current snapshot of how each level of government is allocating its resources. Several trends were highlighted, including the size and growth of public expenditures over the last several decades and devolution of responsibilities from the federal government to state and local governments.

SUGGESTIONS FOR FURTHER READING

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Intergovernmental Grants

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9.1 INTRODUCTION

As lawmakers draft their tax cut for fiscal year 2004, one of the most contentious issues has nothing to do with taxes but concerns whether the package ought to contain any help for the financially struggling states.*

Grant-in-aid payments from the federal government to state and local governments in the U.S. soared upwards for almost three decades (1950 to 1970). Since then, however, these grants have been less certain and shrinking relative to state and local government spending, and states and localities

* Helping the states, *Washington Post*, May 8, 2003, p. A30.

have come to increasingly rely on their own sources of funding (taxes, fees, charges, etc.). The strong economy of the past decade had increased revenues for many governments generating surpluses and a fiscal environment that favors tax cuts. Since early 2001, a national recession has taken the focus of governments in the U.S. from “surplus management” to “deficit reduction”; the fiscal year 2002 has been claimed by states and localities as the worst deficit situation in several decades, and some claim it is the worst they have seen. History suggests that the fiscal structure of a federal system of government creates a situation where “deficits at the top of the food chain will trickle down to the bottom level” (Miranda and Pincur, 2003). As the federal government struggles with its projected deficits,* it is likely that federal grants to states and localities will be reduced further, making the state and local deficits worse, and so on until we can see a sustained economic recovery.

Intergovernmental grants (referred to as grants) are designed to deal with such budgetary tensions at different levels of government (Oates, 2003). Counter-cyclical flows of intergovernmental grants from federal to state and local governments have been used in the recent past, in the U.S. From 1972 to 1987, federal revenue sharing grants were used to alleviate revenue constraints at the subnational level. Fiscal experts in the U.S. have supported the idea of temporary revenue sharing grants during the current recession as one measure to counter the business cycle. Others have cautioned against the use of such counter-cyclical measures because it might create perverse incentives for states and thereby

* The U.S. Congressional Budget Office, in May 2003, estimated the annual federal deficit would exceed \$300 billion. This excluded the additional tax cuts proposed by President Bush for the fiscal 2004 budget year. The highest deficit ever was \$290 billion in 1992. But because the U.S. economy is much larger today than it was then, Republicans argue that today’s projected shortfall will have less of an impact (*New York Times*, May 12, 2003).

reverse the trend towards self-sufficiency at the subnational level.* This dilemma is characteristic of the debates about the use of intergovernmental grants in the U.S. and in other countries. While there is a normative theory of intergovernmental grants (discussed in this chapter), for most part the practical applications of grants take place in a political-economy context where ideology, at best tempered by some norms, is decisive in the design of policy.

Section 9.2 describes the relevant history of intergovernmental grants in the U.S. (focusing on federal grants to states and localities). The rationale for grants in a federal system is described in Section 9.3. The taxonomy of grants used in the U.S. along with the fiscal effects of each type of grant on the grant recipient government is discussed in Section 9.4. Various policy questions about the use of federal grants in the U.S. are reviewed in Section 9.5, and this section provides some directions for research on intergovernmental grants. Finally, Section 9.6 provides a summary of this chapter.

9.2 PERSPECTIVES FROM THE U.S. DATA ON INTERGOVERNMENTAL GRANTS**

The literature and policy issues described in this chapter presume some knowledge of the relevant history of federal intergovernmental grants and state and local government expenditure in the U.S. Section 9.2.1 discusses the trends in these data for the past five decades. Federal intergovernmental

* Oates (2003) cautions against creating the expectation of a fiscal “bailout” for states and localities as undermining responsible and accountable budgetary decision making. He points out that macroeconomic stabilization is not solely a centralized responsibility. States and localities do undertake some counter-cyclical measures such as the adoption of rainy day funds (undesigned reserve funds for contingency purposes).

** For a more detailed discussion of trends in intergovernmental grants in the U.S. see Shama Gamkhar, (2002). The discussion in this section and Sections 9.2.1 and 9.2.2 are reprinted from this book with the publisher’s permission.

grants in the U.S. have undergone significant changes during the last three decades and Section 9.2.2 provides some perspectives on these changes and their effects on the share of federal intergovernmental grants in state and local spending for broad functional areas of the state and local public sector.

9.2.1 Trends in Intergovernmental Grants and State and Local Government Expenditure

Real federal grants (1987 = 100) in the U.S. grew fairly steadily from the late 1950s and through the decade of the 1960s but declined since the mid-1970s with intermittent periods of increases (Figure 9.1). The reductions in federal aid, starting in the mid-1970s, were in sharp contrast to the several previous decades of rapid growth in federal intergovernmental aid. There has again been some reduction in these grants in the 1990s, but the grants have leveled out during the mid- to late 1990s. Total real state and local government expenditure (1987 = 100) also shows a hint of leveling off in 1990s, though, for most part, over the period 1957 through 1991 this expenditure was steadily rising (Figure 9.2).

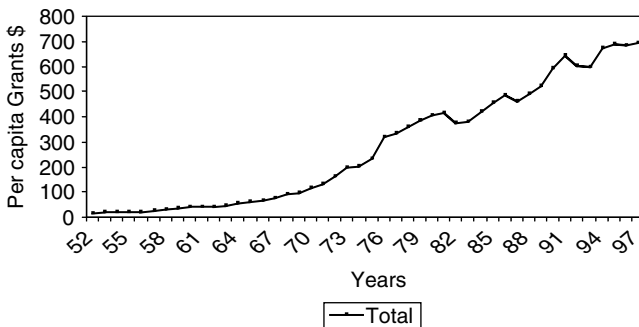


Figure 9.1 Federal intergovernmental grants. *Source:* Gamkhar S. *Federal Intergovernmental Grants and the States: Managing Devolution*. Canterbury, MA: Edward Elgar Publishing Limited, 2002, p. 2.

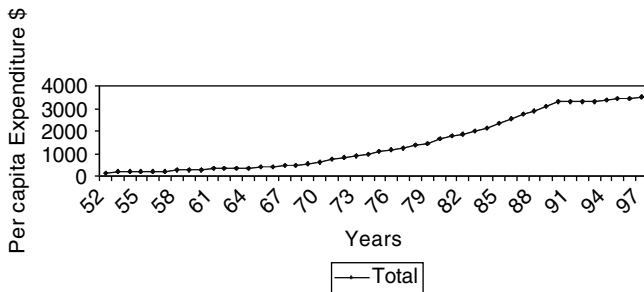


Figure 9.2 State and local government expenditure. *Source:* Gamkhar S. *Federal Intergovernmental Grants and the States: Managing Devolution*. Canterbury, MA: Edward Elgar Publishing Limited, 2002, p. 2.

9.2.2 The Share of Federal Aid in State and Local Government Expenditure

During the period 1971 to 1997, federal grants to states and localities constituted an important lifeline for several social and economic public programs, ranging from an average of 44% of the total state and local government expenditure on welfare, health, and hospital programs (welfare programs) to as little as an average of 4% of the total state and local government expenditure on education (Table 9.1).

TABLE 9.1 Percentage Share of Federal Intergovernmental Grants in State and Local Government Expenditure, 1971 to 1997

| | 1971 | 1975 | 1980 | 1985 | 1990 | 1995 | 1997 |
|-----------|------|------|------|------|------|------|------|
| Education | 5.1 | 4.4 | 5.0 | 3.8 | 3.7 | 3.8 | 4.0 |
| Welfare | 49.0 | 43.3 | 43.4 | 41.1 | 40.9 | 44.8 | 42.0 |
| Highways | 25.3 | 20.0 | 27.3 | 26.4 | 22.4 | 23.9 | 24.7 |
| Others | 15.1 | 17.3 | 23.8 | 12.0 | 8.9 | 8.4 | 8.1 |
| Total | 19.0 | 20.6 | 23.4 | 19.6 | 15.2 | 16.0 | 15.3 |

Source: Gamkhar S. *Federal Intergovernmental Grants and the States: Managing Devolution*. Canterbury, MA: Edward Elgar Publishing Limited, 2002, p. 5.

During the period 1971 to 1980, the percentage of federal aid in total state and local expenditure increased from 19 to 23%. The percentage of federal aid in state and local expenditure decreased between 1971 and 1975 in all categories of expenditure except in the category of "other" expenditures, and then increased to the end of the decade. The "other" expenditures include programs such as environmental and economic development projects and low-income housing; in this case, the percentage shares of federal aid rose throughout this period.

The very high share of federal aid in welfare expenditure noted in 1971 has a special explanation. During the late 1960s, the federal welfare rolls were very small and the federal government organized a campaign to enlist qualifying individuals in the welfare programs. The benefits in these programs were guaranteed by law to all eligible individuals and therefore could not be restricted by a limit on federal appropriation for the program. The increases in welfare enrollment during the early 1970s resulted in a large increase in welfare grants in 1971, as observed in Table 9.1 (discussed below).

Between 1980 and 1990, federal grants to state and local governments dropped from an average of 23% of state and local direct general expenditure to about 15% (Table 9.1). While the share of federal aid in state and local government expenditure declined in all categories of expenditure during the years 1980 to 1990, the reductions were the largest in the "other" expenditure category; in the latter case the share of federal aid in state and local government expenditure dropped from 24 to 9%. In contrast, the share of federal aid in welfare dropped from 43 to 41% during the period 1980 to 1990. The absence of significant cuts in federal aid for state and local welfare spending is explained by several factors: economic recession that continued for most of the early 1980s; the rising costs of public health care, subsidized by federal grants, such as Medicaid; and to some extent state budget maneuvers to obtain additional federal entitlement aid which the Reagan administration budget-cutting measures were not able to curtail. On the other hand, the decline in the share of federal

aid in welfare expenditure in 1997 is also explained by the end of a long period of recession in 1997 and the concurrent tightening of federal and state conditions on eligibility for various welfare programs as a part of welfare reform.

9.3 PURPOSE OF GRANT

Intergovernmental grants are a key mechanism for devolution in a federal system; other methods include the judicial and legislative delegation of fiscal responsibilities. An example of judicially mandated reforms in the U.S. federal system are the court mandated reforms in public school financing, transferring a greater part of the responsibility for public school revenues from localities to states (Evans et al., 1997). In a federal system each level of government has its own set of expenditure and revenue functions. The basic “principle” for assigning fiscal functions to different level of governments should be to provide incentives for public officials at all levels of government to enact programs where benefits for society exceed costs, and a jurisdiction proposing a new program bears the costs of the proposed program and receives benefits commensurate with the costs incurred (Oates, 2003).

Intergovernmental grants are justified in a federal system on various grounds (Oates, 1996):

1. To compensate for external effects of public goods and services (public programs)
2. To equalize fiscal capacity of decentralized jurisdictions
3. To promote equitable and efficient tax systems via revenue sharing between central and decentralized governments in a federation and to act as a macro-economic stabilizing mechanism for the subnational government

Selecting an appropriate form, designing the associated conditions, and determining the method of distribution of intergovernmental grants are important if the grant is to achieve the specific purpose. The grant forms mentioned in this section are described in more detail in the next section.

9.3.1 Compensate for External Effects

When a program in one jurisdiction or a group of jurisdictions affects the well-being of others, but without monetary compensation, in these cases economic decisions at the level of the individual jurisdiction will tend to be suboptimal from society's point of view.* In such cases, there are two options by which the program can be expanded to a size that is socially optimal: one is to centralize the program funding to the level of government that encompasses all the jurisdictions that benefit from the program (if it is politically and constitutionally feasible to do this); or intergovernmental grants can be provided to the jurisdiction(s) whose program benefits spill over to the other jurisdictions (Oates, 2003). The latter is often preferred because the lower-level governments are better equipped to design programs to match the preferences of their constituents. Grant funds are obtained by the grantor government (state or federal) from taxes on all jurisdictions; therefore, most jurisdictions end up paying for some or all of their external benefits in state or federal taxes (Fisher, 1998). An example of such a benefit spillover arises in the construction of an extension to a national highway by a locality or a state. The benefits from the highway extensions spill over to other jurisdictions that do not incur the cost of constructing the extension. Federal highway grants to the jurisdiction constructing the highway extension could be designed to compensate the jurisdiction for spillover benefits and to provide it with an adequate incentive to construct the highway. The appropriate form of a grant for compensating jurisdictions for programs that provide external benefits is matching grants.

9.3.2 Equalize Fiscal Capacity

Within a federation, state and local governments generally have different capacities to raise tax revenues even with a

* A similar definition is used for external effects created by the actions of individuals or groups of individuals — an individual subsidy or tax would be the appropriate fiscal instrument in this case.

similar assignment of taxing authority. These differences between jurisdictions primarily stem from the differences in their endowment of tax bases; richer communities are able to raise the same tax revenues as poorer jurisdictions with lower tax rates and lower effective tax burdens on their residents. Fiscal inequities across jurisdictions are further aggravated by the differences in service needs of richer and poorer jurisdictions; the former are usually comparatively less dependent on public services than are the latter. An appropriately designed nonmatching grant can correct fiscal inequities across jurisdictions; it does not, however, address individual-level fiscal inequities within a jurisdiction. Equalizing grants are inversely proportional to the jurisdiction's fiscal capacity and directly related to its needs; they should not depend on the jurisdiction's fiscal response (Oates, 2003).

Differences in net fiscal burden across jurisdictions can also induce individual migration among local communities resulting in a type of externality. Potential migrants in search of low tax–high service jurisdictions can impose a cost on other residents of the jurisdiction they move to without making any compensation for their actions (Hamilton, 1975). This external cost arises if the new residents face less in tax cost than the cost of services they consume, while existing residents are likely experiencing a reduction in their service or a higher cost of services or a combination of the two (Fisher, 1996). In this case market forces should lead to a capitalization of the fiscal surplus realized by new residents into property values of the low tax–high service jurisdiction, eliminating the source of the externality. Higher rents in this jurisdiction will raise property values. For the process of capitalization to be complete, residents in the relevant jurisdictions need to be highly mobile and capital markets efficient. In the event that these preconditions are not met, the proposed externality will persist and can only be remedied by a suitable policy intervention. One way to curtail the externality is to use an appropriately designed intergovernmental grant to the jurisdiction where the migration originated (high tax–low service jurisdiction) to lower the cost of services and thereby discourage fiscally

induced migration. The appropriate form of grant in this case is one based on the jurisdiction's tax effort.

A variant of a tax effort-based fiscal equalization grant is used to eliminate fiscal inequities created by the financing of public school education with property taxes. The underlying principle is that equal tax effort per pupil should generate equal revenue per pupil for public school education. States have used intergovernmental grants to guarantee equal revenue per pupil for equal tax effort by the jurisdiction responsible for providing public school (K-12) education. These grants, among other formula features, tend to be inversely proportional to the jurisdiction's property wealth and directly proportional to its tax effort.

9.3.3 Promote Efficient and Equitable Tax Systems

Taxes at the state and local levels entail greater inefficiencies relative to national taxes. Economic theory suggests that the same tax revenues can be raised, with less distortion of economic decisions, by jurisdictions with a broader geographic coverage. This criterion would, *ceteris paribus*, make the tax levied by a national government less distorting than the tax levied by a state or a local government because residents have fewer choices to avoid the national tax via relocation. Additionally, state and local governments also tend to shift the burden of their taxes onto other jurisdictions — tax exportation — resulting in inefficiencies (Oates, 2003). For example, the hotel-motel tax is often used by these governments and is mostly paid by nonresidents. Tax exportation lowers the cost of public services in the tax-exporting jurisdiction to below the full cost of these services. Consequently, residents' demand for public services rises beyond the socially desired level. Lastly, the larger scale of operations at the federal level offers greater opportunities for economies of scale in administering a tax at the national level than at the state and local level (Oates, 2003). Finally, national governments are also more effective in redistributing individual income with the use of

progressive taxes than state and local governments are. In this case state and local government taxes are prone to leakages in revenue due to mobility of residents induced by fiscal differentials across jurisdictions resulting from tax progressiveness.

What all this suggests is that the federal government, by virtue of its broader geographic coverage, limited tax shifting possibilities, and greater scope for progressive taxes, is likely to be more effective and efficient in raising tax revenues than state and local governments can be. This line of reasoning is often proposed for using federal tax revenues coupled with federal intergovernmental grants to states and localities, as a substitute for state and local tax revenues. These intergovernmental grants in this case are typically in the form of a revenue-sharing grant, with the federal government imposing a uniform tax on all jurisdictions and distributing the proceeds to these jurisdictions based on a revenue-sharing formula. The federal government in the U.S. initiated a revenue-sharing program of a modest magnitude during much of the 1970s and 1980s to transfer federal revenues to state and local governments unconditionally.*

9.4 TYPES OF GRANTS AND THEIR FISCAL EFFECTS

9.4.1 Taxonomy of Federal Aid Design Features

The key features of federal aid programs include form of the grant, the limits on funding, and the formula for distribution of grants across the grant recipient jurisdictions. The federal grant forms considered in the U.S. can be classified as categorical, block, and shared revenues (Table 9.2). A categorical grant is one that is directed to a narrowly specified activity. Block grants provide a broader functional focus and greater

* Oates (2003) cautions that an excessive use of central government support of state and local expenditure on public services could undermine the effectiveness of local governments as providers of public services.

TABLE 9.2 Federal Intergovernmental Grants: Design Characteristics

| Design Types | Categorical | | | Cost Reimbursed | Block | Shared Revenues |
|-----------------------------|--------------|------------|------------------|-----------------|-------------------|-----------------|
| | Non-matching | Matching | | | | |
| | | Open-Ended | Closed-Ended | | | |
| Matching required | None | Yes | Yes ^a | None | None ^b | None |
| Federal funding limitation | Yes | None | Yes | None | Yes | Yes |
| Formula (f) vs. project (p) | f/p | f | f/p | f | f | f |

^a Federal share of the matching funds stops once the appropriation limit on federal funding is reached.

^b Most block grants have no requirement of statutory matching funds from the grant recipient.

Source: Gamkhar S. *Federal Intergovernmental Grants and the States: Managing Devolution*. Canterbury, MA: Edward Elgar Publishing Limited, 2002, p. 20.

discretion in the use of funds by the grant recipient. The distinction between categorical and block grants can be illustrated by considering separate federal grants for alcohol, drug abuse, and mental health (categorical) as opposed to a single grant for all three functions (federal block grant created in 1982). Finally, in the case of shared revenues, there is no specific function to which these grants are directed and their use is fully determined by the grant recipient. The U.S. revenue-sharing grant in 1973 to 1987 is the best example of a revenue-sharing grant.

Categorical grants are further divided into the following types: nonmatching, matching, and cost reimbursement grants. Matching grants require matching funds to be provided by the grant recipient. These grants are further subdivided as open-ended matching and closed-ended matching. In the case of open-ended matching grants, there is no maximum limit on the appropriation level at the federal level. The individual eligibility conditions for matching open-ended grants

and the state matching requirements, as specified under federal law, determine the annual federal commitment of funds for these grant programs. Federal Medicaid grants for health insurance coverage of qualified lower income and unemployed individuals is an open-ended matching grant. Closed-ended matching grants have a stipulated maximum appropriation in a particular fiscal year and a specified statutory matching requirement. The federal highway safety grant is an illustration of a closed-ended matching grant. In the case of cost reimbursement grants, the federal government covers all the costs incurred by grant recipients on specific federal programs; federal unemployment compensation is funded by a cost reimbursement grant to states. Nonmatching grants have no requirement of matching funds to be provided by the grant recipient, but the federal government does stipulate a maximum appropriation level in a particular year for each nonmatching grant program (the exceptions are the entitlement cost reimbursement programs). Federal education grants for economically disadvantaged youth (Title I grants) are an example of a categorical nonmatching grant.

Federal grants are distributed either on the basis of a legislative formula or on a project basis. The formula used to calculate a recipient's allotment, in the case of formula grants, is based on data such as population, population subgroups, program expenditure, and per capita income. Project grants are awarded on the merits of a project proposal submitted by the grant recipient. The federal government also uses a combination of the formula and project methods for distributing grants. In this case the federal grant allocations to a jurisdiction are determined by a formula and then allotted to a specific project. Consider wastewater treatment (construction) grants as an example of a federal program and attempt to classify it by the above taxonomy: These are closed-ended matching grants, distributed on a project and formula basis; the grant allocation formula includes both a measure of prior funding levels (used to determine a minimum allocation to a recipient) and the planned current expenditure levels. The funds are assigned to individual treatment plants in the grant recipient's jurisdiction if the project receives federal approval.

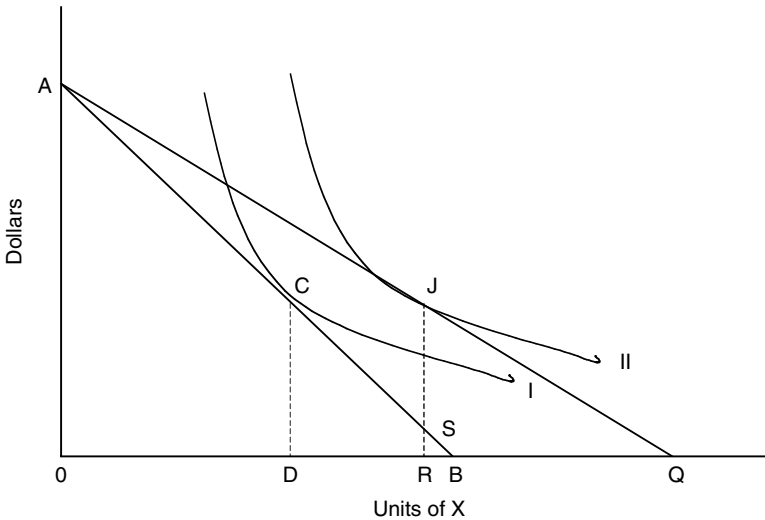


Figure 9.3 Fiscal effects of an open-ended matching grant.

9.4.2 Fiscal Effects of Intergovernmental Grants

Broadly, the fiscal and economic effects of intergovernmental grants depend on whether the grant is in the form of matching or nonmatching aid. Matching grants reduce the price of the grant-funded commodity and have a price effect on the grant recipient's spending. On the other hand, nonmatching grants raise the fiscal resources of the grant recipient jurisdiction, without affecting relative prices, and these grants have an income effect on the grant recipient's spending (Oates, 1972).

In the open-ended matching grant, the grant recipient government is required to match, according to a specified formula, each grant dollar accepted from the grantor with a certain amount of its own revenues (Oates, 1972). Figure 9.3 illustrates the fiscal effects of an open-ended matching grant. In this case the grant pivots the recipient government's budget constraint from AB (pre grant) to AQ (post grant); the slope of the budget constraint in the post-grant situation reflects the subsidized price of the public service that is being funded by the open-ended matching grant. For example, if the slope of the budget constraint is one prior to the grant, and

the federal matching rate on the grant is 50%, then the price of the grant-funded service declines by the federal share of total post-grant spending on the public service by the jurisdictions (0.5/1.5) or by 33%.* The slope of the budget constraint in the post-grant situation is $(1 - 0.33)$ or 0.66. Given a set of indifference curves representing the preferences of the jurisdiction (I, II,...), the jurisdiction moves from a pre-grant equilibrium consumption of the public service (X) at D to a higher level of consumption at R; the dollar value of the matching grant at R is \$JS.

Federal matching grants are the appropriate form of grant when there is an externality or spillover benefit from the public service provided by a jurisdiction. In this case the federal matching share of the grant should be equal to the percentage spillover of benefits at the socially desirable level of the public service. The federal matching share compensates the jurisdiction for this spillover and thereby provides it the incentive to deliver the socially desirable level of the public service. The actual level of public activity selected by the jurisdiction depends on the price elasticity of demand for the public service. If the price elasticity is greater than one, the grant is expected to stimulate the jurisdiction's public expenditure beyond the level that the jurisdiction would have spent, from its own sources, in the absence of the grant. Alternatively, if the price elasticity of demand of the public service is equal to one (less than one), then the grant will induce the jurisdiction to spend, on the public activity, as much as (less than) what it would have spent from own-source funds in the absence of the grant. In the case where price elasticity of demand is less than one, the matching grant will result in some fiscal substitution or tax relief.**

* Analogously, a federal matching rate of 100% reduces the price of the grant-funded activity by $(\$1/\$2)$ 50%.

** Fiscal substitution, in the context of intergovernmental grants, is the use of some or all the grant money for tax relief rather than spending it on new public expenditure. In accounting terms, all grant money is observed as spent on the public activity, but in economic terms the grant recipient jurisdiction could be using grant money to support public expenditure that it has supported in the past with its own-source revenues (GAO, 1996).

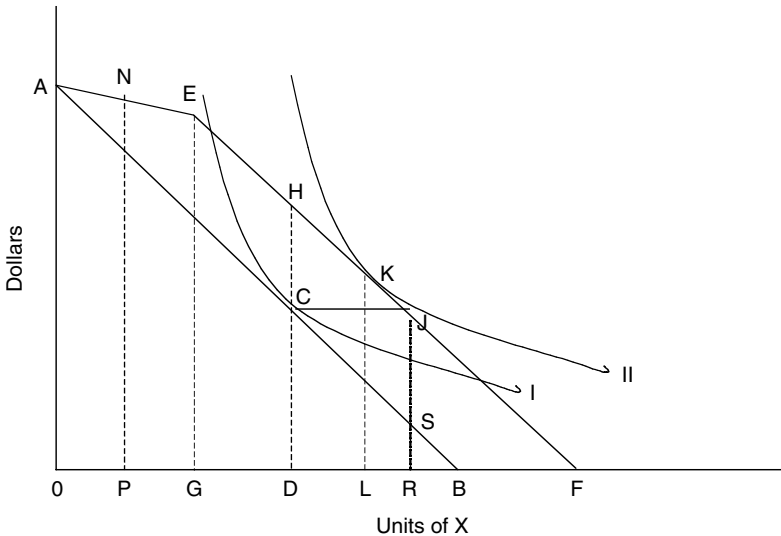


Figure 9.4 Fiscal effects of a closed-ended matching grant.

Closed-ended matching grants are similar to open-ended grants (See Figure 9.4), except that in this case the grantor's matching stops at a prespecified upper limit on the grantor's contribution. The grant recipient's pregrant budget constraint is AB , and the postgrant situation the budget constraint pivots to AEF . The kink in the budget constraint AEF , at E , signifies the level of public service (G) at which the grantor stops matching the jurisdiction's spending on the public service. Alternatively, G is the level of the public service that requires just sufficient amount of grant recipient's resources to fully draw the grantor's allocated dollars for the program. For public consumption beyond the point G , the slope of the budget constraint goes back to the pregrant slope EF (parallel to AB), albeit the total resources available to the jurisdiction now are larger by total amount of the grant received by the jurisdiction (the dollar value of the grant is $\$JS$).

The fiscal effects of closed-ended matching grants are similar to the effects of open-ended matching grants if the postgrant consumption of the recipient jurisdiction is less

than G . The recipient's provision of the public service can be predicted to expand by the price effect of the grant subsidy (or the price elasticity of demand for the public service). Alternatively, the effect of a closed-ended grant is similar to a categorical nonmatching grant after the limit on the grantor's contribution is reached (at G). Beyond G , the marginal unit of the public service generates no price subsidy, though the jurisdiction benefits from the overall increase in income (as seen in the shift of the budget constraint from AB to EF). In this latter case, the grant recipient's spending response to the closed-ended matching grant is predicted by the income effect (or by the income elasticity of demand for the public service).

Currently in several federal closed-ended matching grant programs the federal matching share is relatively high compared to the spillovers that the grants compensate for. Additionally, in programs that are well established at the state and local levels, the subnational government's own-source funding for the program is substantially larger than required to draw its federal share of funds for the program. In the latter context, the price subsidy is not effective on the margin and the grant serves as an income supplement for the recipient jurisdiction. Both these issues are symptomatic of inefficiencies in grant design and need to be remedied. Lower matching rates commensurate with the magnitude of spillover benefits and open-ended rather than closed-ended matching grants are recommended by a number of fiscal experts (Oates, 2003; Gramlich, 1987; Bezdek and Jones; 1988). However, the budgetary constraints and the uncertainty about the commitment of grant funds in the case of open-ended matching grants limit their use to a handful of federal programs.

Grants designated as categorical, block, or general-purpose fiscal assistance have economic effects on the grant recipient's spending that are essentially similar since these are all nonmatching grants. Often the administrative factors associated with the different ways of structuring these grants could cause differences in the recipients' spending responses. In these cases, as seen in Figure 9.5, hypothetically, a nonmatching grant of $\$KS$ (or in terms of physical units of the public activity $-AN$ or OP) will shift the postgrant budget constraint

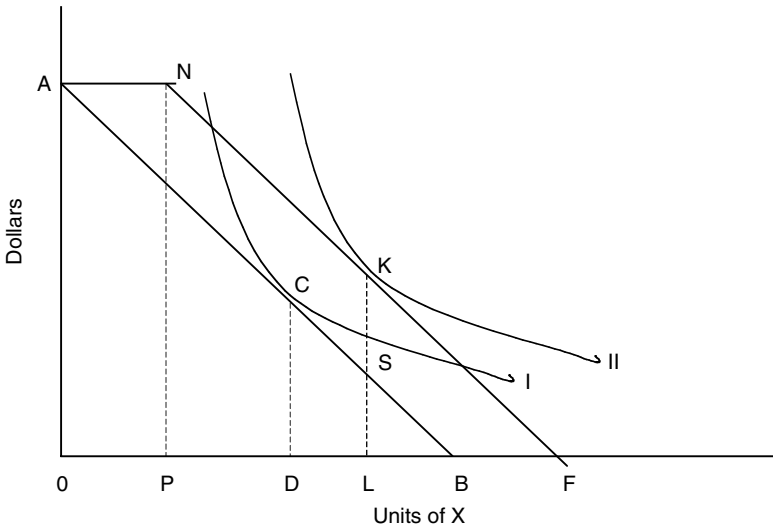


Figure 9.5 Fiscal effects of a nonmatching grant.

to ANF and the relevant jurisdiction's consumption of the public service, depending on the shape of the community indifference curves, moves from D to L (an income effect). Note in this case a portion of the grant $0P - DL$ (assuming the public service has a relative price of one) is *ceteris paribus* used by the grant recipient for tax relief, also referred to as fiscal substitution.* Nonmatching grants are best suited for fiscal equalization purposes.

One important administrative difference between non-matching categorical, block, and general-purpose (revenue sharing) grants is the restriction on the use of the grant money. When the restrictions take the form of allocations of certain amounts of grant money to specific categories of public expenditure, they are binding for the grant recipient jurisdiction

* In cases where the income effect of a nonmatching grant is zero, the fiscal substitution is equal to one; all grant money is substituting for resources the jurisdiction would have raised for the public activity in the absence of the grant. For further discussion on fiscal substitution see Gamkhar (2002, pp. 74–75).

only if the jurisdiction is spending less than the amount mandated for allocation to a particular category by the grantor. For example in Figure 9.5, OP is the amount of the public activity mandated by the grant. In the event that the grant recipient jurisdiction is already providing this amount of the public activity from its own sources (prior to the grant), the additional grant money could be substituted for own-source funds. Grantors expecting the recipient to substitute grant money for their own sources of funds introduce several conditions on grant programs to prevent fiscal substitution from occurring. The most commonly used conditions are maintenance of (spending) effort (MOE) restrictions by the grantor as a precondition for obtaining the grant. These restrictions require minimum levels of expenditure on specific program categories equal to the previous year's, or an average of a couple of previous years', spending on the program category. The usefulness of this regulatory approach for preventing fiscal substitution is discussed further in the Section 9.5 below.

9.4.3 Composition of Federal Aid by Form of the Grant

In measuring the fiscal effects of intergovernmental grants on the grant recipient's spending and other budgetary decisions, the disaggregation of federal grants by form is of crucial importance (Wilde 1971; Oates, 1972; Gramlich, 1977; Inman and Rubinfeld, 1997). The data on federal intergovernmental grants published by the U.S. Census Bureau and U.S. Office of Management and Budget are organized along functional lines. This has always been a major obstacle for those doing empirical work on the U.S. grant system. The functional division of federal intergovernmental grants in the U.S. Census data is far more detailed than the four aggregate functional categories considered earlier in Table 9.1. Since the 1970s, there are on an average, annually, about 100 functional categories in the U.S. Census data on federal intergovernmental grants. Each of these functional categories needs to be reclassified by the form of the grant it received to empirically measure the economic effects of grant programs on the grant recipient's spending.

Transforming federal grants from a functional classification to one based on the form of the grant has two main complications. In many cases, grants classified by function include programs with both matching and nonmatching components. For example, U.S. federal highway grants are closed-ended matching grants with a few subprograms receiving nonmatching grants. In such cases the grants considered here are classified by the form of the subprograms with the largest dollar value; in the case of federal highway aid, the subprograms with the largest dollar value received closed-ended matching grants.

Another complication in the classification of grants by their form arises if the grant changes its form over the period under consideration. In these cases the grant's classification is changed when its form changes. For example, prior to 1982, a majority of social service grants were closed-ended matching grants and were classified accordingly, but in 1982 when these grants were consolidated into a block grant, their classification changed to nonmatching grants.*

Table 9.3 provides a division of grants by form for the period 1971 through 1990. The data indicate that during this period, matching grants (closed-ended and open-ended combined) have dominated as a preferred form of distribution of federal grants to states and localities in the U.S. Matching open-ended grants had the largest share of federal aid among the different forms of federal aid in 1971 (42%). The share of these grants declined during the mid- to late 1970s. However, during the 1980s their share grew, and by 1990 they were again reinstated to their dominant position in the structure of federal aid, with a 47% share of total federal aid. Open-ended matching intergovernmental grants in the U.S. were given almost entirely to the entitlement welfare programs during

* Parts of this section are excerpted from Gamkhar (2002). For a more detailed discussion on sources of data on intergovernmental grants and classification of federal grants in this data, see Gamkhar (2002, p. 18–21). This division of federal grants by form is only available for the years 1971 through 1990. Updating this data on federal intergovernmental grants organized by the form of the grant is a direction for future work.

TABLE 9.3 Percentage Distribution of Total Federal Grants to State and Local Governments by the Form of the Grant, 1971–1997

| | 1971 | 1975 | 1980 | 1985 | 1990 |
|-----------------------|-------|-------|-------|-------|-------|
| Nonmatching | 17.4 | 17.8 | 28.2 | 31.4 | 28.3 |
| Matching open-ended | 41.5 | 29.3 | 29.9 | 37.3 | 47.3 |
| Matching closed-ended | 40.9 | 39.5 | 33.4 | 25.8 | 23.8 |
| Shared revenues | 0.3 | 13.4 | 8.5 | 5.5 | 0.6 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

Source: Gamkhar S. *Federal Intergovernmental Grants and the States: Managing Devolution*. Canterbury, MA: Edward Elgar Publishing Limited, 2002, p. 9.

this time period. Thus the reasons for the substantial increase in the share of open-ended matching programs since the late 1980s are similar to the reasons for the increase in welfare grants, described earlier.

Matching closed-ended grants accounted for about 41% of total federal aid in 1971. During the 1980s, however, some of these grants were converted to block grants (classified as nonmatching grants).^{*} The latter along with the Reagan cut-backs in aid explain the decline in the share of closed-ended matching grants during the early 1980s; by 1990 their share in federal aid had stabilized at 24%.

The effects of the changes in federal matching closed-ended grants are mirrored in the nonmatching grants. These grants start with a relatively small share of federal aid in 1971 (17%), but their share of federal aid increased during the 1980s, due to the creation of block grants. However, between 1985 and 1990 nonmatching grants dropped in their share of federal aid. In the U.S., during the period under con-

^{*} President Reagan's 1981 budget proposal recommended the consolidation of 90 of the more than 300 categorical programs into block grants. Congress finally approved, for the 1982 fiscal year, the conversion of 57 categorical programs into nine block grants, which brought significant reductions in funding for the consolidated programs relative to their prior categorical federal expenditures (Peterson et al., 1986).

sideration, the major federal program included in this category was the revenue-sharing program from 1973 through 1987.

9.5 INTERGOVERNMENTAL GRANT POLICY ISSUES

Intergovernmental grant systems are the product of a complex set of social, economic, and political forces that shape intergovernmental relations in a federation. Therefore, the evolution of the forms of these grants and the policy consequences of grant programs often deviate from the theoretical predictions described in the previous section, though the theory does provide a useful starting point for policy analysis. The implications of grant policies in the U.S. during the past three decades and the reforms in the intergovernmental grant structure during this period are reviewed in this section.

In the U. S., for almost three decades, the federal government has been decentralizing, or devolving, spending and financing responsibilities to states and localities. During this period intergovernmental grants have undergone significant reforms. The primary nature of the federal aid reform in the U.S. has been a shift in the funding responsibility for a large number of social and economic public programs to state and local governments, noticeably spurred by the federal deficits of the 1980s. Additionally, federal involvement in the implementation of some key social programs has been considerably reduced, partly by converting the federal share of funding for these programs from categorical to block grants (Gamkhar, 2002).

9.5.1 Responses to Increases and Decreases in Grants*

Over the last 30 years, a substantial literature, both theoretical and empirical, has addressed the issue of the impact of

* This section is an excerpt, with some modifications, from Gamkhar (2002), Chapter 2.

intergovernmental grants on the expenditure decisions of recipient governments. At the theoretical level, it has been established, for example, that lump-sum grants to a locality, in a setting of perfect information, should have allocative and distributive effects no different than if these funds were distributed in a particular lump-sum pattern to the residents of the locality — termed the “veil hypothesis” (Bradford and Oates, 1971). In short, the local expenditure response to such grants should be essentially like that of an equivalent increase in private income (described in Section 9.4). However, a large body of empirical work has emphatically rejected this prediction. This literature has found time and again that the expenditure stimulus to local public programs from unconditional grants far exceeds that from equal increases in private income (Gramlich, 1977; Hines and Thaler, 1995; Bailey and Connolly, 1998). The marginal effect of private income on local government spending is estimated at \$0.10 (Borcherding and Deacon, 1972), while the estimated marginal effect of unconditional grants is approximately \$0.50 (Hines and Thaler, 1995). This phenomenon has become enshrined as the “flypaper effect,” namely, that “money sticks where it hits.” For a period of almost two decades beginning in the mid-1950s, federal grants to state and local governments increased steadily, and intergovernmental receipts came to make up a growing proportion of state and local government revenues. It was during this time that the flypaper effect was first observed and measured. Thus, the flypaper effect has been associated with increases in intergovernmental grants and the powerful stimulus that they appeared to provide to state and local spending.

Over the last 20 years, in contrast, trends in the magnitude of these grants have not been uniformly increasing. Efforts at fiscal retrenchment under the Reagan administration in the 1980s, for example, entailed large cuts in a wide range of federal grant programs to state and local governments. The data on federal aid described earlier suggest that federal aid accounts for a substantial share of state and local government spending in certain key categories. Reductions in

federal aid are likely to have significant effects on program size in these categories of spending unless states respond by picking up the slack left by the loss of federal aid.

This has raised an interesting question of whether the response to cuts in intergovernmental grants is similar in sign and magnitude to the response to increases in these grants. Gramlich (1987) observed that, during this period of retrenchment, states and localities responded to the cutbacks in grant support by picking up most of the slack: they increased their own taxes and largely replaced the lost grant funds so as to maintain levels of existing programs. If Gramlich's observation is generally correct, it suggests a basic asymmetry in the response to intergovernmental grants: it suggests that, while state and local spending is highly responsive to increases in these grants, it is relatively insensitive to the loss of grants. The implication is thus that intergovernmental money sticks where it hits, but that it comes "unstuck without leaving a gaping hole" — that while its disbursement brings additional money into a community, its removal leaves no noticeable void in funding (Gamkhar and Oates, 1996).

However, there are a number of reasons for suspecting that the response to decreases in grants may differ from that to increases in such funds — an asymmetric response. Gramlich (1987) suggests that programs become entrenched and develop clientele that make large abrupt cutbacks politically difficult when grant money declines. Gramlich observed that during the Reagan administration cutbacks, a number of states and localities responded by raising taxes rather than cutting expenditures on programs that had lost federal funds.

The evidence on the spending response of grant recipient governments when grants are increased and decreased suggest that the fiscal response by state and local governments to fluctuations in intergovernmental grants varies depending on the program and the type of grant recipient government. Symmetry would suggest that total state and local spending should decline when grants are reduced, by the amount by which spending increased when federal grants were rising. Instead the response may be asymmetric, where a dollar decrease in the federal grant may lower spending by grant

recipients by less than the symmetric response, resulting in some replacement of lost federal dollars; alternatively, a greater reduction than the symmetric response may occur in the grant recipient's spending. The case where the spending response of the grant recipient to cuts in grants is less than to increases in grants is referred to as the "fiscal replacement" form of asymmetry, and the case where the spending response to cuts in grants is greater than to increases in grants is called the "fiscal restraint" form of asymmetry.

Some evidence from the local level suggests a retrenchment of local programs relative to the response that would have been expected based on an assumption of a symmetric response (Stine, 1994; Goodspeed, 1998). However, these studies face a complex task of separating out the effects of federal and state aid to localities. During the period of reductions in federal aid, some states raised their aid to localities to offset some of the losses of revenue at the local level, and other states restricted aid to localities to diffuse the effect of federal aid reductions on their own budgets. At the state and at the combined state and local level, the empirical tests of the symmetry hypothesis are mixed; they suggest that there is some replacement of lost federal aid in programs such as welfare (Volden, 1999) and highways (Gamkhar, 2000), but the size of the asymmetry coefficient is very small. The latter measures the difference in the response to rising and falling grants. Therefore, from a policy perspective, the replacement of the federal revenues by states is small and could mean a substantial reduction in the size of state and local government programs that receive federal aid. The results of the more aggregative studies of state and local government spending for all types of programs (Gamkhar and Oates, 1996) suggest an overall symmetric response, though such an aggregative approach has its own limitations of averaging out the various types of underlying responses; some of these could well be of the replacement kind and others of the fiscal restraint kind.*

* For a more detailed review of the literature on this issue see Gamkhar (2002).

An important difference in devolution is taking shape in this latest phase of U.S. federalism during the post-1990s boom period: States and localities are less favorably positioned today as compared to the earlier periods in taking on the responsibilities of raising revenues relative to their spending needs. There is, though, substantial evidence of innovative new sources of revenue at the state and local level, in particular through fees, charges, various new forms of private financing, and public debt. However, these new forms of financing, coupled with a shrinking tax base, are not perceived as adequate for states to meet their increased spending responsibilities (Kenyon, 1999; Dye and McGuire, 1997). Additionally, over the most recent business cycle in the 2003 fiscal year, the decline in income tax revenues (Jenny and Nathan, 2003) by a dramatic 13% (California personal income tax collections were down 40% during the fiscal year 2003) has placed states in the worst budget gap in many decades. A survey of state actions in this latest phase of budget deficits suggests that states have undertaken tax increases, cut expenditures, used budget reserves, and retrenched their labor force in several ways (Jenny and Nathan, 2003). The question regarding state responses to increases and decreases in federal aid merits further consideration in this latest phase of U.S. federalism.

9.5.2 The Effectiveness of Block Grants versus Categorical Grants

A second type of reform in federal intergovernmental grants in the U.S., one that predates the cutbacks, is the advent of a hybrid category of grants called the block grants. Block grants are created by a consolidation of a set of related categorical grants. They come with fewer strings attached and more freedom for the grant recipient in the use of the grant funds. The grantors often provide implicit or explicit incentives for the grant recipient to innovate and experiment or simply support existing local strategies for serving citizens' needs in effective ways. The experience with block grant programs in general suggests an increase in local participation

and experimentation in decisions about how to use grant funds. Spending on these programs has also benefited, to some extent, from the added fiscal and budgetary flexibility (Gamkhar, 2002).

Researchers have been concerned about the use of block grants for federal redistributive programs in the U.S. The basic theory of federalism suggests that decentralized decision making in these programs is likely to result in inadequate levels of welfare benefits for the poor. This primarily occurs due to fiscal competition between states and localities for the wealthier tax base. The conversion of federal open-ended matching welfare grants to block grants in 1996 resulted in a reduction in the real value of benefits to welfare recipients in several states, but more importantly, in almost all states these benefits are highly restricted in terms of work requirements and the time period for which they are available (Gamkhar, 2002). The latter results in complications for beneficiaries availing these benefits and also could have the effect of discouraging migration of poor people in response to benefit differences across states. This has allowed states to set different levels of cash benefits based on the differences of preferences for welfare spending in the states.

Another important concern about block grants is that the grantee might use the grant funds as a substitute for its own-source funding of the program. As a result, the U.S. federal government has imposed MOE and other restrictions on these grants and created federal oversight institutions to enforce these restrictions. Such measures diminish grant recipients' flexibility to use the money in accordance with their priorities and sometimes defeat the initial purpose of the block grant. The evidence is mixed on the effectiveness of federal restrictions and oversight of block grants to ensure that federal money is not used as a substitute for state and local government own-source funds. One study suggests that these restrictions have no effect without strict federal oversight, and states are likely to substitute most or all of the federal grant funds for their own sources of spending on the block grant program (Jacobsen and McGuire, 1996). These findings were based on a study of the Alcohol and Drug Abuse (ADA) block grant

program, which also found that once federal oversight is introduced, state spending on the program increases substantially in response to the federal aid. However, the findings of a second study of the ADA block grant suggest that the increase in federal oversight of state and local government compliance with grant restrictions does not change the spending response significantly (Gamkhar and Sim, 2001). This study finds that once the budgetary flexibility in the use of federal ADA grant money for two consecutive fiscal years is incorporated in the model explaining state and local government spending, the response to block grants is large relative to other nonmatching grants and independent of federal oversight effort.

Presently, the federal government attaches a number of restrictions on block grant programs to stimulate state and local spending on specific aspects of the ADA program and to maintain a certain overall spending effort on part of the grant recipients. These restrictions require costly oversight. Instead of this approach, the federal government could consider using matching grants to stimulate grant recipients' spending on specific program activities where needed. Another important weakness of the present block grant programs is the availability of program data on a nationwide basis for comparing the effects of these grants more systematically than is presently feasible; data are especially deficient for the welfare block grants.

9.6 SUMMARY

This chapter has examined intergovernmental grants from the perspective of their role in a federal system of government. The primary focus was on describing the evolution of federal grants to state and local governments in the U.S. The chapter presented trends in intergovernmental grants over the past 50 years. After almost three decades of consistent growth since the 1950s, federal intergovernmental grants in 1980 comprised approximately 23% of state and local government spending in the U.S. Since then, the share of federal grants has fallen to approximately 15%. Intergovernmental grant reforms, during the Reagan administration and after, resulted

in reductions in specific categories of grants and a large-scale conversion of categorical grants to block grants.

Familiarity with the principles of grant design and the economic effects of grants is required to understand the policy implications of these reforms. Intergovernmental grants are justified on various grounds, including externality in the benefits of a public service provided by a jurisdiction, equalization of fiscal capacity across jurisdictions, and to promote equity and efficiency of the tax system. The theory of intergovernmental grants suggests that using an appropriate grant form can generate the incentives needed to meet each objective. Matching grants are best suited for compensating jurisdictions that provide public services with externalities. Non-matching grants, on the other hand, are appropriate for equalizing fiscal capacity and for improving the overall equity and efficiency of the tax system.

For almost three decades, federal grants were rising and their stimulating effect on state and local spending was extensively documented. Since the 1980s, these grants have declined periodically, raising important policy questions about how states and localities will respond to these cuts:

1. Will their response be symmetrical?
2. Will they replace the lost federal dollars with own-sources of funds to maintain program spending (fiscal replacement)?
3. Will they restrain their spending on the grant-funded programs to something less than the symmetric response (fiscal restraint)?

The empirical evidence suggests that different programs and grant recipient governments respond differently to cut-backs. However, for all federal programs considered together, during the period 1960 through 1990, state and local governments responded symmetrically to increases and decreases in federal grants. However, the possibility that in some programs when federal funding is reduced states and localities might replace program spending to offset the lost federal funds with own-sources of funding, suggests that states and localities must find the funds to undertake this replacement of federal

funds. Alternatively, other programs might be retrenched substantially upon loss of federal funding. If these happen to be programs where the benefits of the program extend beyond the jurisdiction undertaking the expenditure, then the grantors must plan for alternative means of providing adequate amounts of the public service.

The U.S. system of intergovernmental grants is dominated by matching grants; a large number of the matching grants are closed-ended categorical grants. Recent reforms to convert categorical grants to block grants as a way of devolving power to states have initiated improvements and innovations in the use of grant money by the recipients but have also raised some concerns about the response of state and local governments to changes in these grants. Conversion of federal grants to block grants has been combined with reduced compliance requirements on the grant money. Grantor concerns about fiscal substitution have resulted in a new set of federal restrictions on block grants, whose effectiveness in maintaining state and local spending effort in the block grant programs is at best mixed and requires further research.

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Public Debt and Stability

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That the United States government has a large and growing national debt is well known. However, policy makers and economists disagree about the causes of the debt, its effects on the economy, and what should be the proper response to it. This chapter discusses the debt of the U.S. national government, traces its history, compares it to the debt of other nations, and discusses theoretical and empirical analyses of its impacts. The chapter also discusses the debt of state and local governments in the United States.

10.1 HOW LARGE IS THE NATIONAL GOVERNMENT'S DEBT?

Historically, the United States went into debt in 1777 when the Continental Congress borrowed money to buy supplies to fight the Revolutionary War. However, this early debt was quickly repaid. The debt rose substantially with the War of 1812, and by 1816 it was 13% of national income (Schiller, 2003). For many years in the nineteenth century, the United States was debt free. With every war, however, the debt increased, and during World War I it went from 3% of national income in 1917 to 41% in 1921, the highest level to date. The greatest increase in the national debt occurred during World War II.

The national debt increased and decreased several times in the nation's history. In 1851, it was \$68 million; it grew to over \$1 billion in 1863, stayed between \$1 billion and \$2 billion until the end of World War I, and reached \$250 billion by the end of World War II (Hirsch and Rufolo, 1990). The national debt declined after the end of World War II but grew enormously in the second half of the twentieth century going from \$257 billion in 1950 to \$909 billion in 1980. In fiscal year 1964, during the Vietnam War buildup and the Great Society programs, the federal debt was \$316.8 billion. By 1986, the debt had increased to \$2.13 trillion, and by the year 2000 it was \$5.7 trillion. Between 1980 and 2002, the debt more than quintupled to over \$6 trillion (Kettl, 2003). Table 10.1 and Figure 10.1 show the U.S. national debt for selected years since 1950.

Although the growth rate of the national debt slowed in the late 1990s, by 2001 it was approximately \$5.8 trillion, over \$20,000 per person in the U.S. By 2003, the government experienced increased deficits and a slowing economy coupled with large tax cuts and a war in Iraq. These factors led to projections of a substantial increase in the debt for each of 10 years in the future.

Reference to the absolute size of the public debt alone overlooks the fact that the wealth and productive capacity of the U.S. economy have also increased over the years. The

TABLE 10.1 United States National Debt in Billions of Current Dollars, Selected Years, 1950 to 2006

| Year | Debt |
|-------------------|----------|
| 1950 | 257.35 |
| 1955 | 280.77 |
| 1960 | 290.22 |
| 1965 | 320.91 |
| 1970 | 389.2 |
| 1975 | 576.6 |
| 1980 | 930.2 |
| 1985 | 1,945.90 |
| 1990 | 3,233.30 |
| 1995 | 4,974 |
| 2000 | 5,674.20 |
| 2001 | 5,769.88 |
| 2002 | 6,228.40 |
| 2003 | 6,783.23 |
| 2004 ^a | 7,320.77 |
| 2005 ^a | 7,837.45 |
| 2006 ^a | 8,353.38 |

^a Estimates. The debt on March 31, 2004 was \$7,131.07 billion.

Source: United States Department of the Treasury.

amount of debt is usually measured as a percent of the capacity to fund it. The size of the national debt is compared to the size of the nation's economy to get a sense of its overall burden. Until 1992, the United States used the Gross National Product (GNP) as a measure of the output of the economy. This was the market value of all goods and services produced by United States entities. In 1992, the GNP was replaced with a different measure — Gross Domestic Product or GDP. GDP measures the output of all entities located in the United States, domestically and foreign owned, and is defined as “the total market value of all final goods and services produced within a nation's borders in a given time period” (Schiller, 2003, 93). The output of entities located outside of the United States is not included. Economists now think that

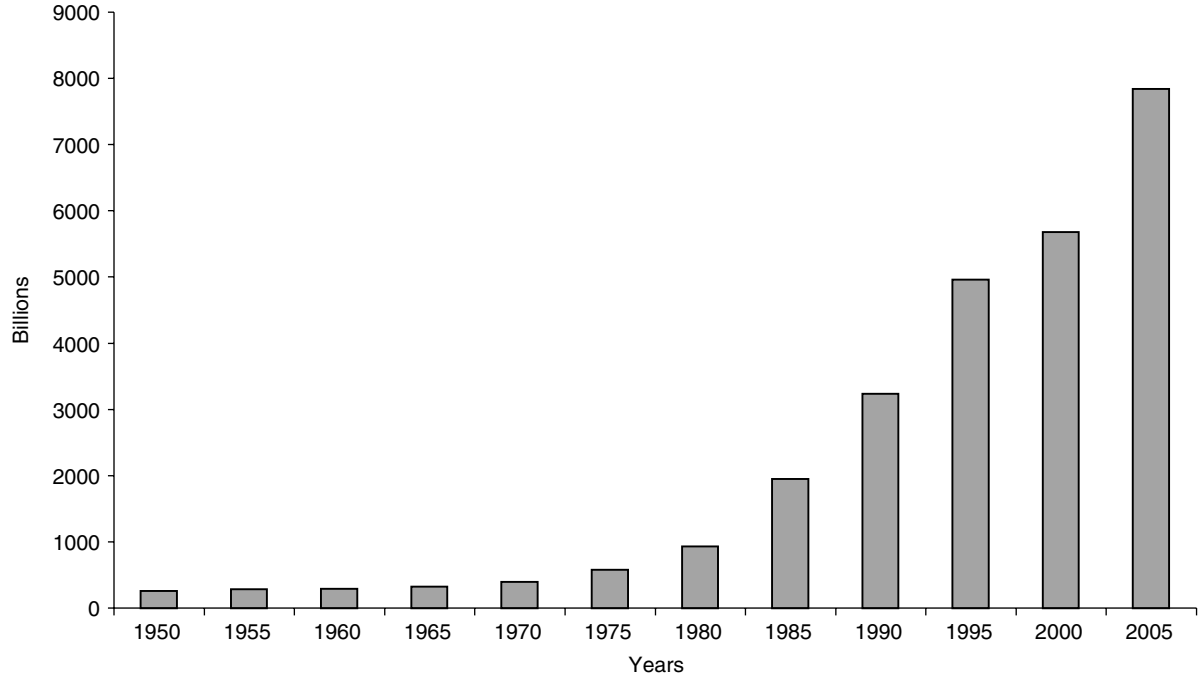


Figure 10.1 U.S. national debt in current dollars, selected years, 1950 to 2005.

GDP is a better measure than GNP of the income produced and made available to the nation. Table 10.2 shows the debt to GDP ratio for selected years for the U.S. national government. Note the high ratio of 93.9 in 1950, which declined to a low of 33.3 in 1980.

TABLE 10.2 Federal Debt As a Percent of Gross Domestic Product (GDP), Selected Years, 1950 to 2006

| Year | Total Debt as a Percent of GDP |
|-------------------|--------------------------------|
| 1950 | 93.9 |
| 1955 | 69.4 |
| 1960 | 56 |
| 1965 | 46.9 |
| 1970 | 37.6 |
| 1975 | 34.7 |
| 1980 | 33.3 |
| 1985 | 43.9 |
| 1990 | 55.9 |
| 1991 | 60.7 |
| 1992 | 64.4 |
| 1993 | 66.3 |
| 1994 | 66.9 |
| 1995 | 67.2 |
| 1996 | 67.3 |
| 1997 | 65.6 |
| 1998 | 63.2 |
| 1999 | 61.3 |
| 2000 | 57.9 |
| 2001 | 57.6 |
| 2002 | 60 |
| 2003 | 61.7 |
| 2004 ^a | 64.8 |
| 2005 ^a | 66 |
| 2006 ^a | 66.9 |

^a Estimates. The Congressional Budget Office in spring 2003 projected much larger debt figures, and in July the Office of Management and Budget projected larger deficits for 2003 and 2004.

Sources: Department of the Treasury; Office of Management and Budget. Economic Report of the President.

The size of the total federal budget also provides context for the debt figures. For fiscal year 1980, the total federal outlay in current dollars was \$590.03 billion, 21.1% of GDP. The fiscal year 2000 total federal budget outlay was \$1.789 trillion — 18.2% of GDP.

During the twentieth century, national debt as a percent of GDP peaked in 1946 at 121% as a result of World War II. Since WWII, the public debt of the U.S. relative to GDP has varied from a ratio of over 100% to less than 20% (Sill). After 1946, the ratio fell until 1974, when it reached 34% of GDP. The debt to GDP ratio fell in the late 1940s to mid-1970s; rose in the mid-1970s partly because of the shock of oil price rises; and decreased again by 1980. Federal income tax cuts in 1981 to 1984 and a recession in 1990 and 1991 caused further increases in the debt-to-GDP ratio (Schiller, 2003). After staying relatively constant for several years, the debt-to-GDP ratio rose again between 1982 and 1996 and reached another peak in 1996 at about 67% of GDP (Mikesell, 2003). From 1996 until about 2002, the ratio fell, reaching 56.8% in 2001 (See Table 10.2 and Figure 10.2). However, in 2002 and 2003 the debt increased, and several factors contributed to a concern that it would continue to increase substantially. These factors included a weakened economy, federal income tax cuts, the effects of the September 11, 2001 tragedy, and military action in Iraq.

During the 1980s, the national debt tripled in a single decade, going from \$914.3 billion in 1980 to \$3163 billion in 1990 (Schiller, 2003; Office of Management and Budget Historical Tables). A recession, massive tax cuts in the early years of President Reagan's administration, and greatly increased defense spending are usually identified as the causes of this increase. The debt continued to increase in the 1990s. In 1993, following the largest federal budget deficit year ever, the Clinton administration persuaded Congress to raise taxes to help offset the debt. This and other actions plus a growing economy allowed the U.S. government to reduce the deficit and to experience budget surpluses from 1998 through 2001.

Before the Great Depression of the 1930s, an important norm of federal budgeting was balance — policy makers and

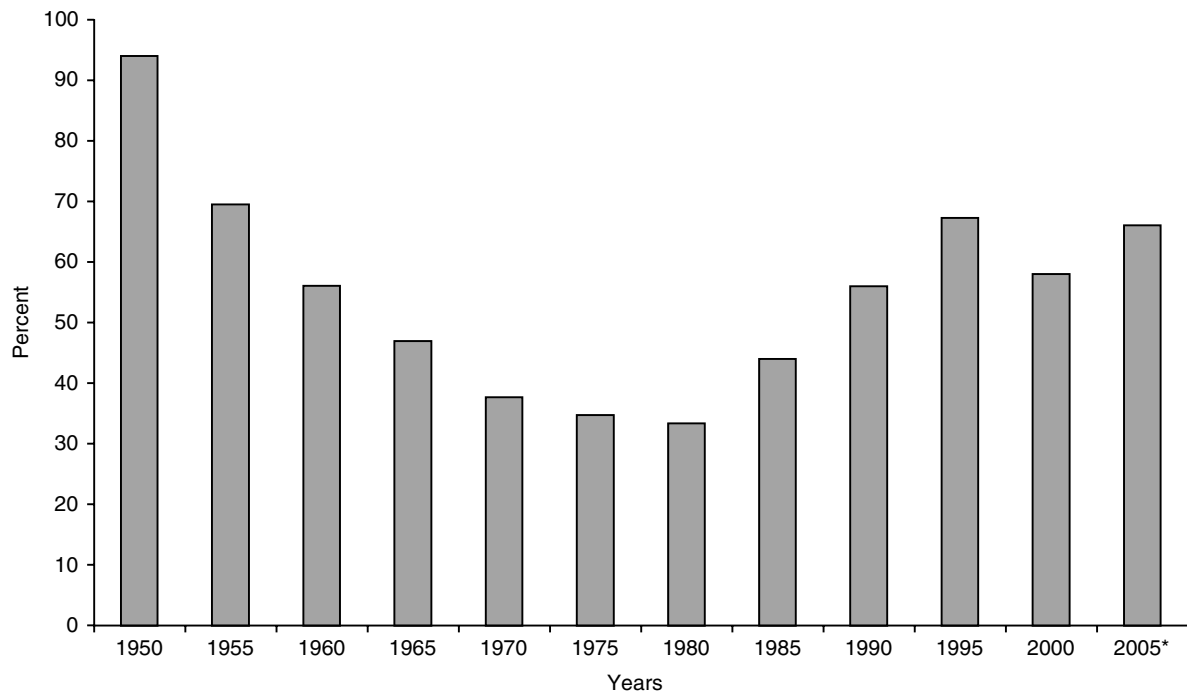


Figure 10.2 Total debt as a percent of GDP.

citizens expected that the federal budget should be balanced. The historical antipathy to peacetime deficits and debt goes back to Hamilton and Jefferson and continued through to Reagan. Even Franklin Roosevelt expressed concern about peacetime debts and deficits (Kettl, 2003). Although every major war resulted in the U.S. incurring a debt, the norm of balance lasted until the twentieth century. New economic ideas changed how policy makers thought about deficits and set the stage for the large deficits of recent decades. Classical economists did not believe that government activity affected employment in the private sector, and these ideas influenced policy makers. President Herbert Hoover, for example, believed that the government could and should do little about the problem of growing unemployment in the late 1920s and early 1930s. Franklin D. Roosevelt's decision that the national government had to act to do something about unemployment was a radical idea in 1933 when the New Deal programs were introduced. The New Deal was a collection of federal programs devoted to building new roads, constructing new buildings, and putting Americans back to work. Roosevelt and his advisors decided that government had to act and saw deficits as a short-term necessity.

Economists identify three traditional economic functions for government (Musgrave, 1959; Fisher, 1996; Mikesell, 2003). These include: maintaining economic stabilization, altering the distribution of resources, and obtaining an efficient allocation of society's resources. Governments accomplish these through fiscal policy — the revenue actions and spending decisions of elected officials — to influence the overall economy. Economic stabilization refers to the role of the government in maintaining employment, price stability, and economic growth through the use of fiscal and monetary policy. Stabilization involves counteracting the affects of cycles in the economy, especially to limit unemployment, inflation, and recession. Altering the distribution of resources involves providing some resources for the poorest in society through transfer payments using resources made available by others who are more affluent. Allocation is the provision of services and goods

desired by society that will not or cannot be provided by the private sector at a desired level.

It has commonly been believed that state and local governments are limited in achieving the first two of these functions — stabilization and distribution — in any specific subnational jurisdiction principally because individuals can move easily from the jurisdiction of one state or local government to another. This suggests that stabilization and distribution are more appropriately national government-level functions. However, many state and local services have substantial distributional implications. The size of the subnational government sector suggests that it may have macroeconomic effects. Some economists have recently challenged the conventional wisdom, arguing that subnational fiscal policies may be more potent than previously believed (Gramlich, 1987b; Fisher, 1996).

10.2 WHAT IS THE FEDERAL GOVERNMENT'S DEBT?

Distinguishing between the deficit and the debt is important. A deficit is the difference between outlays — total expenditures — and revenues for a fiscal year. A deficit occurs when the government spends more than it receives in revenue for the fiscal year and must borrow the difference. The national debt is the accumulation of the amounts borrowed to finance the annual deficits (Evans, 1997). Although reducing the deficit is a major concern of many, reducing the deficits will not reduce the debt. The debt is money already borrowed that must be repaid. The national debt is a stock of IOU's created by annual deficit flows. Table 10.3 shows the federal budget deficit or surplus for selected years in billions of dollars and as a percent of GDP and as a percent of outlays. Outlays are an indicator of the size of the budget, as they measure the federal government spending in that fiscal year.

Federal debt is measured in several ways. The components of the debt are: (1) gross debt, which includes all federal debt outstanding, and (2) debt held by the public. The debt

TABLE 10.3 Federal Budget Deficit in Billions of Current Dollars, as a Percent of GDP and as a Percent of Outlays, Selected Years, 1960 to 2006

| Year | Deficit/Surplus (-/+) | As a Percent of GDP | As a Percent of Outlays |
|-------------------|--------------------------|------------------------|----------------------------|
| 1960 | 0.3 | 0.1 | 0.3 |
| 1965 | 1.4 | 0.2 | 1.18 |
| 1970 | 2.8 | 0.3 | 1.43 |
| 1975 | 53.3 | 3.4 | 16.01 |
| 1980 | 73 | 2.7 | 12.49 |
| 1985 | 212.3 | 5.1 | 22.4 |
| 1990 | 221.2 | 3.9 | 17.65 |
| 1995 | 164 | 2.2 | 10.82 |
| 2000 | 236.4 | 2.4 | 13.22 |
| 2001 | 127.3 | 1.3 | 6.8 |
| 2002 | 157.8 | 1.5 | 7.85 |
| 2003 ^a | 400 ^b | 2.8 | 14.8 |
| 2004 ^a | 500 ^b | 2.7 | — |
| 2005 ^a | 208.2 | 1.8 | — |
| 2006 ^a | 200.5 | 1.6 | — |

^a Estimates.

^b Revised upward, July 2003.

Source: Office of Management and Budget, Historical Tables, FY 2004.

held by the public reflects cumulative federal government borrowing and excludes debt holdings of trust funds, such as Social Security (Congressional Budget Office, 1984). The amount of debt owed by the U.S. government to outside parties is known as net debt and is sometimes called external debt (Evans, 1997; GAO, 1996). The public holds about 58% of the total debt; however, this percentage has declined steadily since 1990, from 75% in 1990 to 58% in 2002. The government now owns about 42% of the national debt. Trust funds — Medicare, Social Security, Highway Construction — hold revenues from earmarked monies. When one of the trust funds has a surplus, federal law requires that these surpluses be invested in federal securities. When the U.S. Treasury borrows money it issues debt instruments, which represent a liability

for the government and an asset for the bond holders. Federal agencies hold roughly 50% of all outstanding Treasury bonds. Because of surpluses in the Social Security Trust Fund, the Social Security Administration is now the largest single holder of national debt (Schiller, 2003). Other federal agencies also have lent money to the U.S. Treasury. The private U.S. sector — households, banks, and insurance and investment companies — hold about 28% of gross debt. State and local governments hold about 8%, and foreigners hold 20% of U.S. debt as it is an attractive investment for them. The Federal Reserve Bank holds 9% of the debt (Evans, 1997; GAO, 1996, 1999).

Gross debt is the measure that captures all of the federal government's outstanding debt. In 2002 the gross debt was approximately \$6.2 trillion, whereas the debt held by the public was approximately \$3.6 trillion. This figure reflects how much of the nation's wealth is absorbed by the federal government to finance its obligations. It represents the cumulative effect of past federal borrowing on today's economy and the federal budget. The debt held by the public better approximates the federal government's competition with other sectors in the credit markets (GAO, 1996). This affects interest rates and private capital accumulation. Interest on the debt held by the public is a burden on taxpayers; interest on the amounts loaned by government trust funds is paid by one government agency to another. However, at some point the debt held by the government trust funds will also have to be repaid. The gross debt better facilitates debt level comparisons with other nations and is also the amount subject to statutory debt limits. In this chapter, unless otherwise noted, debt figures refer to gross debt.

As noted earlier in the chapter, for much of the country's history, a balanced national budget was the norm. However, each war required the government to engage in deficit spending where expenditures exceeded revenues. From 1901 through 2000, the budget was in deficit for 71 of the years (Evans, 1997). The United States government had large budget deficits each year between 1969 and 1998. Between 1950

and 2000, the budget was in surplus for a total of only 9 years. Prior to 1960, the deficits occurred only during times of war and during recession years.

The budget deficits in the United States government between 1970 and 1997 ranged from a low of approximately \$2 billion to a high of \$293 billion (Taylor, 2001). A large deficit occurred in 1975, due to a recession caused in part by a sharp rise in oil prices. The early years of the 1980s saw unprecedented deficits. In fiscal year 1981, the deficit was approximately \$73 billion, about 2.7% of GDP. By fiscal year 1983, it had grown to \$95 billion, about 6.0% of GDP, the highest since the end of World War II. The deficit during the early 1980s was due in part to a double dip recession and in part to the tax cuts pushed through by the Reagan administration. The changes in the tax laws in the early 1980s caused long-term gaps between revenues and outlays (Evans, 1997). Large deficits occurred into the 1990s, although they decreased from 1992 through 1996, and the budget had a surplus from 1998 through 2001. For fiscal year 2003, the Office of Management and Budget projected the deficit to be \$304.2 billion. However, this estimate proved to be low.

10.3 WHY DO THE DEBT AND DEFICIT MATTER?

The rapidly growing federal debt together with high and volatile interest rates caused federal government net interest costs to rise rapidly in the 1980s. Between 1960 and 1987, the budget share going to interest payments on national debt accumulated by past deficits grew from about 8 to almost 15%. As a share of GDP, net interest grew to over 3% in the 1980s. By contrast, during most of the three decades after World War II, net interest totaled approximately 1.5% of GDP (Evans, 1997). Table 10.4 shows interest figures for selected years since 1940. During the 1980s, interest on the debt was one of the most rapidly growing components of the federal budget, rising from 8.5% of federal spending in 1979 to 14.8% in 1989.

TABLE 10.4 Interest on National Debt, Selected Years, 1940 to 2006

| Year | Net Interest (Billions of \$) | Percent of Outlays | Percent of GDP |
|-------------------|----------------------------------|-----------------------|-------------------|
| 1940 | 0.899 | 9.5 | 0.9 |
| 1945 | 3.112 | 3.4 | 1.4 |
| 1950 | 4.812 | 11.3 | 1.8 |
| 1955 | 4.85 | 7.1 | 1.2 |
| 1960 | 6.947 | 7.5 | 1.3 |
| 1965 | 8.591 | 7.3 | 1.2 |
| 1970 | 14.38 | 7.4 | 1.4 |
| 1975 | 23.24 | 7 | 1.5 |
| 1980 | 52.58 | 8.9 | 1.9 |
| 1985 | 129.48 | 13.1 | 3.1 |
| 1990 | 184.35 | 14.7 | 3.2 |
| 1995 | 232.01 | 15.3 | 3.2 |
| 1996 | 241.01 | 15.4 | 3.1 |
| 1997 | 244 | 15.2 | 3 |
| 1998 | 241.01 | 14.6 | 2.8 |
| 1999 | 229.08 | 13.5 | 2.5 |
| 2000 | 223 | 12.5 | 2.3 |
| 2001 | 206.02 | 11.1 | 2.1 |
| 2002 | 171 | 8.5 | 1.7 |
| 2003 ^a | 161.04 | 7.5 | 1.5 |
| 2004 ^a | 176.04 | 7.9 | 1.6 |
| 2005 ^a | 204 | 8.7 | 1.7 |
| 2006 ^a | 224.05 | 9.1 | 1.8 |

^a Estimates based on FY 2004 budget. The size of the projected deficits increased substantially since these estimates, undoubtedly increasing the debt and the interest cost.

Source: Budget of the United States, Historical Tables.

During the 1990s, interest on the national debt fluctuated between 13.5 and 15.1%. In 2000 it had decreased to 12.5% of total spending. However, rising deficits in 2002 and 2003 again threatened to increase interest payments. This is important because every dollar spent on interest cannot be spent on something else. Figure 10.3 shows the interest on the national debt as a percent of total outlays for every 5 years since 1940.

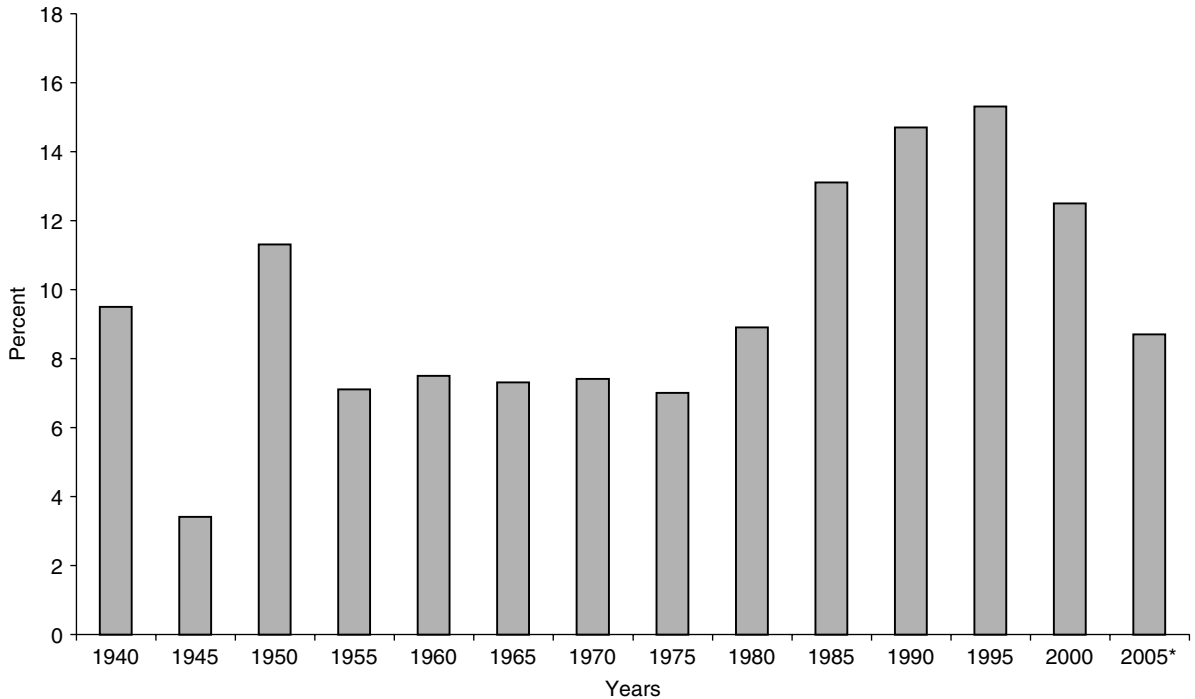


Figure 10.3 Interest on national debt as a percent of outlays.

Economists disagree about the importance of the costs of the debt and deficits. One view is that the effect of very large deficits may be to erode the quality of life in the United States slowly and quietly. Citizens and many policy makers tend to pay little attention to the debt and deficits. They may not consider them to be major problems and hence feel little pressure to do anything about them. The various problems that have been identified are discussed below.

According to Robert Haveman (1976), although public debt and deficit spending can, under some circumstances, cause inflation, such a claim does not hold as a general proposition. Only if consumers, businesses, and government wish to buy more than the economy can supply will deficits cause inflation. If businesses are operating at full capacity, the pressure on supply would drive up prices. On the other hand, if the economy were in recession deficit spending would increase demand and lower unemployment. According to this analysis, the state of the economy is a major factor in whether deficit spending causes or increases inflation.

Americans are poor savers, and American consumption has risen to historically high levels (Kettl, 2003). With investment low and consumption high, the nation as a whole is said to be living beyond its means (United States General Accounting Office, 1990). In the 1980s as the deficit rose, the American savings rate declined from about 9% of disposable household income in the 1960s and 1970s to 3.7% for most of the 1980s. In 2000, it was 1%. By contrast, in 2000 the household savings rates in Canada and Japan were 3.9% and 10.7%, respectively (Kettl, 2003). The General Accounting Office concluded: "With the economy running close to full capacity, large and persistent budget deficits undermine the future well-being of the country by consuming savings that would otherwise be available to finance investment supporting long-term economic growth" (United States General Accounting Office, 1990). The average net national saving rates of most major industrial nations have also been higher than that of the U.S. The General Accounting Office (1999) reports that for the years 1960 through 1997, the U.S. rate was 8.9%, Germany was 14.2%, and Japan was 23.0%. Gramlich (1989) argued that deficits

reduce national savings. With a bigger deficit, net national savings are smaller. National savings is the sum of government saving — the excess of national government revenues over expenditures — and private savings (Parkin, 2003). Net national savings is the difference between national savings and the amount by which exports exceed imports.

Foreigners helped finance a large part of the increase in national debt in the 1980s. Interest payments made to foreigners increased rapidly as a result. In 1970, the federal government paid \$1 billion in interest on the debt to foreigners. By 1989, the total was \$33.4 billion. Domestic consumption was financed by borrowing from others. The United States became a debtor nation to the rest of the world in 1985. In part this means that there are more foreign demands on U.S. assets than there are U.S. claims on assets in other countries (Lee and Johnson, 1998). In every year since then, the United States has borrowed from the rest of the world. In 2001 alone, the U.S. increased its international debt by \$330 billion (Parkin, 2003).

The rise in consumption and decline in savings worsens the nation's two other major deficits, one in international trade and the other in domestic investment (Kettl, 2003). American consumption has grown faster than the nation's ability to produce. As a result, imports from abroad have increased rapidly, and U.S. imports now exceed exports. On the whole, Americans tend to buy more from abroad than foreigners buy from us, causing large trade deficits. The sustained trade deficit of the 1980s had serious consequences. The larger the imbalance of trade the more jobs are exported; U.S. consumption finances the expansion of employment abroad at the expense of employment at home. Analysts believe that higher interest rates will have to be paid to attract foreign investments. The Euro is also expected to be a competitor for the dollar for foreign investments (GAO, 1999). Although foreign investments allow Americans to fund consumption, interest payments from those investments flow abroad.

Domestic investment in the United States is low. The more we consume the less we invest, and the less we invest

the more we lose ground with international competitors. Low rates of investment mean that the U.S. is not building the facilities and equipment needed for future economic growth. In just one area of the economy, the nation's transportation system, this means that roads, bridges, mass transit systems, and airports are not being renewed or repaired and will not be adequate for future generations (Hirsh and Rofulo, 1990).

Research regarding the effect of deficits and government debt on interest rates is mixed. Evans (1985) concluded that budget deficits do not have a lasting impact on interest rates. Beard and McMillan (1991) studied budget deficits existing between 1922 and 1938 and also concluded that they seemed to have no fiscal impact. However, Darrat and Suliman (1992) and Eisner and Pieper (1992) concluded that deficits affected GDP. Barro (1989; 2003) claimed that the effects of deficits on interest rates are uncertain and very small. He also claimed that: (1) real interest rates depend on cumulated levels of public debt in relation to the GDP, not on current deficits; (2) real interest rates in any one country depend on the overall level of debt in a larger universe of countries; and (3) the effects of debt levels are very small (Barro, 2003). Eisner (1992) has argued that the national debt does no harm as long as it does not grow faster than national income or output.

10.4 COUNTER-CYCLICAL FISCAL POLICY

Because government spending and taxes affect GDP in the short run, fiscal policy can, in principle, offset the impact of shocks that push real GDP away from potential GDP. Potential GDP is the value of national output that could have been produced if the nation's resources had been fully employed during a given time. Such use of fiscal policy is called counter-cyclical policy because the cycles in the economy are being countered, that is, offset by changes in government spending or taxes. According to some theories, this should work in both boom times and in recessions. Recessions require cutting taxes or increasing spending; booms require increases in taxes or cuts in spending (Taylor, 2001).

10.4.1 ECONOMIC STABILIZATION AND JOHN MAYNARD KEYNES

The English economist John Maynard Keynes turned conventional economics upside down with his theories in the 1930s. To increase employment, according to Keynes, it was necessary to increase demand and this required more spending. Demand was a function of spending by individuals, business, and government. Keynes' theory asserted that government played an important role in determining national income and employment. Once the economy reached full employment, government budgeting could return to the classical position of balance. Keynes' book on these topics, *The General Theory of Employment, Interest, and Money*, was published in 1936, after the Roosevelt administration took action to counteract the effects of the Great Depression. However, in time Keynes writings lent a powerful theoretical rationale for the actions that the government had taken.

Keynesian economic theory was very influential through several decades following the Great Depression. According to this theory, if the economy went into a slowdown, government was advised to spend and to cut taxes. This would put money into people's pockets and boost the economy, thereby providing jobs. Naturally, deficits would result; however, once the economy recovered, the deficit spending was to diminish and the debt be repaid. If the economy grew too fast, government should reduce spending and even increase taxes. Keynes' theories were tested in the early 1960s when President John F. Kennedy proposed a tax cut to spur the economy. It appeared to have some impact (Kettl, 2003). However, the Vietnam War was heating up and Lyndon Johnson, who became President when John Kennedy was assassinated, initiated the Great Society programs in 1964. The cost of the war and the Great Society Programs stimulated the economy too much and inflation resulted. According to Keynes' theory, government spending would be a counter to unemployment. When employment grew, spending would decrease and, if necessary, taxes would be raised to counter inflation. Unemployment and inflation would be balanced; both would not be high at the same time.

However, the 1970s saw the emergence of a condition called stagflation — high unemployment and high inflation existing at the same time.

In the late 1970s and early 1980s, Keynesian economic theory lost much of its influence over budgetary policy making. Although it was attractive for understanding government's role in the economy, there were serious problems in applying it to accomplish what Keynes thought could be done (Kettl, 1992; 2003). Stagflation, for which there was no good Keynesian explanation, was a problem. Keynes believed that deficit spending was appropriate to bring the economy to full employment. However, in practice that was difficult for policy makers and politicians to define. They also found it difficult to agree on the level of employment that would be considered full employment. So long as it was politically easier to stimulate the economy than to restrain it, the balance between unemployment and growth seemed impossible to achieve (Colander, 2004).

10.4.2 CROWDING OUT¹

Many economists argue that deficits and the debt pose a danger of crowding out private sector borrowers and investors (Brazelton, 1994; Evans, 1997; Mankiw, 2001; Taylor, 2001). However, this is a danger only if the economy is at full employment. Even then, if the deficit spending is for infrastructure and other investments, the benefits provided by these may be greater than benefits from the alternatives that might have been funded. President Clinton claimed this when he took office, arguing that the nation needed to invest in education, training, and infrastructure.

According to Gregory Mankiw (2001), large government budget deficits reduce the supply of loanable funds — money available for loan to investors and borrowers. Other things being equal, that drives up the interest rates. Government budget deficits reduce the national savings by increasing the demand for money to borrow, the interest rate rises, and investment falls. Because investment is important for long-run economic growth, government budget deficits reduce the economy's growth rate. Savings are an important long-run

determinant of a nation's productivity. If the United States raised its saving rate to the level that prevails in other countries, both the growth rate of GDP and the U.S. standard of living would increase, according to Mankiw (2001). The Federal Reserve Bank can intervene to ease the upward pressure on interest rates. However, Federal Reserve intervention can also cause inflation, as it would increase the money supply (Evans, 1997).

10.5 RECENT EVIDENCE OF IMPACT OF LARGE BUDGET DEFICITS AND NATIONAL DEBT

The largest peacetime deficits of the twentieth century occurred in the 1980s. In 1981, when Reagan assumed the White House, the national debt was just under one trillion dollars, at \$908.5 billion. By 1989, the national debt had increased to \$2,867.5 billion — almost three trillion dollars. It is difficult to identify the specific causes of the large deficits occurring during the Reagan administration. The debt itself results not only from deficits in any given year but also from other factors including a variety of administration policies, the policies of previous administrations, the state of the economy, and Congressional action. Concern about cause and effect, however, is more likely to focus on the results of large deficits and debt. In addition to the causes of the deficits, researchers have studied the deficits of the Reagan years to identify their effects.

Van De Water and Ruffing (1985) pursued an important and commonly asked question: “Can deficits be that bad when the economy continues to grow at a reasonable rate?” They believed that the answer to this question was yes and discussed the following five reasons why deficits and the resulting debt are undesirable:

1. Large budget deficits tend to curtail the amount of funds available to support capital investment and economic growth.
2. Deficits make America less competitive in the world. High U.S. interest rates attract large amounts of foreign capital, increase the demand for dollars, drive

- up the value of the dollar in terms of foreign currencies, and increase the trade deficit.
3. The U.S. has been transformed from a creditor to a debtor nation. Between 1982 and 1985, the net international investment position of the United States shrunk from \$150 billion to \$106 billion.
 4. In 1985, large deficits in the U.S. were greatly aggravating a precarious international debt situation. U.S. government borrowing absorbed one-third of net private savings in the seven largest industrialized countries. United States export markets are diminished and U.S. financial markets are made less stable. The authors admitted that these first four points are open to debate but say that the fifth is not.
 5. The large federal deficits cause government interest costs to increase. Growth in interest costs offset other savings. Interest on the deficit turned debt adds to costs in future years and makes the budget sensitive to changes in interest rates.

Whicker (1996) claimed that the growth of the debt during the Reagan years resulted from deficits accumulated when the supply-side economics goal of cutting income taxes and the allocation goal of increasing defense spending both escalated the gap between receipts and outlays. Gordon concluded that the primary source of the deficit was indeed the tax cuts, which lowered the share of federal revenue in GNP from 20.1% of the budget in 1981 to 18.1% in 1983 while expenditure's share rose (Miner, 1989).

Miner (1989) also analyzed the deficits of the Reagan years, 1982 to 1988, and the implications of the larger national debt that resulted. He concluded that the Reagan administration's program of tax reduction and defense spending buildup were the major reasons that the deficit grew after the recovery from the recession of 1981 to 1982. Miner concluded that the increase in the debt during the 1980s probably reduced exchange rates, increased inflation, and increased interest rates. The short-term legacy of the debt created by the tax reductions was either tax increases or recession. The long-term

legacy, according to Miner, was a large deficit, possible recession, and economic emergencies. He also concluded that deficits created a drain on national savings and investment. The larger debt and deficits also left a smaller area for macroeconomic policy actions in response to recession. The higher the deficit became in the 1980s, the harder it was to use the budget as an economic tool. However, Miner also noted that the deficit is one of the major areas of macroeconomic policy over which the president has some control.

In each budget year, continued spending for important allocation goods receives higher priority than deficit reduction. The federal budget process is decentralized, with no central policy structure for controlling deficits by coordinating stabilization and allocation. In addition there are incentives for spending. Much of the Federal Budget is now “uncontrollable”; interest must be paid as must Social Security and other mandatory payments. Congress and the President have discretion over the spending in a smaller portion of the budget (Whicker, 1996).

10.6 HOW LARGE A DEFICIT IS TOO LARGE?

Kettl (2003) claimed that Americans agree that the national budget deficit must be reduced. Several problems, however, beyond the politics of providing services and programs for constituents, are barriers to doing so. One, according to Kettl, is that fundamental disagreements on whether to cut taxes or increase spending always lie at the core of budget battles. Another problem is that the uncertainties in budget forecasting make it hard to be sure how much money is available to spend without further increasing the debt. Interest costs can be unpredictable, and that instability increases the deficit. Few observers think that the deficit should be reduced to zero. However, no one can say how much of a deficit is too much.

Governments use the budget process to make fundamental decisions about how the nation's wealth ought to be spent. The budget deficit results from many complex decisions. It is a result of spending policies, revenue — especially tax — strategies, and overall economic growth. According to Herbert

Stein (1989), former chair of the Council of Economic Advisors, the real problem is not in balancing the budget but in budgeting the nation's wealth. The fundamental question then is not whether to have a deficit but what underlying decisions the deficit represents. Stein contends that current budget processes do not allocate the national output well and Kettl agrees, noting that battles over the deficit signal that we are not making the best use of the nation's wealth. Many critical policy issues become casualties to the budget battles as they did during the Reagan years and in the early 1990s, when large budget deficits put constraints on policy makers.

10.7 WHAT IS AN APPROPRIATE LEVEL OF DEBT?

This question relates in important ways to the stability of the government. At what point is a debt level so high that it impedes either the economy in which the government operates, the ability of the government itself to function as its citizens wish, or both? Although the U.S. has a legislated ceiling for the national debt, there are no guidelines for appropriate debt or deficit limits for the U.S. national government based on a theoretical rationale. The European Union has established debt requirements for its member nations. Many state and local governments in the U.S. have debt limits. Many states, for example, have statutory or constitutional debt limits for state government debt. Many impose limits on the debt that local governments in the state can incur. Accurately defining what debt is covered by these limits can be difficult, and state and local governments often change the type of borrowing they do in order to avoid these limits (Sbragia, 1996).

Typically, debt levels are expressed as a percent of some measure of wealth or of the capacity to repay the debt such as a percent of GDP for nations, of gross personal income for states, or of assessed valuation for local governments. Measuring it as a percent of annual revenues or — as is more likely — as a multiple of annual revenues is also common. Other measures are used to assess the burden or average

burden. These include debt per person or debt per household. Many states express debt limits as a dollar amount or as debt per capita (Bunch, 1991; GAO, 1996).

Capacity measures may provide an inherent indicator of whether debt is too high; however, they are best used for comparison, to compare the debt level for one government over time and debt levels among governments (Evans, 1997). It would be difficult to find a consensus among economists about what a prudent ceiling for the debt-to-GDP ratio or the deficit-to-GDP ratio should be. The European Union, however, set a ceiling of 3% of GDP for member countries for the deficit (Evans, 1997; <http://europa.eu.int>). The ratio of government debt to GDP is set at 60%. European Union (EU) members are expected to keep their deficits below 3% and their net debt below 60% of GDP, although members have not always met these standards. The EU debt standard includes general debt — that is not just the debt exclusive to the national government but all government debt in the nation. This is equivalent in the United States to combining outstanding debt of all levels of government — national, state, and local (Evans, 1997).

In 1997, the debt-to-GDP ratio for general debt ranked the United States in the middle of seven major industrialized countries. At that time, of the seven, Japan had the lowest ratio at 18.3%; the U.S. was at 46.7%, and the highest was Italy with a debt-to-GDP ratio of 108.8% (Evans, 1997). However, these levels can change dramatically in a relatively short time. For example, by 2003 Japan's debt had risen to 156% of GDP (The Economist, 2003).

In terms of internal debt service thresholds, the debt-to-revenue ratio is a more reliable indicator than is the debt-to-GDP ratio (Evans, 1997). The ratio of debt to revenues corresponds to the debt-to-income ratio of financial entities in the private sector. Debt-to-income or debt-to-revenue ratios reflect the debt divided by the short-run means of servicing the debt. The higher the ratio, the higher the percentage of income or revenue required to service the debt. Although financial experts have not agreed upon a limit, a large

increase in this ratio is considered to be a clear danger signal. In the United States following World War II, in 1950, this ratio was approximately 5.4. It then declined to a low of approximately 1.5 during much of the 1970s and into the 1980s. However, in 1982 the net debt-to-revenue ratio began climbing again and reached 2.7 in 1995 (Evans, 1997). By 2000 it had declined to approximately 1.7. We might expect that by 2003 it will have climbed again.

By many indicators, the United States is doing rather well compared to competitor nations. Table 10.5 shows recent debt-to-GDP and deficit-to-GDP ratios for the European Union countries.

TABLE 10.5 Deficit-to-GDP and Debt-to-GDP Ratios for European Union Countries, 2002

| Country | Deficit Ratio | Gross Debt Ratio |
|---------------------|---------------|------------------|
| Italy | 2.3 | 106 |
| Belgium | 0.2 | 102.7 |
| Greece | 1.1 | 101 |
| EUR-12 ^a | 2.5 | 69.9 |
| Austria | 1.1 | 68.5 |
| EUR-15 ^b | 2.3 | 63.5 |
| Germany | 3.4 | 62.7 |
| France | 3.7 | 61.8 |
| Portugal | 3.5 | 59.4 |
| Spain | 0.4 | 52.5 |
| Netherlands | 1.6 | 52.4 |
| Sweden | 0.8 | 50.9 |
| Denmark | 1.8 | 42.7 |
| Finland | 3.3 | 42.3 |
| United Kingdom | 2.5 | 39 |
| Ireland | 0.6 | 33.3 |
| Luxembourg | 0.2 | 4.1 |

^a EUR-12 consists of the Euro area member states participating in the monetary union.

^b EUR-15 consists of European Union member states, i.e., EUR-12 plus Denmark, Sweden, and the United Kingdom.

Source: European Union, 2003.

The debt-to-GDP ratio for Japan was 149%, Canada 95%, and Australia 39% in 2002 (The Economist, 2003; Colander, 2004). The United States federal debt-to-GDP ratio for 2002 was 60%.

The worst U.S. deficit in the 1980s was about 7% of GDP and 23% of outlays (Evans, 1985). General government data including deficits and debt amounts for all levels of government, national and subnational, for OECD countries (Organization for Economic Cooperation and Development) show that the general deficit for the U.S. was 2% of GDP in 1994. Germany's was 2.6%, and other major countries were higher yet. Italy, for example, was 9%, and the United Kingdom was 6.9%. Only three European Union (EU) nations fell below the 3% ceiling in 1995 (Evans, 1997). The United States' federal deficit went as high as 6.0% of GDP in 1983 (U. S. Treasury Department; Office of Management and Budget Economic Report of the President). Regarding general government gross debt as a percent of GDP, the U.S. stood at 63% in 1994, above the EU standard. Some EU countries were over this standard and some under.

Corporate finance experts have developed numerous measures and indicators as guides to the appropriate debt levels for business organizations. Many of these can be modified for use by state and local governments. However, a major guide to whether a state or local government has "too much debt" is the rating by one or more rating firms assigned to the government's bonds when it issues debt. These ratings express the rating company's opinion regarding the probability that the unit of government will repay the debt and interest on time. These ratings are based on several factors including existing debt burden, budgetary soundness, tax burden, the overall condition of the local economy, and administration (Leonard, 1996; Mikesell, 1995). As indicators of appropriate debt levels, the trend of the debt is important for managers, investors, and policy makers. Many local governments set their own debt policy. These are often normative statements about the absolute or relative level of debt that will be considered acceptable.

10.8 WHY DO DEFICITS AND THE DEBT PERSIST?

The political imbalance in Keynesian economics made it easier to create deficits than to restrain them. The goal of stabilizing the economy by reducing deficits, interest, and debt conflicts with the allocation goals of increasing federal spending for social and defense goals and with tax reduction efforts. Tax policy is used as an instrument for stabilization and redistribution and sometimes undercuts the goal of raising revenue to fund government. Several factors constrain the ability of policy makers to raise taxes as demands on government grow. According to Whicker (1996), Americans expect low taxes. A National Economic Commission report in 1987 ignored the fact that reducing deficits required raising taxes. Whicker addressed an often-posed question: “Do higher taxes make government and deficits bigger?” Analysts and policy makers disagree on the answer to this question. However, according to Whicker, research supports the proposition that higher spending leads to higher taxes rather than the reverse.

Several automatic stabilizers — such as income transfers and unemployment insurance — offset changes in the business cycle. If the economy turns down and unemployment increases, several of these automatic stabilizers provide payments at the same time that revenues decline. Hence, the deficit increases, adding to the national debt. Keynesian theory highlights the potential of fiscal policy to solve macroeconomic problems. In Keynesian theory, government would use a fiscal stimulus — increased government spending, tax cuts, increased transfer payments — to eliminate unemployment. It would use fiscal constraints — less spending, tax increases, and reduced transfer payments — to keep inflation under control. From this perspective, the federal budget is a key policy lever for controlling the economy (Schiller, 2003). Using the budget to stabilize the economy implies that federal expenditures and receipts will not always be equal. From a Keynesian perspective there is nothing to fear if a budget deficit emerges.

What have policy makers done about deficits? At the national level, they have adopted a statutory debt limit, moved expenditures off budget, moved trust funds carrying surpluses on budget, and passed laws requiring deficit reduction. For example the Social Security Trust Fund surpluses continue to offset operating deficits. At times policy makers have used strategies to directly reduce the amount of interest paid. Much of the debt has to be continually refinanced, as the principal is not reduced although the interest is paid. In 1999, interest alone was \$230 billion (Taylor, 2001), and for fiscal year 2001, it was over \$200 billion (See Table 10.4). Paying this interest takes money away from other purposes.

The Clinton administration attempted to lower the cost of interest on the debt. If taxes distort economic activity, lower interest costs mean less distortion, since tax revenues are used to pay interest on the debt. The interest paid on the national debt is a significant expenditure in the national government's budget. Interest rates normally work such that the longer the term of the loan, the higher the interest rates. During President Clinton's first term, 1992 to 1996, the U.S. Treasury engaged in a strategy to reduce the average maturity of the public debt in order to reduce interest costs. Other strategies suggested to lower the interest rates have tradeoffs. Increasing the money supply, for example, may very well lead to inflation, which would ultimately cause interest rates to rise. Attracting foreign capital has its price. Increased domestic savings would help to lower interest cost, but it has stayed relatively stable and low for some time. Any reduction in the deficit creates a bonus in the form of interest savings. These can cumulate dramatically in the long run. The only way to control federal government interest costs is to reduce federal deficits and the rate of growth of the federal debt.

10.9 WHO BEARS THE BURDEN OF THE PUBLIC DEBT?

Economists debate whether the burden of public debt can be shifted from one generation to the next (Hirsch and Rufolo, 1990). The arguments in favor of and opposed to the sides of

this issue go back as far as David Hume and Adam Smith. Historically, some economists have argued that government expenditures are beneficial in that they create wealth, and therefore it is acceptable to incur debt in peacetime. Some economists say that net debt burden depends on the productivity of the expenditure and on who bears the cost and when. A deficit that finances construction of roads, bridges, harbors, and airports is an investment in the future. Those who repay the debt in the future may receive the benefits of the items financed by the debt. The true burden of the debt depends on what that debt has financed and when.

National governments can generate revenue to cover expenditures by taxation, borrowing, and printing money. Both public debt and taxes are characterized as burdens — the difference between tax burden and public debt burden depends on when the burden is realized. Bonds also are voluntary; lenders volunteer to lend money for a price, the interest. Taxes are not voluntary; they are imposed.

Governments incur debt for several reasons: to cover annual deficits, to finance capital-project construction, and to cover short periods during the fiscal year when payments on bills due exceed cash on hand (Mikesell, 2003) Not all governments borrow in peacetime for the same reasons; the U.S. national government borrows money for different reasons than do state and local governments. National governments will increase spending as a fiscal policy measure to counter an economic slowdown. State and local governments, however, generally borrow money for investment in infrastructure — roads, buildings, and bridges, as well as major pieces of equipment. These are major capital items.

Local governments are required to operate with balanced budgets. Every state in the U.S. except one, Vermont, is required to pass a balanced operating budget (Gosling, 2002).² Operating budgets, those appropriating money for a year's operation, are funded through current revenues and must be balanced in these governments. Capital items, on the other hand, are often financed through borrowing. The principal and interest necessary to repay the loans are items in the annual operating budget, and revenues must be sufficient

each year to provide for the payments. Long-term debt itself is accounted for in other documents. Because of this situation, state and local governments usually develop annual operating budgets separate from capital budgets. The capital budget and the capital budgeting process authorize and appropriate spending for expensive projects with long lives. Long-term debt is issued to fund these projects, which return benefits to the community over many years. The U.S. national government, on the other hand, has a unified budget where current expenditures — those for annual operations — and capital items are funded in the same budget. Hence, it is more difficult to identify the amount of the national budget that is for investment in infrastructure.

Governments use several mechanisms to borrow money. Perhaps the most common of these are bonds. And, of these, two types are dominant: general-obligation and revenue bonds. These designations apply, however, primarily to state and local governments. Although the national government issues bonds to borrow money, the debt incurred by these bonds is secured differently by the federal government than it is by state and local governments.

10.10 THE REAL TRADEOFFS

The funds obtained by borrowing allow the federal government to bid for scarce resources. Private investors and consumers will have less access to loanable funds and be less able to acquire income, goods, or services. The larger the deficit, the more the private sector gets squeezed. Hence, deficit financing allows the government to obtain more resources and, in general, to change the mix of its output in the direction of more public sector goods and fewer private sector goods. Either financing method, taxing or borrowing, allows the public sector to expand at the expense of the private sector. Borrowing rather than taxing, however, makes the federal government's claim on resources less apparent (Taylor, 2003).

When the cost is incurred is also important. Although future generations may benefit from current government

spending, they may also be adversely affected by today's opportunity costs. Of particular concern is the possibility that government deficits might crowd out private investment. Investment is essential to enlarging the nation's production possibilities and attaining higher living standards in the future. If federal deficits and debt servicing requirements crowd out private investment, the rate of economic growth will slow, leaving future generations with less productive capacity than they would otherwise have.

It is not certain that such crowding out will occur. Any reduction in private investment may also be offset by public works — such as highways, schools, and national defense systems — that benefit future generations. So future generations may not suffer a net loss in welfare even if the national debt slows private investment and economic growth. From this perspective, the whole debate about the burden of the debt is really an argument over the optimal mix of output. More deficit spending promotes more public sector activity. On the other hand, limits on deficit financing curtail growth of the public sector. Battles over deficits and debts are a proxy for the more fundamental issue of private versus public spending (Schiller, 2003).

As noted earlier in the chapter, the federal government does not differentiate between current expenditures and capital stock expenditures (Hirsch and Rufolo, 1990). Therefore it is often not clear what amount or percent of the national budget goes to capital creation. Some analysts look at new roads and other new capital and argue that a deficit is just a way of financing this capital. State and local governments have separate operating and capital budgets in part for this purpose.

Often the cost of individual items making up the public infrastructure is far in excess of the ability of a government unit to raise sufficient revenue, typically through taxes, at a given time to pay for them with current resources. However, the long life of these items means that they will provide benefits over time; hence it makes sense to spread the cost out over time as well. This involves debt financing — the government incurs debt to build the infrastructure and collects

revenues in the form of taxes and fees over the life, or partial life, of the item to pay the debt. In general, building infrastructure is often justified by showing that the benefits provided over time are greater than the cost of building and financing. Borrowing allows a government to build infrastructure that it might not be able to fund with current revenues, but it also places a repayment obligation on that government in the future. Capital financing must be balanced against other future obligations. Although future generations may have to pay interest on the debts incurred earlier, interest payments will also go to future generations. Future interest payments entail a redistribution of income among taxpayers and bondholders living in the future. External financing — money lent to the U.S. by foreigners — allows us to get more public sector goods without cutting back on private sector production. However, this external debt is used to acquire imported goods and services and hence must be repaid with exports of goods and services (Schiller, 2003).

10.11 DEFICIT AND DEBT LIMITS

The only way to stop the national debt from growing is to eliminate the federal government budget deficits that create debt. To do this requires a balanced annual budget or one that is in surplus. The first explicit attempt to force the federal budget into balance was the Balanced Budget and Emergency Deficit Control Act of 1985 — the Gramm–Rudman–Hollings Act of 1985. It set a lower ceiling on each year’s deficit until the budget was balanced and called for automatic cutbacks in spending if Congress failed to keep the deficit below the ceiling. This act set a target date of fiscal year 1991 for the annual federal budget to be in balance. Part of the Gramm–Rudman–Hollings Act was ruled unconstitutional, and so it was revised in 1987. The target date for balance under the revised act was fiscal year 1993. However, the political costs of the act proved too great for it to be implemented effectively.

Another piece of legislation, the Budget Enforcement Act (BEA) of 1990, laid out a plan for limiting spending or raising

taxes. BEA set separate limits on various categories of spending and required that any new spending initiative be offset with increased taxes or cutbacks in other programs. It was somewhat successful; however, it also was too painful politically to be sustained (Kettl, 2003; Gosling, 2002). In 1990, when then-President Bush submitted his budget, he was hopeful that he could meet the Gramm–Rudman–Hollings target. However, the economy began to decline, and the deficit projection increased to nearly \$300 billion. The across-the-board cuts required to meet the deficit target amounted to \$230 billion — an amount that would have caused unacceptable problems in federal programs and services. The deficit targets set by Gramm–Rudman–Hollings were abandoned and yet another deficit-reduction system was adopted. This system, although more modest in its goals, was more complicated. It put limits on discretionary spending and adopted a “pay as you go” rule, in which new or increased spending had to be balanced by savings or increased taxes. Kettl (2003) notes that this reform was built on a more solid foundation than the previous ones were.

Congress tightened caps on discretionary spending in the Balanced Budget Act of 1997. This act resulted from bipartisan action and put limits on spending for the next few years. At the same time the economy improved and revenues increased. In late 1990s and 2000, the budget went from deficit to surplus. However, that situation did not last. Pressures to increase spending overtook the surplus. A new President Bush successfully advocated tax reduction, the economy weakened, and the nation encountered the tragedy of September 11, 2001.

A debt ceiling, an explicit legislative limit on the amount of outstanding national debt, is another mechanism for forcing Congress to adopt specific fiscal policies. Prior to 1917 when the government budget was in deficit, Congress approved each debt issue. In 1917, to facilitate borrowing for World War I, Congress established a dollar ceiling for federal borrowing and authorized the executive branch to issue debt. This ceiling has been raised periodically over the years. Each time the debt nears the limit and additional borrowing will exceed it,

Congress and the president debate and then vote to raise the dollar limit for the federal debt so that the government can pay bills when due. At the end of Fiscal Year 1998, the limit was \$5.4 trillion; at the end of Fiscal Year 2002 it was \$5.95 trillion. The debt limit does not determine federal borrowing needs. These result from all of the spending and revenue decisions the government makes as well as the performance of the economy.

Economists debate whether the national debt should be lower or higher (Taylor, 2001). With a lower debt, interest costs go down; more surplus funds are available, and more investment takes place leading to higher economic growth. By freeing the private savings that previously financed budget deficits, a lower debt can help to “crowd in” more private investment. An argument supporting a higher debt is that the government debt plays an important role in the financial system. Central banks use government securities — debt instruments — in open market operations to influence interest rates. If governments are willing to increase the national debt, counter-cyclical fiscal policy is an option. Lower debt service payments help to reduce the burden on future taxpayers, and lower debt creates more room for governments to use fiscal policy to cushion the economy against future recessions. Yet this does not mean that government should do away with debt; sometimes it should be boosting public investment instead. If a surplus is achieved by starving education or public infrastructure of funds, this could actually reduce future growth. Or, in a high tax economy, cutting taxes might deliver bigger benefits than would eliminating or reducing public debt.

10.12 STATE AND LOCAL GOVERNMENT DEBT

Much of the government spending and taxation in the United States is by state and local governments. Although fiscal policy usually refers to the plans and actions of the national government, the actions of state and local governments affect the nation’s economy. For example, during a recession in 1990 and 1991, many states cut back on spending and raised taxes.

We would expect both actions to reduce real GDP in the short run just as similar action by the federal government would (Taylor, 2001). In the economic slowdown of 2000 to 2003, state and local governments took actions similar to those in the recession of 10 years earlier. One state acting alone may not have much impact. However, several state and local governments taking similar actions at the same time can substantially affect a region's economy as well as the nation's GDP (Gramlich, 1987a). Investments in infrastructure projects by state and local governments can have enormous impact on local economies. However, state government capital spending does not have much of a counter-cyclical effect; local government capital spending has even less. In fact, state and local government spending may follow or coincide with the ups and downs of the economy, making them worse.

State and local governments as a whole are a large force in the nation's economy and collectively have significant impact. In 1999, state and local government expenditures were about 55% as much as federal government expenditures. Although these units of government do not, as a rule, attempt counter-cyclical fiscal policy, changes in their total expenditures can affect the economy positively or negatively. Most state and local government expenditures are for fire services, roads, and public schools and other public buildings. All of these services require large amounts of capital investment for facilities and other physical infrastructure and are usually financed with long-term debt secured by issuing bonds. Much, but not all, of the unemployment and welfare benefits paid out by state and local governments comes from the federal government. These payments help stabilize the economy in bad times. However, state and local governments cannot incur deficits for their shares of these payments.

General-obligation (GO) and revenue bonds are the primary mechanisms that state and local governments use for issuing debt. General-obligation bonds are backed by the full faith and credit of the issuing government. Revenue bonds are backed by the revenue produced by the facility financed. Debt secured by revenue bonds is often called nonguaranteed debt, as its repayment is not guaranteed by the taxing power

TABLE 10.6 Total State and Local Debt Outstanding in 2000 (in Billions of Dollars)

| Type of Debt | State | (%) | Local | (%) | Total |
|-------------------|--------------|---------------|--------------|---------------|---------------|
| Short-term | 6.38 | (26.0) | 17.91 | (74.0) | 24.31 |
| Long-term (total) | 541.5 | (37.9) | 886.03 | (62.1) | 1427.52 |
| GO | 138.53 | (26.9) | 376.63 | (73.1) | 515.24 |
| Nonguaranteed | 402.97 | (44.2) | 509.4 | (55.8) | 912.48 |
| Total | 547.9 | (37.7) | 903.9 | (62.3) | 1451.8 |

Source: Bureau of the Census — State and Local Government Finances.

of the government issuing the debt. General-obligation bonds are secured with the pledge of the government borrowing the money to use its full resources and taxing power to repay the loan. This is one aspect of state and local government bonds that makes them especially attractive to investors, particularly those interested in a secure investment. The payment of interest and return of principle is guaranteed by the “full faith and credit” of the borrowing government.

In 2000, state and local governments in the United States had total debt of almost \$1.452 trillion, approximately \$5159 per person. Table 10.6 displays total figures for state and local government debt in the United States.

Interest earned on bonds issued by state and local governments is exempt from the federal income tax. This provides an incentive for investors to buy these bonds and enables governments to issue them at a lower interest rate. This arrangement amounts to a subsidy of state and local government activities by the federal government. The tax revenue not collected on the income earned from this source also represents a revenue loss for the federal government. These concerns and others led in the 1980s to provisions in tax legislation to restrict the use of private purpose tax-exempt bonds (Sbragia, 1996).

Traditionally, state and local public debt burdens have focused on debt by the full faith and credit of general-purpose governments. However, the 1970s and 1980s witnessed the rapid expansion of new debt instruments and an increasing

use of public authorities to issue debt. Tax-exempt debt for private purposes became a principal vehicle of state and local economic development policy and the use of nonguaranteed debt to fund the projects of public authorities and enterprises grew tremendously. The use of private purpose revenue bonds increased rapidly in the 1980s. Nonguaranteed debt went from 39% of total state and local debt outstanding in 1970 to 69% in 1990.

By 1989, approximately 75% of all state debt issued was long-term nonguaranteed, payable primarily from revenue-producing activities, and frequently issued through special-purpose government authorities established to circumvent general government debt limitations. The rapid growth of tax-exempt debt for private purposes led to a debate over whether the federal government should be subsidizing state and local governments in this manner (Sbragia, 1996). Congress ultimately took action to limit this private-purpose debt. Key components of the federal Tax Reform Act (TRA) of 1986 limited the use of tax-exempt and particularly, private-purpose debt. This legislation also affected the demand for municipal bonds (Bahl and Duncombe, 1993). The percent of nonguaranteed debt declined after the late 1980s for both state and local governments and the percent of long-term debt secured by general-obligation bonds increased.

The rapid growth in the 1980s in nonguaranteed debt can be divided into two categories. The first is that issued by general-purpose governments or government authorities to support clearly public purposes, usually capital acquisition or construction for schools, police and fire departments, and public works. The second is issued for principal support of private enterprises and is called private-purpose debt. Private purpose nonguaranteed debt includes industrial development bonds (IDB), industrial revenue bonds (IRB), hospital bonds to support private hospitals, pollution control bonds to support private businesses, and mortgage revenue bonds to help finance housing programs (Petersen, 1987; Sbragia, 1996). Although this form of tax-exempt debt is now capped by the Tax Reform Act of 1986, it still represents a significant share of state and local debt.

10.13 MEASURING DEBT BURDENS AND THE CAPACITY FOR REPAYMENT

Measuring debt burdens for state and local governments addresses the question of an appropriate amount of debt. Measuring and comparing long-term debt burdens has been a centerpiece of municipal credit analysis for decades. Debt burden measures have traditionally been used to assess the debt carrying capacity of a government and the risk associated with further borrowing (Berne and Schramm, 1986). The basic concept of a debt burden is generally accepted and can be given as a simple ratio (Bahl and Duncombe, 1993):

$$\text{Debt Burden} = \text{Debt/Debt Carrying Capacity}$$

Although this ratio is conceptually clear and acceptable, analysts debate the specific components of the formula and how to operationalize them. For example, analysts disagree on what to include in the numerator, that is, about what constitutes debt, and on what should be in the denominator. Historically, the definition of state and local debt became subject to debate with the development of revenue bonds. With general-obligation bonds, ultimately the taxpayer is liable or at risk. With revenue bonds, the bond holder rather than the taxpayer takes the risk. This led to the argument that only general-obligation debt and not revenue debt should be subject to legal debt limits (Sbragia, 1996).

The denominator of the debt burden ratio is a measure of the resources available to the government to repay the principal and interest due on its debt. That this should reflect the revenue raising capacity of the community is well accepted. However, there is less agreement on how to measure this. One argument is for using the revenue raising capacity of the actual tax system in operation in the community. Another is to measure the underlying capacity to finance debt and is used by many analysts and rating agencies.

The most common measures of underlying capacity for state and local governments are full-market property value and personal income. Property values reflect the base of the property tax but may not accurately reflect other potential

tax bases. Personal income is a more comprehensive measure of the fiscal capacity of a community because all taxes and charges must be paid for by either income or accumulated wealth. Researchers have concluded that the differences between personal income and a broader set of bases, such as business income, with regard to measuring debt burden are minor (Bahl and Duncome, 1993). Personal income is a more common measure, as it is available annually. It is often used as a measure of the underlying capacity of state governments to repay debt. Debt burdens for local governments, however, are likely to be measured with reference to full-market value of property subject to taxation. This may be because personal income measures for local jurisdictions are less readily available. Common measures used to assess the level of debt of state and local governments are total debt, debt per capita, debt as a percentage of personal income, and debt as a percent of annual revenues (Miner, 1989; Hovey and Hovey, 2002). As there are no absolute thresholds or benchmarks for assessing debt levels, comparing units is common. Table 10.7 shows summary data for state and local governments for the states with the highest and lowest levels of per capita debt in 1999 and for the U.S. as a whole. Table 10.8 shows state and local debt in fiscal year 1999 as a percent of total general revenues for the top and bottom five states.

The total debt burden for state and local governments has ranged between 12 and 20% of personal income over the last 30 years. It increased from about 16% of personal income in 1982 to 19% in 1989. Much of this increase was due to nonguaranteed debt issued with private-purpose bonds (Bahl and Duncombe, 1993; Regens and Lauth, 1992). The debt burden stopped expanding in 1987, and the outstanding amount of nonguaranteed debt began to decline. This drop may have been due to a decline in the use of private-purpose bonds as a result of the TRA of 1986. The burden of full-faith-and-credit debt also continued to decline in the late 1980s. Since the end of World War II, state debt has increased as a percentage of total public debt. The need for education facilities and roads accounted for much of this increase (Hackbart and Leigland,

TABLE 10.7 State and Local Debt: Total, Per Capita, and as a Percent of Personal Income, Fiscal Year 1999, Selected States

| Rank, Debt Per Capita | State | Debt, Per Capita | Debt as a Percent of Personal Income | Debt in Millions |
|--------------------------|----------------|---------------------|---|---------------------|
| 1 | Alaska | 11,991 | 43.3 | 7,434 |
| 2 | New York | 9,420 | 29.3 | 171,419 |
| 3 | Massachusetts | 8,149 | 24.5 | 50,319 |
| 4 | Nevada | 6,800 | 23.7 | 12,300 |
| 5 | Connecticut | 6,776 | 18.1 | 22,238 |
| 46 | Indiana | 3,107 | 12.4 | 18,464 |
| 47 | Mississippi | 3,098 | 15.6 | 8,577 |
| 48 | Arkansas | 2,719 | 12.9 | 6,937 |
| 49 | Idaho | 2,511 | 11.7 | 3,144 |
| 50 | Iowa | 2,494 | 10.1 | 7,156 |
| | 50 states | 5,013 | 18.5 | 1,364,314 |
| | U.S. plus D.C. | 5,021 | 18.5 | 1,369,253 |

Median for 50 states 4,494

Mean for 50 states 4,863

Sources: Hovey, H. and Hovey, M. *State Fact Finder*. Washington, D.C.: CQ Press, 2002; Census Bureau, Government Finances; Calculations by the author.

TABLE 10.8 State and Local Debt as a Percent of Total General Revenue for Fiscal Year 1999, Selected States.

| Rank | State | Outstanding Debt as a Percent of Total Annual General Revenues |
|------|---------------|--|
| 1 | Massachusetts | 121.5 |
| 2 | New Hampshire | 105 |
| 3 | Nevada | 104.9 |
| 4 | New York | 99.5 |
| 5 | Kentucky | 98.9 |
| 46 | Wyoming | 53.1 |
| 47 | Arkansas | 53.1 |
| 48 | Ohio | 50.0 |
| 49 | Idaho | 45.8 |
| 50 | Iowa | 41.4 |

Sources: Census Bureau, Government Finances; Hovey, H. and Hovey, M. *State Fact Finder*. Washington, D.C.: CQ Press, 2002.

TABLE 10.9 Total State and Local Debt, Selected Years 1970 to 2000

| Year | Total Debt in Billions | Percent of GDP | Percent of Personal Income | Percent of Annual Revenues | Percent State | Percent Local |
|------|------------------------|----------------|----------------------------|----------------------------|---------------|---------------|
| 1970 | 143.6 | 13.8 | 19.3 | 81 | 29 | 71 |
| 1980 | 335.6 | 12.0 | 15.5 | 63 | 36 | 64 |
| 1990 | 858.0 | 14.8 | 18.4 | 83 | 37 | 63 |
| 2000 | 1,451.8 | 14.8 | 17.6 | 64 | 38 | 62 |

Source: Bureau of the Census, Government Finances. Hovey, H. and Hovey, M. *State Fact Finder*. Washington, D.C.: CQ Press, 2002

1990). Table 10.9 shows total state and local debt with relative measures for selected years beginning with 1970.

Clingermayer and Wood (1995) examined the causes of U.S. state public debt from 1961 through 1989 and found that debt is primarily a function of economic conditions reflecting the need to borrow and the capacity of states to repay debt. However, political factors such as culture, partisan competition, and electoral cycles also affect state debt. These authors found evidence that tax and expenditure limitations may increase state indebtedness, while constitutional debt limitations had no effect on slowing the growth of state debt. Bahl and Duncombe (1993) reported that public school and college enrollments, per capita water consumption, and energy use correlated positively with the level of debt burden and account for much of the differences in debt burdens among the states. They also found that states with higher population density and higher rates of population growth had higher debt burdens.

Intergovernmental aid may stimulate borrowing by state and local governments. Since many federal aid programs support capital projects such as new roads, bridges, and sewer and water systems, all of which are usually financed by long-term debt, federal money is likely to affect state borrowing and federal and state aid may affect local government borrowing. Clingermayer and Wood (1995) showed that states with higher intergovernmental revenues borrowed more than those states with lower intergovernmental revenues did.

Changes in the level of debt burden in the 1980s were due in part to increases in the demand for capital-intensive services and the preference of a state for a generally large role for its governments. Demand factors and institutional constraints rather than capacity to finance seem to have driven the level of debt burdens. Clinger and Wood found that differences among states in the per capita income of residents were positively related to per capita debt levels. Rich states had somewhat higher debts; poorer states had lower debts. As they noted, this may be because rich states are better able to afford debt than are poor states or it may be that they are a better lending risk. State revenues were also positively related to debt levels, with high revenue states borrowing more, per capita, than lower revenue states did. However, when all other factors were taken into account, debt burdens tended to be larger in poorer states than in richer states.

Thirty-nine states have some form of constitutional debt limit applying to long-term debt, and two other states have a statutory debt limit (Bunch, 1991). These limits are usually expressed as an absolute dollar amount, as a percentage of revenues for a given period, or as a percentage of property values and usually refer to a maximum amount of debt that can be outstanding at any one time. All of the states with debt limits impose them on general-obligation debt. States vary with regard to limits on revenue debt; 14 have constitutional limits on nonguaranteed debt and others have various statutory limits. Many states also impose similar restrictions on debt levels for local governments.

As noted earlier in the chapter, for much of the country's history, Americans believed that the appropriate norm of government fiscal conduct was a balanced budget. Borrowing was to be avoided; debt was seen as a threat to the solvency of governments and their citizens. This norm was frequently violated by all levels of government but especially by state and local governments in the nineteenth and early twentieth centuries. Defaults by state and local governments served to motivate support for placing state constitutional restrictions on debt financing during the twentieth century (Sbragia, 1996).

Most debt incurred by state and local governments is for investment in capital items. However, the belief is widespread that debt limitations, separate annual operating and capital budgets, and norms of state and local budget balance have limited the growth in debt. Clinger-mayer and Wood note that research on the changes in state debt is important because many of the proposals for controlling borrowing at the federal level have already been implemented by some states. The research is also important, according to them, because of the impact of debt service on the service capacity and fiscal integrity of the governments that provide many of the most important programs affecting citizens.

10.14 REASONS FOR STATE AND LOCAL PUBLIC DEBT

Historically, governments have borrowed money for a variety of reasons: to finance long-lived infrastructure, cover revenue shortfalls of providing current services, pay for wars, and (more recently) to counteract cyclical downturns in the economy with additional spending. During much of American history, national government budget deficits and the resulting national debt were of little importance because deficits were uncommon. For most of the nineteenth century, the national government experienced more annual budget surpluses than deficits. State governments, however, were frequently in debt during that time and often lapsed into default (Sbragia, 1996). The states' reputations for fiscal irresponsibility prompted states to enact constitutional debt limits during the late nineteenth and early twentieth centuries. Despite Keynesian arguments justifying deficits, public concern over borrowing never completely abated. What seems to trouble the public more than government borrowing, however, has been the burden of taxes. During the 1970s, several states experienced "taxpayer revolts," which often resulted in legal limitations on taxes and on expenditures. The effect of these limitations on public debt is uncertain. Some state government leaders may have attempted to avoid taxing and expenditure limitations by creating off-budget agencies and enterprises with

borrowing authority. Although scholars have found that states do pursue counter-cyclical policies (Gramlich, 1987), state and local spending can exacerbate the cycles. In time of financial stress, state and local governments often delay capital spending even though interest rates may be low.

Research shows that constitutional or statutory tax, expenditure, and debt limitations do not significantly alter growth in debt for state governments. In fact, tax and expenditure limitations may actually increase growth in state debt as politicians evade formal constraints through alternative means of financing. Debt financing occurs when either the need or capacity for new debt exists. It is also affected by many of the same political influences affecting national political economies. Proposals for controlling the growing national debt by using techniques in place in states seem fundamentally misguided, according to Clingermyer and Wood (2003).

The 1986 federal TRA had the intended effect of slowing the growth of state and local government borrowing. However, rather than slowing the growth of state and local debt, the TRA of 1986 may have changed the nature of the debt. The preference for the type of bonds used by state and local governments changed in the 1980s. As late as 1977, 56% of long-term outstanding debt for state and local governments consisted of general-obligation bonds (Fisher, 1996). By 1991, nearly 70% of outstanding long-term debt of state and local governments was for nonguaranteed, that is, revenue bonds. However, following the early 1990s, the percent of total debt made up of revenue debt declined and general-obligation debt rose. By 2000, 35.5% of total state and local debt was general-obligation debt and 63% was revenue debt.

Regan and Lauth (1992) investigated indebtedness patterns of states from 1950 through 1989. They found that states relied more on long-term debt than short-term debt and that debt shifted dramatically during that time from general-obligation debt to nonguaranteed or revenue debt. State indebtedness as a proportion of total state revenues increased from 44% in 1950 to 50% in 1989. However, Regens and Lauth found that the amount of that debt derived from long-term nonguaranteed bonds grew from just over 7% of state revenues

in 1950 to nearly 40% in 1989. However, the end of the period Regens and Lauth investigated was only 3 years after passage of the Tax Reform Act of 1986. Since 1990, there appears to have been a shift back to the use of general-obligation bonds and away from revenue bonds. Both conventional wisdom and scholarly literature point to growing government reliance on nonguaranteed as opposed to full-faith-and-credit debt up until about 1987. Following the late 1980s, however, the percent of total debt of state and local governments that was nonguaranteed has declined, and the percent of GO debt has increased (Rassel, 2003).

Almost all state debt is long term; it has a repayment period of over a year. Short-term debt matures in one year or less. This contrasts with the national government's debt, about one-half of which matures in less than one year. Although the amount of long-term debt for the states grew by almost a factor of five between 1950 and 1989, the increase in constant dollars (adjusted for inflation) was relatively gradual.

10.15 DEBT ISSUANCE AND REVENUE CAPACITY

Revenue raised from taxation is an indication of government's willingness to pay for goods and services using current economic capacity. Debt is an indication of willingness to pay for goods and services with future economic capacity. Total debt as a proportion of revenue generated has remained relatively stable over time for states. Although the amount of state and local debt has increased in the last 40 years, it has remained rather steady compared to the size of the economy — 12 to 15% of GDP — and compared to the annual total revenue of subnational governments — 60 to 80% (See Table 10.9). Most of this debt has been used to finance capital expenditures and so is balanced by state and local assets. In 1964, the state share of this debt was 27.1%; in 1970, 29%; in 2000 it had increased to 38%. The local share of total state and local debt has gone down.

State and local debt represents a genuine resource commitment with both long- and short-term opportunity costs. The investment is paid with revenues provided over a long

period by those living in the community. When states choose to assume high levels of long-term debt, such decisions raise questions about intergenerational equity. There is a possible imbalance between those who pay and those who receive benefits. However, for long-term infrastructure that returns benefits to the citizens, those who pay will also benefit.

10.16 FINANCIAL CONDITION AND STABILITY

Credit quality for state and local governments is indicated by bond ratings, which are judgments about the issuer's ability to meet its debt service obligations. This ability depends on whether the tax base can generate sufficient revenues and depends largely on four factors: debt burden, budgetary soundness, tax burden, and the overall condition of the economy (Leonard, 1996). Although no fixed standards for assessing an issuer's debt burden exist, analysts and practitioners offer several guidelines taken from practice and the literature that are useful in judging when debt burden is too high (Groves and Valente, 1994; Berne and Schramm, 1986).

Evaluating the financial condition of any organization is important — no less so for government than for businesses. Financial condition means many things, including the ability to cover short-term cash requirements as well as the ability to raise sufficient revenue in a normal budget period to meet expenditures and not incur deficits. In a broader sense, financial condition refers to the government's ability to offer needed services and pay its obligations over the long run. Groves and Valente (1994) refer to the long-run balance between revenues and costs as long-run solvency. Public debt can affect the budgetary solvency — the ability of a government to meet the community's fiscal year spending needs — and the long-run solvency and hence the stability of governments. One of the dangers of too much debt for local governments is that they will lose their autonomy and be placed in receivership by the state.

Few firm normative standards for the financial conditions of local or state governments exist. For example, what

are acceptable levels or rates for per capita expenditures, reserves, or amount of debt? Credit rating organizations have many benchmarks, but they must be considered with other, less objective factors. The corporate finance industry also has benchmarks — however, they tend to be used as industry comparisons and may be only partially useful in application to state or local governments.

Two factors that are often overlooked when addressing local government debt are overlapping debt and unfunded liability. Overlapping debt is bonded debt of another jurisdiction that is issued against a tax base within part or all of the boundaries of the community — school or other special district, town, city, county. Citizens of towns are usually assessed a property tax by the county in which they live. The county's general-obligation debt represents an overlapping debt for the town. The debts of special-purpose governments can constitute overlapping debt for many cities and counties. In bad economic times, the overlapping jurisdiction or agency may default, causing another government to be liable or affecting its credit standing. Many statutory and constitutional debt limits and debt measures do not capture the amount of overlapping debt. An unfunded liability is one that has been incurred during the current or a prior year, that does not have to be paid until a future year, and for which reserves have not been set aside. The most common unfunded liabilities are employee pensions and compensated employee leave.

The question of the appropriate amount of debt relates in very important ways to the stability of the government. At what point is a debt level so high that it impedes either the economy in which the government operates, the ability of the government itself to operate as its citizens wish, or both is a question that warrants continued scrutiny.

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ENDNOTES

1. See Evans, pp. 200–205 for a discussion on the crowding out argument.
2. The situation in California is unclear to many. In Fiscal Years 2003 and 2004, the state had a large deficit in its operating budget. For the Fiscal Year 2005 budget, the governor proposed borrowing \$15 billion to cover a deficit in the operating budget.

Transportation Infrastructure

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This chapter applies economic theory to public issues in the development and use of transportation infrastructure. First, it develops basic principles of economics as applied to transportation infrastructure, and then it incorporates other perspectives relevant to public policy and management in this area. The third section compares current practice in highways and airports to economic principles and points to areas of divergence. The chapter then concludes by suggesting how different disciplinary perspectives can be reconciled in ways that might improve policy and management in the development of transportation infrastructure.

The basic insights of economics are very helpful for decision making in this area. Moreover, these principles demonstrate

that in many cases, current practice is wasteful and that at a theoretical level the solutions are clear. From an economic standpoint, the problem is not one of insufficient investment in public infrastructure, but a process of decision making that misallocates public investment. However, there is a slip between the cup and the lip as we move from theory to practice. Understanding why the decision-making process falls short of the economic ideal is the main theme of this chapter. It is instructive in understanding both this policy area and the relation between economics and policymaking more generally.

11.1 BASIC PRINCIPLES

The economic issues of passenger transportation are different than those associated with freight. Passenger transportation is a consumption item purchased by individuals, while freight transportation is an input into the production process. From the perspective of microeconomic theory, this is a critical distinction.

11.1.1 TRANSPORTATION AND ECONOMIC BEHAVIOR

The concept of a “good” is central to economics. Goods may be thought of as either final goods or intermediary goods. Final goods are consumed for the utility or happiness that they give the consumer. For example, an apple is a final good because eating it produces utility for the consumer. Intermediary goods are goods that do not produce utility in their own right but are necessary in order to have access to the consumption of the final good. Passenger transportation is for the most part an intermediary good because it allows one to have access to the final good, enjoyment of the travel destination. While some people do enjoy driving, flying, sailing, or riding trains for their own right, in most cases the final good is a vacation or a business trip and not the journey itself. This has an important implication — there is a high degree of substitutability among modes of transportation. If you do not care what mode of transportation you use, then you will shop for the

best deal in terms of price, speed, convenience, and amenities and then select the mode of transportation that provides that, be it car, plane, train, ferry, or skateboard.

From an economic perspective, freight transportation is an input to the production process. Improvements in transportation infrastructure can reduce the costs of production and can also allow for other inputs to be used more effectively. Thus the value of these improvements on the production side is measured by their reduction in production costs, and in turn, the impact on producer and consumer surplus. This suggests that with enough data, one could measure the effect of an infrastructure improvement on social welfare and make a determination of whether the improvement passed the efficiency criterion.

In the U.S., governments are the main actor called upon to provide transportation infrastructure. Thus, these projects can be weighed using the criteria of equity and efficiency that are applied to government programs.

11.1.2 EQUITY

There are two principles of equity in economics: first, that the costs of government should be distributed in proportion to the benefits received (the “benefits received” approach), and second, that the costs should be distributed according to the ability of citizens to pay (the “ability to pay” approach). These two principles are both compelling. However, their propriety depends on the specifics of the service. The benefits received approach is most appropriate where services are distributive and specific to certain identifiable persons or areas, and when service use can be measured. The ability to pay approach is more appropriate when the service is redistributive in nature, broadly realized, and difficult to measure. In the case of transportation infrastructure projects, the benefits received principle is more compelling because they generally meet the criteria of distributive services that are measurable and specific. There may, however, be cases where ability to pay considerations are relevant, such as for the provision of local roads.

11.1.3 EFFICIENCY

The benefits received principle of equity aligns closely with the principle of economic efficiency — that price should be set equal to the marginal cost attributable to the user. An efficient price ensures that users value the good as much or more than the value of resources used up in producing it. Services provided on a user fee basis will cover the costs of provision if the industry is not a natural monopoly, that is, an industry where average costs are always declining. Where it is a natural monopoly, there are a variety of pricing strategies that involve tradeoffs between the goals of efficiency and cost recovery.

Marginal cost pricing in its strict form may differ from benefit-based pricing. The former approach implies one price for all users, while the latter may imply different prices for each user. There are other possible pricing approaches, such as perfect price discrimination, where each buyer pays his or her maximum willingness to pay, or two-part tariffs, where a person pays a flat fee to gain access, plus a per-unit fee. The equity and efficiency characteristics of these differing pricing systems vary, but they have the common attribute that they charge users directly for their use.

Most departures from direct user charges lead to wasteful policies that are often difficult to change. For example, if the price of electricity is subsidized at a price lower than the efficient price, a residential user would be encouraged to over-use it. A user might shift from a gas furnace to electric heat because of the artificially low price for electricity, resulting in investment in an economically inefficient capital stock. Thus the inefficient subsidy has several unfortunate effects: it encourages the wasteful use of scarce energy, it requires a continued subsidy from the government, and it creates incentives to install inappropriate capital. While efficiency is not the only goal, departures from efficient prices should be made only after the alternatives have been carefully weighed. “User fees” of one sort or another are employed for the use of most transportation infrastructure.

11.1.4 EXTERNALITIES

With any public facility, there may be external benefits or costs from one community to another. For example, a road from city A to city B might also serve residents of city C. If city C is not involved in the decision about the financing and design of the road, it is unlikely that the decision will be equitable or efficient for society as a whole. Further, if the residents of many other cities are affected by the road, the difficulty of negotiating a satisfactory solution compounds. Numerous positive and negative externalities that concern transportation exist. On the negative side, the most important externalities are air pollution, congestion, and noise. On the positive side, “network externalities” are very important. This term refers to the benefits of having an effective transportation network that allows fast and inexpensive movement of people and goods. So for example, linking Sitka, Alaska into the transportation network benefits me in Omaha, Nebraska even though I may never travel there because I now have access to salmon and other goods produced there. So a third party like me is willing to pay something for the extension of the network to places to which I will not travel.

The classic solution to the externality problem is to tax negative externalities and subsidize positive externalities. So for example, many economists urge the use of congestion tolls to internalize the externality of the congestion of urban roads. For positive externalities, a logical solution is for either the state or federal government to allocate a grant to encourage the appropriate level of investment. However the “Coase Theorem” tells us that taxes and subsidies are only one possible solution to the problems of externalities (Coase, 1960). Several other approaches exist that typically involve less government intervention. One is to widen the scope of decision making to include all concerned parties. A second is to allow third parties (of which there may be many) to negotiate payments. A third is to negotiate it through the tort liability system.

Although grants can be useful tools in the case of positive externalities, they have tended to run amuck in the U.S.

political system. Current federal grants typically use relatively high federal shares, some as high as 100%, and are capped at a relatively low dollar amount. Gramlich points out that, because of this, these grants do not provide the appropriate stimulus for local spending, yet are more costly than needed. As Gramlich (1994, p. 1191) wrote, "the correction is obvious — lower federal matching shares and remove the caps." Following Gramlich, state and federal grant policy could be reformed in this way to better meet the goals of efficiency and equity.

11.1.5 EFFICIENT FINANCING POLICY

In theory, then, the application of microeconomic theory to the development of transportation infrastructure is straightforward. An efficient and equitable approach to financing infrastructure projects would rely on user fees that reflect the full social cost of use. This approach would give governments appropriate signals to make their decisions about the level of infrastructure investment. In general, price subsidies should be avoided as they run the danger of wasting dollars and resources, as well as encouraging inefficient installation and use of capital stock.

Grants are appropriate only as a means to address positive externalities. Grants should employ matching formulas determined by the ratio of external benefits to total benefits at rates that vary by local circumstance. This might require a customized approach, calling for granting agencies to examine specific local situations and then recommend specific financial packages. The effectiveness of grants also needs to be carefully examined. Many studies have found that federal grants partially displace state and local spending on aided functions (for a review see U.S. Department of Treasury, 1985). This suggests that they are not as effective as they should be in inducing the desired investments.

Projects may be financed in a variety of ways. Typically, major capital projects are initially financed by bonds, which can allow for the costs of the project to be spread over the

useful life of the facility — an approach termed “pay as you use” rather than the “pay as you go” method of cash financing. This has the advantage of enhancing generational equity by spreading the costs over present and future users. Also, it is part of an efficient structure of user fees, as prices under a “pay as you go” approach are usually too high; prices that are too high are inefficient for the same reason that low prices may be inefficient (Mikesell, 2003).

Another key choice is between public and private financing. Under current federal law, the interest from most public debt enjoys tax-free status, while private debt issues are taxable. However privately held debt enjoys the advantage of full deductibility of interest payments in the determination of taxable income, as well as the advantage of being able to take a deduction for depreciation of assets owned (Giglio, 1997). The depreciation advantage is the source of many imaginative financial arrangements such as “sale–lease backs,” where a public authority will sell an asset to a private entity that will then take tax deductions for depreciation and lease the facility back to the authority, with both parties sharing the tax benefit. All of these features of the U.S. tax code create inefficiencies and would be repealed in an economist’s dream world; however, that would be a nightmare for those parties currently benefiting: local governments, bond attorneys, bankers, investors, and consulting firms. all of whom hold considerable political clout.

11.1.6 MANAGING INFRASTRUCTURE

As suggested above, cost–benefit analysis provides a very helpful framework for decision making about any capital project; this applies to transportation infrastructure as well. At each decision point, the basic question is: which choice provides the greatest net benefits (total benefits minus total costs)? That choice is the one that should be chosen. However, this simple rule is more complex in several cases. An appropriate infrastructure policy is focused on three intertwined aspects of management: system design, finance, and planning.

Infrastructure systems should be designed for an efficient size, that is, a size that provides the level of services desired by the community as measured by the community's willingness to pay the marginal social cost of the good or service. With an efficient price, the resulting demand dictates current system capacity. Once designed, facilities should produce output at the lowest possible cost per unit. Costs should be kept low by making the appropriate changes in technology and substituting capital and labor for each other as appropriate. Where there are constant returns to scale, the costs of the system will be covered by user fee revenue. Fees must be collectible, which in some cases requires metering, tolls, or other user charges. In some cases, toll charges can have high administrative costs, which might present a tradeoff that would challenge the attainment of a well-managed system.

User charges should equal the marginal cost of the service. Charges that are subsidized at levels below the efficient price lead to waste and often inequity. They overstimulate demand and create exaggerated perceptions about capital needs. New systems built in response to this artificially high demand represent an inefficiently high allocation of scarce capital resources to the activity (U.S. Congressional Budget Office, 1983). This then creates future maintenance costs that are unwarranted. Price subsidies might be justified if they support basic services to low-income persons who would otherwise do without, but even then, the inefficiency they create must be weighed against the help they give to these persons.

Once an efficient price is set and an appropriate facility put in place, planning becomes easier. Expansion or improvement of infrastructure is justified either when it reduces long-run costs or when consumers are willing to pay for an improvement in either quality or quantity. The attractiveness of any development can be judged using current market values. Development then should be able to pay for itself and be financially sustainable for the long term.

The U.S. Office of Management and Budget and U.S. General Accounting Office have developed principles that characterize high quality capital management processes. They are (U.S. General Accounting Office, 2000, p. 60):

- Integration of organizational goals into the capital decision-making process
- The evaluation and selection of infrastructure projects by using an investment approach
- The balancing of budgetary control and management flexibility when funding capital projects
- The use of project management techniques to optimize a project's success
- The evaluation of results and incorporation of lessons learned into the decision-making process

These principles are logical extensions of the basic economic principles discussed here.

11.2 OTHER DISCIPLINARY PERSPECTIVES

If all decision makers were economists, then there would be limited conflict about capital projects. There are, however, several other perspectives that come to bear in making decisions about transportation capital projects. Some of these perspectives have had a great deal more influence in transportation investment policy, suggesting why the prescriptions of economic theory differ from current policy. Those discussed here are the political viewpoint, engineering, and the privatization perspective.

11.2.1 POLITICAL

Most political actors like to build. Cutting a ribbon to open a new highway is a classic political photo opportunity and a tangible symbol politicians can point to of their work on behalf of their constituents. It is even better when federal money paid for the project, as the burden of paying for the project is not perceived to be high to constituents. Combining this political instinct with the engineering passion for building, the interests of construction firms in increasing profits, the interests of bankers in increased lending activity, and the interests of labor unions in providing high-wage jobs for their members, it is easy to see how advocates of infrastructure expansion have substantial political power — much greater than that

of economists. As a result, these patterns of influence have woven together a strong fabric of institutions, incentives, and routines that are hard to reform.

A related issue is the politics of location. It is well known to developers, landowners, and political representatives that infrastructure projects can serve as a strong stimulant to economic development in the immediate area. This creates a very large incentive for political action that will deliver this infrastructure, ideally at little or no cost. Of course, the net economic effect may well be zero as the development may be a redistribution of economic activity elsewhere, but the political incentives facing actors to locate and expand transportation networks may cause this inefficiency. Congressman Bob Carr, former Chairman of the House Transportation Appropriations Subcommittee, aptly described the conflict between these political incentives and the economic ideal:

Over the years, Congress has adopted a variety of strategies that have virtually nothing to do with economics or investment. They have been underpinned largely by distributional strategies, not investment strategies [D]istributional strategies just float money around the country without much assurance of real benefit Although building such projects may create some jobs and some economic stimulus for a particular area, the total effect on the national economy may be to create unemployment, if those dollars would have been better spent someplace else with a higher economic rate of return. (Carr, 1994, pp. 18–19)

A third political consideration is the effort to use infrastructure development and development subsidies as a way to aid low-income individuals or urban core areas in need of redevelopment. Such efforts may come from these constituents, or also from those who would benefit from this development: construction firms, labor, and landowners. From the view of an economist, this may be justified for equity reasons and perhaps for economic growth reasons if the investment can spur enough economic growth. Typically, however, economists argue that it is usually more effective to subsidize low-income people directly rather than hoping that capital investment seeps down to

needy people. The distortions in prices and the resulting diminution of economic efficiency need strong equity justification.

Fourth, financing methods have created another set of entrenched interests, which are generally at odds with the goals of economic efficiency. As previously mentioned, the use of debt to pay for the building of transportation infrastructure has created business for a variety of professionals. Many of the financing tools rely on tax differentials, both between the private and public sector and among industries, that are inconsistent with the doctrine of economic efficiency. As the types of debt instruments have proliferated, increasingly specialized attorneys and investment professionals have carved out a business reliant on existing provisions of the tax code. Some local governments and special districts would be subject to default if certain development incentives were eliminated. Also, certain investors have a strong demand for local debt because of its attractive tax-exempt feature.

A recent case illustrates how political considerations can easily trump efficiency. Recently, the California Department of Transportation and the Metropolitan Transportation Commission in the San Francisco area approved an increase in tolls on the San Francisco Bay Bridge as a plan to reduce congestion. The toll revenue would be distributed to transit agencies which, among other things, would provide discounts to low-income commuters. The state legislature rejected this proposal as a tax increase that would be redistributed to poorly run transit agencies (Smhanske, 1994).

Almost everyone likes economic development, especially when it is perceived to come at little cost. The political considerations outlined here are a dominant feature of the landscape of transportation policy. Only the most naive would fail to recognize the impact of these groups in shaping transportation infrastructure.

11.2.2 ENGINEERING

Engineering is a respected profession, based on science. As such it has a strong base of credibility. If an engineering report declares that a bridge is structurally deficient and unsafe for

use, it is immediately closed. The use of objective standards for decision making is often contrasted with subjective political standards that are said to be prone to corruption and favoritism. Using mathematical models of optimization, it is hard to argue against an impressive, complicated engineering study that determines a single best solution to an infrastructure problem. Along with this scientific credibility, the engineering profession has clear standards that require attentiveness to safety, design, and material quality. All this comes at a cost, however, but unlike economists, the primary focus of engineers is less on cost. Rather it is on the potential for technology to improve the quality of life. More rewards exist in the engineering profession for building new facilities with high quality, modern technology as opposed to lower-technology solutions that may cost less. There is less emphasis on maintenance than on building; on cost-minimizing systems than on high-quality facilities, and on technology that is “good enough” than on “best available technology.”

Another focus of engineering is on the concept of a system. A proper engineering solution integrates all relevant considerations to create a system that works. For example, in the transportation of freight, an engineer should consider all modes in devising the network. Roads need to be linked with airports, rail stations, and docks to create a system that moves the freight quickly, safely, and inexpensively to optimize the shipper's objectives. To do so requires the full development of the system, as well as intermodal linkages so the freight can be quickly loaded from the barge to a rail car, then a truck. All modes of American transportation have the goals of developing and improving a national system. This dates back to Alexander Hamilton and the *Federalist Papers* and was the central tenant of the Whig party of the early 1800s and one of the founding principles of the Republican party in 1854. Their second nominee for President was a railroad lawyer from Illinois who strongly endorsed the goal of developing a national network of railroads and using the federal government to do so. Although Abraham Lincoln was distracted in that effort during his Presidency, other Presidents who followed him achieved that goal.

National systems are not necessarily justified from an economic view, however. While the presence of positive network externalities is an important consideration, it still may not justify extension of the system to remote locations with little commercial potential. From the economic viewpoint, if the social benefits do not outweigh the social costs, the system should not be extended. For example in the case of airports, many smaller general aviation airports do not have sufficient traffic to pay for the costs of the airport and instead rely on federal subsidies. General aviation interest groups have made their argument in part on the basis of the need to maintain a national system. Thus while the economist argues for making investment decisions by examining each project, engineers and some industry advocates urge making decisions by examining the system as a whole.

Engineers often lament that average people rely on infrastructure so much in their daily living that they only think about it when it fails. As such, it is argued, infrastructure investment has low political salience. While there may be some truth to this argument, there are numerous counterexamples. Although the maturation of the federal interstate system has reduced its political salience, other types of development have risen in prominence. As Sanders (1995, pp. 181–182) wrote, “[i]ncreasingly, state and city governments are directing their political and financial resources towards investment in such things as sports stadiums, convention centers, arts and entertainment complexes, aquariums, and other tourism-related facilities.” These represent conscious changes in political preferences that have shaped the fiscal priorities in many communities. So while transportation may not be currently favored over other types of development, it is hard to argue that there is a political bias against infrastructure.

Engineers are dominant among the professions in transportation policy. Many of the top officials at state and federal transportation departments are engineers. Often local governments have officials such as a “county engineer” who directs an agency responsible for infrastructure management. So one of the reasons why the economic viewpoint has not won the day is because of the dominance of engineers in the profession.

11.2.3 PRIVATIZATION

Deregulation and privatization have affected U.S. transportation in fundamental ways. The deregulation movement of the 1970s and 1980s affected several U.S. industries, including airlines, trucking, and to a lesser extent, rail. At about the same time, the environmental movement argued for development that reduced pollution and took into account health and long-term sustainability. A third important trend has been the recent emphasis on accountability and performance in government projects. This has called for transportation agencies to be more consumer responsive. As a result of these three factors, federal and state transportation institutions have been in a state of evolution from monopolized, tax-dependent agencies with federally determined standardized approaches to enterprises that draw their revenue from priced services, relying on market feedback with varied approaches to problems (Lockwood, 1997). Many different interests have made a case for greater privatization and decentralization of transportation policy making. A comment in 1992 by the Director of Government Policy and Research of the now-defunct Advisory Commission on Intergovernmental Relations sums up this perspective well:

The future is more likely to focus on maintaining and getting the most out of existing facilities, keeping costs down, making public facilities fit more comfortably into the natural environment, and being more ingenious in meeting needs in the most efficient ways that science can devise. Performance — not construction — is now the goal. (McDowell, 1992, p. 23)

The federal Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) was the first major milestone in this shift, and its principles were continued in the Transportation Equity Act for the 21st Century (TEA-21) in 1998. The passage of this legislation signaled a shift from previous policies that were more focused on new construction and system expansion to preventative maintenance, transporting people and freight, and greater efficiency. It has encouraged public-private partnerships and greater flexibility in meeting

federal aid requirements. Federal aid can now be used to partially support toll roads and private roads. In 1994, President Clinton issued Executive Order 12893, which directed federal transportation agencies to use market pricing, cost-benefit analysis, and increased private participation in infrastructure investment and management (Truitt and Esler, 1997). While implementation of this Order has been uneven, these principles heavily influence the U.S. Office of Management and Budget, the Congressional Budget Office, the General Accounting Office, and similar state agencies. The goal is to achieve public investment objectives by rationing investments more wisely. This is largely consistent with the economic perspective, in part because economists were the main advocates of deregulation. However, economists have many allies on this issue: environmentalists, libertarians, and fiscal conservatives (politics really *does* make strange bedfellows). In many ways, this alliance has been the most politically effective development for efficiency advocates.

Decentralization is a milder reform than privatization, but it is still a major change in transportation policy. Economist Marlon Boarnet argues that as the interstate highway system has matured, the national economic growth attributable to highway improvements has diminished, although localized gains can be realized at the expense of others. Federal highway subsidies that cause shifting of economic activity are ineffective at stimulating national economic growth and probably inequitable. Instead, he argues for a more decentralized system of highway finance. Localities should be required to pay for highway developments but also be given the financing tools to do so. To Boarnet (1999), decentralization would help accomplish a better geographic correspondence between who pays and who benefits, and also use existing capacity more efficiently. In the area of urban transit, Winston and Shirley (1998) have argued that the system is so riddled with inefficiency that privatization is a better option than the pricing reforms of the sort urged by economists.

Although other professions and ideologies affect transportation policymaking, the point here is that other persuasive and powerful actors have institutionalized policies and

investments that are in some cases different than would be recommended by economists. The next section looks at infrastructure policy for highways and airports, which illustrate many of the tensions described here.

11.3 APPLICATIONS

U.S. transportation policy is a mixed public–private financing system that typically taxes economic activities related to use and deposits these proceeds into a trust fund, which then finances federal aid to states and local authorities and direct federal operations supporting the industry. What have been termed “user charges” are such in only a loose sense. For highways and airports, various users pay fees and taxes, but the amount they pay may not reflect the cost of their use in the way a private price would. Certain users benefit from subsidies paid for by other users or the general taxpayer. This section examines the economic and finance issues in highway and airport development, and describes the differences between existing practice and those recommended in Section 11.1.

11.3.1 HIGHWAYS

Historically, a variety of taxes and fees have been dedicated to the funding of highways, which has put them on a relatively stable basis, allowing for long-term planning. This stability has facilitated the development of a world-class architecture of roads. The main source of revenue at both the federal and state levels is taxes on motor fuels: gasoline, diesel fuel, and other fuel. Other federal taxes include a truck and trailer excise tax, an annual heavy vehicle use tax, and an excise tax on tires. At the state level, revenues are also drawn from vehicle registrations, tolls, and general funds. Local revenues are largely from the property tax.

The federal Highway Trust Fund was established in 1956. At that time, Congress explicitly considered and rejected three other alternatives: the use of general revenues, tolls, and bonds. The trust fund approach was selected because it met three Congressional policy goals: locking in highway spending plans, avoidance of debt financing, and retention of

Congressional control over the funds (Patashnik, 2000). Many states have similar trust funds.

At the same time the Highway Trust Fund was established, Congress mandated that the Federal Highway Administration conduct a study to guide Congressional decisions about distributing the burden of highway finance among its users. Current federal practice in highway financing relies on "cost allocation" approaches that attempt to divide system costs among groups of users in accord with the costs they cause. From an economic perspective, cost allocation approaches are flawed for four reasons. First, they only include pecuniary costs and not the social costs of pollution or congestion. Second, they ignore the importance of signals that prices send to users. If users respond to prices by adjusting their consumption as one would expect, then the user fees would need to be adjusted. Third, cost allocation is a form of average cost pricing, not marginal cost pricing. Fourth, within groups, some users may differ from the average, and so should be treated differently. Thus, although highways are reputed to be user financed, this is only true in the sense that cost allocation methods make *post hoc* calculations about the amounts different groups of users pay relative to the system costs they cause. Even if these calculations found that each group paid its share (and they do not), within groups certain users underpay and others overpay. For instance, trucks with light loads per axle pay more than their share of costs compared to heavily loaded trucks with a minimum number of axles. Although cost allocation methods have evolved over time, a recent Transportation Research Board (1996, p. 44) study referred to the approach as "arbitrary and imprecise."

Inappropriate highway user charges encourage inefficient patterns of use and investment. Highway maintenance costs are largely a function of pavement thickness and the number and weight of loadings passing over the road. Crucially, as the weight per axle (measured by equivalent standard axle loads, [ESAL]) increases, pavement damage increases to the third power (Small et al., 1989). Thus it is essential that the prices paid by users be related to axle loadings. None of the current taxes do so. However, the solution

is not just to tax in proportion to ESAL. Thicker pavement greatly reduces the pavement stress of loadings. Thus, the appropriate policy is a combination of investment in thicker pavement and a reformed tax structure. Small et al. find that such a policy dramatically lowers maintenance costs for government, improves the welfare of other transportation modes, and even makes trucking firms better off as they respond to the tax by changing the number of axles on their trucks and shifting load sizes. Current highway user taxes account for less than 2% of total trucking costs, so increases in these charges have small effects on trucking costs (U.S. Congressional Budget Office, 1983). Similarly, in the long run shippers are expected to respond to efficient charges by shifting modes of transportation and relocating terminals, resulting in lower charges. Of course, these responses take some time, until which truckers' and shippers' costs may increase. If efficient prices are adopted with the current (inefficient) pavement thickness, truckers and shippers will face increased costs (Small et al., 1989)

Reform could improve the efficiency of resource use and the equity of these taxes and fees. The administrative costs for these appropriate user charges would rise but would not be prohibitive. Ten states currently have weight–distance taxes, which charge in proportion to the weight per axle of the vehicles and their distance traveled. The U.S. Department of Transportation (1988) found that the administrative costs and compliance costs of a national weight–distance tax would be reasonable. Other, simpler reforms that enhance efficiency in important ways are possible. Small et al. find that even quite simple reforms, such as a uniform tax per ESAL, result in substantial social gains. Similarly, Francis Turner, former Federal Highway Administrator, proposed increasing the gross weight limits on trucks while reducing individual axle weight limits, which would reduce pavement damage (Small et al.). Finally, Oregon is currently considering shifting from a gas tax on light vehicles to one based on vehicle miles traveled (Goodman, 2003).

Economists have long recommended tolls to address the problem of traffic congestion. Substantial research indicates

that this approach would effectively ration the scarce resource of highway use during peak periods to those who value it the most. Further, it would increase the viability of public transit in certain areas and could be designed so as to avoid a regressive net impact (Small et al.). At the same time, a fair amount of political resistance to tolls exists, so successful policy adoption would require a good information campaign and clever use of the toll revenues to reduce political resistance. Administrative costs of collection and enforcement are high in some cases. Downs (1992) suggests that effective congestion-reducing management would require not just one but several different approaches that might differ among areas.

Tolls could be implemented a number of ways. One is by the use of tollbooths; however, they have high administrative and compliance costs and also present safety problems (Forkenbrock and Schweitzer, 1997). A second way is by the use of proxy charges, such as parking fees, or stickers required for driving in congested areas at peak times. This has been implemented in London and Singapore. These are also imperfect, but may be a partial solution with low administrative costs. A third approach is to implement automatic vehicle identification (AVI) and vehicle recording mechanism technology. These allow application of electronic technology to perform the same job as a tollbooth and scales without the logistical problems of that method. Further, global positioning systems (GPS) allow application of satellite technology to provide information about the position and movement of vehicles. Electronic receivers on the vehicle, combined with on-board computers, could send drivers information about congestion ahead and the prices they will face for use of certain roads. These prices can vary with changes in traffic flows, creating an exchange of information between the producer and consumer that allows for efficient pricing and consumer decision making. It would also provide the government essential data indicating which roads merit widening and which do not.

For trucks, this technology allows these prices to vary with vehicle weight, road segment, state and locality, and time of day, further enhancing the possibilities for efficient user charges to pay for maintenance. This technology entails high

startup costs, but these are likely to be less than current administrative costs in the long run because of their capital intensity. For example, the Oklahoma Turnpike Authority reduced the labor costs for toll collection from \$176,000 per lane to \$15,500 with the implementation of electronic toll collection technology (Forkenbrock and Schweitzer, 1997). The ISTEA legislation of 1991 enabled states to receive federal matching aid for building toll facilities, as well as for rehabilitating them or converting freeways into toll roads, so legal barriers to tolls have been reduced (U.S. Congressional Budget Office, 1992). In addition, a variety of innovative financing tools were created in the ISTEA and TEA-21 legislation, which allow greater private cost-sharing, use of debt, and state infrastructure banks. These methods have allowed states to accelerate project development, include private partners in decision making and financing, and tax users more directly. Although there will be issues of cost and coordination among political subdivisions as this technology is implemented, there is potential for increased use of tolls as a method to address the congestion problem and as an alternative revenue source.

In general, highway pricing and investment are far from the efficiency ideal. The results are inefficient patterns of land use and transportation, waste of fuel, high and inappropriate public and private maintenance costs, poorly targeted grants, and ultimately, inefficient infrastructure investment. An appropriate pricing and investment policy could improve all these problems, as well as ultimately replacing the current highway taxes with those discussed here.

11.3.2 AIRPORTS

Historically, the goal of U.S. aviation policy was to stimulate the development of the industry. The 1926 Air Commerce Act declared the role of the federal government to promote aviation for commercial transportation. In 1946, the Federal Airport Act authorized federal aid to airports and financed almost half of all capital spending on airports between 1947 and 1969 (U.S. Congressional Budget Office, 1988). In 1970, the Airport

and Airway Development Act established the Airport and Airway Trust Fund (AATF), which earmarked certain federal revenues for deposit into the trust fund, which then supported certain expenditures. The Airline Deregulation Act of 1978 signaled a shift away from public regulation and control of the industry. This shift was accelerated during the Reagan Administration, which attempted to privatize, or at least “defederalize” many airports. The first Bush and Clinton administrations have continued this policy.

As with highways, in the aviation industry costs are not well assigned to users. In particular, a 1985 Congressional Budget Office (CBO) report found that general aviation paid only about 10% of the federal expenditures attributable to it, while commercial aviation passengers paid 20% more than their share of federal expenditures. In that year, if general aviation had paid its full share of federal costs, taxes on commercial passengers could have been reduced, and the subsidy from the general fund could have been eliminated (U.S. Congressional Budget Office, 1985). In addition to the malapportionment of the direct costs, certain social costs, such as pollution, are not paid by those causing them.

The main argument against a more direct user fee system is the desire to maintain a national system of air travel facilities. It is argued that reliance on market mechanisms will leave areas without vital air service and will endanger the nation’s network of airports that benefits all citizens, not just users. Federal grants support between 75 and 80% of the investment funds at general aviation airports, compared to between 20 and 25% at large and medium hubs (U.S. Congressional Budget Office, 1985). Thus, removing or reducing this subsidy would threaten some general aviation airports, possibly cutting off certain low-density areas from air service. While not unpersuasive, one has to question the practicality of this argument for the U.S. today. Currently, there are 17,451 airports in the U.S., 11,853 of which are closed to the public, and 5,598 of which are open to the public. Only 4,169 of the public access airports are publicly owned (Truitt and Esler, 1997). Even a large decline in the number of publicly subsidized airports would still leave thousands of private facilities.

Closing smaller airports and consolidating operations into a larger, regional facility could result in better service for some. As with highways, local communities are loath to lose their airports. But as discussed above, fairness and national economic development probably would be improved if airport finance were less centralized. Although citizens do benefit from a national system of airports, as with any good the question is, how does that benefit compare to the cost of these resources? When there are other transportation modes that are close substitutes, as well as private alternatives, one has to question the need for high federal subsidies for airports.

11.3.2.1 Federal Finances

Public aviation facilities are financed by a variety of public and private sources. At the federal level, the AATF is funded by an excise tax on tickets for domestic flights, a per-passenger fee on domestic flight segments, an excise tax on domestic cargo, taxes on international departures and arrivals, and taxes on aviation gas and jet fuel. Expenditures from the AATF support grants-in-aid for public-use airports and partially support Federal Aviation Administration (FAA) operations. The grants-in-aid from the AATF fund local airport safety, planning, construction, and rehabilitation projects. About 60% of the grants are distributed according to passenger volume, while the remaining amount is discretionary (U.S. Congressional Budget Office, 1985). These grants fund these activities at percentages ranging from 65 to 100% of project costs.

The ticket tax and the international departure and arrival taxes are not related to the costs incurred by the FAA for the air traffic control (ATC) system. The FAA's costs are related to the number of air route traffic control centers an airplane moves through, the number of takeoffs and landings, and the use of weather and mapping information. Taxes related to the number of passengers and the fares they pay do not reflect costs well (U.S. Congressional Budget Office, 1992). The fuel tax has some relationship to ATC costs, as fuel use is correlated with distance traveled, which in turn is loosely related to the use of ATC services, but this relationship

is weak and does not send appropriate price signals. Similarly, the cargo excise tax is not closely related to ATC costs. The segment tax would be a reasonable proxy if it was assessed per aircraft rather than per passenger. An even more direct charge would be one based on the operation of each aircraft and the services used. FAA radar systems are capable of identifying each aircraft using the ATC system, and bills for the cost of use could be sent to each owner for the services used (U.S. Congressional Budget Office, 1983). Administrative costs of these fees might be high, however.

Congestion in the airways is a social cost caused by air traffic, and landing fees related to congestion could efficiently charge for that cost. Implementation of this approach has been hindered by a court ruling against practices in New York, New Jersey, and Boston (U. S. General Accounting Office, 2003). Air pollution and noise are social costs that should also be recovered through the federal tax system. Again, these taxes should be based per plane, rather than per passenger, as an empty plane causes as many of these costs as does a full one. Fuel taxes are appropriate taxes to internalize the cost of air pollution but should not be deposited into the AATF, as this just further subsidizes the externality. Either landing fees or possibly a reformed segment tax could charge appropriately for noise pollution. However, because there are increasing returns to scale in the ATC system, marginal cost pricing would lead to less-than-complete cost recovery (U.S. Congressional Budget Office, 1992). There are a variety of ways to address this issue, most involving a tradeoff between efficiency and cost recovery.

Regarding the federal grants, one might question whether there should be any federal grants to local airports. Grants for airport construction, rehabilitation, and planning generally do not fit the criteria of correcting for a positive externality. Those for safety may. Further, current federal policy subsidizes low-use airports more than high-use airports. The low-use airports generate the fewest external benefits, which is the opposite of what theory recommends. In general, it is unlikely that aviation services serve critical needs of low-income people, as this group generally does not

travel by air, and air freight can be transported by other transportation modes. Thus, the theoretical justification for federal airport grants is weak. With the possible exception of safety grants, it is likely that a fairer and more efficient policy would be to encourage states or local governments to tax and spend as they desired on these projects.

11.3.2.2 Local Airport Financing

Most airports providing civil air transport in the U.S. are owned by counties or municipalities. In some cases, airport authorities, which operate as separate special districts, exist. Although they are often seen as separate quasi-public entities, their finances are linked with that of their parent government.

The financing of local airports is diverse. Typically, fees charged are based on costs incurred. In most cases, one of two methods of allocating costs is used: the compensatory cost approach or the residual cost approach. The compensatory cost approach charges facility users (typically airlines) fees to recover the costs of their use and occupancy of specific airport facilities, such as a portion of a terminal wing. The airport then uses other revenue sources to pay for the costs associated with common areas. The residual cost approach charges users a share of the net cost of the airport (the "net revenue requirement") after subtracting other revenues from total costs. Landing fees are calculated based on the net revenue requirement. In cases where other airport revenues (such as rentals and concessions) are particularly high, landing fees can be quite low or even zero (Ashford and Moore, 1992). The main difference between the two is that under the compensatory cost approach, an airport's revenues might be greater than or less than its costs, while in the residual cost approach, revenues are adjusted to equal total costs.

Both the compensatory cost approach and the residual cost approach are variants of an average cost pricing system, not unlike the cost allocation system used for highways. These approaches share the same problems mentioned above: they are not true user-pay systems, there are within-group inequities, the signaling role of prices is ignored, and social costs

such as air pollution and noise are ignored. The residual cost approach in particular inappropriately reduces landing fees if other airport revenues are high. Landing fees should be set based on the congestion costs caused by each takeoff or landing, the social costs of noise and air pollution, and any direct costs to the airports for capital costs and maintenance. Marginal cost pricing is compatible with cost recovery in most cases, as airports tend to be characterized by constant returns to scale (Winston, 1991). Thus marginal cost pricing would allow airports to be financially self-sufficient, weaning them away from federal grants as a source of capital funding. Airports that cannot be financially sustained with user charges and local taxes apparently have costs that exceed benefits and thus are of questionable propriety.

11.3.2.3 Local Tax Policy

To recover costs, airports generally levy three types of user fees on aircraft and their passengers: landing fees for the use of runways, taxiways, and landing strips; passenger facility charges; and apron parking fees for aircraft. Landing fees are generally based on aircraft weight, although at some smaller airports, flat-rate fees are common. Passenger facility charges (PFCs) are based on the number of passengers on the airplane. They are similar to passenger load supplements, which are common in Europe. Aircraft that park on aprons are typically charged fees. Other common fees are for terminal concessions and leased areas, such as offices, cargo areas, and ticket counters.

Passenger facility charges are growing as a revenue source. However, PFCs suffer from the same problems as federal ticket taxes and international departure and landing fees, as they vary with the number of passengers, rather than the number of aircraft. The marginal cost of landing is not increased by the number of passengers. Current landing fees also are inefficient. At busy airports, one of the main costs imposed on an airport by an aircraft is the delay caused to other planes; as a result, weight-based landing fees are inferior to congestion-based landing fees. Weight-based landing fees might be a

reasonable method for uncongested airports, although a charge directly related to the services used would be better.

Congestion fees would shift the burden of taxation among users. Winston argues that if the congestion fees were used to add runways at busy airports, there would be several effects: reduced delays would benefit both passengers and carriers, and airports would receive congestion fees that would roughly balance the investment required in the runways. General aviation would face higher landing fees, but if it adjusted its usage to avoid congested airports during peak arrival and departure times, the impact of these fees would lessen (Winston, 1991).

Clearly, there are many opportunities to improve the current aviation tax system. The current system is neither equitable nor efficient. Changes in pricing methods have important long-term implications for resource use. The most politically unpopular aspect of the proposed change would be the loss of revenue by general aviation airports and smaller commercial airports. Many citizens would be concerned if their local airport was closed or services reduced. But as different modes of transportation are substitutes for each other, shifts in the financing of airports affect other modes. Subsidies and inefficient pricing systems cause misallocation of resources, inhibiting long-term economic development.

11.3.3 THE POTENTIAL OF REFORM

In the development and management of transportation infrastructure, inefficient arrangements exist that do not make the best use of government revenue, travelers' time, and environmental capacity. User fees are possible in all cases, and although they do present difficulties in terms of administrative costs and political acceptability, these problems are not as serious as they once were. Further, as a result of the public's resistance to increased property taxes or further adoption of local nonproperty taxes, user fees might now be the path of least resistance.

Part of the problem is that policy is too centralized, with a large share of local revenue derived from federal grants.

Federal aid formulas need to be reformed, as in many cases, grants do not send appropriate incentives. Local characteristics and needs differ widely, and to serve these needs a logical response would be to make state and local managers more financially independent. Local, rather than federal, tax dollars would be used to support local facilities. Resource allocation decisions could be made by local managers comparing the costs and benefits of specific projects instead of federal administrators. Managers of congested facilities could make their own decisions about whether to impose congestion fees or to build additional capacity.

The wider adoption of user fees not only produces an additional source of revenue, it also can reduce expenditures and allow for more effective management of service responsibilities. The benefits of moving to a user-fee system to finance capital-intensive local services are many:

- Lower cost of investment in public infrastructure and a source of information to guide public officials about the allocation of public funds to various projects (Gramlich, 1994)
- In most cases, facilities self-financed through user fees, rather than relying on local taxes
- Charges that more closely correspond to the benefits users receive from these services, achieving a more equitable system
- More appropriate facility size and quality with lower long-run maintenance costs, leading to a longer facility life and reduced congestion
- Better incentives for conservation of natural resources
- State and federal grants with the most “bang for the buck,” that is, that stimulation of the appropriate technology at the lowest long-term cost to society at large

11.4 A PRAGMATIC GUIDE TO TRANSPORTATION INFRASTRUCTURE DEVELOPMENT

As the previous section indicates, numerous differences exist between current policy and that recommended by economists.

Some of these differences are attributable to the influence of the other disciplinary perspectives, as discussed in Section 11.2, while other differences are due to inertia, historical development, and other reasons. The differences suggest where inefficiencies are present in the current U.S. approach to the development of transportation infrastructure and therefore imply potential reforms that would make better use of the resources devoted to these investments.

But more important than that is the lesson it imparts to the reader. Although efficiency is important, it is not the only goal. As valuable as the economic perspective is, other perspectives deserve the respect of a fair hearing in policy decisions on this issue. Further, the practitioner who sincerely wants to improve infrastructure development policy needs to understand these other perspectives in order to be an effective change agent. Economists have argued for congestion pricing for many years, and only recently has some experimental use of this option been made. To move these ideas from the purely intellectual to reality takes an understanding of the “engineering mind” (Doing, 1995) and an appreciation for the rough-and-tumble politics of development, the complexities of finance and, at least now, the influence of privatization and decentralization.

It would be hard to overstress the importance of interest group politics in this policy area. In most American communities, those who stand to gain from further development of transportation infrastructure hold a great deal of power. The current complex web of tax laws, financing practices, contracts, intergovernmental relationships, and industry standards reflects a policy equilibrium that those in power are loath to upset, so even seemingly minor reforms can cause a firestorm of opposition that is not for the timid.

Where does this leave the sincere practitioner who sees value in the insights of economics in this area? One avenue is to accept the status quo and play the game effectively. Another is that of a critic, who condemns the power relationships and inefficient policies. A third path is to work within the system to incrementally reform practices that are closest to home and use the power of ideas to try to persuade those

in a position to change broader national policies most relevant to one's own concerns. In contrast to the intellectual traditions that undergird economics, politics, and engineering, this approach is related to the philosophy of pragmatism. Pragmatism is characterized by reflecting on one's experiences to adjust future actions so that the consequences of future actions will be more favorable (Snider, 2000). As Snider (2000, p. 129) has written, quoting the philosopher William James, "The value of any idea, then, is simply a matter of the degree to which a particular arrangement of facts serves to 'carry us prosperously from one part of our experience to any other part, linking things satisfactorily.'" The philosophy of pragmatism provides a compass to guide practitioners, as they can draw on any disciplinary perspective as it helps shape future action, rather than being captive to the dogmas of any one approach.

As with any policy area, a substantial gap exists between theory and practice in transportation infrastructure development. In the short run, change is slow and reform seems impossible. However in the longer run, institutions and the incentives embedded in them are the blueprint for future development. What appear to be small changes in programmatic details can feed through the system to change the incentive structure, the orientation of institutions, modes of travel, and the architecture of the future.

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E-Government Expenditures

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12.1 INTRODUCTION

Governments — national, state, county, municipal — have Web sites, although some are better organized and more user friendly than others. As a means to an end, governments use these Web sites to communicate with and provide services to their citizens, to businesses, and to other governments, so to enhance productivity. For example, some governments provide online services such as driver's license renewal, paying

parking tickets, or filing taxes. These services could potentially reduce the number of people in line and hence the waiting time at the department of motor vehicles/secretary of state's office, the courts, or even the post office, where if we wait until April 15 to mail our tax forms, the lines extend seemingly forever. Furthermore, these services can be accessed 24 hours a day, 7 days a week (of course, there are times when a site may be down temporarily for updates). Some governments may charge a small, nominal fee for certain online services; generally this is the case where production is outsourced to a private software company. As such, government investment in such technology could make government presumably more productive, but what about the fairness of financing such technology?

This chapter evaluates the equity or fairness of e-government technology expenditures. To do so, we begin by assessing Internet usage and explaining the four developmental phases of e-government technology. Then, using aspects of equity, we evaluate potential financing concerns. Finally, propositions are offered to finance e-government technology.

12.2 INTERNET USAGE

Before we can evaluate the equity of e-government technology expenditures, we need to understand Internet usage. The Internet is, of course, very popular, and its popularity grew exponentially in the late 1990s and early 2000s. Despite its popularity, fewer than 50% of Americans use the Internet at home. Adding work, libraries, and other locations, Internet usage increases to a majority, albeit a small one—somewhere between 50 and 60% (General Accounting Office, 2000; Governing, 2002).

Fewer Internet users visit government Web sites, and as the size of the government decreases so too does the access to their sites (Larsen and Rainie, 2002; Governing, 2001). But of those visiting government sites, most are seeking tourism and recreational information, information about a public policy or issue, or what services the government provides via the World Wide Web (Larsen and Rainie, 2002). For example, a variety of forms, such as job applications, tax forms, voter registration

forms, and purchase orders, are available to download on some governmental Web sites (Larsen and Rainie, 2002). Additionally, most agencies in the U.S. offer a feedback/comment mechanism (Hart-Teeter, 2000), and some of the Internet users visiting a government Web site have sent comments about an issue to a government official (Larsen and Rainie, 2002).

Although it is estimated that over half of the adult population in the U.S. surfs the web, a digital gap or digital divide exists along lines of race, employment status, education level, income level, and age. For example, whites (59.9%) and Asian-Americans (60.4%) use the Internet roughly twice as much as Hispanics (31.6%) and blacks (39.8%) do (U.S. Department of Commerce, 2002). Those who are employed access the Internet twice as much (65.4%) as the unemployed do (36.9%). The income and education gaps are substantial; the U.S. Department of Commerce data suggest that there is a positive relationship, i.e., when income and education levels increase so too does Internet access. Finally, people between the ages of 9 and 49 access the Internet roughly twice as much as those under the age of 8 or over the age of 50 do (U.S. Department of Commerce, 2002).

Overall, studies suggest that half of the adult population in the United States has Internet access; however, very few are frequenting government Web sites. The numbers are even smaller once the digital divide enters the equation. These numbers are important to note when considering the financing mechanisms for these expenditures. Now, let us turn to the development of e-government technology.

12.3 DEVELOPMENTAL PHASES

When developing e-technology, governments pass through four successive phases: formative, distributive, transactional, and transformational or integrative (Miranda, 2000, 2001; Balutis, 2001a, 2001b). Table 12.1 (Column 2) briefly describes each developmental phase. Each phase creates different relationships. For example, governments use Web sites to communicate with citizens, businesses, or other governments.

TABLE 12.1 The Developmental Phases of E-Government Technology, Their Definitions, and Aspects of Equity and Efficiency in Each Phase

| Developmental Phase | Description | Non-exhaustive | Non-exclusive | Consumption | Investment |
|------------------------|---|----------------|---------------|-------------|------------|
| Formative phase | Identifies government as having a Web page with basic information, a “billboard” phase, with effort to post information — news and views — to a broad audience | X | | X | |
| Distributive phase | Uses the Web page as a means of dispensing information that may be downloaded by anyone who has access to the Web page, often with the option to transmit information back to the government | X | | X | |
| Transactional phase | Provides a mechanism on the Web page that allows the completion of a procedure such as applying for a permit or paying a parking ticket | X | | X | X |
| Transformational phase | Provides an instantaneous and contemporaneous means of interaction among agencies within government and between agencies and outside parties, linking transactions to back-office operations such as encumbrances and budgets, purchasing, accounting, and accounts payable | X | X | X | X |

Source: Miranda, R. (2001). In *ERP and Financial Management Systems: The Backbone of Digital Government*, R.A. Miranda, Ed., Chicago: Government Finance Officers Association, p. 6.

Managers may need to consider these varying relationships when developing a financing strategy.

Governments begin in the formative phase, where a simple homepage is created, and basic information such as town hall hours, town meeting minutes, budgeting and financial information, tourism information, and listings of recreational activities is posted. For the most part, a majority of local governments have accomplished this phase; most have a formal Web site where calendar and event information, documents, constituent services, and search engines are provided (Moon, 2002; Hart-Teeter, 2000).

After an official Web site has been created, governments can move more easily through the next phases. The distributive phase is where the Web page is used as a means of dispensing information that may be downloaded by anyone who has access to the Internet. Citizens and businesses can download tax forms, job applications, voter registration forms, and purchase order forms, among others. Also, this stage provides two-way communication, where citizens can transmit information back to the government, for example by sending comments and concerns to public officials.

The transactions phase allows government an opportunity to provide public services electronically while reducing costs. For example, citizens with access to the Internet can pay parking tickets, renew a driver's license, or pay taxes. Cost reduction is created by a more efficient department as well as downsizing government. Low usage of these online services suggests that the majority of states and local governments across the country do not offer these services electronically. For example, Moon (2002) found that 1.4% of municipalities provide online payment of fines, less than 1% have the ability to provide online payment of taxes, and 1.5% provide online payment of license/permit fees.

After passing through these first three phases — formative, distributive, transaction — all of which are essential to productivity enhancement, governments arrive at the integration, or transformational, phase. This phase uses the Internet to link systems such as purchasing and accounts payable. In addition, these departments may have direct online connections with vendors.

Overall, from a macro perspective, the four phases, together, achieve certain goals for government and society. By making information and services instantly available and integrated, government efficiency, accountability, and transparency are improved. In order to reach such goals, however, successful development of each phase and transition to the next phase — a micro perspective — must be accomplished first.

Now that we have put Internet usage and the development of e-government technology into perspective, let us turn our attention to equity.

12.4 EQUITY AND E-GOVERNMENT

The use of financial analysis helps us take into account the financial burdens allocated according to ability to pay and benefits received of the investments in the technology. Keep in mind the number and groups of people who use the Internet as well as those who use government Web sites and the purposes for their visits.

We understand that equity or fairness of expenditures refers to the incidence of spending, that is, how the benefits and burdens are distributed. Put differently, we want to determine, if possible, who benefits from the expenditure or service, and who pays for the expenditure or service.

As discussed in previous chapters, varying degrees of received benefits exist. At one extreme, we have public goods and services where benefits are widely received. Such goods and services are nonexhaustible and nonexclusive.

A nonexhaustible good or service can be consumed at any given time by any number of people without diminishing the quantity available. A nonexclusive good or service is one where consumption is not distinguishable between those who have paid and those who have not paid for the good or service. As a good becomes exhaustible and/or exclusive, welfare economic theory holds that some measure of benefit or use should dictate who pays.

Consider the following examples. A pure public good, such as national defense or education, is nonexhaustive and nonexclusive, where society as a whole benefits and therefore

citizens pay according to their ability. Based on principle, pure public goods are equitable (recall the ability to pay principle). Toll goods such as roads and bridges are those that are non-exhaustive but exclusive. Those who benefit from the service pay via user charges and user fees. These goods also achieve equity (recall the benefits received principle). What about e-government and its phases? Who benefits? Who pays? Columns 3 and 4 of Table 12.1 present a simplified matrix.

Is e-government a collective good meeting the nonexhaustive and nonexclusive criteria? From a macro perspective, yes, we can consider e-government a pure public good. How so? First, e-government is nonexhaustive because any number of people can surf a government Web site at the same time without depleting the service. Of course, the more people who visit a site the greater the potential for slower connections and download times. Nevertheless, the service is not depleted. Second, government Web sites are nonexclusive because taxpaying and nontaxpaying citizens cannot be separated. For example, no one can be excluded from downloading town hall meeting minutes or researching a local ordinance. However, nonexclusivity only applies to those taxpaying and nontaxpaying citizens with access to the Internet. If a resident does not have Internet access, is e-government still considered a collective good? The macro perspective does not address this issue; therefore, it offers only a simplified analysis of e-government as a collective good. Microanalysis is needed to investigate the equity among the different developmental phases as well as immediacy of benefits from consumption and investment standpoints. Such an analysis allows us to create an equitable financing plan.

For the most part, the phases of e-government development remain nonexhaustive but become primarily exclusive. In the broadest sense of these phases, the formative, distributive, and transactional phases are exclusive to those who can visit a municipal Web site, download information, and perform transactions — those paying for a private service that enables them to access the Internet and in turn government sites. In addition, taxpaying citizens pay for the government to possess technology that enables enhanced e-government, but not all

of these citizens can access the Internet because they do not have computers, or if they own computers, they do not have Internet access. Investment in these three phases moves e-government consumption away from being a pure public good toward an exclusive good accessible only to those with Internet access.

Society, as a whole, may benefit from the transactional and distributive phases. While access still remains limited, these two phases could potentially make government more efficient in the long run, benefiting everyone. For example, allowing people to pay a parking ticket online instead of mailing it or paying the fine in person frees up time to perform additional transactions at that office and reduces labor and material costs.

At the transformation stage of development, the integration of systems creates a technology gain enabling higher productivity, another public good. For example, if the parking ticket remains unpaid, the police department and the accounts receivable department could access the same information. If parking violations continue, the police have a record of the vehicle and unpaid parking tickets, and accounts receivable has a record of how much revenue is outstanding. The technology gain is a pure public good; every resident receives the benefit of the efficiency improvement, and this fourth phase moves e-government away from being an exclusive good to a nonexclusive good.

The immediacy of benefits and incidence at each phase, however, affects equity. Immediacy of benefits refers to the immediate consumption of the e-government development spending or the resemblance of the spending to investment in e-government development. That is, how long will a purchase last, who benefits from this purchase, and who is paying for said purchase? Managers should consider this immediacy when developing a strategy to finance technology expenditures.

In many cases, e-government initiatives provide ready access to current information and encourage efficient transactions. As such, government spending on these phases has little effect on short-term equity but improves short-term efficiency for citizens, businesses, and governments. We call

these initiatives consumption oriented where their benefits are immediate with no long-run effect. Some phases of e-government development have long-run impacts; the spending in these phases is intended to have a positive effect on long-term — over time or future consumption — equity and efficiency for citizens, businesses, and governments (Anthony and Young, 1996). These phases have investment characteristics: invest today for long-run returns or improvements. The fifth and sixth columns of Table 12.1 present these differences.

All four phases of e-government development are consumption oriented. Within each, citizens, businesses, and governments with Internet access benefit immediately. As such, short-term efficiency improves (immediate access to information and services) but short-term equity does not exist because not everyone has Internet access.

Long-run equity and efficiency improve as governments invest in the transaction and integrative phases. Both have investment characteristics. The transaction phase allows for development through the creation of relationships with citizens, businesses, and governments. For example, business development may be the primary focus, especially in the distribution of government spending in such a way that businesses thrive. In addition, the transaction phase could encourage more interaction and stronger relationships between public administrators and citizens, especially when transparency of government improvements also occur. Greater trust may build through more frequent interaction, stronger relationships, and improved transparency.

The integrative or transformational phase is not only an investment in the efficiency of government operations. This efficiency can come through the integration of government operations, improvements in constituency relationships, or improved operations involving businesses in regulation or vendors in the near-instantaneous working of the supply chain. All of the consequences of integration lead to equity improvements — all members of society benefit from such investment.

Overall, government spending at all four phases results in efficiency in the short run and long run, but equity is not achieved until the long run. Keeping in mind the aspects of

equity, how might a manager plan to pay for the technology that supports e-government?

12.5 WHO PAYS? FIRST ASK, WHO BENEFITS?

A number of financing mechanisms are available to public officials. Each method, however, should be considered in the context of short- and long-run equity and efficiency.

As either consumption or investment spending, e-government phases suggest appropriate financing methods. Simply, those who benefit here and now, when the phase of development creates short-term improvements with immediate pay-offs that may not last very long, should finance consumption spending. Investment spending, however, will have benefits far into the future, either as e-government investment builds a dynamic basis for further innovation or as this spending provides facilities that will have a useful life of many years. The e-government initiatives also may stimulate investments by citizens or businesses in their desire to exploit opportunities the government efforts provide.

Whether the benefits are immediate or long range, the financing must follow logically to preserve equity. Consumption spending provides immediate benefits and, to finance equitably, the burden to pay for consumption falls on those who benefit immediately. Investment spending will benefit future generations. To preserve equity, the future generations should bear their share of the burden in return for the benefits they receive.

Financing techniques differ for consumption and investment spending and, therefore, for the different phases of e-government development. These spending patterns are also shaped by the access businesses and citizens have to the Web and other technologies and the progressiveness of government policies toward tax structures. We have stated that Web access is markedly restricted, whether self imposed or not. As a result, restricted access limits the benefits of e-government innovation immediately.

Tax structures may complicate the equity problems of e-government spending. In the worst case, regressive tax structures, favoring the wealthy with lower effective tax rates, place a higher tax burden on the poor. That is, the poor pay more of their income for a service from which they receive very little, if any, direct benefit. The worst-case problem finds a partial solution in progressive tax structures, favoring the poor with lower effective tax rates. Here, the wealthy pay more because of a greater ability to pay and receive direct benefits from the service. The poor, although still paying something, are paying far less for the few benefits they receive. The principle of vertical equity is maintained while, at the same time, achieving greater market efficiency where benefits received depend on payment. Only at the integrative phase of e-government development, although perhaps also to some extent at the transactional phase, is there a possibility of an e-government project having a positive effect on long-term, nongovernmental sector growth. At this phase, long-term benefits, and equity, can require long-term burdens. Yet, again these burdens may be unfairly distributed unless the tax system is one that is proportional or progressive.

12.6 E-GOVERNMENT FINANCING STRATEGY: SOME PROPOSITIONS

From this analysis, what initial propositions for financing can be proposed? Let us consider the following three propositions, which are derived from the characteristics of the phases of innovation as consumption or investment, the benefits incidence of this infrastructure at present, and the burden demanded by the tax structure used to pay for infrastructure:

First, all other factors ignored, the more consumption oriented the infrastructure project, the more equitable it is to have current taxpayers pay for it. The more investment oriented the project, we argue, the more equitable it is to have both current and future taxpayers pay for the stream of benefits they will receive.

Second, consumption or investment has limits in the access reasonably available to the benefits of the infrastructure project. Although future access may be hard to forecast, currently, access problems suggest that either consumption or investment benefits will fall primarily on the wealthy rather than the poor. The less reasonable access the infrastructure project allows, the more the burden of paying for these benefits should fall on current and wealthy taxpayers.

Finally, the characteristics of the projects and the access to their benefits have even greater financing problems in the tax structures that exist in governments pursuing e-government innovation. The more regressive the tax structure, the more consumption oriented the project, and the less reasonable access the project provides to all income classes, the more the burden of paying for the projects should fall on immediate and wealthy taxpayers.

12.7 CURRENT TRENDS AND PRACTICES

How are governments financing e-government expenditures? Three major trends are emerging: leasing equipment, charging a fee, and outsourcing. These financing methods can and do exist at the four different phases. Each is discussed in turn.

Most technology projects are unfit for long-term bonds due to a shorter life span, so some governments are leasing technology. Salverda (1999, p. 43) argues that leasing is “more feasible for purchases that are too large for direct purchase and too small for debt issuance.” Many companies, such as Dell, offer “refresh leases” to governments. Here, the lessee — the government entity — can trade in old equipment for newer, updated equipment.

To achieve equity, some governments are charging fees for e-government services (Pardee, 2000). Using fees and charges, governments are not increasing taxes on all in the community; rather, they are recovering the cost associated with e-government by charging those who are directly benefiting from the service. New York City provides its citizens with the opportunity to pay parking ticket fines online. “With the online payment option, [parking violators] no longer need

to mail fines or appear in person at designated locations” (Voorhees, 2001, p. 11). By charging a “convenience fee” for this service, New York achieves equity — those directly benefiting are paying — while maintaining efficiency.

In addition to charging a fee, governments are outsourcing the production of certain online services. For example, ServiceArizona.com, developed and hosted by IBM, allows customers to renew vehicle registrations online. “IBM gets 2% of the value of each transaction (\$4 per registration) and the motor vehicle department saves \$5 per transaction (online service is \$1.60 compared to \$6.60). Total savings to date are about \$1.7 million annually with only 15% of renewals being done on-line” (Hyde, 2001, p. 29).

12.8 SUMMARY

What matters in choosing a financing strategy? Equity and efficiency. This chapter proposed some possible financing strategies for e-government technology within the context of consumption or investment characteristics, the benefit incidence of the e-government phases, and the burden of paying for these benefits. At present, much of the evidence favors financing structures that place burdens on those who have access to the benefits of these projects. Those receiving the primary benefits are those more wealthy than poor. Tax systems favoring the wealthy — regressive systems — complicate these benefit problems, in a sense, forcing the poor to finance projects that benefit the wealthy.

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Part IV

Market Reactions Collection, Allocation, and Distribution

Government Fiscal Policy Impacts

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13.1 INTRODUCTION

Fiscal policies create incentives, distribute burdens and benefits, and trigger effects. Policy makers hope that intentions shape consequences. With the first-best or second-best alternatives in mind, this survey explores the origins and intentions of fiscal policies, the tools leaders choose to apply them, and the policy consequences found among seven policy impacts: incidence, work and leisure, savings and consumption, investment, portfolio choice, risk taking, and innovation–productivity relationships.

Fiscal policy designs do have an impact. Public finance research shows the compelling force that variations in conventional and nonconventional tax and expenditure legislation

can have for people at all levels of the economy (Keynes, 1936/1964; Blinder and Solow, 1974; Auerbach, 2003). This survey also asks whether the expected or unexpected impacts of fiscal policy designs have dominated findings from research.

To guide intentions to appropriate designs and tools, decision makers need analysis, and analysts need methods. Analysis helps predict the possible effects and outcomes of alternative policies. Positive research methods strengthen the analysis, as Musgrave and Musgrave illustrate. They describe the scope and method of fiscal policy analysis in a classic economic approach based on “if ..., then :”

If the merits of a corporation profits tax or of a sales tax are to be judged, one must know who will bear the final burden, the answer to which in turn depends on how the private sector responds to the imposition of such taxes [Such answers come from] the type of economic analysis which deals with predicting, on the basis of empirical analysis, how firms and consumers will respond to economic changes and with testing such predictions empirically (1984: 4).

This review covers the analyses that have predicted policies' incidence and their impact on individuals, firms, governments, and the economy.

Economists, political scientists, and public administrators have found the traditional analytical public finance task a complicated one. Fiscal policy may not have the impact economic planners desire because monetary policy designs also exist to neutralize, mitigate, or intensify the effects fiscal policies have. Moreover, short- and long-term impacts may differ. Policy targets also vary considerably in the reception they give the designs. Efficiency goals may compete with intentions to increase fairness. Tradeoffs confront analysts and policy makers, especially when the traditional ones involve saving and consumption or work and leisure, as well as investment risk and return. Policies must account for normative inclinations, and analysis must predict the consequences of various tradeoffs and inform the choice of second-best policy designs and tools. Analysts must also take into account how

likely normative compromises, competing institutions, distorted policy designs, vaguely understood policy tools, and clumsy execution will frustrate policy intentions. Analysis must be sophisticated.

Analysis begs the question of why leaders and the dubious, skeptical, and hard-to-convince people they influence want fiscal policies. Grier (2002) argues that fiscal policies formalize the goals of the executives and legislators. By such formalization, fiscal policies establish a method for determining and expressing leaders' economic, tax, debt, and budget policies to the public, business planners, investors, market analysts, credit underwriters, and central bankers. Fiscal policies clearly demonstrate that a systematic analysis of problems and solutions has taken place. Fiscal policies provide guidance and help steady expectations others have. Such guidance and expectations can help ensure suitable and expeditious execution of policy by stating the outcomes or results wanted and by which all executors may be judged. Finally, fiscal policies establish a standard and focus attention on evidence of performance or lack of performance, giving legislators, government executives, business managers and executives, market participants, and central bankers a sense of attempts, successes, and failures by policy makers to influence important behaviors such as saving, investment, consumption, economic growth, employment, price level stability, and innovation.

Whatever policies leaders pursue, governments and public authorities in the United States allocate the burden of paying for numerous responsibilities in distinctive ways. Table 13.1 illustrates the various revenue sources used. The federal government taxes incomes and payrolls primarily. States depend on intergovernmental revenues as well as consumption taxes (sales, excise, and gross receipts taxes) and income taxes. All local governments receive a large proportion of revenue from other governments, but they also levy most property taxes and charges or fees for services they provide. In fact, Table 13.1 shows that the largest amount of property taxes levied goes to school districts, followed by that which municipal and township governments and counties receive.

TABLE 13.1 Estimated General Revenues by Source and Level of Government, United States, 2000 (Percent)

| Revenue source | Federal | | | | | | State | | | | | | Total |
|-------------------------------|---------|-------|--------|------------------------|------------------|-----------------|---------|-------|--------|------------------------|------------------|-----------------|-------|
| | Federal | State | County | Municipal and township | Special District | School District | Federal | State | County | Municipal and Township | Special District | School District | |
| Intergovernmental revenue | 0.0 | 25.9 | 36.1 | 22.6 | 22.9 | 56.9 | | | | | | | |
| Property | 0.0 | 0.9 | 22.9 | 19.3 | 8.5 | 32.9 | 0.0 | 4.0 | 21.9 | 27.6 | 3.9 | 42.7 | 100 |
| Sales, excise, gross receipts | 3.4 | 21.9 | 7.6 | 9.6 | 3.4 | 0.8 | 17.7 | 66.3 | 4.9 | 9.3 | 1.0 | 0.7 | 100 |
| Individual income | 49.6 | 17.6 | 1.2 | 3.7 | 0.0 | 0.3 | 81.6 | 16.9 | 0.3 | 1.1 | 0.0 | 0.1 | 100 |
| Corporate income | 10.2 | 2.7 | 0.0 | 1.0 | 0.0 | 0.0 | 85.5 | 13.1 | 0.0 | 1.5 | 0.0 | 0.0 | 100 |
| Estate and gift | 1.4 | 0.7 | 0.0 | 0.0 | 0.0 | 0.0 | 78.4 | 21.6 | 0.0 | 0.0 | 0.0 | 0.0 | 100 |
| Charges and fees | 0.0 | 10.1 | 19.3 | 28.8 | 55.1 | 4.1 | 0.0 | 33.5 | 13.6 | 30.4 | 18.6 | 3.9 | 100 |
| Payroll | 32.2 | 10.2 | 2.7 | 3.9 | 0.5 | 0.4 | 82.0 | 15.1 | 0.8 | 1.9 | 0.1 | 0.2 | 100 |
| Customs | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 100 |
| Other | 2.1 | 10.1 | 10.1 | 11.0 | 9.7 | 4.6 | 16.7 | 46.5 | 9.9 | 16.1 | 4.5 | 6.2 | 100 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 | 56.8 | 24.3 | 4.9 | 7.2 | 2.0 | 4.8 | 100 |

Note: Numbers rounded to one-tenth of a percentage.

Sources: Executive Office of the President of the United States (2002a, 2002b, 2003); Office of Management and Budget (2003); U.S. Census Bureau (2001).

States and municipalities both receive the largest proportions of charges and fees for services. Consumption taxes go primarily to states. Income taxes, estate and gift taxes, and payroll taxes flow substantially to the federal government.

The responsibilities of governments vary as well. Table 13.2 illustrates these responsibilities. The federal government is the major provider of social services and income maintenance or transfer payments to individuals. State governments also provide social services and income maintenance but are major spenders on education services, as are school districts. County governments provide some education services, but these governments' expenditures are even more likely to be social services and income maintenance related. Both counties and municipal-township governments spend substantial funds on public safety and administration of justice activities such as the courts and corrections.

The scale of government differs substantially. The federal government spends approximately 55% of all revenue received by governments. Local governments are next proportionately with over one-fourth of spending, with states having about one-fifth of all expenditures.

Government scale may also appear from a comparison of government outlays and then receipts with the total output of the economy, gross domestic product (GDP). The Organization for Economic Cooperation and Development (2001) publishes comparisons across nations with the largest, most highly developed economies. The OECD's databases show that the governments in the United States collect and spend approximately one-third of total GDP. That proportion has remained relatively constant for the last decade. In contrast, total government outlays and receipts in European nations are approximately one-third larger.

Whatever the burdens allocated, responsibilities assumed, or scale of outlays and receipts relative to other large national economies, fiscal policies have enormous influence in the United States. The tools with which government leaders influence behavior include numerous forms of spending and taxation, loans, loan guarantees, insurance, and regulation. When looking solely at the scope or magnitude of activity involving

TABLE 13.2 Estimated Expenditures by Function and Level of Government, United States, 2000 (Percent)

| Function | Federal | | | | | | State | | | | | | Total |
|---|---------|-------|--------|------------------------|------------------|-----------------|---------|-------|--------|------------------------|------------------|-----------------|-------|
| | Federal | State | County | Municipal and Township | Special District | School District | Federal | State | County | Municipal and Township | Special District | School District | |
| Defense and international relations | 17.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 100 |
| Interest on general debt | 12.7 | 3.7 | 4.6 | 5.1 | 9.3 | 2.4 | 72.5 | 10.1 | 3.7 | 6.8 | 4.1 | 2.7 | 100 |
| Social services and income maintenance | 60.4 | 48.1 | 28.8 | 9.7 | 13.8 | 0.3 | 66.5 | 25.4 | 4.4 | 2.5 | 1.2 | 0.1 | 100 |
| Education services | 4.1 | 18.1 | 14.7 | 11.0 | 1.5 | 97.3 | 11.2 | 23.7 | 5.6 | 7.0 | 0.3 | 52.1 | 100 |
| Transportation | 2.7 | 8.2 | 7.3 | 8.1 | 7.6 | 0.0 | 26.4 | 39.0 | 10.1 | 18.7 | 5.8 | 0.0 | 100 |
| Environment | 0.0 | 3.3 | 7.2 | 13.7 | 16.9 | 0.0 | 0.0 | 22.1 | 14.3 | 45.2 | 18.4 | 0.0 | 100 |
| Housing and development | 0.0 | 0.8 | 4.1 | 9.9 | 12.4 | 0.0 | 0.0 | 9.2 | 13.5 | 54.8 | 22.5 | 0.0 | 100 |
| Public safety and administration of justice | 1.6 | 7.6 | 18.2 | 15.3 | 2.8 | 0.0 | 13.7 | 31.6 | 21.9 | 30.9 | 1.8 | 0.0 | 100 |
| General government | 0.8 | 2.8 | 5.9 | 4.6 | 0.0 | 0.0 | 19.0 | 33.5 | 20.8 | 26.8 | 0.0 | 0.0 | 100 |
| Other | 0.0 | 7.4 | 9.2 | 22.7 | 35.8 | 0.0 | 0.0 | 27.5 | 10.0 | 41.2 | 21.3 | 0.0 | 100 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 | 54.3 | 19.9 | 5.6 | 8.9 | 2.8 | 8.5 | 100 |

Note: Numbers rounded to one-tenth of a percentage.

Sources: Executive Office of the President of the United States (2002a, 2002b, 2003); Office of Management and Budget (2003); U.S. Census Bureau (2001).

these tools, the metaphorical “reach” of government decisions exceeds nine-tenths of gross domestic product. Table 13.3 provides data from 1999 to 2000 on which the stylized estimate rests.

The 90%+ estimate reflects a large impact, but any educated guess should be viewed with caution. Many researchers have approached the size-of-government question in contrasting ways to the method here (Auerbach, 2004; Bozeman, 1987; Taylor, 1983). Table 13.3’s specific percentage estimate may include some double counting, some unrealistic assumptions about factual and counterfactual estimates — what happened or what might have happened without the policy tool — and an inapt comparison to GDP. However, the actual impact fiscal policies have exceeds the size portrayed when government size equates to total government outlays or receipts as a percentage of GDP revealed in the comparison across large economies above. The major characteristic of the impact portrayed in Table 13.3 is the “largely hidden” “complex networks that merge the activities of ... governments and ... private organizations in increasingly inventive ways” (Light, 2003, 1999; Salamon, 2002: vii). Fiscal policy makers’ intentions and policy impacts under the new form of governance have an extremely intricate, perhaps tenuous relationship.

However, government leaders persuade individuals, groups, organizations, and firms to do much. These governmental actions may influence nongovernmental actors to do what nongovernmental actors wanted to be persuaded to do. The policy tools may subsidize actions already planned. In such cases, policy tools may have the impact of reducing risk, stifling innovation, and rewarding some and penalizing others inappropriately. The issue with policy tools becomes one of control of government rather than control or influence of the governed, an issue for discussion at the end of this chapter.

13.2 FISCAL POLICY TOOLS

Although many different policy tools exist, this review concentrates on three basic ones. The public finance literature gives taxes the most attention, an emphasis followed here.

TABLE 13.3 The Influence or "Reach" of United States Public Sector Fiscal Policies (in Billions of Dollars in 1999 to 2000)

| | | |
|---|--------------|----------------------|
| Gross Domestic Product or total economic activity | 9,824 | |
| 1. Federal government expenditure | 1,789 | |
| Nonconventional expenditure | | |
| Tax expenditures ^a | 810 | |
| Other, including | | |
| Loans ^b | 37 | |
| Loan guarantees ^c | 131 | |
| Government-sponsored enterprise lending ^d | 182 | |
| Insurance ^e | 57 | |
| Regulation and mandates ^f | 393 | |
| Pension liabilities ^{g,h} | 2,068 | |
| Total estimate of federal government influence | 5,468 | 55.66% of GDP |
| 2. State and local government expenditure | 1,895 | |
| Tax incentives ^a | 727 | |
| Other nonconventional expenditure including loans, ^b loan guarantees, ^c government sponsored enterprise lending, ^d insurance, ^e regulations and mandates ^f | 140 | |
| State and local government pension assets held in nongovernmental domestic investments ^g | 1,086 | |
| 3. Authorities not a part of state and local government | | |
| Spending | 135 | |
| Tax incentives ^a | 48 | |
| Other nonconventional expenditure including loans, ^b loan guarantees, ^c government sponsored enterprise lending, ^d insurance, ^e regulations and mandates ^f | 9 | |
| Minus intergovernmental aid | 324 | |
| Total federal, state, local, and authority influence | 9,184 | 93.48% of GDP |
| Total Government Net Capital Stockⁱ | 6,155 | |
| Total assets, all governments^j | 470.5 | |
| Federal debt held by the public | 3410 | |
| State and local debt held by the public | 1317 | |

^a 40% of government receipts (Rivlin, 1981, p. 292).

^{b,c,d} Economic activity equals credit amount provided during the fiscal year, multiplied by appropriate depreciation rule (Gale, 1991, pp. 141–145, 147)

TABLE 13.3 (CONTINUED) The Influence or “Reach” of United States Public Sector Fiscal Policies (in Billions of Dollars in 1999)

- ^e Excludes “social” insurance against poverty and health risks (U.S. General Accounting Office (1997). Budgeting for federal insurance programs [GAO/AIMD-97-16]. Washington, D.C.: U.S. General Accounting Office; Executive Office of the President of the United States (2002b). *Budget of the United States Government: Analytical Perspectives, Fiscal Year 2002*. Washington, D.C.: U.S. Government Printing Office. Retrieved August 18, 2003, from <http://www.gpoaccess.gov/usbudget/fy01/pdf/spec.pdf>, pp. 17–18).
- ^f Environmental regulation, health and safety regulation, economic regulation only (Litan, R.E., and Nordhaus, W.D. (1983). *Reforming Federal Regulation*. New Haven, CT: Yale University Press., p. 23). Estimate does not include policing or state and local safety regulation and land use regulation.
- ^g For federal, difference between discounted present value of the benefits offered retired workers and to current employees who will eventually retire and amount expected to be collected. For state and local, actual total nongovernmental securities held by state–local government employee-retirement systems (U.S. Census Bureau (2000). Federal, state, and local governments state and local government employee-retirement systems. Table 1 National Summary of State and Local Government Employee Retirement System Finances, FY 1999–2000. Washington, D.C.: Government Printing Office. Retrieved March 3, 2004 from <http://www.census.gov/govs/www/retire.html>).
- ^h Penner, R.G. and Steurle, C.E. (2003). Budget Crisis at the Door. Washington, D.C.: Urban Institute. Retrieved April 18, 2004 from <http://www.urban.org/url-print.cfm?ID=8634>.
- ⁱ Kamps (2004).
- ^j U.S. Census Bureau (2003). Statistical abstract of the United States, 2003. Washington, D.C.: Government Printing Office. Retrieved March 3, 2004 from <http://www.census.gov/prod/www/statistical-abstract-03.html>, p. 327, Table No. 438. State and local government and authority assets estimated based on ratio of total nonfederal government debt held by the public to federal debt held by the public. Sources: Data on actual spending and gross domestic product: Executive Office of the President of the United States (2002a, 2002b, 2003); Office of Management and Budget (2003); U.S. Census Bureau (2001).

Spending and debt have prompted a large amount of normative analysis in public economics, but these tools have less importance than taxes. This review gives spending and debt less emphasis also.

13.2.1 TAXES AND DISTRIBUTION POLICIES

When public economists speak of taxes, they often conceptualize them into lump sum (“head” or “poll”), consumption, and

means taxes. Some of these names may sound strange, but they correspond to understandable, existing forms. A lump sum tax is most often a levy on every individual, perhaps graduated by income or some other meaningful category, sometimes not. A consumption tax is most often a tax on specific items purchased, most commonly known as sales taxes. The sales tax may vary in scope, at one extreme being general and broad-based in the sense that it applies to every item or service available for purchase (a "value added" tax) or very narrow, as in taxes specifically on fuel, motor equipment, tobacco, alcohol, or luxury goods. A means tax may be just what the name suggests, the means to gaining a livelihood, but means may be taxed in the form of corporate income, individual income as wages, individual income as nonwage or capital income, or income from all these sources. The means tax base may also vary according to all income but investment earnings, all wages paid by an employer, or all wealth or assets held at the date of the tax levy, such as a property tax on residences or an inheritance tax paid at death.

Taxation is a major form of distribution policy, particularly when viewed as the distribution of the burden of government provision of goods and services. Although there are other facets to distribution policies on the spending and debt sides, the tax policy variation of distribution has become the greatest concern decision makers have.

There is a normative logic behind the raising of revenue to pay for government activities. Mikesell states the orthodox public economics approach as "avoidance of inequitable and inefficient revenue devices" (1978: 513). What does he mean? First, the basis for spending is theoretically and practically separate from the basis for taxing. Second, the taxing decision is based on the optimal combination of several criteria, particularly equity and efficiency.

All criteria for tax systems have roots in thinking by Adam Smith (1776) and have developed from the experience of every tax policy maker ever to face the question of what good government entails. Smith urged equity and efficiency, but he also suggested three basic criteria that apply to tax administration

and the administrator's relationship to a government and a taxpayer: adequacy, collectability, and transparency. The identification of the latter three criteria follows immediately below with more detailed discussion of equity and efficiency afterward.

First, the tax must be adequate to fund the government programs decided in budgeting. A tax is merely a nuisance for both government and taxpayer if it fails to generate sufficient revenue at rates falling within a zone of indifference felt by everyone participating in politics. The concept of adequacy has complex implications, especially as the nominal accounting differs from the actual behavior of taxpayers. Nominally, a tax will yield more the higher the rate. Actually, taxpayers may respond to higher rates by changing their behavior to avoid higher tax payments, and tax payments may actually decline as tax rates increase. Adequacy also encourages a view that spending drives revenue raising when, thinking realistically, we find the relationship much more complex. A high-needs jurisdiction may have an economic base and a tax base that do not yield the revenue to meet high needs. Bases that do not grow as quickly as spending does have a bigger revenue adequacy problem than do those jurisdictions whose economic and tax bases grow more quickly than spending does. The tax chosen in high-needs jurisdictions may have severe problems yielding adequate revenue, provoking a substantial and different reaction among policy makers, and then individuals, households, and firms. The search for revenues in other places and for means to stimulate economies to expand more rapidly will create incentives for local and foreign taxpayers to shift and share, and the outcomes for the high-needs jurisdiction are far from certain.

Second, government tax collectors must be able to do their work in an efficient way. As Smith said, "Every tax ought to be so contrived as both to take out and to keep out of the pockets of the people as little as possible over and above what it brings into the public treasury of the state" (1776: 655). Efficiency also suggests that collection costs provide no real economy benefit to society and certainly no political benefit to policy makers.

Third, the revenue system must have transparency. In a democracy, taxes — perhaps all policies — should be understandable in what they intend, in the process used to adopt them, in their administration, in what they require to comply, in the amounts to be paid, and the impact they can have (Finkelstein, 2000: 1–9; Mikesell, 2003: 306). These virtues may sum to transparency or simplicity (Institute on Taxation and Economic Policy, 2004). The taxpayers who face a revenue system that lacks either transparency or simplicity will take taxation’s power to destroy as a fact about the motives of policy makers. Confused, angry taxpayers will view the system as one decided through favoritism and corrupt efforts to influence the system. Little transparency can lead to a widespread lack of understanding, or even outright fiscal illusion, about the real amounts levied and the uses to which they are put (Buchanan, 1977, 1970; Downs, 1960; Goetz, 1977).

The two other criteria for evaluating tax systems reveal conflicts between norms and actual behavior in government policy making, the conflict between equity and efficiency, allocation and distribution. First, the fundamental norm of fiscal policy is equity. Citizens should pay for government spending, goods, services, and institutions, Adam Smith said (1776: 654), “in proportion to their respective abilities; that is, in proportion to the revenue which they respectively enjoy under the protection of the state.” Smith might have implied “in *some* proportion” because different views exist on what equity or proportionality mean. Ability to pay (or egalitarian) norms and benefits received (or utilitarian) norms both are accepted as reasonable in judging tax systems. Policy makers avoid regressive fiscal policies and especially regressive tax systems. For a comparison of different degrees of equity in tax systems, see Table 13.4.

An analyst may define a tax system’s equity by contrasting the effective tax rates of the three taxpayers who appear in Table 13.4. In a regressive system, the effective rate declines as income increases, a situation in which those richest pay the least proportion of income among the three groups of taxpayers. The regressive system, generally criticized as unfair, does have some support when the point of view

TABLE 13.4 Tax Equity under Three Different Systems

| Taxpayer income, \$ | Regressive system | | Proportional system | | Progressive system | |
|---------------------|-------------------|-----------------------|---------------------|-----------------------|--------------------|-----------------------|
| | Net tax paid, \$ | Effective tax rate, % | Net tax paid, \$ | Effective tax rate, % | Net tax paid, \$ | Effective tax rate, % |
| 20,000 | 3000 | 15.0 | 2000 | 10.0 | 1000 | 5.0 |
| 40,000 | 3000 | 7.5 | 4000 | 10.0 | 3000 | 7.5 |
| 60,000 | 3000 | 5.0 | 6000 | 10.0 | 9000 | 15.0 |

changes, especially in changing the point of view from an analyst to the taxpayers themselves. In general, analysts might view fairness as dictating some relationship between burdens and benefits of government fiscal policies, with the poor receiving fewer benefits than the rich and being entitled to a lower burden of paying for the benefits. However, if we take into account the marginal utility of income — how taxpayers value the last dollars of their income — we might find the richest taxpayer always valuing the last dollars more than the poorest taxpayer, everyone valuing the last dollar the same, or the poor valuing the last dollar of income more. Each case would justify a different tax or fiscal system.

Proposed rules for determining the fairest distribution of tax burdens come from various sources, few of whom agree. Moreover, the experts providing these rules may not be better sources than any other, although careful thought might bar pure expediency or one group’s exploitation of others (Buchanan, 1970: 102–104). The rules rely on specification of a base for determining burden — income, consumption, or wealth — and a principle for distributing burdens — ability to pay or benefit.

13.2.1.1 Equity and the Tax Base

The base for determining burden must conform to the equity idea that individuals in similar circumstances be treated equally (a horizontal equity principle) and individuals with greater resources be treated differently and bear a greater

burden (a vertical equity principle). By defining a base comprehensively, one individual with habits different from another might get the same treatment in determining burden. The most comprehensive measure of ability to pay may be either income or consumption. When viewing taxation over a period of time or lifetime, income may be taxed more than once when the definition of income includes interest earned from saving, as Musgrave and Musgrave (1984: 234–236) have argued. Therefore, the consumption tax usually wins a fairness argument, but the difficulties related to complexity, efficiency, and even adequacy raise more problems, returning the attention tax system designers pay to the income tax (Musgrave and Musgrave, 1984: 236–237). Nevertheless, many argue the equivalence of an income tax excluding savings from the base and the consumption tax. The income tax might then fall solely on earned income, excluding savings when defined as interest and capital income. Such a definition may run afoul of traditional beliefs that earned income be favored over unearned income. Tax-preferred savings may raise the prospect of a wealth tax as a fairer alternative. Such a tax policy, those who oppose it say, ignores that fact that wealth has as high a visibility as wage income and consumption. Moreover, they say, wealth includes gifts and bequests, windfalls or luck, certainly unearned, making a wealth tax a popular alternative to an earned income tax or a consumption tax.

13.2.1.2 Horizontal Equity

The horizontal equity problem grows as thoughtful analysis moves to other substitutes, and reforms take place. The tax system design goal remains the same: to treat equals equally. The Musgraves describe the issues (1984: 238–239):

Consider a person who saves a part of his or her income and consumes later. Now a consumption tax is imposed. As a result, both present and future consumption is reduced by the rate of tax. The [discounted] value of the tax is the same whether saving occurs or not. Thus ... the consumption tax [is] a fair tax. But the utility derived from the holding of wealth while saving occurs is not

reached by the consumption tax. Hence, the combined gain from saving (i.e., the increase in future consumption which it permits plus the holding satisfaction) is reduced by less than the rate of tax. Thus, the consumption tax, by excluding the satisfaction of holding wealth, favors the saver and is not neutral. To treat people with equal options equally, a supplementary tax on "holding utility" would be needed. How large a tax this would call for depends on the weight to be assigned to this utility. While this shows the consumption tax to be defective, it also improves the rating of the income tax. However, we cannot conclude that the income tax is superior: the discrimination against the saver that the tax imposes may more than offset the additional tax justified by wealth-holding satisfaction. Nevertheless, wealth utility offers one more reason why the case of the consumption base is not clear-cut. This is especially so if consumption never occurs and bequests are passed on from one heir to another.

Decisions weighing horizontal equity against adequacy, collectability, and transparency are reached with great difficulty. Tax policy, an art rather than science, according to the Musgraves, can approach equity only by degree and never absolutely.

13.2.1.3 Vertical Equity

Once they choose a base combining income, consumption, and wealth to reach the goal of horizontal equity, tax policy makers confront the vertical equity problem. The principle of vertical equity lies in treating unequals unequally. Vertical equity analysts can apply the ability to pay principle among unequals, vertically among incomes, by treating them differently when making the rich individual pay more than the poor one.

The rules defining such a burden differ between a proportional and a progressive burden, and, as a whole, the arguments make the case for progressive taxation "uneasy" (Blum and Kalven, 1953). The case for progression rests on several foundations: economic stability, benefit, sacrifice, economic inequality, and depression.

First, progressive taxes (particularly income taxes) contribute to economic stability. The effective rate of an income tax increases in periods when economic activity rises. A growing economy provides more income to individuals, and the progressive rates on income dampen the inflation growth that might take place by taking money from the economy and allowing governments to have surpluses. An economy with decelerating growth may need a stimulus, and progressive rates provide it. As deceleration takes place, incomes decrease, and progressive rates allow for lower taxes as individuals move down the income scale. Losing income taxes, governments borrow, providing the stimulus to the economy by maintaining spending levels as well as triggering automatic stabilizers.

A second defense of progressive tax rates exists in benefit theories. The benefit ideas come in two basic forms, benefits to property and benefits to the well-being of individuals. In the property sense, benefit proponents argue that without government services, such as police, fire protection, and the military, holding property would be risky. The government services reduce risks, and those who own large amounts of property should pay for the services in larger amounts than those who do not own property do.

The well-being argument is far broader and is based on the idea that well-being springs substantially from the existence of government. Well-being may be measured in terms of income or wealth; therefore, those receiving the largest amount of well-being must pay for it by taxes on income or wealth. Beyond the proportional increase in either the benefits of government services or the well-being individuals enjoy, proponents argue that benefits increase progressively so that increases in benefits more than exceed increases in income or wealth and increases in the effective tax rates levied to pay for benefits.

A third defense of progressive tax rates comes from sacrifice theory. Taxes are sacrifices individuals make, and decision makers must apportion the sacrifice equitably, according to this view. The sacrifice argument takes at least one of four forms: equal sacrifice, proportionate sacrifice (both of which flow from a declining utility of money idea), ability to pay, and social differences in spending preferences.

The equal and proportionate sacrifice arguments derive from the sense that the same amount of money has greater value to a poor person than a rich person. In other words, the utility of money declines as income increases. A reduction of income through taxes will matter less to the rich taxpayer than to the poor one unless the tax has progressive rates. A proportional reduction in income will amount to equal sacrifice, but a progressive reduction more closely relates to declining utility, so that the rich taxpayer gives up the same utility of income as the poor. As Blum and Kalven said (1953: 41), “[Equality of sacrifice] can mean that the quantity of sacrifice, that is, the loss of units of utility, demanded of each individual be equal (‘equal sacrifice’), or it can mean that each should be required to give up an equal percentage of his total utility derived from money (‘proportionate sacrifice’).”

Both a proportional and a progressive reduction result from progressive tax rates. Bentham (1789/2000) and Mill’s ideas of minimum sacrifice (1899) and Pigou’s argument that the utility of income may come from one person’s comparisons of utility to his or her economic and social rivals (1928) support the idea. All stress that either equal sacrifice or proportional sacrifice equate to minimum sacrifice. According to Bentham (1789/2000), law should bring about the greatest quantity of total satisfaction, the greatest good for the greatest number. Mill (1899: 308) argued that government should require taxpayers to bear burdens in such a way that the “least sacrifice is occasioned on the whole.” According to Blum and Kalven (1953), the example might be one in which taking a dollar from a person with the larger income involves less sacrifice than taking a dollar from a person with the smaller income. If required, a second dollar might still entail less sacrifice from the person with the higher income than the person with lower income if after the second dollar the higher-income person were still richer than the other person. Pigou argued (1928) that, logically, the procedure requires taking from the top of the highest incomes first until government needs are met, and if needs are not met continuing to take from the top and from middle incomes as well, at the same

time providing income to the poorest. Such a procedure would follow from the definition of minimum sacrifice.

A contrast to sacrifice theory has survived in the form of the ability to pay principle of taxation. Blum and Kalven argued that the principle leads to the logically consistent choice of a tax base as well as the progressive rate structures on the base. For example, the income tax most often represents the “best test of the ability of the taxpayer to pay taxes” (1953: 64). As for the progressive structure of rates, Blum and Kalven argued that such a use of ability really means that ability increases more rapidly than income. They quote Seligman (1908: 291–292) as a defender:

[Possession] of large fortunes or large incomes in itself affords the possessor a decided advantage in augmenting his possessions. The facility of increasing production frequently grows in more than arithmetical proportion The more [a rich man] has, the easier it is for him to acquire still more Hence ... the ... production faculty may be said to increase more rapidly than fortune or income. This element of taxable capacity would hence not illogically result in a more than proportionate rate of taxation.

Therefore, Seligman changes the emphasis from sacrifice to the ease of earning additional income or wealth and the corresponding capacity to pay taxes. Hobson (1919) defined the ability to pay as the extent of the person’s ability to create a surplus above the cost of producing income. The ability to gain a surplus through a person’s superior economic opportunities makes the ability to bear taxation fair.

Still another variant of sacrifice theory is the defense of progressive taxation on the basis of norms related to spending. In the use of income, some argue that household spending to meet survival needs has more importance in society or even the economy than any spending above those needs. Any income that exists above the money needed to satisfy survival needs might rightfully be taxed, these sacrifice theorists argue. Blum and Kalven classify Chapman (1913) among the leading surplus-spending tax proponents. Chapman (1913: 23) argued:

[The] wants satisfied by the earlier increments to income are usually of more importance socially than the wants satisfied by later increments to income ... [whatever the utility] In speaking of the equity of taxation, ... [the] poorer a man is, the more likely is some confiscation of income to cause him deprivation of comforts which add to efficiency (meaning the social value of his life) ... the richer he is, the more likely is the curtailment of his consumption to be effected at the expense of luxuries which add little [or no social value] as commonly understood

Chapman's idea develops both minimum sacrifice theory and ability-to-pay theory into a shared norm affecting the taxation of important versus trivial consumption. Although applied to progressive income taxes by implication, Chapman's idea has served as the basis for degressive income taxes, sales tax expenditures, and property tax variations.

A fourth major defense of progressive taxes changes the focus from internal tax system dynamics to external ones with the idea that the tax system always should redistribute wealth or income. The belief that the tax system should be equalitarian becomes the major reason for adoption of progressive tax rates. Blum and Kalven saw no reason to adopt progressive tax systems without acknowledging the primary reason for doing so. They pointed out (1953: 71), "If one is persuaded that the society should reduce economic inequalities there are no real problems [with] the use of progression to accomplish that result." In fact, they said (p. 72), efficiency may result. Should public finance be used for redistribution and nothing else, the market decision makers may determine relative values and allocate resources via prices, leaving little for government decision makers to do, thereby preserving relatively unimpaired freedom for individuals.

Why reduce economic inequalities? One major reason relates to minimum sacrifice theory: maximum economic welfare comes along with tax systems that allow the wealthy to sacrifice a share of their income with less loss of welfare than the poor will gain in getting what the wealthy sacrifice. Another major reason relates to economic and political stability. The economic stability argument depends on the power

of fiscal policy to stabilize the economy (Auerbach, 2002a). The political stability idea assumes that economic inequality threatens democratic deliberation, decision, and the balance of political power, that the rich person can vote more than once (Blum and Kalven, 1953: 77). Bound up in economic inequality are forces related to wealth such as inheritance, social position, and the professional prestige and expertise of those people the wealthy are able to hire to assist them. However, the greater threat to political stability may lie in the lack of economic opportunity and the justice of rewards, said Blum and Kalven (1953: 85). In the economic opportunity case, fewer equalitarians argue for progressive income taxes than for progressive inheritance taxes. Reducing windfalls directly affects the inheritance of economic and cultural opportunities by future generations, equalitarians say, and utilitarians agree. Work incentives, savings incentives, higher standards of living, general well-being, and positive self-regard all derive from the equalitarian and the utilitarian views, strangely enough, and form a part of the argument both groups use to increase or decrease inheritance taxes. In the case of justice of rewards, equalitarian theorists argue that economic achievement is not the whole of human accomplishment. Some methods must exist to balance economic achievement with other measures, to blunt the finality of the market's rating of people. A progressive tax system may be able to blunt finality and recognize other achievements, although this may be done primarily through spending — education, health care — rather than through tax expenditures.

The final major defense of the progressive system of tax rates is less theoretical than instrumental. In a way, “degressive” taxation looms as a means that suits the ends of progressive and proportional tax proponents (Blum and Kalven, 1953: 94–100). Degressive taxation refers to the exemption from taxes of a minimum income with a scale of decelerating rates that finally reaches a flat rate. For example, the tax base will exclude a certain amount of income for all taxpayers, and tax rates will then progress from the minimum to the maximum rate as a gradual rather than abrupt marginal increase above the exemption. The major difference in the

graduated rates found in a degressive tax system and those found in a progressive tax system is the fixed curve found in the graduation of the tax rates from the exemption to the flat rate in a degressive system. Given the simplicity of decision making in determining what the exemption level will be, conservatives, both utilitarian and libertarian, embrace degressive taxes. Moreover, by assuming the exemption will never move lower but always higher, the degressive system imposes considerable pressure to increase the flat tax rate and the graduated system above the exemption as government revenue requirements increase.

Those opposed to progressive rates on a tax base that permits no shifting of burdens to others have strong arguments also. The arguments dismiss some supporting assumptions quickly and focus instead on the corruption of politicized tax policy decisions. On the quick dismissal of the value of government spending, Buchanan simply noted, "public expenditures are considered to constitute always net drains on the private economy" (1970: 103–104). He then moved to the least-sacrifice principle and attacked the concept of utility and specifically the marginal utility of income. He noted that in economics research and theory, individual utility is not measurable or comparable among individuals; therefore the least-sacrifice principle has no realistic, testable basis. Buchanan defied any least-sacrifice theorist to say anything other than "Incomes must be leveled down by taxation in order to meet fully this principle [and] the major portion of the tax bill must be placed on the high-income classes."

Buchanan did find grounds on which progressive taxation may stand more firmly. These grounds are economic efficiency and political acceptability. On efficiency, he noted (1970: 104),

If the utility functions of individuals are such that marginal valuations of public goods tend to be directly and disproportionately related to income levels, a progressive rate structure would be required for full neutrality. Since we have little evidence on the actual evaluations, this says little more than that progression in taxation is not necessarily inefficient. A slightly different defense of progression emerges when the tax structure is recognized as

quasi permanent and when uncertainty about individual income levels is introduced. Here individuals may choose to pay taxes under a progressive structure in order to concentrate payments during periods when the marginal utility of income is relatively low.

The progressive taxation view has a neutral (not anti-wealth) economic efficiency argument, he said, but a substantial economic stability rationale.

In the end, however, Buchanan argued a specific reason why progressive taxation exists. He said (1970: 104), "If neither of the [two] defenses for progression can be used, the widespread use of this rate structure can be explained only on political grounds. In this case, progression represents one part of a process through which gains are secured by one group at the expense of remaining groups." He predicted serial, political fights between the many groups who are destined to benefit and the one group that will bear the tax burden under progressive rates.

The case for progression based on equalizing incomes may be the surviving rationale, particularly the exemption of a certain amount of income from any tax. Blum and Kalven (1953), having reviewed the case for progressive taxation based on benefit, sacrifice, ability to pay, and economic stability and having found each insufficiently justifiable, argued that "the case has stronger appeal when progressive taxation is viewed as a means of reducing economic inequalities" (p. 104). They further argued that much of the uneasiness in relating progressive taxation to the reduction of economic inequalities lies in the use of the tax code as the primary or sole means of gaining fairness, leaving radical change in the other fundamental institutions of society alone.

The idea of reducing income inequality appealed to Thurow, who argued for reduced inequality as a public good, that some better distribution may be recognizable as preferable on the economic arguments. He asked (1971: 327):

Is every initial distribution of income a Pareto optimum, or is some redistribution necessary to achieve a Pareto optimum? [First, individuals] are not just interested in their own incomes. The incomes of other individuals may

appear in their own utility functions. To maximize their own utility they may find it necessary to redistribute their income to some other person. [Second,] individuals may also receive utility from the process of giving gifts. There is a third reason, however, why income redistribution may be necessary to achieve a Pareto optimum. The distribution of income itself may be an argument in an individual's utility function. This may come about because there are externalities associated with the distribution of income. Preventing crime and creating social or political stability may depend on preserving a narrow distribution of income or a distribution of income that does not have a lower tail. Alternatively, individuals may simply want to live in societies with particular distributions of income and economic power. There may be no externalities; the individual is simply exercising an aesthetic taste for equality or inequality similar in nature to a taste for paintings.

Thurow left the matter at a philosophical point, a "way of life" argument, related to what is beautiful rather than efficient, stable, or broadly tolerable.

In forcing the argument to a philosophy of the senses, Thurow might accept the biblical relationship between the beautiful and the just. If so, the relationship leads to consideration of Rawls' arguments in favor of just political systems (1971), ones in which the "maximin" criterion of income distribution prevails, where social welfare increases no more than increases in the welfare of the poorest individual (1999: 65).

Beyond equity, the efficiency of the tax system, and eventually the entire fiscal policy system, rises in concern. The efficiency principle rests on eliminating economic distortions or making tax systems *neutral* in their economic effects, neither encouraging nor discouraging changes in behavior.

13.2.1.4 Neutrality

Neutrality suggests efficiency to public economists. Practically, all fiscal systems encourage economic actors to behave in specific ways, intentionally and unintentionally. Fiscal systems create excess burdens or "deadweight losses" on top of their nominal impact. For example, almost all people pay tax

on the income they receive for the work they do in their jobs. Deadweight losses suggest an additional loss on top of the income tax that, when netted against the gains from government services, yields a loss.

How do deadweight losses occur? Diewert et al. explain (1998: 136):

Consider taxes on income from labor. These taxes adversely affect incentives to work. When they increase, some people work fewer hours (i.e., they substitute away from work toward leisure); others work less intensively or undertake more do-it-yourself work; and a few shift into occupations offering relatively larger nonpecuniary benefits. The point is that in the absence of taxes people would have done things differently, which is to say that taxes have made them worse off, not only by the amount of the taxes they must pay, but also by causing them to shift away from the preferred patterns of work and leisure.

Taxpayers, facing higher taxes, respond with substitutions for what they were doing when they were taxed less. With higher income taxes on the work they are paid to do, taxpayers work less and vacation or stay away from work. They work less intensely, producing less. They do work for barter in the shadow economy that the tax authorities cannot track. They work less and do more in occupations with large benefits not related to money. They also search for tax loopholes, using part of their remaining assets to find and pay advisors. In sum, taxpayers substitute efforts that they do not prefer for efforts they prefer, reducing their “utility” and, by some measure more often than not, reducing the productivity of the economy (Goulder and Williams, 1999; Ballard and Fullerton, 1992; Hausman, 1981; Auerbach and Rosen, 1980). Finding that behavior changes, taxable income changes, revenue collections fall below that predicted, and tax rates must increase, creating a spiral downwards (Rosen, 1985: 276–277).

In contrast to neutrality, another view argues for intervention on grounds that taxes should have *favorable* economic effects: the outcome from market operations can be improved by using tax incentives to alter private behavior. Many policy

makers argue that they could intentionally design fiscal systems to bring about economic and social health. For example, the earned income tax credit (EITC) has become a major incentive to replace lump-sum cash grants to the poor based on family size. The EITC is a cash grant representing the difference between work income and the base amount on which payroll and income taxes are levied. The effort to synchronize all fiscal policy tools assumes that tax, spending, and debt systems should not work at cross purposes. Then the question becomes an analytical or positive one in choosing the configuration of policy tools that will achieve the efficiency, effectiveness, or equity goal with the least effort (Miller and Illiash, 2001).

13.2.2 EXPENDITURES AND ALLOCATION POLICIES

Although fiscal policy deals with an important but specific subset of all government policies and often signifies tax policy, an allocation policy component exists. Eckstein (1973: 97) has defined fiscal policy as one of several short-run matters pursued by government decision makers: "The influence of government on total purchasing power, the use of the budget to fight recession and inflation ... [c]hanges in taxes and expenditures that aim at the short-run goals of full employment and price-level stability" Fiscal policy, therefore, often signifies budgetary allocations and the implicit choice between public and private sector provision of goods and services.

The shorthand meaning of different policies should be clear. Many economists use "allocation" to mean the policy toward tax system design grounded in a concern for greater efficiency and less waste. By distribution policies, they mean the distribution of the burdens and benefits of taxes and spending in efforts to achieve greater equity. Stabilization policies aim at credit expansion or tightening, inflation or price-level management, and ultimately economic growth and full employment. There is another meaning. Allocation may refer to the allocation of production of goods and services to the private and public sectors so that taxes may be put to their highest and best use. To simplify matters, this survey

uses allocation to refer to political and economic choices between public and private sector resources to meet the demand for goods and services.

An economic logic toward allocation, or government spending, begins with a *laissez-faire*, individualistic point of view. Assuming that residents want a good or service, whatever that might be, they will demand it and someone will step forward to produce it. However, this willingness does not always lead to market provision of whatever residents demand. The welfare of society demands some goods or services the market will not provide, and thus market failure occurs.

In the market of firms, proprietors will not provide those goods that cannot be exhausted by use or that two or more residents may consume jointly. "Public" goods may include epidemiology and perhaps inoculation against the spread of a communicable disease, reduction of noise pollution and street crime at the local level, and antiterrorism efforts at the national and international level. The social benefits of knowledge about a given communicable health condition and the action, inoculation, that takes place to deal with the condition actually grow in usefulness without congestion with the number of users. Moreover, global antiterrorism efforts may solve problems more effectively the greater the number of beneficiaries, and one beneficiary's use does not ordinarily compete with another's use.

In a different view of public goods, pricing may indicate whether a good is relatively public or private. Levying a price in exchange for a good rations the good. The question making the good a public one is the degree to which society wants to discourage use or discriminate on some basis against potential users. As Musso argued, "Whether a good is [a public one] depends on legal frameworks, technology, costs, and social and professional norms" (1998: 352). In the latter case, norms construct a sense of deservingness that allows for the production of public goods. The larger the pool of deserving individuals, perhaps even the degree of deservingness of a small group that society constructs, the more likely the good will come from public provision as a matter of public policy.

Society can determine efficiently what public or other goods government should be responsible for and how much should be produced by making choices on the basis of two efficiency criteria. First, a Pareto-optimal decision of what goods government should make available, and in what quantities, amounts to an efficiency improvement. If a choice is the “best that could be achieved without disadvantaging at least one group” or “the community becomes better off if one individual becomes better off and none worse off” with a choice, the community has made an efficient choice. The principle comes from the economist Vilfredo Pareto, who stated (1906: 261):

We will say that the members of a collectivity enjoy maximum [optimality or his word] “ophelimity” in a certain position when it is impossible to find a way of moving from that position very slightly in such a manner that the [optimality] enjoyed by each of the individuals of that collectivity increases or decreases. That is to say, any small displacement in departing from that position necessarily has the effect of increasing the [optimality] which certain individuals enjoy, and decreasing that which others enjoy, of being agreeable to some, and disagreeable to others.

Determining an entire population’s “optimality” is ridiculously difficult. Such difficulty results in tradeoffs over voting systems and fundamental constitutions (Buchanan and Tullock, 1962). Therefore, another criterion has replaced the Pareto criterion in use, a criterion named for two economists, Nicholas Kaldor (1939) and John R. Hicks (1940). The Kaldor–Hicks variation on Pareto holds that, for a change in policy or policy regime to be viewed as beneficial, the gainers should be able to compensate the losers and still be better off. No compensation need actually be paid, which, if it did, would make this the same as the Pareto criterion. With no compensation required, the Kaldor–Hicks criterion forms one of the key analytical bases for costs benefit analysis, the technical and administrative features of which Miller and Robbins have discussed at greater length (2004).

The determination of how much of a good government might take responsibility for producing poses substantial difficulties for decision makers, as well. A great deal of thought on what amount to produce comes from the concept of “marginal utility” and thought about the concept stretches from Clark (1899), Marshall (1890), and Wicksteed (1910) to Pigou (1928). Based on Pigou, Lewis (2001) identified three factors in determining the level and type of public goods furnished. First, he argued in favor of the calculation of relative value. Whether to spend on more battleships or more relief for the poor cannot be resolved without relating the two in some way, he said. Lewis stated that relationship as opportunity cost, that the cost of anything is simply the amount that would have been realized had the resources been used for some other purpose. In other words, the opportunity cost of a choice reflects the real consequences a decision maker faces in making a particular decision. This cost is usually the difference between the magnitude of the consequences of the first and second choices.

Second, Lewis (2001) argued that decision makers use incremental comparisons, comparing value or cost at the margin. Knowing that value diminishes with quantity consumed, “four tires on a car are essential, a fifth tire is less essential but is handy to have, whereas a sixth tire just gets in the way,” consumers and decision makers can choose the fifth tire or something else and certainly something else instead of a sixth tire. For governments, the number of poor needing relief will diminish as relief becomes available. Moreover, at some point, more of a given weapon will exhaust the ability of those who will use it. At the margin, decision makers can assess the relative value of more units of a given weapon or more units of a given type of relief.

Third, and most difficult of all, decision makers have aid in making marginal decisions if they have a standard for determining the relative effectiveness of alternative objects of expenditure. Political leaders set goals in reference to which subordinate executive and administrative policy analysts can make relative value and incremental comparisons. Political leaders change these goals as events unfold.

13.2.3 EXPENDITURES AND STABILIZATION

Spending has a stabilization meaning as well as an allocation one. Stabilizing economic growth through the budget has moved through both a pre-Keynesian and a post-Keynesian stage, suggesting the immense impact Keynes has had on stabilization for four generations of economists and policy makers. The pre-Keynes era, according to Musgrave (1985: 44–45), relied on Say's Law (1855) — that the economy could manage itself since “supply creates its own demand (Keynes, 1964: 18; James Mill, 1992; J.S. Mill, 1899: I, 65–67 and II: 75–82; Ricardo, 1951). Musgrave disputed the beginning Say made against fiscal policy in stabilization by pointing out Stuart's ideas about government debt as an addition to the nation's income (1767, Book 4, Part 2, Chapters 1–2, Part 4, Chapter 8). Even during Say's time, Malthus (1964) wrote about the distress brought about by excessive saving to the detriment of consumption, arguing that Ricardo and Say were wrong, at least in the short run (Maclachlan, 1999).

The unemployment depression of the 1930s provoked the Keynes revolution. Rather than supply creating its own demand, supply could contract as saving stood pat. In fact, the supply of savings could expand out of fear of loss or hope for eventual gain rather than hope of gain in a risk–return inverse relationship. Savings growth could produce a liquidity trap.

At the heart of Keynes' theory, three concepts formed fiscal policy's strength in stabilizing the economy between boom and bust (1964; Eckstein, 1973). First, demand for goods and services drive the economy. Total or aggregate demand, a macroeconomic idea, responds to budget policies that provide an incentive to consume rather than save. Second, consumption may have multiple if not quite compound effects as money works through the economy. The consumer spends; the retail firm owner pays salaries of employees, expands the business with profits, saves, and invests in other business expansions; and the government receives additional tax revenue. Whether the multiplier reflects a full compounding or simply the tendency of all persons or organizations to spend

most but not all of what income they gain, the multiplier's stimulus to economic growth exists. Third, many expansions and contractions in the economy have less extreme limits due to the automatic stabilizers that exist in budget policies. Beyond the discretion to run deficits and borrow in contractions, policy makers find that the contractions move toward an end as the base for supply, capital equipment, wears out and gets replaced. The turn in demand from negative to positive automatically triggers the spending multiplier and turns contractions into expansions, job layoffs into rehiring, and government deficits into surpluses and debt repayment.

From the basic ideas that formed from Keynes' original insight, two major fiscal policy concepts came into being. The measurement of the economy as gross national product (GNP) — the sum of consumption, saving, net exports or imports, and government spending — became a formal practice through the National Income and Product Account (Bureau of Economic Analysis, 1985). Fiscal policy, macroeconomics, and econometrics became intertwined. Also, budgeting for full employment grew in use as the discretionary component of fiscal policy. Full employment GNP, or the difference between current, nominal, and full employment GNP, acted as the gap that fiscal policy incentives or disincentives could fill. An economy with capacity for growth demanded incentives to ensure growth. The incentives included combinations of tax reductions and spending increases. An economy exceeding full employment GNP required policy makers to dampen the same incentives. The incentives came from the budget, and the budget came from the discretionary decisions by policy makers added to the already-expected effect of automatic stabilizers.

The problems with Keynesian fiscal policy became points of contention among supporters and opponents of government intervention in the economy. Contending views surround the multiplier's actual effects, time lags, and deficit financing. First, all tax changes differ. Permanent tax changes have a higher multiplier than temporary ones do (Carroll, 2001; Friedman, 1957). Higher-income individuals and two-earner

families respond differently to tax rate changes than do middle- and lower-income individuals and one-earner families (Goolsbee, 2000; Feldstein and Feenberg, 1995). Consumption and corporate income taxes have uncertain effects, differ from period to period, and require analysis of shifting and incidence to understand fully (Feldstein, 2002; Eckstein, 1973).

Second, time lags bedevil effective application of fiscal policies to economic stabilization. Recognition by policy analysts lags behind the actual appearance of an economic contraction or expansion. Decisions about actions to take lag behind recognition. The full economic impact certainly lags behind the decisions made and the execution of those decisions (Eckstein, 1973). Correct forecasts, certainly dynamic forecasting, relying on rigorous economic models, can reduce the lags (Altig et al., 2001; Auerbach, 1996 2002a, 2002b, 2003; Auerbach and Kotlikoff, 1987). However, forecasts require artfulness, and dynamic forecasting has gained political acceptance only recently and with partisan rancor (Barry, 2002; Lizza, 2003; Krugman, 2003; Stevenson, 2002).

Third, the government budget deficits that may emerge from fiscal policy stabilization actions may create offsetting destabilization. Government borrowing to finance the deficit may create competition in capital markets, leading to interest rate changes that can reduce private investment. Feldstein argues that discretionary fiscal policy can play a constructive role only in a lengthy economic contraction when both aggregate demand and interest rates are low and prices have tended to fall (Feldstein, 2002). At such a point, and only then, Feldstein says, stimulus may have an effect without increasing budget deficits by providing incentives for increased private spending (Feldstein, 2002).

The practice of discretionary fiscal policy stabilization has lost respect among many bankers and economists. In fact, at a Federal Reserve Bank of Kansas City symposium, most of the invited speakers called discretionary fiscal policy into question (2002). Research on decisions made by monetary policy authorities, what the researchers called “the Berkeley story,” suggests that stabilization has returned as the primary

goal of monetary policy makers rather than fiscal policy makers and that inflation is the key problem to solve rather than unemployment (Sargent, 1999, 2002; DeLong, 1997). The period of Keynesian fiscal policy stabilization efforts included a depression, three major wars, a period between wars with strong and sustained government spending on defense, long periods of economic growth without inflation, and one major period of oil supply shocks. The period ended with extremely persistent stagflation and, at the end, intense inflation. The ending of the long period when Keynesian fiscal policy dominated stabilization, with stagflation and then high inflation, led to a succession of monetary policy leaders bent on challenging inflation and letting economic retrenchment take its toll.

The succession, the monetary policy changes, and their success encouraged doubt about any effectiveness fiscal policy might have to stabilize the economy and to stimulate economic growth without inflation. Many have argued that fiscal policies have only blunt, unpredictable multipliers and lags. Fiscal policy stabilizers require monetary policy makers to ratify deficit-borrowing decisions with “an easy money policy” of readily available funds for financing private investment at moderate interest cost. Imprecise tools and impacts doomed fiscal policy as a set of arrow-fine, sharp instruments at most. Much of the time, policy makers aimed fiscal policies at the wrong target (Eckstein, 1973; Auerbach, 2002a: 144).

The opponents object most to “discretion” in fiscal policy, but they laud automatic stabilizers (Auerbach, 2002a: 120–127). Those who favor discretionary fiscal policy as a stabilization device see the same evidence to suggest large counter-cyclical effects in the last two decades of the 20th century. They point to research that shows few long-term effects from temporary tax cuts and stimulus packages, at least in comparison to virtually permanent policies (Blinder, 2002; Friedman, 1948). Remaining supporters do sense the value fiscal policy has for stabilizing the economy, probably because fiscal policy lies within the responsibilities, and especially the opportunities, of political leaders. Political leaders have ambition and electoral accountability, giving them credit for initiative and a certain amount of legitimacy in defining

economic problems and finding solutions. The legitimacy may outrank and the actions create less rancor than actions by more indirectly accountable monetary policy makers. The role for fiscal policy in stabilization hinges on the balance among accountability, representativeness, political responsiveness, leadership, and expertise sensed as right by decision makers at all levels of energy and vigor (Kaufman, 1956).

Spending may take place in a number of different ways as well: conventional and unconventional, on-budget and off-budget, and with credible or not-so-credible commitments. We associate conventional spending with budget requests to legislative bodies on behalf of continuing operation of government departments or the institution of new programs. Unconventional spending may take place, not using direct spending by legislatures on government departments in which government employees or government contractors work, but through the incentive structures toward firms inherent in loans, loan guarantees, insurance, and regulation. In all nonconventional forms, legislatures have chosen non-governmental organizations to carry out effective programs on behalf of government objectives. Finally, legislatures make credible commitments to target groups when they “entitle” the groups to transfer payments and make these entitlements a permanent appropriation subject only to changes in the basic authorization rather than appropriations law.

Distribution, allocation and stabilization — fiscal functions — require tax and spending tools. The goals of fiscal policy vary and conflict. Distribution of burdens in a fair way may rival neutrality or efficient distribution, allocation, or stabilization. Above all, social values, politically expressed, may vie with positive analysis and force the choice of second-best fiscal policy designs and tools.

13.3 FISCAL POLICY IMPACTS

Government leaders can choose fiscal policies and tools to avoid distorting economic behavior, to promote government neutrality regarding economic transactions, and to gain macroeconomic efficiency. The choices may also take a more interventionist

slant. The choices may promote certain economic behaviors, and leaders may make specific guesses about whose costs and benefits will lead to preferred economic changes. The neutrality position may have its adherents (Ventry, 2002: 45–52), but both the high, universalist spending and low-tax, high-savings groups offer competing policies that favor intervention (Lindert, 2004: 302–306). The choice may involve a neutral tax and government delivery of narrowly defined public goods. The choice may also involve universal government-provided benefits with a progressive income tax. Finally, the choice may involve a consumption tax and narrowly targeted, highly policed, means-tested public programs.

Fiscal policies have favored a “second best,” interventionist approach. Despite the first choice of economists — limited government, policies neutral in economic matters, and lump sum taxation — these parts of Adam Smith’s logic (1776) fell from favor in the early 20th century as Goldscheid (1925/1958) and Schumpeter presented and argued a new “fiscal sociology” (1918/1954). Contextualizing fiscal policies, both economists disputed the first choice fiscal policies — neutrality in the form of lump sum taxation and limited government. Both pointed out that first-best policies had failed to satisfy policy makers’ constituents.

The change from Smith’s logic to the views of fiscal sociologists came from three pre–World War I sources. Bell (1974: 37–40) suggests that the first source materialized from the policy maker’s need to encourage capital accumulation in an industrial age. The second source, he said, was policy makers’ compelling need to promote social harmony by satisfying newly middle class (bourgeois), acquisitive individuals with “goods [that] are not ‘needs’ but *wants*” (Bell, 1974: 31). The third source of change arose from the necessity to find revenue to pay for wants without reducing capital accumulation (Bell, 1974; O’Connor, 1973). Needing more than a change in the power centers and individual tastes in capitalist society, leaders could find no method or policy to meet demands for change with a neutral, lump sum tax. The fiscal support of the state, the incentive to accumulate capital, and the satisfaction of

the members of the consumer class required thinking beyond neutrality.

Neutrality, adequacy, incentives to save and to spend — a hard enough set of conditions to meet — also clashed with the norm of fairness. The taxpayer reaction to the violation of any of the ideas, except neutrality, became severe enough in Goldscheid and Schumpeter's time to force considerable rethinking of the role of government and the role of fiscal policy. Why? Equity demands of distribution policy a relationship between taxpayers' wealth or income and the revenues they are responsible for providing to support government activity. Recall Adam Smith's way of stating the principle of tax equity (1776: 654):

The subjects of every state ought to contribute to the support of the government, as nearly as possible, in proportion to their respective abilities; that is, in proportion to the revenue which they respectively enjoy under the protection of the state. The expense of government to the individuals of a great nation is like the expense of management to the joint tenants of a great estate, who are all obliged to contribute in proportion to their respective interests in the estate.

Fiscal policy neutrality failed to deal with the problems of the time, Goldscheid and Schumpeter said. Moreover, neutrality may not be fair. A flat rate, lump sum tax, the equivalent of what economists think of as neutral taxation, creates a proportional tax, given a wide tax base and generally inelastic demand or supply of income, goods and services, or assets. While possible, proportionality of ability, obligation, and enjoyment may not be probable.

History suggests that a neutral, proportional tax provided adequate revenue, effective incentives, or fair burdens. The United Kingdom offers one history lesson, in a poll tax, levied three times in the 14th century, once in the 17th century, and then once more in the late 20th century. The latter poll tax was an attempt by Prime Minister Margaret Thatcher to make common sense of local revenue systems and intergovernmental formula transfers (Butler et al., 1994).

The neutral lump sum tax in Great Britain has notoriety. The earliest poll tax had a rate of four pence (often one shilling) per capita among adults (Oman, 1906; Dobson, 1970). Differences in rate came about by action of the local notable paying all or some of the tax for the people indebted to him. The adult head tax had no progression according to wealth and appeared grossly unfair (McKisack, 1959: 406–407). Tax collection took place without a census of the adult population, although it became one and included questions about personal circumstances asked by tax officials. McKisack (1959: 407) described the upshot of it all as “evasion on a large scale” with the poll tax payments/census of adults revealing “a fall of one third in the adult population between 1377 and 1381.”

Already indelicate methods deteriorated in subsequent efforts to improve the collection rate. McKisack (1959: 406–407) and Butler, Adonis and Travers (1994: 12) give an example that they call typical:

The age exemption for children worked on the principle that girls were exempt if they were virgin. A certain [tax collector] insisted on ascertaining this by physical examinations conducted in public.

All the researchers state that the collection rate remained terrible despite the methods used. They argue that the poll tax system, coming on the heels of the Black Death of 1349, contributed to the Peasant Revolt of 1381. The Black Death decimated the labor population, driving wages up and motivating employers to force the tax on wage earners. The Revolt gave rise to one of England’s most popular figures and folk heroes, Wat Tyler, who killed a tax collector after his 15-year-old daughter became the object of a tax collector’s efforts. The Wat Tyler myth, based on a short, intense insurrection, inspired Thomas Paine’s *Rights of Man* and efforts to end serfdom in England as well as to import the French Revolution.

Ultimately the Revolt and the Wat Tyler myth teach how closely tax policy changes resemble the swings of a pendulum. The subsequent efforts in England to levy a poll tax materialized

in 1641 and 1987 to 1990. In 1641, the tax had gradations, but collection occurred without a census or a register of taxpayers. Designers thought that a graduated assessment would tax snobbery, the more willing rich revealing their social status through their tax rates and payments. However, the 1641 tax “fell short of expectations” as people undervalued their status, pushing social climbing to a lower standing than tax dodging (Butler, Adonis, and Travers, 1994: 13). In 1987, Prime Minister Margaret Thatcher proposed and Parliament passed a poll tax for Scotland. She and the members of the Conservative Party won the General Election of 1987 proposing a poll tax for England and Wales as well. The poll tax for the entire country passed through Parliament, with the House of Lords approving it overwhelmingly during the highest turnout of Lords in living memory to that point (Butler et al., 1994: 124). The tax created a fiscal emergency for local governments, requiring them to spend much more than anyone anticipated to collect the tax. The taxpayers saw the tax, once implemented, as unfair, tried to avoid it, and finally rioted to protest it (Butler et al., 149–153). The opposition to the tax led to the Conservative Party’s loss of a by-election, the rise of opposition within the party to the Prime Minister, Prime Minister Thatcher’s resignation, and the abolition of the poll tax.

The lump sum tax has led to the punishment of British policy leaders who pushed it into law. Taxing to avoid distorting the economy with the most neutral tax, by widely held norms, has gained the summary status as optimal tax policy (Gentry, 1999). If a lump sum tax is the least distorting, as some say, the British example shows that care has to be taken because more economic efficiency may lead to less equity. More equity may lead to less economic efficiency, less revenue collected, a more complicated tax system, and higher tax administration costs. Balancing numerous factors, leaders usually take the second best or third best (Lipsey and Lancaster, 1956–1957; Meade, 1955; Corlett and Hague, 1953–1954; Little, 1951; Ng, 1983; Greenwald and Stiglitz, 1986; Hoff, 1994; Hoff and Lyon, 1995; Bhagwati and

Ramaswami, 1963). Sandmo (1985: 265) reveals the complex tradeoffs required to produce efficient tax systems:

If alternative tax systems can lead to different rates of private saving, then the choice between them should take into account the short-run effects on employment and inflation, the medium-term effects on the rate of growth, and the long-term effect on the capital intensity of the economy. These are basically issues of the efficiency of resource allocation, but distributional policy is also involved. A tax policy designed to encourage saving may transfer income from “workers” to “capitalists” and from the present to future generations. Evidently, there are all sorts of tradeoffs to consider in policy design.

Tax analysis presents a difficult set of problems, to say the least.

Generalizing from the U.K. experience, the most neutral and least distorting tax may be the most unpopular. The second- or third-best tax, on neutrality grounds, may become a better tax on the political merits and prospects.

Should policy leaders move from a lump sum tax to a lump sum, flat rate tax, and on to graduated rate taxes, they have several choices beyond raising money for government operations. The policy leaders will face the consequences of their acts in lost tax neutrality. What second-best consequences they might choose may be a matter of socioeconomic and political debate.

The choice of the second-best alternative tends to follow two different courses. The first course emerges as a matter of incidence and the answers found when the analysis concerns who bears the burden and who receives the benefit of fiscal policies. A review of the incidence literature follows below. A second course influencing the second-best alternative to a lump sum tax and a neutral fiscal policy comes from the analysis of behavioral reactions to tax policies, primarily those reactions found in work, saving, investment, portfolio choice, risk taking, and innovation and productivity. These behavioral reactions follow the discussion of incidence.

13.3.1 INCIDENCE

Discussion of the market reaction to government fiscal policy decisions starts with some brief mention of incidence. Musgrave (1953a, 1953b) gets the greatest credit in focusing attention on “the changes brought about by a given public finance instrument in the distribution of real income available for private use,” a definition Break uses (1974: 123) in recognition of Musgrave’s work. Incidence studies (Mieszkowski, 1969; McIntyre et al., 2002) distinguish between those taxpayers statutorily directed to comply with or be entitled to benefit from the fiscal policy design, nominal incidence, and individuals who ultimately bear the burden or receive the benefit after all shifting of burdens and benefits takes place, economic incidence.

Incidence models also differ in the way economists choose to study the impact policy instruments have. The static incidence model characterizes much of the theory and empirical research in public finance in contrast to the more realistic dynamic incidence idea. Static incidence refers to the first shift in one tax bill from the check writer to the individual whose purchasing power and income decline as a result. Dynamic incidence refers to the rates of change in taxes and incomes and then the behaviors — saving, investment, consumption, and labor supply for example — that are sensitive to changes in taxes and incomes (Krzyzaniak, 1972; Feldstein, 1974a, 1974b; Break, 1974). With effort, research with a dynamic incidence model can reveal not only current but lifetime income and current and multiperiod effects on the economy, taking into account individual and aggregate reactions.

Analyzing fiscal instrument effects by limiting study to a single tax or the substitution of one tax for another is artificial. More realism might come from studying the simultaneous effects of changes in several taxes, spending, and debt (Martinez-Vazquez, 2001). However, realism may be an unattainable goal. Any policy prescription based on dynamic and simultaneous effects may overwhelm the understanding and motivation of policy makers to take action. For example,

Shoup (1969: 14) described the difficulty policy makers might face:

... if there are eight goals to be achieved, by the public finance system, eight public finance instruments will normally be required, with a unique set of eight rates or values. If the value for one of these goals is to be changed, as when the distribution of disposable income is to be made less unequal, while the values of each of the other seven goals are to be unchanged, the values of all eight of the public finance instruments must normally be changed. All eight are changed, just to alter one of the goal values (and to keep the other goal values unchanged). The new distribution of disposable income is necessarily the "incidence" of changes in eight public finance instruments.

Dynamic incidence and simultaneous effects may signal the direction for research, but the policy recommendations may have limited appeal to policy makers due to the complexity of execution.

Although incidence refers to fiscal policy instruments and their effects on groups of individuals, researchers and policy makers often have a narrower focus. Researchers ask how much of the fiscal burden of a tax falls on the poorest and richest segments of the population. Policy makers ask about tax incidence by business sectors, between industry and labor, by geographic region or state, and by domestic or foreign beneficiaries. New estimates of generational incidence now exist (Auerbach et al., 1999; Fullerton and Rogers, 1993; Kotlikoff, 1992).

Incidence studies begin with the point that individuals bear the burden of any tax ultimately. Nominally, a firm may write the check for taxes, but shifts take place. The tax reduces some individual's income in the end. Galambos and Schreiber have illustrated this point (1978: 115):

[Suppose] that local government officials are planning to increase the property tax rate. Who will bear the burden of this tax increase? Off hand, one might be tempted to answer that property owners (whether residential or business property) will pay the tax, since they write the check. But this answer assumes that property owners cannot

shift the tax burden to someone else. Yet, the apartment owner may be able to shift the increase in property taxes to the renter through higher rents. Similarly, a business firm may shift all or part of the increase in taxes to consumers of its products through higher prices, or to its employees through lower wages. If such shifting is not possible, then the property owner (stockholders, for a corporation) must bear the tax. Ultimately, a person or a household bears the burden of all taxes.

Many researchers agree on the incidence of specific taxes and tax bases. These agreed-upon shifts to final bearers of the tax burden appear in Table 13.5.

Galambos and Schreiber have pointed out that many factors provoke the reaction to a tax change (1975: 116). The factors include market price competition, in which the greater the competition, the less likely the tax may be passed on as higher prices. Also, the longer-term effects include finding substitutes. That is, producers can switch their work to untaxed products, and consumers can find other similar, untaxed products or can buy the same product in another, nontaxing jurisdiction.

Therefore, factors affecting the shift of the tax burden vary, and they vary in complex ways. Generalization may be hazardous beyond a specific locality. However, for the sake of illustration, Table 13.6 later presents some of the factors and the ways the factors may influence tax burden shifting. The discussion below follows the ideas Table 13.6 illustrates.

In the broader context of state and federal taxes, incidence accounts for the impacts fiscal policy instruments have on both incomes and prices or the sources and uses of income. For example, an increase in the size of a tax expenditure (such as a tax credit) rather than deductibility of municipal bond interest from income might increase after-tax income. The tax credit may benefit more than the highest income classes, since the credit might benefit all income classes that have a tax liability. The tax credit might lead middle-income households either to consume or save the increased amount of income at their disposal. Should the consumption choice be buying a new car, car prices may rise in the short run but car manufacturing may increase in the longer term, with succeeding

TABLE 13.5 Major Local Taxes and Incidence

| Form of tax | Nature of the shift in incidence |
|--|--|
| Sales taxes | Most consumption-based taxes (including a general sales tax as well as excise taxes on tobacco, alcohol, and other practically fixed demand items) are shifted forward to the consumer in the form of higher prices |
| Personal income taxes | No shifting; the taxpayer pays the tax nominally and finally |
| Property taxes | |
| a. For owner-occupied housing | The owner will pay the property tax because the owner has no one else to whom the tax can be shifted; the owner of the house is also the tenant in the case of owner-occupied housing; the owner has a portfolio with one asset, but the owner finds the tax capitalized into the property; since capital is mobile, higher property taxes force values of property after tax downward, as the higher property taxes force down wages and land values, when compared to lower-taxing localities; the capitalization reduces the amount available for further investment, affecting all uses of capital; all owners of capital or property share the burden of the property tax |
| b. Increase in property taxes on renter-occupied housing | Most commonly, the assumption made in tax incidence analysis is that the increase in property taxes is paid by the renter in the form of higher rents |
| c. Property taxes on renter-occupied housing ignoring any increase | Another, current view is that the portion of the property tax on rental housing common to all jurisdictions is borne by the owners of the property while the differences between jurisdictions are paid by renters |
| d. Increase in the property tax on nonresidential property | <ul style="list-style-type: none"> a. 100% shifting of the property tax to consumers through higher prices b. 100% in reduced profits or returns on investment to owners of the property c. 50% forward shifting [to consumers through higher prices], and 50% in reduced profits [to owners of the property] |

TABLE 13.5 (CONTINUED) Major Local Taxes and Incidence

| Form of tax | Nature of the shift in incidence |
|-------------|--|
| | <p>d. Percentages varying by the degree of competition in markets, the ability of producers to switch to the production of other commodities, and the ability of consumers to buy other products or the same products in other jurisdictions where the products are not taxed in the same way</p> <p>e. It seems reasonable that some portion of the property tax, as a cost of business, does find its way into the price of products</p> <p>f. It also seems reasonable that the business firm's inability to shift tax burdens or to absorb them, in the long term, may force the firm to test mobility, bargaining with the present locality over tax rates, and threatening to locate in another locality</p> |

Sources: Galambos, E.C., and Schreiber, A.F. (1978). *Making Sense out of Dollars: Economic Analysis for Local Government*. Washington, D.C.: National League of Cities, p. 116 and used with permission; Aaron, H.J. (1975). *Who Pays the Property Tax?* Washington, D.C.: Brookings; Gaffney, M.M., (1971). The property tax is a progressive tax. Proceedings of the Sixty-Fourth Annual Conference on Taxation sponsored by the National Tax Association: 408–426. Retrieved May 8, 2004, from, <http://www.schalkenbach.org/library/progressivet.pdf>.

increases in either capital invested in car manufacturing or workers hired. A tax credit rather than a deduction from income for municipal bond interest may also reduce the cost of borrowing faced by state and local governments. Lower costs may convince state and local leaders to increase their capital investment. Results from increased investment may convince state and local officials to pass the productivity increases on to state and local taxpayers through general or targeted tax rebates, rate reductions, or a more stable fiscal system. Rebates and rate reductions will increase household and corporate income, provoking another round of short-run price increases, capital investments in the long run, and employment increases.

TABLE 13.6 Labor, Consumption, Work, and Future-Orientedness Effects of Taxes

| Concentration | Tradeoffs | | | |
|--------------------------|---|--|---|---|
| | Consumption | Work | Labor | Present-oriented |
| | – | – | + | + |
| Policy tool | Sales tax | Income tax | Property tax | Debt |
| | + | + | – | – |
| | Saving | Leisure | Capital | Future-oriented |
| Focus of impact | Retirement, investment | Early retirement versus later retirement | Investment, risk taking, later retirement | Consumption now if taxes are higher later; saving now if taxes are higher now |
| Alternative policy tools | Flat tax ^a , value-added tax ^a , or head tax ^b | Head tax | Tax on immobile factors | Progressive income tax or tax deferral in anticipation of lower future earnings or income |

^a Slemrod, 1997.^b Butler et al., 1994.

The price elasticity of demand and supply tends to be the major factor determining who bears the burden of a tax. Elasticity refers to the degree to which demand changes as prices change. Likewise, as prices change, a supplier's incentives change. Ultimately, the less the elasticity, the more likely those demanding or those supplying bear the burden of a tax. As an example, take the market for automobiles in the United States. Car buyers and car sellers are probably sensitive to the price of a red Mercedes. Both car buyers and car sellers can find substitutes as prices of the red Mercedes rise. If a tax increase prompts a rise in the price, both buyer and seller will find some other car color to market, and the tax can be thought to have destroyed the market for the red Mercedes. For a market dealing in any color Mercedes, more likely a market for all imports or all luxury cars, one might find the demand relatively insensitive to price. A buyer will absorb a tax on all Mercedes models. For a market dealing in any car in Manhattan in New York City, the demand may change radically as prices change, due to a general new automobile tax. Substitutes may be found in taxis, limousines, phone cars, buses, jitneys, and the subway. The tax levied on cars in Manhattan will force an increase in prices, perhaps, but more likely, the seller will absorb the tax increase. Even more likely, the fares of every form of transportation from taxis to the subways will increase, reducing transportation substitutes. Finally, the market for cars is relatively insensitive to price on both the demand and supply sides in the United States. Both car buyers and car sellers will share any new tax, although substitutes may exist for the car's financing. Just as likely, the tax will prove so unpopular that both buyers and sellers will organize an effort to reduce the tax.

In the longer sequence of effects caused by the levy of a tax, buyers and sellers, those demanding and those supplying, form a different set of actors in the households whose sources and uses of income change with the tax. In the red Mercedes case, both consumers and car dealers avoid the tax, preferring that their uses of income go to some other good, perhaps a blue Mercedes. Hardly anyone's sources of income change. In the case of the Mercedes *per se*, the consumer absorbs the tax,

reducing that household's income. That consumer, as an income producer, finds his or her real buying power reduced. That consumer buys less, and his or her uses of income change. In the case of a car buyer and seller in Manhattan and a general automobile tax, both the buyer's and seller's uses of income change, the buyer's towards substitute transportation and the seller's towards supply of something in addition to cars for sale. The income of the buyer, labor, does not change, but the income of the seller, capital, does. Rates of return to investors in car sales companies fall, and investment capital moves to sources of higher rates of return. Finally, in the car market in the United States generally, both consumers and sellers share the tax. Consumers find their uses of income affected, and so do investors in car sales. Certainly, the car suppliers, the owners of capital, find their sources of income reduced.

In the case of equity, the incidence of the tax on everything from a red Mercedes to a car generally has a possibility of being progressive or regressive. The red Mercedes has a neutral effect, but the Mercedes of whatever color appeals to an exclusive, perhaps high-income, group of buyers, in which case the car tax becomes a progressive tax. Should the product be salt rather than a Mercedes, a necessity instead of a luxury, the tax would fall inordinately on the lowest income group, for which the cost of salt is a bigger proportion of income than for the wealthier. The tax on the car in Manhattan, falling as it does far more on capital than labor, on car sellers rather than buyers, probably has a progressive tax impact. Finally, the car tax throughout the United States has the chance to be proportional, if car buyers tend to use a fixed percentage of their income on a car.

Incidence studies employ measures gauged before and after fiscal policy changes take place. The research question relates to distributional changes in income among groups. The analysis yields the conclusion that the fiscal system has become more regressive, proportional, or progressive. The illustration in Table 13.4 at the beginning of this review distinguished these systems on the basis of taxes alone, although

the combination of all fiscal policy instruments may be characterized in the same way if the offsetting burdens and benefits can be calculated to produce a net effect. The incidence analysis employs various statistical measures of distribution to determine the nature of the before-change incidence, the after-change incidence, and the difference between the two, including the Lorenz curve; the Gini coefficient; the Suits index; newer, weighted Atkinson measures; and finally a variety of measures of welfare dominance, concentration curves, and statistical testing surveyed and described by Martinez-Vazquez (Pechman, 1985: 5 note 10, 44 note 3; Suits, 1977; Atkinson, 1983; Yitzhaki and Slemrod, 1991; Keifer, 1984; Musgrave and Thin, 1948; Younger et al., 1999; Davidson and Duclos, 1997; Martinez-Vazquez, 2001).

To picture incidence, consider the relationship of a capital income tax and a wage income tax, following an approach called "differential incidence." The substitution of a tax on capital with a tax on wages has different outcomes as the assumptions about the factors of production and savings rates change.

First, the labor supply and the supply of capital may not respond (may not be elastic) to different rates of return, and rates of return on both tax bases (capital and labor) may be the same. In this case, the substitution of a capital tax for a wage tax shifts the burden to capital, and nothing else changes.

Second, should labor supply alone be responsive to rates of return, a different dynamic occurs. Lowering taxes on wages and increasing them on capital income leads to higher wage rates and more people willing to work, with more people bidding the wage rate downward. As the wage rate declines, the rate of return on capital, despite the tax, increases. Lower wage rates and higher rates of return to capital mean that employees would share the burden of the tax on capital income.

In the long run, the shifts move the tax from labor to capital and back again and cancel out any real change. The real source of change in the long run is the growth of the

population. With population growth, labor supply increases, setting the long-term wage rate. Long-run growth can assume that the savings habits and practices of wage earners and capital owners do not change, and there is no change in the amount of capital invested, either. What is the result in this case, in the long run? The tax substitution (wage to capital) transfers the burden of the tax from labor to capital.

Changing the assumption to a supply of investment income (capital income) responsive to rates of return, the substitution of capital income taxes for wage labor taxes changes the outcome. The long-run complexion of the economy changes with the capital income tax. Although wage rates respond to the growth of population — more workers, less wages — the capital income tax will reduce the supply of capital as well. Again, the tax on capital shifts so that wages from labor share part of the tax burden.

In another situation where both wages and capital income reflect rates of return (i.e., where both are elastic) the shift from a wages tax to a capital tax duplicates the previous situation in which employees share the capital tax burden rather than enjoy a full tax reduction in the shift. As wages increase with the reduction of the tax on wages, the supply of labor increases and employer demand for workers decreases. Capital income tax increases lead to decreases in net or after-tax capital income. Investors reduce the supply of capital to the organizations and instruments taxed, while users of capital demand more, raising the cost of capital. Then, wages decrease and capital income increases. Labor shares the capital income tax because of the complex series of turns made among policy makers, wage earners, firms needing capital, and investors.

Consider finally the situation in which both labor and capital do not respond, i.e., both are inelastic or insensitive to the rate of return. A reduced rate of capital formation results. Again, the nominal tax on capital income shifts to become a tax on income generally, a tax shared by labor and capital. Overall, through long periods, at least the largest portion of the burden of a capital income tax shifts to labor

to bear. For policy purposes, however, a shorter-term version might make more sense.

What other fiscal policy tools have incidence effects? Consider tax expenditures and conventional expenditures, both of which are negative taxes. Many but not all tax expenditures are broad based, such as the mortgage interest deduction for home buyers and the corporate income tax deduction for health insurance and other related care provided to corporate employees as part of wages. These tax expenditures might have a neutral economic impact. Some economists classify conventional expenditures as either neutral in impact or pro-poor (Martinez-Vazquez, 2002; Musgrave and Musgrave, 1989). Loans and loan guarantees, insurance, procurement and contracts, and grants have an uncertain impact and have generally eluded incidence studies. Income transfers by definition are pro-poor. Debt, being delayed taxation, may also reduce the growth of the economy by reducing the investment capital otherwise available to the private sector through higher demand and fixed supply conditions in capital markets (Laubach, 2003; Federal Reserve Bank of St. Louis, 2004). The “crowding out” effect of government borrowing, however, may be offset entirely by the infrastructure and other investment for which government policy makers decide to use government borrowing.

Nonresidents of states and localities, more than those of the nation as a whole, pay all or a portion of some taxes. When nonresidents pay a tax levied on people or transactions locally, incidence analysts describe the tax burden as an export. Tax exports reduce the local tax burden and, unsurprisingly, are popular. Examples provided by Galambos and Schreiber include (1978: 116):

1. A tax on hotel rooms, paid by tourists, conventioners, visiting businesspeople, and other nonresidents
2. The portion of a payroll tax levied by the central city of a metropolitan area that is paid by commuters from the suburbs
3. A property tax on manufacturing plants that ship most of their products outside the local area (assuming

that the tax is shifted forward in the form of higher product prices)

Analysts estimate the exported portion of nonresidential property taxes (that shifted forward to consumers) through economic base studies (to calculate total economic exports) and especially location quotient studies (Hildreth and Miller, 2002; Hayter, 1997; Galambos and Schreiber, 1978: 13–47).

13.3.2 WORK AND LEISURE

Policies may stress rewards of work over leisure. The choices involve deciding to favor one commodity or product over another. Incentives may favor future over present consumption. Tax and budget policy can prefer land to improvements to land. A variety of fiscal actions may encourage risky investments to promote innovation and to increase productivity. These basic choices are explored here as fiscal policy impacts.

Leaders may also try to promote income equality and faster economic growth. Moreover, because a society needs a government, members must pay for that government in some way. Therefore, among all incentives, members of society must tax or choose not to tax but still pay for preferred government action. Other incentives flow from or exist beside the taxing decision. From the taxing decision, other decisions on tradeoffs emerge simultaneously among spending tools and policies. Public agency provision of goods or services may result and may increase transfer payments, grants, and contracts. Loan funds, loan guarantees, and insurance programs spring to life. Nevertheless, the tax decision — what to tax, what to spend by not taxing, what to refund without taxing — sits at the heart of fiscal policy.

The tradeoff consideration requires different analytical approaches. Sandmo (1985) characterized the forms of analysis required as positive and normative. Both types of analysis must be used to minimize distortions created by a tax as well as to meet the expectations of taxpayers about a preferable tax, he said. Positive analysis is one in which policy makers question whether an expenditure tax will lead to a higher or lower level of saving than an income tax, for example. A

normative analysis introduces a more fundamental question of criteria. Sandmo pointed out, "It is only when we introduce criteria for social welfare or efficiency that we can begin to consider the normative question of the desirability of an expenditure tax" (1985: 265). If considering the taxpayer reaction triggered by fiscal policies as saving, investment, portfolio choice, risk taking, productivity, innovation, adequate income in retirement, and stable economic expansion, analysts must follow both the positive and normative forms. Analysts may first compare several taxes in empirical or positive research terms and in terms of various goals and then limit the discussion to the normative question of what constitutes equitable fiscal policy.

On efficiency grounds alone, what tax is second best? Using a head, lump sum, poll tax as the benchmark, consider the effects of the second best on a dozen sets of competing goals, following the consensus about effects and the logic of their materialization in Rosen (1985), Stiglitz (2000), Bruce (2001), Blinder and Solow (1974), Aaron and Boskin (1980), Bradford (2000), Aaron and Pechman (1981), Musgrave and Musgrave (1984), Eckstein (1973), Sandmo (1985), Bernheim (2002), Poterba (2002), and Hasset and Hubbard (2002).

Although public economists consider a lump sum tax the benchmark for financing public goods and maintaining economic efficiency, the tax creates equity problems. Everyone pays the same tax. No economic distortions occur. Equity becomes the chief issue, however, and the "head" tax provokes immediate and sometimes severe changes in the behavior of people.

Nevertheless, consider first the tradeoff between taxing all commodities or some commodities (See Table 13.6). The result of taxing all commodities is little distortion of taxpayers' consumption habits when compared to taxing a specific commodity. The exception is the case of demand for a taxed product that is so necessary that the same amount will be purchased whatever the cost added by the tax.

Next, consider a commodity tax and its impact on the tradeoff between consumption and saving. If imposed, the commodity tax makes goods more expensive but the tax allows

saving to occur tax free. The saving preference in the tax also pushes consumption out of the present and into a future period, making the fiscal system encourage future over present consumption. The commodity tax also leads a taxpayer to prefer the purchase of assets not taxed, such as property (or capital).

In contrast to a commodity tax, consider an income tax on wages from labor. The immediate impact of the income from a tax on wages is probably an increase in work hours to produce more income to make up for that taken by the tax. As probable, the impact of the income tax may be a reduction in work hours with the substitution of leisure or the substitution of one kind of work for another that is not taxed. The income tax, if levied on wages alone, favors both saving and the accumulation of nontaxed assets, such as property. Both saving and accumulation of property or capital suggest a fiscal system preference for delayed consumption, a preference for future consumption over present consumption. Such delayed consumption may include retirement savings.

Finally, consider a wealth tax, a tax on all assets the taxpayer owns rather than the commodities the taxpayer consumes or the work done for wages. The wealth tax may be a property tax on the taxpayer's home. In this case, the fiscal system favors consumption over the accumulation of property, favoring risk-averse renting instead of what becomes a risky investment in capital. A property tax on land alone corresponds to the consumption tax on a commodity the demand of which will never change no matter what the price. Since there is a fixed amount of land, the land tax will have no effect on decisions about owning land; the land tax will have no effect on any other economic decision either.

The property or capital tax — a tax on accumulated wealth, bequests, or the investment returns from stocks and bonds — favors labor income as well as consumption. The property or capital tax penalizes investment, unless the investment is in a risky effort to invent some new, unimagined, and thus far untaxed good or service. In such a case, the property or capital tax on one investment portfolio might

TABLE 13.7 Cross-Criteria Effects of Taxes

| Tax on: | Property | Sales/commodity | Income/wages | Lump sum |
|----------------|----------|-----------------|--------------|----------|
| Tax effect on: | | | | |
| Labor | + | + | - | + |
| Capital | - | + | + | + |
| Consumption | + | - | + | + |
| Saving | - | + | + | + |
| Work | + | + | - | + |
| Leisure | + | + | + | + |
| Present | + | - | - | + |
| Future | - | + | + | + |

Note: + = incentive; - = disincentive.

actually promote another portfolio, one involving risk taking and innovation. The property or capital tax penalizes productivity among business firms relying on investment. The property or capital tax promotes present consumption over future consumption.

By comparing possible tax targets, the great winners and losers in basic fiscal policy come into view. The immediate and long-term impacts of tax portfolios also appear. See Table 13.7 for the comparison. If a simple sum of the rows and then the columns in Table 13.7 were done, two striking phenomena would appear. Leisure (for some and more work for others) appears the best alternative when an assessor levies a tax on any target. The strategy for the taxpayer may not be “don’t do anything” but instead “don’t do anything the tax collector can see.” Tax evasion, expatriation, and underground economic transactions may be what actually takes place.

The best tax is a lump sum tax. In the British examples of head taxes, however, simple lump sum taxes failed the smell test of equity, leading tax policy makers to do something else, graduating the lump sum tax rates in some way to make the lump sum tax a tax in property, consumption, or income. Of these remaining taxes, none gains superiority for the same reasons. The tax on property supports wage laborers and consumption in the present rather than later and undermines saving, investment, and owners of capital. The consumption,

sales, or commodity tax favors wage laborers and capital owners, their saving and future consumption over present consumption. The income or wage tax, simply defined to exclude no source of current income, penalizes wage laborers, their saving and work, as well as future consumption. The tax on wages rewards owners of capital and present-day consumption by all. What norm should prevail and what departure from fiscal policy neutrality should the policy maker pursue? Specific goals for policy tend to capitalize on different combinations of norms. To help clarify the goals and norms, the research on saving, investment, portfolio choice, risk taking, productivity, and expansion follow in the sections below.

13.3.3 SAVING

A tax policy maker may intend to encourage saving. An individual's efforts to save vary according to disposable income: the higher the income, the greater the savings. However, the average propensity to save that higher disposable income suggests does not actually reflect the even more basic marginal propensity. The marginal propensity does not vary greatly by income (Musgrave and Musgrave, 1989: 304). Interest rates, the amount willingly saved by everyone, the point in one's life cycle, and one's estimate of permanent income influence the marginal propensity to save (Modigliani and Brumberg, 1954; Friedman, 1957). The rate of return a saver might receive after paying an income tax might persuade the person to save, particularly when that person was at the point in his or her life cycle when retirement loomed and savings were important (Tin, 2000).

Savings incentives have become the traditional point of positive analysis, and positive analysis helps in understanding the results of normative analytical arguments (Sandmo, 1985; Boskin, 1988; Holcombe, 1998). A tax rate reduction or the elimination of a tax altogether, encouraging savings, will burden those reporting labor income or wages and will benefit those reporting interest earnings, dividends, or capital gains. The tax could encourage later consumption in retirement rather than current consumption. Sandmo (1985) and to a

greater degree Stiglitz (2000: 532–535) have doubted the simple idea that lowering taxes on savings and capital promotes more of both. The more technical precision involved in the savings incentive analysis comes from Sandmo (1985: 271), who argued that if the tax rate on all income, both labor and capital, is assumed to be constant over time, the income tax works like a combination of a lump sum tax and a special tax on interest income. Analysis of the effects on consumption reveals that the indirect or special tax has little effect on consumption, present or future, and that it becomes the equivalent of a lump sum tax levied on labor income. Sandmo's analysis revealed (p. 272), "[A] general indirect tax at a rate which is constant over time is equivalent to a tax on labor income alone, leaving the relative price of present and future consumption unaffected [I]ndirect taxation is accordingly also equivalent to a lump sum tax being levied on all consumers in proportion to their labor income." Sandmo suggested that there may be income or substitution effects for income for the tax on labor income (working more or working less at the taxed activity), but the savings rate remains more or less the same. Stiglitz (2000) also noted that the broad-based tax on labor and capital income, from all empirical estimates, has a small though negative effect on savings. He concluded that any negative effect may reduce savings, but he also argued that any effort to add incentives by reducing taxes on interest earnings and other capital income will have very little impact (2000: 534).

Problems abound when research attempts the leap from discovering what influences an individual's saving to what influences the savings behavior of an aggregation of individuals. These problems include the assumption of a common reaction to changes in fiscal policy, a common price, good by good, for consumers, and a single interest rate for every savings maturity, which all individual savers may exploit.

Economists agree that there is a small "significant negative substitution effect," a noticeable interest elasticity of consumption. That is, the rate of interest varies inversely with present consumption. Moreover, as fiscal policy favors decreasing marginal rates of income taxes, interest rates rise,

saving increases, and present consumption falls (Sandmo 1985: 280–283).

Despite measurement problems, however, Denison's "law" (1958) appears to hold steady, as indicated by the fact that the savings rate in the United States remains at 16% of Gross National Product and has done so since 1929 over tax regimes that had low rates and were barely progressive and ones that were "onerous" (David and Scadding, 1974; Glennon, 1985). Glennon (1985) attributes the steady rate to an extremely large number of factors that have the effect of offsetting each other.

Briefly summarizing the research, economic theory predicts that household consumption depends on the household income available after taxes, the household's disposable income. The delay in consumption by saving part of that disposable income might be related to the level of taxation as well as the type of tax, one based on income or consumption. The delay in consumption may also depend on the level of wealth. Wealthier individuals have higher average savings rates than do poorer individuals, although the marginal propensity to save differs less so (Musgrave and Musgrave, 1984). Expectations about future income may have some effect on savings (Fisher, 1930; Modigliani and Brumberg, 1954). Expecting that in retirement, income will fall, an individual may save more presently. However, the taxes on all forms of income have more of an effect on labor than savings, and any negative effect on savings comes about on relatively small savings magnitudes in the United States.

The more practical fiscal problems related to saving actually get greater attention from policy makers than abstract general problems do. For example, policy makers ask whether a public retirement plan such as Social Security (Social Security Old-Age, Survivors, and Disability Insurance or OASDI programs) displaces private saving. Perhaps. If government fiscal policies force saving, assuming the government investment manager had the same rate of return as private savers, theory predicts displacement. However, Feldstein (1976) argues that the government's policy toward retirement age, or the age at which an individual may begin drawing Social

Security, may affect private saving. Should the government policy be fixed, so that one can begin drawing at least part of the Social Security payments to which he or she may be entitled at a fixed age, the policy induces individuals to retire earlier and to save more during the period they work so that they will have income over a longer period. Government policy, therefore, creates a replacement effect. The displacement and replacement effects offset each other, creating a result in which Social Security has a small, negative effect on saving.

Tax policy encouraging private saving for retirement through Individual Retirement Accounts (IRA) and 401(k) plans might also have some effects. In an IRA, the individual may accumulate a limited amount of savings free of tax until retirement drawdowns. The 401(k) plans are established by employers, have higher tax-deductible contribution limits than IRAs, and may include an employer match for individual contributions. Much of the research literature on tax-advantaged, pension-related savings plans such as these suggests that these plans merely displace what saving might have occurred anyway (Bernheim, 1997). Gale (1997: 327) concludes that while savings incentive accounts accumulated exceptionally large amounts in the recent past, personal saving actually fell over the same period.

Considerable thought and work have taken place to understand as much as possible about when and why people increase savings. Bernheim (2002) has summarized the classes of research as the life cycle approach, variations on the life cycle, and behavioral theories. This review briefly defined these avenues of research, but looks more deeply at them here.

First, the life cycle hypothesis can help understand saving. Modigliani and Brumberg (1954) argued that over lifetimes, individuals' incomes vary. In addition, over lifetimes individuals save and consume with different goals in mind. When young, an individual typically has large consumption obligations for housing, education, and childcare. As an individual ages, these obligations diminish, altering consumption and allowing more saving at the same time that the individual enters a period of peak income. The individual also faces

retirement and the prospect of not working and a smaller income. Therefore, savings not only may rise but must rise in the peak earnings years. In retirement, the individual lives off the income from government benefits and savings, increasing consumption.

Three instances may affect the consumption–saving tradeoff over a person’s life. First, a person may have a strong desire to bequeath income. The desire may come from any number of motives including altruism or selfishness toward individual heirs, patrimony as an cherished value, estate size maximization, and the agreement within a family about gifts from one generation to another (Bernheim et al., 2001; Kotlikoff, 1979, 1988). Saving may also relate to interest rates (Bernheim, 1997; Gale, 1997; Boskin, 1978). Individuals may save, in the life cycle sense, because they are uncertain about either future government benefits or the nature of insurance contracts they may own, or simply because of their precautionary reaction to life expectancy (Engen and Gale, 1996).

Bounded rationality and self-control have entered the conceptual debate over the life cycle hypothesis and the saving–consumption tradeoff more generally (Bernheim, 2002; 1997). Without large amounts of information or the intellectual wherewithal to analyze them, an individual seeks heuristic aids, especially about how much to save. Among these aids are repetition of behavior for learning’s sake, imitation of peers, and advice of sophisticated professionals. Bernheim (2002: 1201) dismissed each of these possibilities. He argued that it is easy for very few people to retire more than once (repetition and learning). Vicarious observation is “incomplete or of questionable relevance,” given the difference between 30-year-olds without knowledge and 90-year-olds with it. And most people have difficulty evaluating the quality of advice even if sophisticated advisors use more than rules of thumb themselves.

Self-control intrigues Bernheim and others (2002: 1202; Thaler and Shefrin, 1981). If people are both savers and consumers over their lives, a “farsighted, patient ‘planner’ and a shortsighted, impatient ‘doer,’” the person seeks an efficient bargain between the two selves. The bargain is one over

deferred gratification or self-control. Willingness to defer declines as the period promising self-gratification nears (Laibson, 1998). The individual constantly bargains mentally over self-control, reaching different states of satisfaction at different points in life.

Business saving is an important aspect of the entire savings phenomenon. Business firms must build new and maintain the existing capital stock — buildings and machinery — through capital investment. With savings that come from depreciation, retained earnings, and unpaid dividends, the firm may be able to finance large amounts of capital stock. Taxes on business income directly threaten savings, although taxes may be shifted to workers in the form of lower wages, to shareholders in the form of lower capital gains and dividends, and to customers in the form of higher prices. Firms might not be able to shift taxes. In fact, in highly competitive industries, the taxes on business profits may not shift at all. In the latter case, the reduction in profits by the amount of taxes also reduces the firm's savings (Musgrave and Musgrave, 1989: 305–306).

Government saving comes in the form of surpluses. Government surpluses, as a form of saving, can increase the total resources available for private capital formation, reduce current consumption, or increase current consumption through public capital formation. The alternative outcomes are unpredictable and require analysis (Musgrave and Musgrave, 1989: 534–537). Whether eliminating debt quickly or slowly with surpluses helps the economy is an open question.

Modern observers of government policy makers and their behavior tend to view surpluses as a constituency-building resource (Buchanan, 1970: 312–317, 113–116). Many take a demand-side view and advocate fulfilling unmet socioeconomic needs through expanded government spending. Others take surpluses to be a supply-side resource useful to reduce tax distortions and provide incentives for provision of goods and services outside the public sector. On the demand side, surpluses allow for greater consumption, employment, and investment through transfers, grants, subsidies, credit, and insurance. On the supply side, surpluses create the opportunity

to cut tax rates and rebate prior tax payments. In either case, the government surplus falls, and, in theory at least, individual and business firm savings increase.

13.3.4 INVESTMENT

Investment takes place because of capital available at low cost, making the expected rate of return on the capital higher. Investment is a function of the supply of savings from individuals, households, firms, and governments. Taxes on saving might reduce the pool of capital available by forcing a tradeoff between saving and consumption among individuals and households. Taxes may help reduce business saving directly through less favorable policies for retained earnings, unpaid dividends, or depreciation, and a firm's pool of internal capital available for investment without borrowing. Business saving may fall when the supply of savings from individuals and governments falls, forcing interest rates to rise.

However, the interrelationships among individual, household, firm, and government savings on the one hand and taxes on the other are complex. Many have shown that declines in any one savings sector tend to be offset by increases in another. Should governments run deficits, firms tend to increase savings.

Following Stiglitz (2000), when an economy is closed to outside investment, savings equal investment. Should savings increase, investment increases. Should savings decline because of a tax on savings returns, investment will decline as well. The tax on savings returns, however, can increase government revenue, reducing a government deficit or actually creating a surplus. The government saving will offset the decline in other savings and the decline in investment.

Should a wage or consumption tax replace a tax on savings, total savings and investment might increase. According to Stiglitz (2000: 503), wage taxes and consumption taxes are made equivalent through tax policies. In the wage tax case, tax policy calls for levying a tax on all wage income, exempting all interest, dividend, and other returns on capital. In a consumption tax case, policy levies a tax on total individual

income less total savings. A reduction in either wages or consumption through a tax does not alter the budget preferences of the individual. The savings side of the tradeoff against consumption grows stronger, and the government gains increased revenue, creating government savings.

Opening the economy to outside investment alters the domestic savings part of the theory. Since increasing amounts of investment capital come to the United States from abroad, Stiglitz argues, the supply of foreign investment has become inelastic, influenced little by the level of interest rates or the returns found more generally (2000: 587). If so, the supply of foreign investment acts to reduce domestic savings, increase taxes, or increase government deficits. The dynamics among foreign investment, domestic savings, taxes, and government savings may be very different, depending on the assumptions about the motives of private investors.

The role of taxes in distorting the picture has powerful adherents and opponents, as does the role of tax policies in providing incentives to savers (Bernheim, 2002: 1182–1195; Bernheim, 1997). One of the longstanding opponents of the argument that tax policy distorts savings decisions, Okun (1975: 99–100), argued

Most fundamentally, the concern about the distortion of [investment] incentives through taxation implies that, with a properly “neutral” tax system, the marketplace would grind out an optimal level of ... investment. But that is a fantasy. Collective decision making – not the marketplace – controls the whole area of public capital formation for such diverse facilities as dams, post offices, highways, and hospitals. Moreover, investment in human capital is determined largely by public budgets for education. [While the] market rules investment decisions on private physical capital, ... the conditions for optimality do not prevail. The market result can be optimal only if everyone faces the same interest rate, and hence can use the same scale to balance the productivity of extra investment against his time preferences for consuming more now rather than saving for later ... that neat balance is a grand illusion when some [people] face 8 percent interest rates, others pay 36 percent, and still others cannot

borrow at any price. So long as such disparities persist, there is no way to find the right national target for saving and investment in the marketplace. Decisions on how much the current generation should curb its consumption in order to bequeath more capital to future generations belong on the agenda of collective choice as clearly as does national defense policy. The only hope for the proper participation of lower-income groups in such decisions lies in voting by ballots rather than by dollars.

The area of business investment reaction to fiscal policy remains a research area, as hotly debated on the normative analysis side as it is murky on the positive analysis side.

13.3.5 PORTFOLIO CHOICE

Portfolio choice involves the amount of risk an investor may be willing to take. In concrete terms, fiscal policies provide incentives aimed toward encouraging and dampening investment risks both generally and in the choices of specific assets. This review covers the general risk taking/risk aversion balance fiscal policies may encourage. Recent research reported by Poterba (2004) outlines fiscal policies and their effects on the rate of return households earn on different and specific assets. The principles of economics and psychology have provided the basic tenets of portfolio choice. In the economic vein, an investor will prefer the greatest return for a given level of risk, the return a function of the probability of the return. In the psychology or behavioral economics vein (Rabin, 1998), portfolio choice may depend on a much more complex set of considerations. Four major factors affect portfolio choice and risk taking. First, individuals and business managers act in terms of how the risks and returns are framed, as large risks relative to small returns, large risks and large returns, or small risks and large returns (Tversky and Kahneman, 1981). Investors carefully select and use representative risk estimates; that is, they generalize a small amount of experience to a large class of events. Third, initial estimates of the probability of an outcome have an anchoring effect. That initial estimates will define for an individual a psychological range

into which subsequent estimates will fall, even though they may differ radically from statistical estimates of actual experience (Tversky and Kahneman, 1974). Finally, individuals and managers act when past or vicariously experienced failure or success comes to mind easily (Tversky and Kahneman, 1974).

For economic efficiency, portfolios have more importance than do saving and investment, the total amount available. Sandmo, advocating the importance of portfolio composition, related the important effects fiscal policies may have (1985: 293–294). He stated that

[T]he tax effects on the total volume of saving are less important than their effects on the composition of saving. The classic argument for a systematic effect of taxation on portfolio choice runs in terms of risk-taking behavior. The popular view has traditionally been that the taxation of income from assets discriminates against risk taking through its lowering of the expected rates of return.

Since high risk and high return are related, lower returns reduce the willingness to undertake projects with high risks.

Many intuitively agree with fiscal policy's reach in dampening risk taking. Subsidies, tax incentives, insurance, insurance guarantees, and regulation appear to work against risk taking. Yet, fiscal policy has a risk-taking incentive, a risk-sharing dimension. Sandmo has credited Domar and Musgrave (1944) with the government risk sharing view. Fiscal policy serves to reduce both risk and return such that they offset each other. Sandmo pointed out that (1985: 294)

[P]erfect loss offset provisions [give] the government ... the same share of a possible loss as it takes in a gain. If individuals ascribed a sufficiently large weight to the loss sharing property of the tax, the direction of the tax discrimination could possibly go in the opposite direction.

Perhaps the loss-sharing provisions of fiscal policies would appear to be political control of the economy, government policy makers' choices of winners and losers among technologies, and an antiinnovation and change proviso for social transformation.

A modern variant of the risk-sharing argument comes from Mossin (1968) and Stiglitz (1969). The portfolio composition individuals prefer comes from their preferences for risk. A risky asset and a less risky asset, taxed at the same rate, will result in the investor preferring the riskier asset, if risk and return do vary directly. If the risky asset carries a government subsidy, the return will exceed what existed without the subsidy and will make the risky asset irresistible as a part of a portfolio.

13.3.6 RISK TAKING

The availability of capital affects risk taking as well. Higher business profits create an alternative source of capital. This source of capital, with relatively lower tax rates applied, yields a pool of available capital with a relatively lower imputed interest cost than credit. Such lower imputed interest makes more risky investments worthwhile.

The tax on business profits creates a tradeoff. Firms may borrow some or all of the funds needed for capital projects, or the business may pay for its capital projects wholly or in part out of profits. The basic tradeoff requires a firm's managers to balance risk and return. The capital projects financed out of the business's own profits may have a risk level and rate of return equal to the bank financing. Should a tax incentive be added to subsidize bank financing, the return on the capital project increases.

The risk-taking incentive can appear an even simpler decision. Stiglitz presents the case (2000: 589–590) that

[A tax] might increase risk taking Assume that an individual has to decide between two assets: a safe asset yielding no return, and a risky asset that has a 50 percent chance of yielding a very large return and a 50 percent chance of yielding a negative return. The average return is positive, to compensate the individual for risk taking. The individual is conservative and so allocates a fraction of his wealth to the safe asset and the remainder to the risky asset. We now impose a tax on the return to capital, but we allow a full deduction against income for losses.

The safe asset is unaffected. The risky asset has its return reduced by half, but the losses are also reduced by half. How does the individual respond to this? If he doubles the amount he previously invested in the risky asset, his after-tax income when the return is positive is the same, and his after-tax income when the return is negative is the same. The tax has left him completely unaffected.

Again, as Domor and Musgrave point out (1944), the government shares the risks with the individual and acts as a silent partner. Perhaps, as Stiglitz argues (1969), in sharing the risk, the individual resists the framing, representative risk, anchoring, and memory effects of the typical, less-than-rational individual portrayed by Tversky and Kahneman (1974, 1981) and becomes much more willing to increase his or her risk taking (Rabin, 2000). However, if the fiscal policy favors one form of investment, such as municipal bonds over equities, the government policy makers substitute their judgment about risk taking for the investor's judgment. If the tax favors one investment, such as oil royalties or oil depletion allowances, over another, the policy makers may face criticism of cronyism. If the tax favors no form of investment or project for investment, the policy makers may still face criticism for indulging so many harebrained schemes or schemers.

13.3.7 INNOVATION AND PRODUCTIVITY

Since British Prime Minister Margaret Thatcher's experiments with lump sum taxation in the last decade of the 20th century (described above), strong editorials and much argument have regretted the end of a just era in fiscal policy making. After the Prime Minister's poll tax experiment began, major "right turns" in developed countries' tax policies seemed to occur. Stroking the rich became a dominant theme in fiscal policy debate. Tax rates fell. The object of taxation became consumption. The number, type, and amount of unconventional fiscal policy tools increased. Together corporate welfare, tax injustice, and the end of the welfare state illustrated how far economic efficiency had gained influence as a fiscal policy goal at the expense of social equity.

The latest research confounds these views. It suggests that second- and third-best taxes do little, and little harm, as long as their designers also reduce distortions. Such a claim is made for consumption taxes, as Table 13.6 and Table 13.7 suggested. Surveys of countries belonging to the Organization for Economic Cooperation and Development (OECD) (Swank and Steinmo, 2002; Heady and van den Noord, 2001) and the European Union (Joumard, 2001) reveal a strong trend toward taxes that are second best but have broader bases and flatter rates. These countries are called high economic growth countries (Lindert, 2004). They are also called countries with low administrative and incentive costs (Bassanini, Scarpetta and Hemmings, 2001). In either the administrative or incentive cost senses, “cost” signifies government policing, means-testing, or regulating, whether of the poor, those with pensions, or business firms. Social spending has not decreased but instead has become more universal, making “people’s basic guarantees [health, retirement, education, work, income] independent of their specific life choices” (Lindert, 2004: 302), those subject to government policing. These economies have grown, innovated, and become more productive, Lindert argues. Advances in technology, the force behind innovation and productivity, require investment in education and training, generally at government expense, Musgrave and Musgrave argued (1989: 311). Large investments in public infrastructure may have substantial positive effects on productivity, especially in the case of highway spending, where private sector inventory and logistics costs fall as a result (Shirley and Winston, 2004; Postrel, 2004). Therefore, good reasons exist to believe that high-growth, highly productive economies thrive on universalist fiscal policies. These policies are more uniform, less costly to administer, fairer, and more transparent (Lindert, 2004: 302). These policies do not reduce or enlarge the size of the public sector but extend its reach without distorting individual choices.

13.4 SUMMARY AND DISCUSSION

This literature review on fiscal policies’ impacts questioned whether intentions shape consequences. The review probed

the possibility that intentions and consequences may closely relate. The study also considered the alternative that policy intentions may be largely frustrated by normative compromises, competing institutions, contradictory policies, distorted policy designs, vaguely understood policy tools, poor execution, and unintended effects.

A somewhat different answer appeared through the examination. Intentions, first of all, encompass processes as well as impacts. Government economic functions can provide frames of reference that leaders use in fiscal policy making to influence what domestic and foreign citizens, business firms, and governments do. The frame of reference may be one dictating action to ensure economic growth, productivity, or innovation. However, the frame of reference may also be limiting government action and enabling action from individuals and organizations outside government. The latter frame emphasizes process or capacity building. Capacity to strengthen allocation, distribution, and stabilization efforts may be built through tax incentives including abatements, deductions, credits, refundable credits, and rebates. Fiscal policies can be implemented through direct government spending on government, whether on government agency operations, on the output of nonprofit or for-profit production of goods and services, on the purchase of products such as crops from farmers in order to maintain price levels, or on the direct transfer or payment of money to individuals. Fiscal policies also encompass grants in aid, loan guarantees, insurance, and debt. Intentions have led to the invention and more sophisticated use of numerous policy tools and designs.

If intentions shape consequences, the argument might lead to the discovery of what combination of function, policy, and policy tool has what impact on private consumption, saving, and investment. However, the attribution of control and choice to the policy maker should observe limits, the review suggests. These limits include the factors that have shaped fiscal institutions and policy tools and range widely to include historical, political, and social factors. The policy maker participates in fiscal institutions that have a definite shape due to past decisions large and small, the historical preferences

of those who will bear burdens and gain benefits, the balance of forces that exist at a given time, and the values developed within the institutions themselves. The policy maker never has complete control or limitless choice. The survey revealed that intentions may never emerge as a result of free individual choice. Policy makers may shape but cannot fully control either the tools used or the consequences of fiscal policy, policy designs, or policy tools.

In this research review, the allocation, distribution, and stabilization functions of government have appeared in their present guises. As discussed here, distribution has become a matter of the justice of net taxes or spending when all shifts take place. Allocation has favored sharper distinctions between public and other goods with government provision becoming simply another, alternative way of making sure goods and services provided meet demand. Stabilization has settled into a minor function of fiscal policy, giving way to monetary policy.

The impacts these functional policies appear to have is much more benign than once thought. Specific impacts made by tax policies and their execution, through both conventional and unconventional fiscal tools, have fewer distortions than at first thought. Aggregate saving has not changed for almost a century; therefore fiscal policies, which have changed, seem to have at most a small negative impact on the savings rate. In any case, savings among individuals, business firms, and government have a compensating character; as one falls, one of the others rises. Investment policies, research suggests, have the least impact when they exist within an open economy. Foreign investment, whatever its incentive, overruns the impact of incentives for domestic investment. Finally, portfolio choices and risk-taking behavior react favorably to fiscal policies that allow risk sharing among entrepreneurs, investors, governments, and the taxpayers generally. Innovation and productivity do relate to stable, broad-based, and flat, rather than decreasing levels of taxes and spending.

Fiscal policies can have a benign effect. In the long run, fiscal policy extremes offset each other. Relatively big government budgets, stable fiscal policies, and policy reach without distortions have a positive and salutary effect on the economy.

The political economy of OECD member fiscal policies suggests variations that have tightened around the roughly equal weight given efficiency, growth, and fairness.

There are numerous policy tools and policy designs that policy leaders aim at problems. Policy leaders aim to intervene rather than remain neutral in economic affairs. Policy leaders respond to demands for capital accumulation, satisfaction of “wants” and needs, and adequate revenue, “reach,” or influence to improve economic performance. Yet, in the United States, the need for these fiscal policies vies with traditional doubt, suspicion, or cynicism for government institutions, policies, policy designs, and policy tools.

The earliest debates over the United States Constitution reveal both a need for government and a deeply embedded distrust of government action. James Madison in the *Federalist Papers*, No. 51 wrote (Hamilton et al., 1978, p. 264):

In framing a government which is to be administered by men over men, the great difficulty lies in this: you must first enable the government to control the governed; and in the next place oblige it to control itself.

The balancing of need and distrust can explain American politics. According to Wildavsky, “[T]hose who made the American Revolution concluded from experience in Britain and the colonies that a free people had to keep its governors on a tight fiscal leash. From the earliest days of American government, [fiscal] decisions were treated as a struggle for power” (Wildavsky and Caiden, 2004: 25). One of the major controls over government was fiscal control, the control over the power to tax, to spend, to grant loans, to guarantee loans, to insure, and to finance regulation.

The *Federalist* perspective resonates in more modern times. The *Federalist Papers* provide the first interpretive dimension to budgets and fiscal policies. Policies represent both the government’s ability to control the governed and its responsibility to control itself.

Unsurprisingly, some ideologues view control of the governed as a control at odds with liberty. The means of control, whether through taxes, conventional spending, regulation,

credit, or insurance, whether control of the governed may come with good intentions, or whether control of the governed may take place on behalf of any one group against all others or not, violates the independence and need for self-reliance of individuals and organizations. Government control represents the naked meddling by those in power in the affairs and decisions of those they represent, ultimately permitting those in power to control for control's sake. Therefore, some policy makers and their followers, who view government power with distaste, call for limits on the use of that power, one of these limits being "budget control."

At the same time, other government leaders sidestep traditional budget controls to solve problems and resort to different nonconventional spending tools, such as tax expenditures, credit, insurance, loans, and guarantees. What happens, as a result, is a "gradual shifting of programs and resources into less visible or accountable alternatives" (Heen, 2000: 762). These alternatives are usually parties outside government. They execute government policy, sometimes dutifully, most of the time without the constitutional limits or oversight institutions existing when government agencies implement policies. The use of unconventional policy tools, however, is growing faster, some say, than government leaders can control it, faster than efforts can be made to control government.

This distinction between government efforts through the budget to control government and government efforts through nonconventional means to control the governed has provoked wide comment and two observers have provided insights. First, Wildavsky (1986: 350) has observed that

The more government tries to affect citizen behavior, it appears, the less able it is to keep its own house in order. This new relationship between government and citizen may have many advantages, but control over spending is not one of them.

Schick (1981: 349–350) is more forceful about the problem than Wildavsky is. He detects in the growth of off-budget expenditure a "paradox of control." That is

Off-budget expenditures have resulted from the transformation of the public sector from one in which spending was done within the government to one in which spending largely occurs outside government. Not the least of the reasons for this transformation has been the striving of government to strengthen its control of the economy, the distribution of income, investment policy, and the supply of goods and services. The paradox is that in its effort to extend its control over the private sector, the government has surrendered a good deal of its control over the public sector.

Therefore, reforms have attempted to bring nonconventional expenditures within the scope of the budgetary process (Schick, 1986) in order to increase government accountability.

Finding an appropriate role for government and restraining government power through analysis, progressive economists view nonconventional fiscal policy tools as just another form of intervention in society. Therefore, tax incentives, credit and insurance incentives, regulatory sanctions, and state and local government mandates are different values on the same dimension. These policy tools generally either induce or sanction. At bottom, there is no difference between inducement and sanction; both are means of influencing behavior by individuals, households, firms, and other governments.

Nonconventional spending, therefore, is a variation of intervention. Consider government intervention as the following development of the policy tools approach (Vedung, 1998: 22–25; Anderson, 1977). See Figure 13.1.

This “tools” school of public policy analysis asks the question: “When we face a public problem, what do we do about it?” The answer is often: we leave it to the individual, the family, or household to decide. Sometimes the community, we think, should decide issues of import. Finally, some problems are matters “the market” should decide without government interference.

Where belief in government intervention exists, policy tends to be a matter of creating inducements and specifying sanctions or something in between. Sometimes an indirect

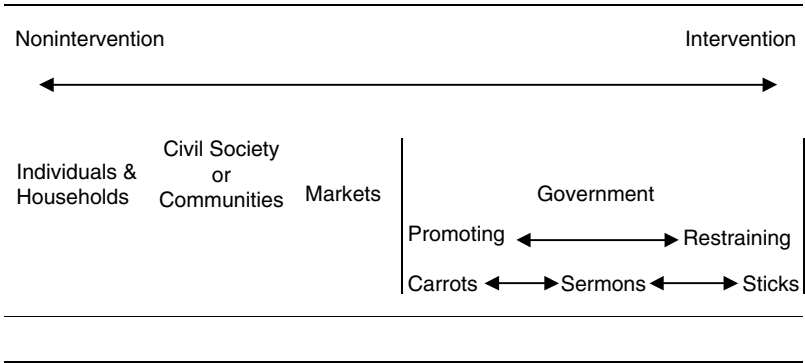


Figure 13.1 Intervention in the economy by various means and degrees. *Source:* Adapted from Vedung, E. (1998). In M.-L. Bemelmans-Videc, R.C. Rist, and E. Vedung (Eds.), *Carrots, Sticks and Sermons: Policy Instruments and Their Evaluation* (pp. 21–58). New Brunswick, NJ: Transaction Publishers, p. 26. Copyright © 1998 by Transaction Publishers. Reprinted by permission of the publisher.

approach is taken, with education, moral suasion, the bully pulpit, propaganda, or other “sermon”-like approaches.

At other times, the conventional and nonconventional expenditure of effort — policy tools — represents the government end of the spectrum in the diagram above. What is more important than the distinction between government’s direct and indirect efforts is that the budget can prioritize, allocate, economize, or control and otherwise “fit” the appropriate policy tool to the problem at hand. Control is exerted by forcing choices to be made among competing means for achieving some identifiable and sought-after end, maximizing the impact of government intervention.

Government intervention is not government neutrality, however, and the intentions–consequences connection does exist. Intentions and consequences may relate to two budget metaphors, Leviathan and Progress, and in relating, clarify the size and role of government in the economy. As Progress, the budget serves as a collection of conventional and unconventional tools with which government intervenes in society, inducing, educating, or sanctioning behavior. Budget control

is a means of selecting the most appropriate tool for intervention. The budget process aims through a form of logical positivism, open, informed, and representative, to gain progressive results.

As Leviathan, through the more rationing, control-of-government arguments, a much different comprehension of a budget exists. The dim view holds a different political and economic theory, limiting government's size and role in society. Deadweight losses, unbalanced incentives, unfair penalties, heavy-handed efforts, ham-fisted action, and squandered wealth describe Leviathan's fiscal policies. The unreformed budget decision chain progresses through expedient means to produce destructive results.

Both budget control metaphors, though, lead to a clear mandate to budget and thereby control. This traditional view in budgeting is also a matter of belief: Budget control usually means that someone somewhere can know what is being done, that he or she can know how much is being done with what effect, that he or she has good intentions, and that good intentions lead to positive consequences. Budget control also means that someone should limit and direct what is being done, at least to the extent of what a large, popular consensus demands, in the political economy through government or government sponsorship.

The issue of budget control is also a matter of research, as this review has revealed. What fiscal institutions — structures, procedures, laws, and organizations — do what with what result? The research cited and described here has provided many ways to define and measure institutions and results. Broadening the scope of budgeting and fiscal policy making beyond institutions to include norms, policy designs, and policy tools, and then to policy incidence, endurance, and impacts, has merit in understanding intentions and consequences.

The remaining question deals directly with intentions. Policy makers intend certain consequences. The very narrow range of fiscal policies reviewed here reveals that intentions bottom on work, thrift, business opportunity, sound economic growth, fairness, and the wealth to be able to satisfy both

needs and wants. Among all the intentions policy makers could have, why these?

In another, similar context, the question “why these intentions” takes a political form. Key (1940: 1138) roots a political theory of budgeting in the answer to the question, “On what basis shall it be decided to allocate x dollars to activity A instead of activity B?” He finds political philosophy to be the most likely place for the answer. His reliance on beliefs and faith in democratic processes and republican governance leave him with little doubt in letting allocation follow the dictates of representatives freely elected. He has no difficulty with the normative route to theory. However, this review assumes that government leaders have given Key’s allocation question in large part to nongovernmental institutions. Moreover, political philosophy may do little to reveal intentions.

The answer to the question “why these intentions” may come from moral philosophy. Consider the following case in which Miller (1976: 28) illustrates the differences among three criteria for what he calls justifiable distributions of benefits and burdens. The case was one in which a homeowner engaged two small boys to clean windows, promising them 1 pound (£1) each for doing the job. After the task was finished, each of the boys had a right to 1 pound each, Miller argues. Yet, knowing that one boy did a much better job quicker than the other boy, one would recognize that the boy doing the better job deserved more and the other less than 1 pound. Knowing even more, that one boy came from a well-to-do home with pocket money to spare and the other from a poverty-stricken home, one would also recognize that one boy needed more than 1 pound and the rich boy less than 1 pound.

What choice should the employer make, asks Miller, to avoid endorsing only one of three moral principles or to avoid appearing arbitrary in the selection of a mere “preference” for interpreting justice? Miller argues that the choice may be justified in terms of the view of society with which each interpretation is linked, however obvious such an interpretation may be to the employer.

Three views dominate thinking. First, some readers of the case could have a “rights” view. A view based on the existing order, “rights” refers to contracts: the boys should get what the contract called for. More broadly, political leaders should accede to rights of citizenship such as voting, getting what the government promised, ability to own and transfer property, and mobility, for example, in fiscal policy making.

Second, Miller presents a “deserts” view. Such a view is based in measures of merit, in utilitarianism, based on rewarding some attribute of human effort. In the window washing job, one of the boys could claim, “I worked harder, I deserve higher pay,” and he could provide the employer with a justification for a view other than contract. Similar cases may arise in fiscal policymaking where merit and performance of the economy become synonyms for economic efficiency as a basis for fiscal policy designs.

Third, the case study may reveal the highest moral ground in “needs.” The employer may decide that the neediest window cleaner may deserve the greater share of the pay. Needs-based allocations relate to the necessity of remedying a deficiency or supplying a basic requirement for survival or prosperity. Need may refer to the imperative to provide justice according to the moral order. The moral order may require decency and responsibility. The order demands that everyone be able to realize a good life whatever his or her condition. The neediest may have the view, “I am not responsible for what happened to me; the entire community is responsible or at least should help.” In fiscal policymaking, redistribution from rich to poor or from one section of a nation to another illustrates the dominance of the needs view.

Seldom do fiscal policy choices appear as clear moral imperatives as the employer dilemma illustrates. Rights and deserts can form a potent combination. One boy could say, “I must have the pay to survive; if I don’t get paid, moreover, I’ll never be able to get the training to get a job to allow me to stand on my own, to show merit and self-reliance.” Rights often derive from needs. The moral rights based on the

decency the community shows toward everyone, making sure that everyone has basic food and water, decent housing, reasonable access to health care, and a full education, often come from the paucity of socioeconomic system distribution. Finally, deserts and even rights may originate in a definition of the community or government as insurer of last resort. Rights or deserts can relate to government provision of protection or help in events for which the individual has no responsibility, such as disasters; inherited or innate characteristics such as physical disabilities, gender, and race; or comparative disadvantage due to endowment, bequest, inheritance, or birth on the other hand.

What are the consequences or reactions of citizens, taxpayers, and leaders of organizations and institutions to fiscal policies? From an efficiency standpoint, a government spending program may alter choices among goods (Stiglitz, 2000: 254–258). Should a program subsidize the price of one good rather than all goods, an individual will certainly choose the cheaper good (i.e., the subsidized good) rather than any unsubsidized one. The subsidy alters choices. The subsidy may come in the form of crop supports for farmers, making domestic farm goods the choice over imported farm goods. The program consequently transforms production of domestic farm goods. In contrast, the spending program may provide an income transfer from the treasury to an individual. The program may not change the prices of competing goods, but the increased income may lead the individual to react with a change in consumption. The individual may prefer imported French butter or Italian pasta to domestic varieties. The subsidized prices, the transformation of farm production, and the increased income of the consumer may have a beneficial effect with a larger food supply and lower prices, or leaders may view the entire government allocation decision as inefficient. That is, either the farm goods producers or importers may raise their prices, and no increase in farm production may take place, canceling out any beneficial effects as food consumers pay the entire transfer payment to farm good producers.

In both the beneficent and inefficient prediction of the consequences of allocation decisions, the distribution of benefits may have dominated policy maker thinking about fiscal policy. The subsidy for food prices may be aimed at consumers, and the income transfer may have targeted people who cannot afford to sustain themselves nutritionally. However, the pessimistic, inefficient distribution may appear as food exporters, rather than farmers, pocket the entire amount of the crop subsidy and the income transfer (Chapin and Williams-Derry, 2002; Egan, 2000; Browne et al., 1992).

The allocation and distribution consequences point to the reactions to fiscal policies by a broad group of individuals. In allocation, efficiency dominates norms. Policy makers desire Pareto-optimal outcomes and prefer the use of cost-benefit analysis with or without contingent valuation, a Lindahl or any other preference revelation technique (Lindahl, 1958; Ciriacy-Wantrup, 1947, 1955; Cummings et al., 1986; Samuelson, 1937). However, even Lindahl (1958) assumed agreement on the composition of public services, the willingness to tell the truth, and, related to truthfulness, the even distribution of political power. With the distribution of political power, normative fiscal policy confronts the distribution of the burdens and gains from economic power. The allocation decision takes place simultaneously with the distribution decision over the long term. In fact, the changing support of those who have power for the just treatment of those who do not determines political power, and “views about what is just in [fiscal policy] determine its actual shaping” (Lindahl, 1958: 176).

On the other hand, some normative economists do not agree that acceptance of economic and political entitlements or rights under a given property order comes before the efficient allocation of social goods, however generous or yielding the entitled may be (Okun, 1975). Rather, the policy analyst, an “omniscient budget planner,” must determine the allocation and distribution aspects of budget policy simultaneously in a general equilibrium system (Musgrave and Musgrave, 1989: 71). Reality confronts this policy analyst with a persuasive

need to get along socially, producing a frame of mind that favors giving the political process credit for revealing preferences for social goods but only within the context of whatever distribution of economic and political entitlements or rights exists (Traub, 1999; Miller, 1991; Musgrave and Musgrave, 1989; Kahneman and Tversky, 1979; Goffman, 1974; O'Connor, 1973). Allocation and distribution decisions, intentions, and consequences occur simultaneously, but they occur in their own practical way, reflecting some comprehension of the consequences a balance between efficiency and justice might have.

Intentions and consequences have the same coincidence as general equilibrium analysis suggests. Only basic norms guide action, as frames of reference, not as the complete control some suggest policy makers might or must have to make fiscal policies work. The dominance of certain norms can change as the revelation of the consequences of old norm combinations demand. Openness to change may yield budget control and give comfort to people who have needs to be met, as well as those who demand privacy and control over their own welfare, and those who view governmental institutions with a mixture of necessity and wariness.

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Taxation and Consumer Behavior

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14.1 INTRODUCTION

The public sector depends on taxes as a source of funding to purchase services that affect all citizens. However, when governments raise taxes, people alter their behaviors and make decisions they would not make otherwise. This suggests that when the behavior of private citizens is affected by a tax, the allocation of resources changes. Some of us are better off, and some are worse off. In other words, because taxes raise the prices buyers pay, providing incentives to consume less, and lower the prices sellers receive, providing incentives to produce less, the size of the market shrinks below its optimum (the size that maximizes total surplus) in the sense that revenues raised by government taxation may be less than the

distorting market outcomes.* Therefore, because taxation has a significant influence on the economy and the welfare of its members, the decisions made by market participants as a result of tax policies has emerged as a significant topic in public sector economics.

Consider, for example, the following responses to taxation. First, individuals have several choices under state/local sales tax to reduce their tax liabilities. They may decide to (1) change their spending patterns toward favorably taxed items, (2) make purchases and pay sales tax in low-tax jurisdictions, (3) choose to live in a low-tax region, and/or (4) self-provide otherwise sales-taxable goods and services (Murray, 1997). Consider also the impact on consumer behavior of imposing taxes on Internet sales. On one hand, Bruce and Fox (2001) and The Center for Business and Economic Research report that the potential narrowing of the sales tax base caused by the lack of tax collection through online shopping venues is significant compared to the loss in revenues from consumers taking their business elsewhere. They estimate that the cost from e-commerce revenues that are not subject to sales tax collections will grow from \$7 billion in 2001 to \$24.2 billion in 2006 and \$29.2 billion in 2011. On the other hand, works by Goolsbee and Zittrain (1999) and Goolsbee (2000a), although supporting the idea that taxes will have significant effects on the Internet purchasing behavior of individuals, suggest that the costs of not enforcing taxes are modest, and there is little tax revenue to be gained from enforcing taxes on Internet sales. Further, as business activity on the Internet increases, Goolsbee estimates that one in four individuals, or 24% of the number of online buyers, would stop buying on the Web if sales were taxed similarly to those in conventional "brick and mortar" retail settings.

Therefore, to better understand the impact of taxation on market behaviors necessarily takes into account how taxes influence the prices consumers pay, the quantities consumers

* For a further discussion on incentives and optimality taxation see Frank (2000).

demand, and the resulting tax revenues raised. Also essential are other margins of behavioral responses to taxation independent of the consumption basket, broadly defined as tax avoidance (Slemrod and Yitzhaki, 2002; Slemrod, 2001). As such, consumer choice in the context of public economics, or how individuals, families, and households adjust their behaviors in response to taxation, encompasses a vast number of decisions. These decisions are embedded in all aspects of our everyday lives — the choice between work and leisure, deferred versus immediate compensation, how much to save and consume, the amount of charitable contributions to be made, the decision to purchase or rent a home, marital status, retirement age, and even choosing a shopping mall based on a jurisdiction's sales tax rate. Changes in tax policies also affect decisions to participate in the labor force, choice of occupation, tax avoidance schemes, and degree of tax evasion activities through, for example, participation in the formal or informal sector of the economy.

It has also been suggested that these decisions are the results of the intended and oftentimes unintended consequences of our present day tax policy (Aaron and Pechman, 1981). One such unintended consequence, for instance, is when the outcome of a tax is in a direction opposite of the intention of legislation. For example, a tax on interest may reduce the supply of savings and, eventually the stock of capital, which in turn may reduce the productivity of workers and their wages. Consider also the effect of tax rate changes on labor supply. Although empirical evidence suggests that the aggregate (compensated) labor supply elasticity is quite small, Slemrod and Kopczuk (2002) point out that there are other margins of responses to higher marginal tax rates than just increasing leisure.

When personal tax rates on ordinary income rise, evasion may increase, businesses may shift to corporate form, there may be a rise in the consumption of deductible activities such as charitable giving, and individuals may rearrange their portfolios and compensation packages to receive more income as tax-preferred capital gains (pg. 92).

When behaviors to avoid taxes are also included, it has been documented that the unintended impact of tax policies on revenue and welfare costs may be even greater than otherwise expected (Slemrod and Yitzhaki, 2002; Alm, 1999; Feldstein, 1999). To illustrate, while a tax on cigarettes provides much needed revenues and reduces smoking and related health costs, at the same time higher levies may encourage more smokers to evade taxes by buying cigarettes via unregulated channels such as the Internet and bootlegged and cross-border sales.*

When revenue is lost by government through avoidance activities, such as renaming a consumer loan as a home equity loan and other “legal” efforts to reduce the tax burden, it follows that the revenue lost must be replaced by increases in other tax rates, loss of public services, or both. Furthermore, although government attempts to lessen these activities might result in a more complex and burdensome tax code, scaling back these efforts produces additional and more creative avoidance efforts, which in turn, make the tax system less fair and less efficient (Slemrod and Bakija, 2000).

The purpose of this chapter is to discuss the impact of taxation on market behaviors, including how the imposition of taxes influences consumer demand in general, and tax avoidance behavior, in particular. Also, since public sector economics is based on the concepts of economic efficiency, economic inefficiency, and distributional welfare, these are added as fundamental considerations. Section 14.2 presents a background discussion of the household decision process and market behaviors. Section 14.3 examines some of the important issues regarding the impact of taxation on efficiency and equity, within a consumption framework. In Section 14.4 a selected review of the literature is presented, including some of the major economic challenges faced by researchers in estimating the effect of taxation on consumer behaviors. Section 14.5 expands how consumers adjust their

* For an interesting discussion of the cigarette tax and externalities see Viscusi (1995).

behaviors to taxation to include tax avoidance schemes. Section 14.6 concludes.

14.2 BACKGROUND

14.2.1 The Household Decision Process

According to traditional microeconomic theory, household behavior is understood as the theory of consumer demand for commodities (i.e., household consumption for goods and services), which attempts to derive some logical propositions about the way households behave in response to changes in budget constraints (Case, 1986). This extends to other aspects of behavior including supply of labor, savings decisions, retirement decisions, and more. Also consistent with the theory of consumer demand, demand functions assume a model of rational choice based on utility maximization subject to underlying economic and budgetary constraints, such as income, commodity prices, and the accumulated wealth of the household. These define the set of choices that are available to a household, referred to as the opportunity set, the size of which is determined by the household's budget constraint. Since tax policy affects the opportunity sets facing households to some extent, it is impossible for an individual to pay a higher tax bill without reducing consumption, increasing income, reducing savings, increasing borrowing, or some other behavioral response. The implications of these decisions determine the ultimate effect of taxation. Further, since taxes affect both the demand and supply sides of the market, the effect of the tax will be determined by the relative ability of buyers and sellers to modify their behaviors in response to the tax imposition.

In an earlier series of lectures given to public economics graduate students, Atkinson and Stiglitz (1980) emphasized that households make an enormous number of decisions during their lifetimes that are significantly influenced by the taxes they pay — on income, wealth, and expenditures. These decisions are illustrated in Figure 14.1, which shows the consumption pattern among households. These behaviors include resource constitution, resource allocation, and the interdependency of

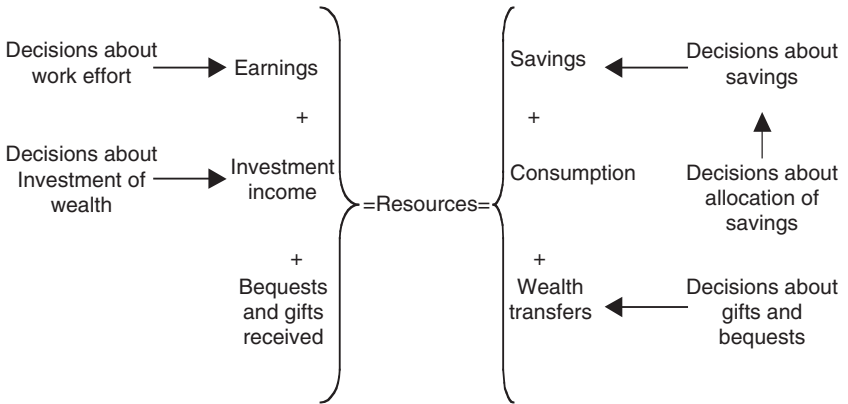


Figure 14.1 The household decision process. *Source:* Atkinson and Stiglitz (1980). *Lectures on Public Economics*. New York: McGraw Hill, p. 24.

these decisions. Beginning with a stock of wealth, each year the household must first decide on how to allocate its portfolio, which may be held in a variety of different assets such as cash, government bonds, and equities, on which depends investment income derived. The second main decision concerns labor supply (i.e., hours worked, whether the wife is employed, time to retire, etc.). The income derived from these two sources, labor supply and portfolio choices, together with income received as bequests or gifts, constitute the resources available to the household. In terms of the decisions regarding the use of these resources, decisions include how much to save, followed by the allocation of the amount that the household plans to consume. Whether to transfer wealth through gifts follows.

The decision about the pattern of consumption may also be influenced by the work effort, savings may depend on when a person expects to retire, and the choice of portfolio may be related to the savings decisions. Taken separately or together, household decisions are influenced by taxation in a number of ways. As Atkinson and Stiglitz (1980) asserted, "High rates of income taxation are held to discourage work effort, the exemption of capital gains from tax is thought to encourage

risk-taking, and it is felt that a switch from income to expenditure taxation would provide a powerful incentive to save” (p. 23). Therefore, it can be said that consumer behaviors are highly interdependent, subject to our current tax code and greatly influenced by future tax policy changes.

14.2.2 MARKETS AND CONSUMER BEHAVIOR

Regardless of the tax base or structure of a tax, everything from tax incidence and optimal taxation to tax compliance and tax reform influences and is influenced by how consumers respond to tax policy. Household decisions are also based on the concepts of economic efficiency, economic inefficiency, and distributional welfare. For instance, given the resources available to a community, both within efficient and inefficient markets, taxation changes economic behavior from what it would have been without a tax. From an efficiency standpoint, standard public finance theory claims that a tax levied for revenue is worthwhile only if it can generate meaningful revenue. From an equity position, that revenue must be raised at socially acceptable rates.

Efficient markets are characterized by mutually agreeable exchange between buyers and sellers. In efficient markets, output is maximized and the goods and services that are produced are the ones that consumers value the most. However, it is precisely because tax obligations are functions of individual behaviors that taxes almost invariably have excess burdens (Auerbach and Hines, 2001). For example, if a tax distorts an otherwise efficient market, an extra economic cost is imposed because taxes have resulted in behaviors that would not occur without the tax (i.e., consumers shift from taxed to nontaxed purchases). Thus, the total burden of a tax is comprised of the payment made by the taxpayer to the government in addition to the welfare cost — the loss created by the changes in producer and consumer decisions that the tax produces. This “excess burden” or “deadweight loss” on the economy reduces the amount of mutually agreeable exchange, potentially lowering output and decreasing the satisfaction of buyer and seller market participants. Therefore the efficiency

objective in tax policy attempts to yield necessary revenue (the tax burden) while keeping economic distortion (excess burden) as low as possible. This also implies the Pareto criterion of public policy or the Pareto-efficient allocation of resources. Named after the 19th century economist Velfredo Pareto, a Pareto improvement is a reallocation of resources that occurs when one person is made better off without making anyone else worse off. When a public policy makes any individual worse off, it has not been in the interest of every member of the public and therefore does not meet the Pareto criterion.

In inefficient markets, however, economic activity creates externalities that result in a divergence between private and social costs.* When private actions create adverse consequences, or negative externalities, the impacts on others are outside the market forces.** In other words, because producers and consumers react to the prices they pay by economizing on the use of goods and services that must be paid for, any external interest when a negative externality is present is motivated only out of the “goodness of their hearts” (Mikesell, 2003). Therefore, when the competitive outcome is no longer efficient, it may be deemed necessary for the state to intervene to limit the inefficiency that results. Government responds by imposing charges (i.e., pollution charges, road congestion taxes, and taxation on alcohol) that necessarily act in the public interest by guiding economic behaviors to return the allocation of resources closer to the social optimum (James, 2001).

In those cases where market failure does not occur, although an equilibrium may be efficient, it need not be optimal according to the state’s welfare criterion. In other words, even though the economy might be producing a Pareto-efficient allocation of resources, it might not be producing an equitable distribution of society’s utility. Government programs

* See Arrow, K. (1973) for a discussion of the relationship between socially efficient behavior and externalities, and Laffont (1990) for a general overview of externalities.

** The idea of market inefficiency can also be extended to include the existence of public goods and of imperfect competition.

aimed at income redistribution, provision of state education, consumer protection, and compulsory pension schemes illustrate appropriate departures from efficiency goals (Myles, 1999; Rosen, 1995). Accordingly, policy intervention and the study of public economics are unequivocally motivated by more than just an efficient collection of revenue.

Therefore, how taxation influences consumer demand is of primary interest to public policy makers, economists, and academic researchers in an endless quest for the ideal or "optimal" system of how to raise revenues efficiently and equitably, without compromising the productive activities that foster economic growth such as investment incentives, capital formulation, and the supply of work effort.* One problem, however, is that an efficient tax system may not necessarily be considered fair, and one that is considered equitable may not be efficient. For example, while society might consider a progressive tax system to be equitable, such a tax might distort incentives to work, save, and invest. A tax on luxury goods consumed by the rich might also be considered fair yet at the same time adversely affect the living standards of poor people who supply those goods. When government raises funds by taxation, people change the way they behave, which in turn affects economic efficiency as well as the distribution of income. "Designing an optimal tax system" as Auerbach and Hines observed, "means keeping tax distortions to a minimum, subject to restrictions introduced by the need to raise revenue and maintain an equitable tax burden" (2002, p. 4).

A second problem is the magnitude of avoidance responses to tax policies and the significant implications of those activities on revenue and welfare costs (Slemrod and Yitzhaki, 2002; Alm, 1999; Feldstein, 1999; Slemrod, 2001).

* To equity and economic efficiency effects, Mikesell (2003) adds collection costs (to both governments and taxpayers), revenue consequences, renewed concern for transparency, and political responsibility to the design of a tax system. Similarly, Stiglitz (1988) defines a "good" tax system as having the properties of economic efficiency, administrative simplicity, flexibility, political responsibility, and fairness.

14.3 TAXATION ISSUES

14.3.1 The Distortionary Effect of Taxation

Most consumers pay a variety of taxes. Common types of taxes include sales taxes, excise taxes, income taxes, property taxes, and user fees. Taxes also come in various forms. They could be direct, such as those levied on individuals, households, and firms, or they could be paid indirectly, levied largely on goods and services. Regardless of type or form, these are the resources that are needed to fund government programs that provide important benefits to society. At the same time, however, economic theory suggests that tax policies have a powerful impact on market behaviors by influencing and oftentimes distorting economic decisions and social activities. For example, without any response from taxpayers to changes in marginal tax rates, the level of income reporting will not be affected, and tax revenues move in the same direction and in proportion to tax rate change. However, if a change in marginal tax rates alters the behaviors of taxpayers, it may affect reported income and tax revenues (Triest, 1990). This has become an exceedingly important policy debate issue, particularly for evaluating whether tax cuts can generate their own revenue.

In terms of economic incidence, or who actually bears the burden of the tax (which is different from the statutory incidence of a tax, which indicates who is legally responsible for the tax) the problem is one of determining how taxes change prices.* Although economic tax incidence suggests that both buyers and sellers, depending on who has the lower elasticity, will share the burden of a tax, the altering (or distorting) of individual behavior as a result of taxes creates an excess

* Rosen (1995, p. 276) further identifies three models of price determination and incidence analysis including 1) balanced-budget incidence, which computes the combined effects of levying taxes and government spending financed by those taxes, 2) differential tax incidence, which holds the government budget constant and examines how incidence differs when one tax is replaced by another, and 3) absolute tax incidence, which examines the effects of a tax when there is no change in either other taxes or government expenditure.

burden or a welfare loss to taxpayers beyond the tax revenues collected.*

Distortionary taxation is best understood as the ability of individuals to lower their tax liability by altering their behaviors. When a commodity is taxed, for instance, an individual may change his or her tax liability simply by reducing the purchase of that commodity. Microeconomic theory suggests that under the assumptions of market efficiency, the economic well-being of society is measured by the sum of consumer and producer surplus. Microeconomic theory also suggests that market efficiency is attained when total surplus is maximized at the point where resource allocation is most efficient. However, behaviors that are altered due to distortionary effects of taxation shrink the size of the market below the level that maximizes total surplus. Thus, the imposition of a tax places a wedge between the price buyers pay and the price sellers receive. Because of this tax wedge, the quantity sold falls below the level that would be sold without the tax. Therefore, the size of the market for those goods shrinks. In other words, the losses to buyers and sellers from a tax often exceed the revenue actually raised by the government. The tax reduces consumer and producer surplus by an amount that is greater than the tax revenue generated. Martin Feldstein, President of the National Bureau of Economic Research, maintains that the inefficiencies or deadweight loss to society from an income tax account for nearly 30% of revenue. Looking at the 1993 federal income tax increase, Feldstein (1999) found that taxes impose enormous losses per dollar of revenue raised, predicting that even though taxes on upper-income Americans raised about \$8 billion annually, tax repeal would reduce deadweight losses about \$24 billion annually.**

* Aaron and Pechman (1981) defined this resulting deadweight loss that occurs as a result of taxation as “the dollar value of the distortions that results as taxpayers seek to avoid paying all the taxes they would have to pay if they behaved as they would if taxes were collected as lump-sum payments” (p. 2).

** See for example, Feldstein and Feenberg (1996) and Feldstein (1977).

Therefore, to achieve government economic policies, taxation necessarily alters incentive structures faced by individuals and encourages behaviors that are less likely to happen without taxation. As a result, consumers respond to government tax policies in a myriad of ways. For example, one way in which consumers respond to a rise in the price caused by a product-specific excise tax is simply by purchasing a substitute good. The magnitude of the distortionary effect caused by the tax, or the difference in revenues that could be obtained from a lump sum tax as compared to a distortionary tax, will depend on how much quantity supplied and quantity demanded respond to changes in price, which in turn depend on the substitution possibilities. This is referred to as the substitution or distortionary effect of taxation. The more limited the substitution possibilities, the smaller the deadweight loss or inefficiency due to taxation. For goods and services that are inelastic in demand or supply, the amounts bought and sold change relatively little when price changes. Higher taxes on these goods cause a relatively low fall in consumption. The more sensitive the quantity supplied is to price, the larger the portion of the tax will be borne by consumers. This suggests that the legal incidence of the tax does not influence the actual incidence.* Rather, the actual incidence of the tax depends on the elasticities of demand and supply. This follows the Ramsey Rule concept of optimal taxation, which states that under certain assumptions, the excess burden of excise taxes is minimized when goods are taxed in inverse proportion to their elasticities of demand.** This also suggests that if the goal of tax policy is to raise revenue and minimize the reduction of output, and therefore employment, brought about by the tax, then the tax should be imposed on goods for which the demand is price inelastic. In other words, for optimal

* For a comprehensive summary of developments in tax incidence analysis over the past 40 years see Metcalf and Fullerton (2002) available online at: <http://www.nber.org/papers/w8978>

** First published in Ramsey, F.P. (1927). A contribution to the theory of taxation. *Economic Journal* 37: 47–61.

excise taxation goods should be taxed in inverse proportion to their elasticities of demand.*

However, even though taxing goods with low elasticities of demand creates the least distortion into the pattern of demand, these goods tend to be necessities, such as food and clothing, that are consumed disproportionately by less well-off households. Taxing these goods highly would cause a proportionately greater reduction in the welfare of poor households. This results in a regressive tax system since necessities would be taxed more heavily than luxuries are. Therefore optimal taxation requires balancing both equity and efficiency objectives. Broadly stated, the efficiency loss from the increase in distortionary taxes necessary to finance an extra dollar of public spending is worthwhile as long as the benefits that are generated exceed the costs of financing public spending.

14.3.2 THE INCOME EFFECT OF TAXATION

Another effect of taxation takes income away from individuals, which necessarily makes them worse off. This is referred to as the income effect of taxation.** When incomes change, behaviors are altered as well. For example, when incomes change, individuals may postpone their retirement and forego leisure time because they are poorer. Whereas the substitution effect of a tax results from changes in relative prices holding utility constant, the impact of the income effect of taxation is due solely to the loss of income; relative prices are unaffected. In other words, the income effect is simply a change in purchasing power or real income. This is the same effect as the impact of a lump sum tax on consumption. Therefore

* For a review of optimal taxation literature see Auerbach and Hines (2002). See also Mirlees (1971) for a classic paper on optimal taxation.

** To the substitution and income effects, Atkinson and Stiglitz (1980, p. 28) add financial effects of taxation, which arise when the same real activity can correspond to different forms of payment, which are taxed at different rates. For example, this occurs when professionals turn ordinary income into capital gains through incorporation, or firms provide executives with stock options. In this manner, the tax system leads to changes in the form of financial organization and the structure of transactions.

it can be said that all taxes, including lump sum ones, leave consumers worse off and have income effects on demand. Whereas the income effect can be understood as a parallel shift down of an individual's budget constraint, the substitution effect shows how the quantity demanded changes not only when price changes but also how income is compensated so that the individual's commodity bundle stays on the same indifference curve.

Take for example the effect of income taxation on labor supply. A tax on labor income might increase or decrease the supply of labor. Although taxes lower the net wage and reduce the labor supply through the substitution effect, taxes also reduce income, which causes workers to consume less of normal goods, including leisure. The effect of income taxation on labor is therefore theoretically indeterminate because of opposing income and substitution effects. An increase in the income tax reduces the reward for work, leading people to work less. At the same time, an increase in the income tax reduces income, leading people to purchase less leisure (work more), assuming leisure is a normal good. The net effect of the income tax on labor supply depends therefore on the strengths of these two opposing effects. Whereas the substitution effect of a lower real wage is a reduction in effort, the income effect pulls in the opposite direction by making individuals poorer than before and providing an incentive to work more.

14.3.3 LUMP SUM TAXATION

On the other hand, a lump sum or nondistortionary tax is one for which the consumer's tax liability is independent of his or her behavior; there is nothing an individual can do to lower the tax liability. These refer to taxes that must be paid regardless of income or wealth, such as a head tax or a tax on unimproved land. Such a tax is deemed efficient, however, in the sense that it is economically neutral because it avoids all distortion of the free market process. In other words, the burden of a lump sum tax does not fall on any particular economic activity. As such, taxpayers' economic decisions are

completely unaffected by the tax system, and every person pays an equal lump sum tax. A tax of this nature is also considered administratively efficient, in the sense that neither taxpayers nor the government would need to document taxpayers' income.* However, a lump sum tax structure at the current level would constitute an insurmountable burden for low-income citizens. If all income groups were required to pool their resources together to fund government operations that presently consume nearly one-third of the nation's income, this would undoubtedly violate the equity criterion of optimal tax policy.

As Auerbach and Hines (2001) have observed, although the alternatives to distortionary taxation are attractive from an efficiency perspective, they are of limited usefulness precisely because they do not vary with individual indicators of ability to pay, such as income or consumption, that are functions of taxpayer decisions. Therefore, even though a tax system that takes "ability to pay" into account may lead to a more complex tax code, since tax revenues are used to provide services to the public, the social welfare criterion, or the equitable distribution of the economy's resources, must also be considered in any public economic analysis beyond a least-cost revenue requirement.

14.3.4 TAX COMPLIANCE AND ADMINISTRATION

In addition, although taxes that distort the economy are inefficient, so are taxes that cost a lot to administer (Slemrod and Yitzhaki, 2002).** This is measured, not only in the direct costs of tax avoidance and accounting expenses, but in the

* According to recent Tax Foundation research as of July 2001, if such a head tax were instituted, every man, woman, and child in the nation would have to pay \$11,116 to fund the government at current levels. The federal government alone would account for almost 70% (\$7,754) of the tax bill, with state and local governments accounting for the remainder (\$3,362). (See Moody, 2001.)

** Based on estimates published by the Internal Revenue Service, the Tax Foundation has projected that future compliance costs will grow by almost \$30 billion from \$140 billion in 2001 to \$170 billion in 2006 (See Moody, 2001).

level of evasion and cheating and by the cost of government auditing and policing. It has been argued that avoidance behaviors cost the government billions of dollars each year in lost revenue (Slemrod, 2001; Myles, 1995; Rosen, 1995; Stiglitz, 1988; Hines, 2002). For example, changes in labor income tax policy affect decisions about the level of tax evasion through participation in the underground economy. Although it might be thought that this type of tax evasion does not lead to excess burden because it does not change the real economic decisions of taxpayers, but merely the legal form of the transaction, this is incorrect as the revenue lost by government through evasion must be replaced by increases in other tax rates, which will in turn, have real distortionary effects. It follows, therefore that taxes that are easily evaded will have high excess burdens.

As a result, efficiency losses, along with excessive compliance and administrative costs, has evoked ongoing criticism of our current income tax system fueling the tax reform debate in favor of a flatter rate structure or broad-based consumption tax (Rivlin, 1992; Hall et al., 1996; Feld, 1999; Brownlee, 1999; Hafer and Trebing, 1990).*

14.4 A REVIEW OF THE LITERATURE

Although the study and modeling of behavioral responses to taxation are complex and controversial tasks that face a number of challenging problems, a review of the literature reveals that estimating how private market participants respond to government taxation is one of the most important functions facing public finance economists and public administration practitioners and researchers alike. Triest (1998), for instance, has suggested that both positive and normative analysis of

* Most recently, The Fair Tax Act sponsored by United States Congressman John Linder of Georgia proposes to abolish all federal income tax including payroll taxes, self-employment taxes, capital gains taxes, and gift and death taxes to be replaced by a simple, revenue-neutral 23% national sales tax on all goods and services at the point of final purchase for consumers (See Web site: http://linder.house.gov/_pdfs/FairTaxFrequentlyAskedQuestions.pdf).

taxation, everything from revenue estimation to social welfare evaluation, depends critically on the magnitude of consumer responses to taxation. This has generated a substantial and growing literature over the past decades.

For example, in an attempt to evaluate the effectiveness of tax policies on consumer behaviors, the impact of taxation and tax incentives has been explored from a variety of dimensions.* These include the conventional research in behavioral responses to taxation such as tax incidence (Metcalf and Fullerton, 2002), optimal taxation (Holcombe, 2002; Auerbach and Hines, 2001; Bradford and Rosen, 1990) and reform (Hines, 2002), as well as administration, enforcement, and avoidance technologies (Feldstein, 1999, Stiglitz, 1986; 1988; Auerbach, 1999; Alm, 1999; Slemrod, 1998, 2001; Slemrod and Bakija, 2000). There have also been innumerable studies on the impact of sales tax (Hawkins, 2000), income tax (Goolsbee, 2000; Souleles, 2002; Auten and Carroll, 1999; Steindel, 2001), and Social Security taxes (Parker, 1999) on consumer spending. How consumers respond to the estate tax (McGarry, 2000), charitable deductions (Tiehen, 2001), the marriage penalty (Alm and Whittington, 2003), and tax rebates (Shapiro and Slemrod, 2001) are other important contributions. Another much-researched aspect of consumer behavior involves how investment patterns of individuals change with changes in the tax system. Poterba (2001) for example, examined the portfolio effects of consumer behavior and taxation, evidencing that households structure their affairs to take advantage of opportunities in the tax code (i.e., borrowing is greater when interest payments are tax deductible).

Overshadowing these studies, however, remains the core question in all public economics literature of how tax rate changes alter taxpayers' behaviors so that the necessary amount of revenue can be raised to finance government spending. Or in other words, what is the appropriate size of government (Feldstein, 1977)?

* This review of the literature is not intended to be comprehensive, including rather, only selected contributions.

14.4.1 NEW TAX RESPONSIVENESS LITERATURE

Since marginal tax rates reflect the change in taxes paid with respect to a change in income, a change in marginal tax rates may alter the behavior of taxpayers, which in turn will affect reported income and tax revenues. Therefore, taxpayers may respond in many ways to an increase in marginal tax rates. Feldstein (1997) has contributed to a large part of tax research that looks to the effects of marginal tax rates on the willingness of individuals to work, to save, and to invest. Feldstein (1977) broadly defined labor supply to include factors other than participation rates and hours worked, traditionally used in distortion analysis. Feldstein's work argues that taxpayers may respond to an increase in marginal tax rates by

1. Reducing the supply of labor and the supply of capital in the long run, thereby reducing the taxable income from labor and capital
2. Changing the forms in which individuals take their compensation
3. Reducing taxable income by inducing more spending on things that are tax deductible or can be subtracted as a business expense.

By including education, occupational choice, effort, location and all other aspects of behavior that affect the short- and long-run productivity and income of the individual, the labor supply elasticity is much larger than traditional estimates.

Feldstein and Feenberg (1996) determined that an increase in marginal income tax rates may actually induce taxpayers to work more to offset the reduction of their disposable income, make fewer tax-deductible expenditures (i.e., charitable contributions), and take more income in cash rather than untaxed fringe benefits (i.e., attractive offices). This supports the idea that the labor supply response is not the only behavioral response to taxation.

In addition, traditional economic discussions of how marginal tax rates affect behavior focused simply on hours worked. In this view, following the so-called Laffer curve, tax cuts would lead to an increase in labor supply and lessen the

revenue loss from the lower rates.* For example, Hausman (1981) showed that the labor supply decisions of husbands, married women, and female heads of households are significantly responsive to income taxation resulting in significant deadweight losses. An overall 2.99% elasticity of utility to tax revenues raised suggests that small changes in the tax system lead to large changes in individuals' welfare. It has also been shown that women's participation rate and hours worked are much more sensitive to net wages and tax rates than those of men (Hausman, 1985; Mroz, 1987).

However, more recently, the existence of this type of response has received little support from the labor supply literature (Triest, 1990; Eissa, 1996). Changes in marginal tax rates may also affect reported income since taxpayers can affect the nature of their compensation package by replacing wages by fringe benefits (private insurance, car, corporate dining rooms, etc.). Changes in marginal tax rates may also induce individuals to modify their saving behavior, seek more tax shelters (tax avoidance), and even engage in tax evasion.

The new tax responsiveness literature (NTR) looks beyond labor supply effects to include the effect of taxation on total reported taxable income. This literature has argued that it is the responsiveness of taxable income to marginal tax rates, not hours worked, that policy makers should think about when calculating revenue and deadweight losses for determining the optimal size of government, optimal tax rates, and tax reform (Goolsbee, 2000b; Saez, 2001; Burtless and Haveman, 1990). As Goolsbee (2000b) noted:

Concerns about inefficiency have led some to condemn the tax increases of the 1990s and praise the cuts of the 1980s. Concerns about rising inequality have led others to do the

* Named after economist Arthur B. Laffer, the so-called Laffer curve reflects the tax rate–tax revenue relationship determined by the elasticity of labor with respect to the net wage. For any change in the tax rate, there is a corresponding percentage change in the net wage. Whether tax revenues rise or fall is determined by whether changes in hours worked offset the change in the tax rate.

reverse. At the center of the debate is the amount of deadweight loss created by a progressive tax code. The responsiveness of taxable income to marginal rates is exactly what determines that cost and, in principle, is a strictly empirical matter (pg. 353).

The NTR literature is based on the idea that tax cuts, even if they do not increase the number of hours worked, may still increase revenue if they induce people to switch income out of nontaxable forms. For example, Goolsbee (2000b) looked at how marginal tax rates affect reported taxable income rather than hours worked. Goolsbee found that even though the short-run elasticity of taxable income with respect to the net-of-tax share was greater than one, suggesting that the responsiveness of taxpayers to changes in marginal tax rates is substantial, especially among high-income individuals, these changes were due to temporary shifting of taxable income. This also suggests that the deadweight loss of progressivity may be more modest than previously thought.

Similarly, Slemrod (1996) offered another informative study of the causal connection between the increased incomes of high-income families and the tax changes in the 1980s (i.e., reduction of the top rate of individual income tax from 50 to 28%). His conclusions suggest that increases in reportable income represent shifting of income (i.e., from corporate tax base to the individual income tax) and not income creation from additional labor supply.

In another study by Feldstein (1999), it was reported that the elasticity of taxable income with respect to tax rates, measured as the marginal welfare cost (MWC) of taxation, has been estimated to be above \$1 per dollar of additional revenue raised, possibly in excess of \$2.* Similarly, using evidence on the sensitivity of taxable income to tax rates, Parry (2002) documented that favorable tax treatment across

* The marginal welfare cost of taxation (MWC) is defined by Parry (2002) as “the efficiency loss from the increase in distortionary taxation necessary to finance an extra dollar of public spending, or alternatively, the revenue leakage that must be made up due to the erosion of the tax base when revenues are increased incrementally” (p. 1).

housing, medical, the labor market, and other types of consumption is subsidized relative to other goods markets, producing efficiency losses when income tax rates are increased. Parry suggested that this is due to tax preferences in the form of deductions and exclusions, such as in the case of homeowner mortgage interest and employer-provided medical insurance. Slemrod (1998) also reported on taxable income elasticity as an added measure of the marginal welfare cost (MWC) of taxation beyond substitution responses. His study concludes that the elasticity of taxable income with respect to the interest rate is a more accurate indicator of the marginal efficiency cost of taxation than a narrower measure of taxpayer response, such as the labor supply elasticity.

Finally, another claim is that high marginal tax rates compromise economic efficiency by channeling talent and effort into tax avoidance and tax evasion, rather than productive work (Frank, 2000). For example, utilizing detailed individual tax return data, Long and Gwartney (1987) concluded that tax avoidance increases with the marginal tax rates and that this effect is large enough in the upper-income classes to generate an inverse relationship between tax rates and tax revenue.

14.4.2 METHODOLOGICAL STUDIES AND BEHAVIORAL RESPONSES

There has also been considerable discussion as to the methodological approaches to quantifying behavioral responses (Moffitt and Wilhelm, 1998; Triest, 1998; Slemrod, 2001). Triest (1998), for example, discussed some of the major methodological challenges faced by researchers in estimating the effect of taxation on consumer behaviors using quantitative measures. These difficulties include misspecification errors and biased estimators caused by identification problems, endogeneity of marginal tax rates, nonconvexity in the budget set, avoidance opportunities, and timing of transactions. For instance, one difficulty is separately identifying tax-price and income effects, as the former is largely a nonlinear function of the latter. Allowing for only a linear income effect in the

econometric specification will likely result in classical omitted variable bias, as tax price will be correlated with the omitted nonlinear income term. Also, the marginal tax rate is strongly influenced by other factors such as marital status and number of dependent children in the household, which are in turn determinants of charitable contributions and other tax- and nontax-related activities. Changes in these and other economic environment variables may influence the behaviors being modeled and bias the empirical estimated tax effects unless controlled for in the regression.

A second difficulty is that tax price is endogenous (observable explanatory variables are correlated with unobservable error terms). This suggests that one's marginal tax rate can be affected by his or her own behavior, i.e., the amount of giving, hours worked, as well as other deductions and realizations of income. Based on the U.S. tax system, when labor supply is increased, for example, taxable income increases, and the worker will shift into a higher marginal tax bracket. As a result, the additive error term in a labor supply regression will be positively correlated with the marginal tax rate, and Ordinary Least Square will be a biased estimator of the coefficients of the regression.

Mikesell (2003) suggested that behavioral responses may also depend on whether the tax is believed to be permanent or temporary, and the response will increase the greater the amount of time to make adjustments to the tax. Therefore, a third estimation problem is distinguishing between temporary and permanent effects of taxation. For example, a temporary increase in income can cause an individual to have an unusually high marginal tax rate in a particular year, creating an incentive to intertemporally substitute some extra deductions today when the value of the deduction is temporarily high, for less tomorrow, without necessarily changing the long-run behavioral response. Distinguishing this from a permanent effect is impossible in cross-sectional data, and is challenging even with panel data. This, however, will likely overstate the behavioral response to a permanent change in tax rates. Triest (1998) reported that two estimation techniques,

difference-in-difference analysis and the use of instrumental variables using panel data where the same individuals or households are followed over time, have been adopted in recent studies of behavioral effects on taxation as alternative means of identification.* The author concluded, however, that despite some of the problems and sources of bias, econometric estimates of consumer demand and taxation lead to better-informed choices regarding alternative tax policies and tax reform and provide more than just intuitive guesswork.**

Slemrod (2001) further claimed that behavioral responses to taxation can be classified into three tiers according to sensitivity of responsiveness. The three-level hierarchy from the most to the least reactive are timing responses, avoidance responses, and real responses. Based on behavioral responses to the U.S. tax changes of the 1980s and 1990s, Slemrod's study suggested that the doubling of capital gains realizations in 1986 in advance of the tax rate increase scheduled for 1987 illustrates the sensitivity of timing responses to tax changes. He argued that shifts in the timing of activities in response to taxation should be separated from observed behavioral responses. This is because timing of transactions can be easily modified to reduce taxes paid without having a large impact on the benefit ultimately derived from the transactions, contrary to the direct impact of real substitution responses on individuals' well-being. Realization of capital gains, for example, is a type of behavior that can respond quickly to tax changes. For instance, individuals may be able to reduce the present value of their expected tax burden by realizing gains when they face a temporarily low marginal tax rate with relatively little change in the composition of their asset portfolios.

* The difference-in-difference analysis is the increase in reported income over the previous year of the treatment group compared to the increase in reported income of the control group

** For a further discussion on the advances in econometric techniques in public finance research, see also Boskin (1990).

14.4.3 CONSUMER SPENDING AND FISCAL POLICY

In light of the many federal tax law changes over the past decades, another treatment of consumer behavior that has generated considerable interest looks at the influence of tax and benefit changes to stimulate household spending.* Also, given the Bush Administration's most recent "stimulative" tax package, there is a substantial and continuing literature debating whether tax cuts are effective fiscal policy tools in spurring consumer spending and increasing tax revenues. Although traditional economic models present consumer spending as a function of disposable personal income, which suggests that any change in tax payments directly affects disposable income, thereby changing consumer spending, recent models of consumer behavior are more ambiguous about the link between spending decisions and tax payments.**

According to a report by the U.S. Congressional Budget Office (2002), tax cuts designed to encourage more consumption are effective because they allow consumers to keep more of their income and thus have more money to spend. The greater the amount of their income that consumers are willing to spend instead of save, the more stimulus there will be from a given reduction in taxes. Students of economics are only too familiar with the Keynesian multiplier effect, whereby the additional spending (by either households or businesses) that a stimulus generates engages some of the resources that are unemployed during a recession, and that new activity has further effects. Households whose income increases as a result of that additional economic activity subsequently consume

* For example, the personal income tax rate has changed at least eight times from 1959 through 1995 due to the Revenue Act of 1964, Revenue and Expenditure Control Act of 1968, Tax Reform Act of 1969, Revenue Act of 1978, Economic Recovery Act of 1981, Tax Reform Act of 1986, OBRA 1990, and OBRA 1993 (Yoo, 1996).

** The dependence of consumption on current income is described in the Keynesian consumption function, while the dependence of consumption on lifetime income is described in the life cycle hypothesis and the permanent income hypothesis.

more as well, adding to demand, and some of the firms that supply goods to satisfy the additional demand are encouraged to invest to add to their capacity. The magnitude of the multiplier depends on how much of their income households tend to spend. The higher that proportion, the more powerful is the ultimate boost to demand. Hence, the efficacy of fiscal stimulus depends critically on households' tendency to spend the income placed in their hands. If the additional income that results from a tax cut is saved rather than spent, it will generate little extra demand and bring few resources into production. Also, whether a tax cut is temporary or permanent also influences its effectiveness. In deciding whether to spend, consumers consider not only their current income but also their expected income over a long period. Making a cut in income or payroll taxes temporary tends to reduce the stimulus it provides to consumption because the cut's effect on lifetime income is small.

For instance, Steindel (2001) studied the impact of income tax changes due to the 1968 Tax Surcharge, the 1975 Tax Rebate, and the 1982 Tax Cut. Household responses suggest that while almost all of the tax and benefit changes prompted changes in consumer spending, the magnitude of the changes varied greatly. The author's conclusions that consumer spending reacted more strongly to a permanent than to a temporary tax change and consumer spending did not change until a tax change affected take-home pay conform to traditional economic theory in the former case but diverge in the latter.*

To determine consumer responses to noticeable changes in tax liabilities, Yoo (1999), an economist for the Federal Reserve Bank of St. Louis studied the Revenue Act of 1964 (a tax cut), the Revenue and Expenditure Control Act of 1968

* The life cycle/permanent income model considers individuals' consumption and saving during a given year as the result of present and expected future income. This suggests both that consumers are forward looking and that spending responds to permanent versus temporary income changes (see Rosen, 1995).

(a tax increase), the tax rebate of 1975 and the refund delays of 1985, which were unexpected or nearly unexpected.* Several conclusions emerged that suggest that consumers react only somewhat to changes in tax liabilities. First, in response to the Revenue Act of 1964, which reduced individual taxes, even though disposable income rose, consumer spending did not. However, personal saving rose sharply once the tax cut took effect. The difference between disposable income and personal consumption expenditures rose sharply once the tax cut took effect, corresponding to the increase in personal saving. Second, contrary to the traditional theory that higher taxes reduce consumer spending, personal consumption expenditures actually increased as a result of the Revenue and Expenditure Control Act of 1968, which called for a 10% income surcharge. However, personal savings dropped by an amount more than enough to pay for the higher tax payments. As a result of the tax rebate bill enacted in March 1975, consumers reacted by increasing personal consumption expenditures by a large amount, but less than half the reduction in tax payments. What was not spent, was saved. Finally, when the Internal Revenue Service (IRS) fell behind in issuing refunds in 1985, which caused an initial rise in tax payments, personal consumption expenditure again actually increased during the delay but an even larger increase coincided with the reversal. The initial increase is once more contrary to what would typically be attributed to tax increases. Again, the data suggest that individuals used their savings to absorb most of the changes in tax payments. The four cases suggest that consumers are reluctant to change their spending patterns and instead, alter their savings to compensate for changes in tax payments. Taking individuals' ability to adjust to predictable events does not, according to

* The idea that people have fluctuations in income, which they want to smooth, is the basis of the life cycle hypothesis of consumption, which was produced by Franco Modigliani, Richard Brumberg, and Albert Ando in a series of articles in the 1950s and 1960s. Therefore, forecastability is important because consumption theory states that individuals adjust their behaviors to minimize the disruptive nature of predictable future events.

the study, significantly change the conclusions about consumer sensitivity.

Souleles (2002) added that other factors can also influence the stimulative impact of a particular tax policy. For example, empirical evidence suggests that rebates are not as effective in stimulating spending as are tax cuts that result in less tax being withheld. The reason may be that households are more likely to carefully consider how they dispose of a large sum than how they deal with small incremental changes to their paychecks. Hence, households may tend to use rebates to pay down debt or to increase their saving in some other manner (Congressional Budget Office, 2002).

In terms of revenues raised, research by Feldstein (1996) found that the 1993 increase in federal income tax rates resulted in only half the new tax revenue created. Similarly, Walden (2003) showed that because an increase in the tax rate lowers the return from economic effort, such as working, spending, and investing, there will not be as much economic base to tax, which in turn has a negative impact on tax revenues raised.* Most recently, Greenstein et al. (2003) and the Center on Budget and Policy Priorities, responding to the President's tax-cut package, commented that because the new bill is "heavily tilted" toward higher-income tax filers (a group which they suggest is likely to save rather than spend tax benefits, as compared to middle- or low-income households), the result is likely to be highly inefficient in boosting the economy in the near term. To this, Carman et al. (2003) added significant heterogeneity in consumption responses to policy changes depending on such indicators as age, resource level and the particular policy undertaken. They found that income tax changes have little effect on the consumption of low-income households because their income tax liabilities are small, while Social Security benefit cuts have minor effects on the young, simply because they lie so far in the future.

* Also according to Walden (2003), the reverse analysis holds true for a tax decrease, which increases the economic base being taxed, therefore increasing tax revenues.

14.5 TAX AVOIDANCE TECHNOLOGY

Contrary to prevailing political rhetoric that all taxes are bad, and all governments are wasteful, Hoene (2003) pointed out that the majority of Americans, when presented with a choice between a tax cut and the loss of vital services (i.e., schools, roads, clean water, police, and firefighters) often choose to bear the burden of the tax. On the other hand, Alm (1999) suggested that because no one likes losing income from taxes, actions will be taken to avoid or reduce tax liabilities, incurring consequential costs to society. After all, any rational taxpayer will likely take full advantage of any legal deductions and exemptions that the tax code allows.

Slemrod and Yitzhaki (2002) documented, for instance, that in the U.S. 17% of income tax liability is not paid and the resource cost of collecting what is paid is about 10% of tax collections. Also, in 1998, former IRS Commissioner Rossotti (2002) testified to the Senate Finance Committee that taxpayer noncompliance costs the federal government \$195 billion per year. These costs become a huge problem, as the revenues lost by government through tax avoidance “leakages” must then be replaced by increases in other tax rates, which will have real distortionary effects, loss of vital public services, or both. Another problem is that the line between legal tax avoidance and an abusive tax shelter is often unclear in the law (Samwick, 1996; Burman, 2003).^{*} It has further been argued that tax avoidance is made possible by the fact that that federal and state income taxes are not levied on gross income, but on a more narrow tax base that results after numerous adjustments in the form of deductions, exclusions, and allowance for income losses (Long and Gwartney, 1987).

Therefore, in addition to the substitution and income effects of taxation, one relatable consequence of taxation that has commanded a lot of interest is tax avoidance behaviors, the legal (versus tax evasion which is illegal) reorganization

^{*} See Lewis, Allison, and the Center for Public Integrity (2002) for an interesting account of the tax avoidance industry including offshore tax havens and cybertax avoidance schemes.

of economic activity that reduces one's tax liability by taking full advantage of the provisions of the tax code. In other words, tax avoidance is characterized by reducing tax payments by legal means and exploiting tax loopholes, such as funneling assets through financial devices, which tax attorneys and crafty accountants create. An analysis of tax avoidance in an income tax by Slemrod (2001) and Slemrod and Yitzhaki (2002) distinguished between two behavioral responses to tax policy: 1) the real substitution response or real response to taxation, which describes activities resulting from changes in the tax laws that alter the relative prices of different activities, and 2) avoidance activities. Whereas real substitution responses induce taxpayers to respond by choosing a different consumption basket, tax avoidance activities are actions taken in response to tax policies that do not involve shifts along a given budget set. Whereas substitution responses to tax induced changes in relative prices cause individuals to seek a different consumption bundle, Slemrod (2001) argued that avoidance responses drive taxpayers to undertake a variety of activities (i.e., tax planning, renaming and retiming of activities) whose goal is to directly reduce tax liability without consuming a different basket of goods. These responses cover a wide range of behaviors. Examples provided by Slemrod and Yitzhaki (2002) include (1) paying a tax professional to alert one to the tax deductibility of activities already taken, (2) changing the legal form of a given behavior, such as reorganizing a business from a C corporation to an S corporation, recharacterizing ordinary income as capital gain, or renaming a consumer loan as a home equity loan, and (3) retiming a transaction to alter the tax year it falls under.

Stiglitz (1986) describes three basic principles involved in tax avoidance: postponement of taxes, tax arbitrage across individuals facing different tax brackets (or the same individual facing different marginal tax rates at different times), and tax arbitrage across income streams facing different tax treatment. Many avoidance devices also involve a combination of these three. Stiglitz demonstrates this in terms of individual retirement (IRA) accounts that can be thought of as postponing tax liabilities until retirement; i.e., the interest earned on the

IRA is tax exempt. However, if the individual faces a lower tax rate at retirement than at the time income is earned, then the IRA can be viewed as tax arbitrage between different rates. Finally, if the individual can borrow to deposit funds in the IRA, and interest is tax deductible, then the IRA is a tax arbitrage between two forms of capital, one of which is not taxed, and the other which is.

As further suggested by Slemrod (2001), the evidence about the responses to the major U.S. tax reforms of the 1980s, interpreted as a behavioral hierarchy puts financial, accounting, and evasion responses second only to the timing of transactions as the most responsive decisions to tax reforms. It has also been proposed that failing to account for avoidance behaviors in optimal taxation models leads to significant errors when predicting how tax reform affects labor supply, tax revenue, and the welfare cost of taxation (Agell et al., 1999; Slemrod, 2001).

Because there is also evidence suggesting that avoidance behaviors are more responsive to tax changes than are real substitution responses (Slemrod, 2001), the consequences of tax avoidance behaviors introduce important considerations for tax policy design. First, tax avoidance destabilizes voluntary compliance. Second, this undeclared economic activity reduces the tax base, which in turn not only undermines the financing of public goods and social protection, but when the taxpaying public perceives that a tax is easily evaded, cumbersome, and unfair, it loses its legitimacy and calls government itself into question. Finally, the degree of compliance with any tax depends on the rate and base structure, which introduces incentives and opportunities for abuse; attitudes, which determine whether taxpayers exploit opportunities for abuse; and tax administration, which provides oversight, enforcement, and control.

14.6 CONCLUSION

Given the important economic function of the public sector, a general theme in public economics research is how the necessary tax revenue to support the public sector can be raised in the most efficient and equitable way. Slemrod and Yitzhaki

(2002) have further pointed out that recognizing the implications of behavioral responses to taxation changes the answers to traditional subjects of inquiry such as incidence, optimal progressivity, and optimal tax structure, and should not be ignored in the evaluation of tax policies. Tax avoidance behaviors further compromise the economic efficiency and fairness of the tax system, incurring consequential costs to society.

In terms of consumption, as one stream of empirical evidence has suggested, consumption by households is generally stimulated when either after-tax income or lifetime wealth rises because of a reduction in taxes. The Congressional Budget Office (2002) concluded that in general, tax cuts designed to encourage more consumption are effective only if they leave consumers with additional spending power. The bigger the chunk of their income that consumers are willing to spend instead of save, the more stimulus there will be from a particular tax reduction. But households do not predictably spend a fixed proportion of the extra income left in their hands when taxes are reduced. Rather, a household's propensity to consume appears to vary with its income and depends on expectations within the household of what will happen to that income over the longer term.

Although other empirical evidence documents that taxable income elasticities, particularly among high-income earners, are greater than one (suggesting that the responsiveness of taxpayers to changes in marginal tax rates, is substantial), these are temporary, short run changes resulting from the shifting of taxable income (i.e., exercising of stock options) immediately surrounding a tax change. This further suggests that the deadweight loss of progressivity may be more modest than previously thought. This also implies that particularly among upper-end income earners, the benefits of reducing marginal tax rates may *not* be as great as first presented by the NTR literature.

As shown in this chapter, consumer behaviors reflect the tax code in a myriad of ways, which in turn influence the revenues needed to maintain the programs and services that citizens need most. From increased spending and income reporting, to savings behaviors and marital status, tax policies

and the principles of taxation involve more than the efficient collection of revenues. Rather, taxation and tax reform involve considerations of equity, social policy and income redistribution — public policy issues, which continue to be ripe for further scholarly investigation. Finally, although the future of the tax system and tax rates is undoubtedly one of life's uncertainties, we can all rest assured that paying taxes is not.

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Federal Taxes and Decision Making: Individual Income, Corporate Income, and Social Security Taxes

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The effect of taxes on labor supply is an important issue in economic theory, econometrics, and public finance. Since the largest share of federal revenue is derived from individual income taxes, corporate income taxes, and Social Security taxes, the impact of federal taxes on labor supply is certainly significant. The potential effects of federal taxes on labor supply are important because of the heavy and growing reliance on direct taxation.

15.1 INDIVIDUAL INCOME TAXES

In 1913, the Sixteenth Amendment to the U.S. Constitution was ratified. The Sixteenth Amendment empowered Congress to tax “incomes, from whatever source derived, without apportionment among the several States, and without regard to any census or enumeration.” Today, Title 16 of the United States Code contains the Internal Revenue Code, which was passed and continuously updated to implement the constitutional amendment.

According to the U.S. Federal Budget for Fiscal Year 2004, individual income taxes accounted for 46.3% of total federal tax receipts, while employment taxes accounted for 37.8%, corporate income taxes for 8.0%, excise taxes for 3.6%, and estate and gift taxes for 1.4%. An individual’s income tax liability is determined by applying a graduated rate schedule to the individual’s taxable income and adjusting for applicable tax credits.

The rate of tax depends on the individual’s filing status and the individual’s taxable income. Generally, the individual’s taxable income is gross income less personal exemptions and the greater of 1) itemized deductions or 2) the standard deduction.

Appendix 1 presents an overview of the U.S. federal individual income tax system.

15.2 EFFECT OF INCOME TAXES ON LABOR SUPPLY*

Contrary to popular opinion, economic theory in the absence of empirical evidence cannot predict whether cutting taxes will increase the economy’s supply of labor. To be sure, reducing the marginal tax rate — the rate that a person pays on the earnings from an additional hour of work — increases the after-tax return from that labor. By itself, that effect would increase the number of hours that a person was willing to

* Adapted from *Labor Supply and Taxes*, Congressional Budget Office, 1996.

work. But lower taxes also increase a worker's disposable income, which means that the worker would be able to achieve the same level of income with fewer hours of work. In the end, the effect of taxes on hours of work is uncertain because it depends on those two forces, which push workers in opposite directions.

Economists have given names to those two counteracting pressures. The first — the so-called *substitution effect* — measures the tendency of workers to work more when their after-tax marginal wage rate goes up. In other words, people “substitute” work for leisure when the relative return from work increases; they substitute leisure for work when that return decreases. The second force — the so-called *income effect* — measures the tendency of workers to work less when their disposable income goes up. That response occurs because leisure is like other desirable goods: people tend to want more of it when they have more income and can afford to take time off.

When a tax structure is progressive, as is the personal income tax in the United States, the income and substitution effects of changes in tax rates will vary by income tax bracket. For example, a change in the lowest tax rate will have both income and substitution effects for people in the lowest tax bracket, but it will have only income effects for those in higher brackets. By contrast, a change in the top tax rate will have both income and substitution effects for people in the highest bracket but neither an income nor a substitution effect for those in lower brackets.

Because economic theory cannot predict how changes in taxes will affect the supply of labor, economists rely on empirical studies of how people actually behave to determine those effects. Most empirical studies are based on data for people with a range of wage rates, incomes, and demographic characteristics. The studies use statistical methods to control for other factors that affect decisions about work and so isolate the effects of changes in after-tax wage rates.

Despite the importance of total wage elasticities, empirical research in labor economics has focused on another type of elasticity, so-called structural measures. Those elasticities

describe the total labor supply response only when changes in labor force participation can be ignored. The total wage elasticity measures the percentage change in total hours of work that would result from a 1% change in workers' after-tax wage rates. Thus, if the total wage elasticity was 0.2, a 10% increase in after-tax wage rates would increase total hours of work by 2%. Part of that response would be due to workers choosing to work more hours; the other part would come from people joining the labor force.

The total wage elasticity can be broken down into two other elasticities: one for participation and one for average hours. The participation elasticity is the percentage change in the number of people in the labor force as a result of a 1% change in after-tax wage rates; the average-hours elasticity is the corresponding percentage change in the average hours of workers. Economists sometimes use the participation elasticity to estimate how taxes influence the number of people in the labor force. Economic theory rules out a negative participation elasticity because rational people will not stop working entirely if they receive a pay raise. However, the average-hours elasticity can be positive or negative.

If the total wage elasticity were negative, an increase in after-tax wage rates would decrease the supply of labor. In that case, reductions in tax rates, which increase after-tax wages, would actually cause the number of hours worked to fall. That drop would occur if the income effect dominated the substitution effect. The phenomenon is also known as a "backward-bending" labor supply curve.

Income and substitution effects can also be expressed as elasticities that add up to the total wage elasticity. The income elasticity is the percentage change in total hours worked from a 1% change in disposable income, holding the after-tax wage rate constant. The substitution elasticity is the percentage change in total hours from a 1% change in after-tax hourly wage rates, holding disposable income constant. Thus, if the total wage elasticity was 0.2 and the income elasticity was -0.1 , the substitution elasticity would have to be 0.3. The substitution elasticity could not be negative because a negative

elasticity would imply that rational employees would work more when their hourly wage fell, even if they were fully compensated for the loss in their disposable income. The income elasticity can be positive or negative, but it is usually negative.

One drawback of any elasticity that summarizes the labor supply of a large group is that it describes the average behavior of the group — that is, of people with average after-tax wage rates and incomes. Consequently, such an elasticity may not adequately describe the labor supply behavior of people whose after-tax wage rates and incomes are well above or below average. That limitation can be especially important when analyzing changes in tax policy that affect high- and low-wage groups differently.

Labor supply elasticities for the whole economy can be calculated by weighting the separate estimates for the labor supply of men and women. Male workers account for roughly 60% of the economy's total hours of work, married women who are not heads of households account for roughly 25%, and unmarried women and female heads of households account for the rest.

Based on those assumptions, the evidence suggests that a 10% increase in after-tax wages would raise total hours of work by between 0 and 3%. About half of the increase in the supply of labor would come from people joining the work force; the remainder would reflect an increase in the annual number of hours each person worked. Married women would account for most of the response: they would increase their hours of work by between 3 and 7%. By comparison, men, unmarried women, and female heads of households would hardly change their behavior.

These estimates may somewhat overstate the responsiveness of the economy's labor supply because they leave out how married men and women respond to changes in a spouse's after-tax wage rate. In theory, a decrease in the wage rate of one spouse could raise the amount of labor supplied by the other. Although the theory applies to both spouses equally, most empirical studies find that women are more likely than

men to respond to changes in their spouse's hourly wage. In either case, the evidence generally suggests that this intra-family effect would moderate the increase in the economy's supply of labor that would result from a general decrease in tax rates.

Reducing tax rates in a progressive tax system can have income and substitution effects that differ in magnitude for people in different tax brackets. The size of the substitution effect depends on what happens to after-tax hourly wage rates and on how much people adjust their labor supply in response. The size of the income effect depends on what happens to total disposable income and on how much people respond to those changes. The overall effect on the supply of labor incorporates the sum of the two effects, but it also depends on how any revenue impact of the tax change is financed.

The United States relies on a progressive system of personal income taxes, which means that additional income is taxed at progressively higher rates as workers move into higher tax brackets. Because of that progressivity, the percentage of additional income taken by taxes (the marginal tax rate) is larger than the percentage of total income taken by taxes (the average tax rate). Total effective marginal tax rates for certain high-income taxpayers can be higher than the statutory tax rates because of the limitation on itemized deductions and the phaseout of personal exemptions. In addition, the phaseout of the earned income credit raises the total marginal tax rate for low- to moderate-income families. The income brackets to which those rates apply depend on marital status and on whether married couples file joint or separate tax returns.

The tax code also provides a number of offsetting reductions to taxable income, such as personal exemptions and standard deductions. Tax filers can claim additional exemptions for dependents and, instead of choosing a standard deduction, may itemize their expenses. In addition, the earned income credit (EIC) reduces the tax liability of certain low-income people with earnings. Because the EIC is a refundable tax credit, low-income filers can receive a payment even if they do not owe any federal income tax.

Various changes in the structure of the federal income tax can have different effects on the supply of labor because they involve different effects on after-tax wage rates and on disposable income for people in different tax brackets.

Cutting the top rate would directly affect workers in the top rate bracket only and would raise their after-tax hourly wage by a larger percentage than their disposable income. Disposable income would not rise as much because the new tax rate would apply only to that part of a person's income that fell into the top tax bracket. For people at the bottom of the top rate bracket, who had just a small part of their income subject to the top tax rate, only the substitution effect would matter. For richer people, income effects would become more and more important as the proportion of their income subject to the top rate increased.

Most low-wage and medium-wage workers would not be affected by a reduction in the top marginal rate, although there would be a few exceptions. A change in the top rate could affect the labor supplied by a low-wage or medium-wage earner in a two-worker family with joint income subject to the top rate. In addition, young and middle-income people who expected to earn more in the future — which would ultimately put them in the top rate bracket — might alter their labor supply behavior.

Cutting the lowest rate might increase the labor supplied by people in the lowest tax bracket, but it would unambiguously reduce the labor supplied by workers in higher tax brackets. Again, for people in the bottom tax bracket, the effects on labor supply would depend on the balance of income and substitution effects, although the empirical evidence suggests that they would probably increase the number of hours they work.

For people in higher tax brackets, cutting the lowest tax rate would reduce the supply of labor because after-tax income would unambiguously rise. But the tax change would not increase the after-tax wage for working an additional hour, so no substitution effect would operate for these groups.

Increasing the size of exemptions, expanding deductions, or adding credits would reduce tax liabilities without changing

marginal tax rates for most people. Thus, narrowing the tax base would involve an income effect but no substitution effect on the supply of labor. Although economic theory does not rule out an abnormal response, the usual effect would be for people to devote more time to leisure and less time to work.

The earned income credit (EIC) subsidizes low-income workers through the federal income tax system. A reduction in the subsidy rate of the EIC would weaken the incentive for nonworkers to join the labor force. For people who were already working but earning less than the full credit, reducing its rate would have opposing income and substitution effects on the supply of labor. A lower subsidy rate would reduce workers' after-tax hourly wage rates and their disposable income. For taxpayers who received the full subsidy or were in the phaseout range, reducing the rate of the credit would decrease disposable income without creating a substitution effect. Thus, a policy that cut the subsidy rate would tend to increase those taxpayers' supply of labor. For those who already earned too much to qualify for any part of the credit, reducing the credit rate would have no effect on labor supply.

Increasing the phaseout rate would have both income and substitution effects for workers with family income in the phaseout range. Raising the phaseout rate would remove some families from the credit altogether, and the resulting income and substitution effects would each tend to boost the labor supplied by those families. Phasing out the credit at a faster rate would have a substitution effect in favor of leisure until the credit was fully phased out. Thereafter, the substitution effect would disappear, and leisure would become more expensive. For families who were still eligible for part of the credit, the policy would involve competing income and substitution effects. Workers with income outside the phaseout range would be unaffected.

Although statistical estimates of how men and women would respond to changes in taxes on labor are subject to considerable uncertainty, the evidence suggests that a reduction in tax rates could affect the economy's supply of labor. Taking into account potential biases and statistical imprecision, the total wage elasticity for the labor supply of the

economy seems to range somewhere between zero and 0.3. However, elasticities outside that range cannot be ruled out.

15.3 CORPORATE INCOME TAXES*

The corporate income tax has always been controversial. Some argue that the level of corporate taxation is too low, while others argue that the corporate income tax is unfair because it results in double taxation. Although the corporate income tax accounts for a rather small share of federal revenue in the U.S., in reality it is the existence of the corporate income tax that helps maintain the integrity of the individual income tax system. If only personal income were subject to taxation, there would be an incentive for corporations to accumulate wealth within the corporation to avoid individual taxation. On the other hand, if only corporate income was subject to taxation, there would be an incentive to distribute earnings to shareholders in order to avoid corporate taxation (Anderson, 2003).

For unincorporated businesses such as sole proprietorships and partnerships, and for certain types of incorporated businesses called S corporations, business income is reported in the personal incomes of the owners and is taxed under the personal income tax system. For other corporations, called C corporations, business income is subject to a separate corporate income tax. Whether or not business income is taxed separately under the corporate income tax is determined by the Internal Revenue Code. In general, C corporations pay income tax on earnings that are taxable income, whether or not distributed, at graduated rates ranging from 15 to 38%. Certain “personal service corporations” may not use graduated corporate rates at all, but pay tax only at the highest corporate rate. Capital gains of a corporation are taxed at the same rates as ordinary income. Appendix 2 presents an overview of the U.S. corporate income tax system.

* Adapted from Joint Committee on Taxation, Background Materials on Business Tax Issues Prepared for the House Committee on Ways and Means Tax Policy Discussion Series (JCX-23-02), April 4, 2002.

15.3.1 RATIONALE FOR TAXATION OF CORPORATE INCOME

According to Bruce (1998: 556), the main reasons for taxing businesses are:

- Businesses are convenient places where the government can collect taxes and enforce the tax rules.
- Taxes on businesses are sometimes needed to prevent tax avoidance.
- Taxes on businesses are an important way in which the government can influence the production sector of the economy.
- Business taxes may be levied in exchange for benefits received by the firms from the legal and economic systems supported by the government.

Another argument is that the corporate income tax performs an important function as an instrument of control over corporate behavior. According to Musgrave and Musgrave, the appropriate form of corporation tax depends on the particular policy objective to be accomplished (Musgrave and Musgrave, 1989: 374–375):

- The control of monopoly has been traditionally undertaken through regulatory devices, but a tax approach might be used.
- If it were desired to restrict the absolute size of firms or bigness, a tax might again be used for this purpose.
- An excess profits tax may be imposed in periods of emergency when direct controls over wages and prices are needed.
- As a stimulus to capital formation and growth, it may be desirable to encourage corporate saving and to discourage dividend distribution.
- Finally, the corporation tax may be used to provide incentives or disincentives to investment, as distinct from corporate savings.

Finally, Bruce (1998: 557) suggested a salient political rationale for taxing corporate income:

Because the burden of a business tax is shifted to people by the firms rather than levied directly on the people, the source of the burden is less transparent than if the tax had been levied directly. If politicians are lucky, the people who ultimately bear the tax burden may not blame the government at all That is, if the government finds businesses a ready source of revenue, it will tax them whether doing so is a good idea or not.

15.3.2 DOUBLE TAXATION

The taxation of a corporation generally is separate and distinct from the taxation of its shareholders. A distribution by a corporation to its shareholders generally is taxable as a dividend to the shareholder to the extent of the corporation's current or accumulated earnings and profits. Thus, the amount of a corporate dividend generally is taxed twice: once when the income is earned by the corporation and again when the dividend is distributed to the shareholder. Conversely, amounts paid as interest to the debt holders of a corporation generally are subject to only one level of tax (at the recipient level) since the corporation generally is allowed a deduction for the amount of interest expense paid or accrued.

However, double taxation may also occur when the corporation reinvests earnings. Although no direct personal taxes apply when earnings are retained in the corporation, the reinvested earnings increase the value of existing shares. Thus, when these shares are sold, shareholders will owe capital gains taxes on the increased value of the shares. However, since capital gains taxes can be delayed by not realizing the gains, the extent of double taxation is not as serious.

The traditional view of dividend taxation is that the U.S. tax system double-taxes the returns from equity-financed investments, first at the corporate level and then through personal taxes on dividend income (McLure, 1979). Corporate equity in the form of retained earnings is also double-taxed through capital gains taxation at the personal level. But capital gains are taxed at a lower effective rate because the tax is deferred until realization of the gains, and, for higher-income

taxpayers, capital gains are taxed at a lower rate than other income. Taxation of dividends, in the traditional view, thus raises the marginal cost of corporate capital, reduces the incentive to invest, and causes large distortions between the corporate and noncorporate sectors.

Since the late 1970s, however, some economists have argued that the additional, personal-level tax on dividend income has little or no effect on the cost of capital because marginal investment is financed primarily through retained earnings, and a dividend tax reduces both the implicit cost of retaining (in dividend income currently forgone) and the return from retaining (in future dividend income). Retained earnings are “trapped equity” and can be consumed only if distributed and subject to the dividend tax. That “new view” of dividend taxation implies that the extra tax on dividends has no effect on investment (King, 1977; Auerbach, 1979; Bradford, 1981). In contrast, the double taxation of retained earnings through capital gains taxation on a personal level will affect marginal investments by corporations (Sorensen, 1995). The effective rate of taxation is quite low, however, because capital gains taxes are deferred until the capital gains are realized. Hence, the new view suggests that the corporate income tax raises the cost of corporate capital above the cost of noncorporate capital, but much more slightly than was suggested by the old view.

The “nucleus theory” of the firm, developed by Sinn (1991), is an attempt to reconcile the old and new views of corporate and dividend taxation. This theory recognizes that important differences exist among the financing practices of corporations, depending on their ages. Immature or rapidly growing firms are more likely to rely on a “nucleus” of new share issues for equity finance and are therefore more likely to face a higher cost of capital when dividends are subject to double taxation. Only mature firms earn enough profits to allow all marginal investments to be made through retentions. Thus, the old view is more likely to hold for young firms and the new view more likely to apply to mature firms.

Since interest payments are deductible from taxable income and dividends are not, the double taxation of corporate

equity income gives firms an incentive to acquire capital using debt rather than equity. Notwithstanding, most American companies have a debt-to-equity ratio of less than one. This counterintuitive anomaly is sometimes referred to as the *debt puzzle* (Bruce, 1998: 574). Similarly, companies historically tend to distribute more of their earnings than they retain. This seeming contradiction is sometimes referred to as the *dividend puzzle*.

15.3.3 INCIDENCE OF THE CORPORATE TAX*

A major reason for considering the incidence of any tax is to determine whether the distribution of the tax burden among taxpaying units is fair. Although businesses may be legally required to pay taxes, all of the economic burdens of taxes fall on individuals. The issue of who bears the burden of taxes on corporate income is yet to be definitively resolved. In determining the economic effects of the corporate income tax, it is crucial to understand the mechanisms by which tax burdens are transferred. A corporation may write its check to the Internal Revenue Service (IRS) for payment of the corporate income tax, but that money must come from somewhere: from reduced returns to investors in the company, lower wages to its workers, or higher prices that consumers pay for the products the company produces. Understanding the mechanisms through which those tax burdens are transferred is crucial in determining the economic effects of the corporate income tax.

From an economic perspective, individuals differ according to how they earn their income and how they spend it. Tax systems are usually not neutral about such differences. Typically, a bias in tax systems results in an inefficient allocation of resources and goods. Nonneutrality matters for equity as well, because differences in how people earn or spend their income may translate into differences in their ability to pay taxes. Differences between burdens on producers and consumers are significant because the distribution of income among

* Adapted from *The Incidence of the Corporate Income Tax*, Congressional Budget Office, 1996.

purchasers of goods and services may be very different from the distribution of income among owners and stockholders and somewhat different from the distribution among employees.

A focus on individuals or households is only the first requirement in studying tax incidence. Assessing the economic incidence of a tax is not as simple as matching up people with the legal entities that are taxed. Tax burdens typically do not remain on those who work for, invest in, or purchase products from businesses that are subject to the tax but are shifted onto others in the economy through “substitution effects,” or the ability of households and firms to reduce more heavily taxed activities and increase lightly taxed or untaxed activities.

Changing employment, investment, or consumption to avoid taxed activities is not without cost. Compared with a no-tax world in which resources and products are efficiently allocated, the larger the substitution effects, the greater the distortionary cost, or “excess burden,” of taxation. The distortionary cost is over and above the tax revenues collected. And regardless of the efficiency of the status quo, the larger the substitution effects, the more likely that total tax burdens will be shifted to those who are not directly taxed. Knowing something about the existence and magnitude of these substitution effects is thus critical in determining both the efficiency costs and the economic incidence of taxation.

The corporate income tax is usually viewed as a tax levied on the return from the equity capital of corporations, but avoidable by firms, their stockholders, or their consumers through various types of substitution, including:

- *Factor*: The corporation can substitute labor for capital in its mix of inputs. That tends to spread the tax burden to capital in general and to provide gains to labor.
- *Financial*: The corporation can adjust financial policies, such as substituting debt for equity financing. Such measures tend to reduce returns from some forms of investment and raise returns from others.

- *International*: Investors can shift physical capital or investment out of a taxed country into other countries. The burden of the corporate tax is thus shifted onto immobile factors of production.
- *Intertemporal*: Investors can decrease the amount they save as a result of the decreased net rate of return from capital. That substitution shifts the burden onto labor by reducing the total amount of capital, thus decreasing the productivity of labor and hence wages.
- *Portfolio*: Investors can substitute other forms of investment for corporate stock. That reduces the value of corporate assets and tends to shift the burden from new investors onto holders of existing stock.
- *Intersectoral*: Higher prices of products produced by firms encourage consumers to move away from those products toward noncorporate products. The resulting reduction in the firm's output level tends to shift the tax burden toward the factor that is used intensively in the corporate sector because the demand for that factor has decreased.

Understanding the nature and extent of those substitution effects is crucial in understanding corporate tax incidence because the effects determine how relative prices and real incomes adjust in response to the tax, and hence how individuals may face different tax burdens according to the ways in which they earn or spend their income.

A 1996 survey by the Congressional Budget Office (CBO) of recent research into corporate tax incidence, drawn primarily from academic publications, suggested a few general conclusions. CBO's survey emphasized general equilibrium studies, which recognize the interaction between corporate decisions and the prices facing other markets and sectors of the economy. Taxpayers can bear the burden of corporate income taxes through the way in which they earn income (sources) or the way in which they spend it (uses). CBO's review of the studies yields the following conclusions:

- The short-term burden of the corporate tax probably falls on stockholders or investors in general but may fall on some more than on others because not all investments are taxed at the same rate.
- The long-term burden of corporate or dividend taxation is unlikely to rest fully on corporate equity because it will remain there only if marginal investment is not affected by those taxes. Most economists believe that the corporate tax system has some effect on investment decisions.
- Most evidence from closed-economy, general-equilibrium models suggests that given reasonable parameters, the long-term incidence of the corporate tax falls on capital in general.
- In the context of international capital mobility, the burden of the corporate tax may be shifted onto immobile factors (such as labor or land), but only to the degree that the capital and outputs of different countries can be substituted.
- In the very long term, the burden is likely to be shifted in part to labor if the corporate tax dampens capital accumulation.
- Most attempts to distribute the burden of corporate taxation have neglected the possible importance of effects on the relative prices of products.

Harberger (1962) was the first to derive the general-equilibrium effects of a tax. The general-equilibrium methodology recognizes that tax changes in one market can affect prices and quantities in other markets and that long-term tax burdens depend on how much these variables must change before a new equilibrium is achieved.

Although the short-term burden of the corporate income tax falls on corporate capital, in the long term perfect mobility and the ability to substitute capital between corporate and noncorporate sectors implies that capital will move from the corporate to the noncorporate sector until the rates of return (after taxes) are equal among all types of capital. Thus, if the net return from corporate capital falls, the net return from

noncorporate capital must fall as well, and capital in general, not corporate capital specifically, will bear the burden of the corporate income tax.

Harberger's model does not, however, rule out the possibility that the corporate income tax may affect labor. Those effects are the corporate firm's substitution of labor for capital in response to a higher gross-of-tax cost of capital, or the "factor-substitution effect," and consumers' substitution away from purchases of the corporate product to purchases of the noncorporate product in response to an increase in the relative price of the corporate good, or the "output effect."

Depending on the degree to which consumers can substitute noncorporate for corporate output, and the extent to which firms in each sector can substitute capital for labor, the burden of the tax could end up on capital, labor, or some combination of the two. The elasticity of substitution between capital and labor, or the substitutability of capital and labor in production, is an important factor.

Generally, the greater the elasticity of substitution between capital and labor in the corporate sector, the greater the burden on capital. A smaller elasticity in the noncorporate sector also increases the burden on capital. The combination of the high elasticity of substitution in the corporate sector and a low elasticity of substitution in the noncorporate sector implies a large factor-substitution effect on the relative return from capital. That is because a high elasticity on the corporate side implies that the sector is very responsive to a change in relative factor prices. Thus it releases a lot of capital and absorbs a lot of labor. A low elasticity for noncorporate firms implies that the noncorporate sector is less sensitive to relative factor prices, requiring a large change in net factor prices before the noncorporate sector accommodates the corporate sector's factor adjustments by changing its own mix of capital and labor.

Using what he regarded as reasonable parameter values, however, Harberger concluded that capital bears around 100% of the corporate tax burden. Although the corporate sector is labor intensive, he found that the output effect was smaller than the factor substitution effect. That conclusion falls

within the range of estimates derived using more complex versions of the Harberger model (Shoven and Whalley, 1972; Shoven, 1976; Ballard et al., 1985).

The effects of the corporate income tax on economic incentives are also important in determining economic inefficiencies. The substitutions between corporate capital and labor and between corporate and noncorporate outputs cause tax burdens to exceed tax revenues. The “excess burden” of a tax is defined as the dollar value of the welfare loss minus the tax revenue collected. Purely efficient taxes result in welfare losses precisely equal to the tax dollars collected, so that excess burden is zero. Greater responsiveness to changes in relative prices not only implies that tax burdens are more likely to be shifted but also that the inefficiency of the tax is likely to be greater. Using his general-equilibrium model, Harberger determined that the excess burden of the corporate income tax is likely to be about 0.5% of national income (Harberger, 1966).

Clearly, no consensus exists in the literature about taxation on the subject of who bears the burden of the corporate income tax. Individuals can bear burdens according to the sources of their income or the uses of that income. :

The literature suggests that in assigning the burden of the corporate tax among households, various distinctions are important. Among those are the share of income earned from capital, the form of capital income, the age and type of corporate shares held, the mix of corporate and noncorporate outputs purchased, and the amount and timing of consumption.

15.4 SOCIAL SECURITY TAXES*

Historically, payroll taxes have been the principal financing mechanism for social insurance programs such as old-age

* Adapted from John D. Wong, *Federal Payroll Taxes: Pensions and Health Care*. In *Handbook on Taxation*, edited by W. Bartley Hildreth and James A. Richardson. New York: Marcel Dekker, 1999.

retirement, disability, and health care. The Social Security program was created in 1935, at the height of the Great Depression. The law established a federal system of old-age insurance (OAI) for retired workers.

The first major revision of the Social Security Act occurred in 1939, when the program was expanded to include coverage for a worker's survivors and dependents (SI). Disability insurance (DI) was added in 1956. However, the most fundamental enhancement to the Social Security system occurred in 1965 with the addition of Medicare (HI). The 1965 Amendments to the Social Security Act established a basic hospital insurance program for persons age 65 or older, to be financed through a separate earnings tax and trust fund. The amendments also provided for a voluntary supplemental medical insurance program to be financed through enrollee premiums and a federal general revenue subsidy. The supplemental medical insurance program covers part of the cost of physician and other ancillary services not covered by the hospital insurance program. The Medicare program was expanded in 1972 to include Social Security beneficiaries of any age under certain circumstances and most persons with chronic kidney disease. Automatic cost-of-living adjustments were also introduced in 1972. Indexing of earnings was introduced to compute benefits in 1977. Appendix 3 presents an overview of the U.S. Social Security system.

15.4.1 RETIREMENT DECISION

According to Leonesio (1996: 30) the five most important facts concerning the work–retirement decisions of older Americans are that:

- Nearly all full-time workers with strong lifelong labor-force attachment retire between the ages of 55 and 70.
- If the lifelong labor-force activity patterns of specific birth cohorts of men are examined, labor-force participation rates begin to decline slowly when cohort members reach their mid-50s, and the decline accelerates as they enter their early 60s.

- Post–World War II statistics on the average age at which men retire show a marked trend toward earlier retirement.
- Many men who leave career jobs subsequently work at other jobs.
- Seniors are a very heterogeneous group.

During the 1940s, only 10% of workers retired “voluntarily,” but by the 1980s over 60% of workers regarded retirement as voluntary (Schultz, 1995). Sherman (1985), using data from the Social Security Administration’s 1982 New Benefit Survey, found that one of the primary reasons for increased voluntary retirement between the 1960s and the 1980s was improvements in the health status of potential retirees. However, some have suggested that because of changing economic and social factors the numbers may be reversing again in the 1990s (Schultz, 1995). Berkovec and Stern (1991) found that poor health, age, and the lack of education significantly increase the probability of retirement. Quinn (1977), Gordon and Blinder (1980), Boskin and Hurd (1978), and Hanoch and Honig (1983) all found that poor health increased the probability of early retirement.

If a retiree’s living standard is to be maintained consistent with that prior to retirement, sources of retirement income must enable the retiree to replace a certain proportion of earnings lost upon retirement. The *replacement rate* is the percentage of preretirement funds that must be sustained to support the preretirement standard of living. It is generally agreed that many expenditures in retirement will be somewhat lower than before retirement, thus 100% replacement is usually not necessary. According to Palmer (1989), a one-worker couple with gross preretirement earnings of \$15,000 would need a target replacement rate of 82%, while the same couple with gross preretirement earnings of \$80,000 would have a target replacement rate of 68%. Most studies agree that without Social Security, a substantial fraction of the population would be inadequately prepared for retirement (Diamond, 1977; Kotlikoff et al., 1982; Bernheim, 1993). As such, the potential availability of Social Security benefits may

have a significant influence on the retirement decision. However, the extent of the impact of Social Security benefits on the retirement decision is disputed (Quinn et al., 1990; Ruhm, 1990; Leonesio, 1993).

Early research found that very few workers retire voluntarily while in good health (Wentworth, 1945). Stecker (1951) found that most Social Security beneficiaries left their last covered employment because they had lost the job or had to quit for health reasons. As a general rule, most workers worked as long as possible and retired only because they were forced to do so. The main reason individuals continued working was that, without earnings, they did not have sufficient resources to live at the level to which they were accustomed. Those with the lowest retirement earnings were the most likely to return to work after claiming benefits. In a subsequent study, Stecker (1955: 12) concluded that "voluntary quitting to enjoy a life of leisure is rare among old-age beneficiaries. Relatively few who are able to work choose retirement."

Overall, early studies indicated that eligibility for Social Security benefits did not appear to a major consideration. Steiner and Dorfman (1957) concluded that the main causes of labor force withdrawal were poor health and obsolescence of skills. Another study concluded that the influence of Social Security was marginal in making the retirement decision (Long, 1958). During the early 1960s, several studies found the opportunity to enjoy increased leisure to be a significant factor in the retirement decision. Palmore (1964) found that 19% of men age 65 or over and 11% of those age 62 to 64 chose to retire to increase leisure opportunities. Epstein and Murray (1967) found that for those who did intend to retire early, eligibility for Social Security benefits did appear to be a significant factor. Barfield and Morgan (1969: 3) concluded, "financial factors — primarily expected retirement income — are of principal importance in the retirement decision," Likewise, Reno (1971), using data from the Social Security Administration's 1968 Survey of Newly Entitled Beneficiaries, reported that the willingness of individuals to retire early was directly related to the size of their expected retirement benefits.

A number of studies have concluded that a significant portion of the reduction in labor supply by older workers since the 1940s is directly attributable to Social Security (Campbell and Campbell, 1974; Boskin, 1977; Boskin and Hurd, 1978; Esposito and Packard, 1980). Danziger et al. (1981) concluded that Social Security may have accounted for up to one half of the increase in the retirement rate for older men since 1950.

In order to understand the influence of Social Security on the retirement decision, it is important to understand the substitution and income effects. The *substitution effect* is the change in the quantity demanded of a particular good that results from a change of its price relative to that of other goods. The substitution effect occurs when after a change in the relative price between two goods, consumers alter their pattern of consumption and buy more of the less expensive good and less of the more expensive good. The substitution effect is the change in the purchasing patterns caused by changes in relative prices alone, assuming that total purchasing power remains constant. The critical point is that it will always be advantageous to find substitutes for goods that become relatively more expensive and to find expanded uses for goods that become relatively cheaper. Thus, the substitution effect is always negative. The Social Security tax implicitly makes labor less profitable and leisure more attractive. Thus, according to the substitution effect, Social Security taxes decrease work incentives and increase the attractiveness of retirement.

On the other hand, the *income effect* is the change in the quantity demanded of a particular good that results from a change in the purchasing power of a given money income induced by a change in the price of that good relative to that of other goods. Other things being equal, the fall (rise) in the price of a particular good will raise (lower) the real income of individual consumers. Therefore, consumers may buy more of the good, the same amount of the good, or less of the good. The income effect may be negative (inferior goods), zero, or positive (normal goods) depending on the nature of the good. Thus, according to the income effect, Social Security taxes

may have a positive, negative, or neutral impact on the desirability of work relative to retirement, depending on the perception of the specific individual. Typically, though, the Social Security tax implicitly makes most workers feel poorer.

As the wage rate rises, the opportunity cost of not working increases; therefore, the substitution effect induces workers to increase the hours they work and decrease their leisure time. However, higher wages make greater incomes possible, and the income effect may induce workers to want more leisure time to enjoy their income. If the substitution effect is more powerful than the income effect, the supply curve for labor will still be positively sloped; this tends to be the case when wages are low. However, at high wage rates, the income effect may be stronger than the substitution effect, causing the supply curve for labor to be backward bending.

Social Security benefits have a similar effect. Boskin (1977), using data from the 1968–72 Panel Study of Income Dynamics, found that the influence of Social Security benefits on the retirement decision was much larger than the influence of income from other assets. According to Boskin (1977: 14) “the overall impact of the Social Security system ... is clearly to induce earlier retirement for a substantial fraction of the elderly population.”

Another study, using data from the Social Security Administration’s 1969 Retirement History Study, found that both Social Security and pension eligibility were significant factors for married white men to retire before age 65, but the wage rate on the current or last job was not (Quinn, 1977). According to Boskin and Hurd (1978), a \$1,000 increase in annual Social Security benefits increases the probability of retirement by about 8 percentage points.

Single-period models of the retirement decision provide simple but useful insights into the retirement process. However, they fail to capture the impact of Social Security taxation and benefits over time. Multiperiod or life-cycle models assume that decisions made in any one period depend on past and present circumstances and on expectations about the future. Multiperiod models view Social Security benefits as

an asset or a type of wealth, not as a monthly benefit. From a life-cycle perspective, the Social Security program involves both taxes today and benefit returns in the future. The net impact on a worker's lifetime wealth may be positive, negative, or zero, depending on whether expected future benefits exceed the present taxes. Generally, studies have found that retirees up until now have or will receive Social Security benefits far in excess of the amounts that reasonable investment returns would have provided (Burkhauser and Warlick, 1981; Moffitt, 1984). Thus, from the life-cycle perspective, what is typically viewed as a tax on present earnings is actually a future earnings subsidy.

According to Pellechio (1978), the probability of retirement increases with the size of *Social Security wealth* (SSW) for men age 62 or older, but Social Security wealth does not influence the retirement decisions of younger men. Burkhauser (1979) concluded that it is not simply the size of annual benefits received each year but the present value of the entire stream of benefits that was significant. According to Burkhauser (1979: 74), "The loss in the asset value of both private pension and Social Security benefits together with their constraints on market work encourages workers to take these benefits and reduce or completely stop work." A subsequent study by Burkhauser (1980), using data from the 1973 Social Security Exact Match File, found that the size of Social Security wealth was a more important determinant of the retirement decision than the value of annual benefits immediately available to the worker. Burkhauser (1980) concluded that beneficiaries maximized their Social Security wealth when they retired at age 62. According to Moffitt (1984) and Hurd and Boskin (1984), because Social Security wealth is completely illiquid until the beneficiary is eligible to claim benefits, a pent-up demand is released upon the attainment of the minimum retirement age. Because Social Security wealth is less liquid than other assets are, it is viewed as being less valuable than an equivalent amount of other wealth. But Social Security benefits are indexed for inflation. This, in part, accounts for Social Security's large impact on

behavior. Burtless and Moffitt (1984: 155) concluded that “at age 62, relaxation of the liquidity constraints induces a surge of retirements.” Thus, the value of retirement income as a stock of wealth can encourage work by increasing in value with continued employment or discourage work by declining in value for those who continue to work.

On the other hand, Blinder et al. (1980) argue that the Social Security benefits of early retirement are frequently canceled out or outweighed by the disincentive effects of the benefit reduction rate. Gordon and Blinder (1980), using data from the 1969, 1971, and 1973 Longitudinal Retirement History Surveys, found that Social Security has a much weaker effect on retirement decisions than private pension plans do. Overall, Gordon and Blinder (1980) concluded that the Social Security system has not had a large impact on the retirement decision.

If leisure is a good, then the loss of leisure during an additional year of work lowers an individual’s utility. But the increased income earned makes additional consumption possible, which increases utility. Thus, an individual will stop working when the marginal disutility of another year of work is just equal to the marginal utility arising from the consumption that can be financed by the added work. Freiden et al. (1976) concluded that the optimal age for retirement based on maximizing the internal rate of return is 65. Accordingly, Burtless and Moffitt (1985) found that men are most likely to retire around the ages of 65 and 62. According to Burtless and Moffitt (1985) the following groups tend to retire earlier:

- Those in poor health
- Minorities
- Those with poor educational backgrounds
- Workers with higher preretirement wages
- Workers with higher levels of potential retirement income

Hurd and Boskin (1984) concluded that increases in Social Security wealth from increases in benefits increased the probability of retirement at age 62. According to Fields and Mitchell (1984a), a \$1000 increase in Social Security or

pension wealth at age 60 is associated with a one-half month acceleration in retirement, while a \$1000 increase between the ages of 60 and 65 delays retirement by one-third to two-thirds of a month. Likewise, Hausman and Wise (1985) concluded that Social Security wealth is directly related to the probability of retirement, with declines in Social Security wealth directly associated with additional work and inversely related to the probability of retirement. Anderson et al. (1986), using data from the Social Security Administration's 1969–79 Retirement History Study, found that unanticipated increases in Social Security wealth increased the probability of retiring earlier than planned and decreased the likelihood of retiring later. Also using data from the Retirement History Study, Sueyoshi (1989) found that increasing the benefit differential between early and normal retirement may actually cause individuals who might otherwise only partially retire to retire fully.

On the other hand, Burtless and Moffitt (1986) concluded that Social Security increases have only a modest effect on retirement behavior. Several authors have found that Social Security policy changes indeed alter aggregate retirement patterns, but the magnitude of the change is small (Burtless and Moffitt, 1984; Fields and Mitchell, 1984a, 1984b; Gustman and Steinmeier, 1985, 1989; Gohmann and Clark, 1989). Moffitt (1987) and Krueger and Pischke (1989) were skeptical of even a small role for Social Security in the retirement decision.

Before 1962, men were not entitled to receive Social Security benefits before age 65. In that year, the Social Security Act was amended to allow men to retire early at ages 62 through 64 with actuarially reduced benefits; the same option was granted to women in a 1956 amendment. The result was an immediate and major increase in the number of men accepting early retirement benefits. Studies generally indicate that historically Social Security has probably encouraged workers to retire earlier than they would have otherwise. However, Gordon (1982) concluded that the trend toward decreasing labor force participation before age 65 and increasing acceptance of reduced early retirement benefits cannot be attributed to Social Security rules.

The existence of Social Security has the potential to distort the level of saving taking place in the economy, and thus, effect the overall level of economic growth over time. First, according to the *wealth substitution effect*, because workers view Social Security contributions as a form of forced savings, they may reduce their level of private savings. Second, according to the *retirement effect*, the availability of benefits may induce workers to retire earlier in order to claim their benefits. Third, according to the *bequest effect*, workers may increase their level of savings to compensate for the impact of Social Security taxes on future generations. An early study by Cagan (1965) concluded that individuals who were covered by pensions saved more than those who were not. Likewise, Katona (1965) also found that pensions increased personal saving. Katona (1965) reasoned that the existence of a pension increases incentive for other personal saving because it increases the potential for a reasonably comfortable retirement.

Feldstein (1974) argued that the Social Security program causes the wealth substitution effect to dominate the retirement and bequest effects and lead to an increase in the level of national consumption at the expense of the level of saving. Feldstein (1974) estimated that Social Security caused the level of personal saving to be 30 to 50% lower than it otherwise would be.

Danziger et al. (1981) concluded that Social Security does have a negative effect on savings, but the impact is very small. According to Beach et al. (1984), Social Security wealth does have a direct effect on consumption, but the magnitude was less than half of the magnitude found by Feldstein (1974) and only marginally statistically significant.

In a subsequent study, Feldstein (1985) reiterates his position that "The primary cost of providing Social Security benefits is the welfare loss that results from reductions in private saving." Hubbard and Judd (1987) concluded that an actuarially fair Social Security system does lead to a significant increase in consumption and a commensurate decrease in saving. Other economists have found this position somewhat dubious (Munnell, 1974; Barro, 1977; Esposito, 1978;

Darby, 1979), while Leimer and Lesnoy (1982) have found evidence that Social Security may actually increase the level of savings.

15.4.2 FINANCING SOCIAL SECURITY

The financing of the Social Security program is through earmarked payroll taxes paid by employees, employers, and the self-employed on covered employment. The Federal Insurance Contributions Act (FICA) authorizes the collection of Social Security payroll taxes from employers and on behalf of employees, while the Self-Employment Contributions Act (SECA) covers self-employed individuals. These taxes are automatically deposited in three separate trust funds: the OASI Trust Fund, the DI Trust Fund, and the HI Trust Fund. In 2003, an OASI tax rate of 5.3% applied to both employees and employers, while a 10.6% tax rate applied to the self-employed, on income up to \$87,000. A DI tax rate of 0.9% is levied on both employees and employers, while a 1.8% tax is levied on the self-employed, on income up to \$87,000. The hospital insurance program is financed by compulsory payroll taxes of 1.45% on both employers and employees and 2.9% on the self-employed. Since OBRA '93, all wages and self-employment income are subject to the hospital insurance tax. Half of the self-employment tax is deductible as a business expense.

The money received by the trust funds is earmarked and can be used only to pay the benefits and operating expenses of the program. Funds not needed to pay current benefits are invested in interest-bearing securities guaranteed by the U.S. government. A Board of Trustees, which is composed of the Secretary of the Treasury as Managing Trustee, the Secretary of Labor, the Secretary of Health and Human Services, and two public members, is responsible for holding the trust funds and for making periodic reports to Congress.

In addition to the Social Security taxes paid by employees, employers, and the self-employed, the trust funds also receive a small amount of transfers from the general revenues of the U.S. government for such things as:

- The federal government's employer Social Security taxes for covered federal employees
- Interest on Social Security trust fund investments
- Reimbursement for revenue lost from the tax credit for the Social Security tax liability of the self-employed
- Funds to pay for limited benefits to certain very old beneficiaries who qualify under special insured status requirements

The trust funds also receive income tax revenues on up to one-half of the Social Security benefits of beneficiaries who have earnings above the income cap.

In recent years, expenditures have exceeded revenue, and it has been necessary to draw down reserves in the DI trust fund. Legislation passed in 1981 and 1983 authorized certain borrowing of assets among the trust funds, with interest paid by the borrowing fund to the lending fund.

15.4.2.1 Reserve Funding

Since its inception, the Social Security program was never fully funded. In the past, most of the revenues generated each year by payroll taxes were used to pay benefits to nonworkers in the same year. If a surplus of revenues over expenditures existed, it was maintained as part of the reserves for future needs and was deposited in one of the three Social Security trust funds. Under the partial funding approach, it is generally agreed that it is not essential for Social Security programs to accumulate large reserves because the taxing power of the government guarantees the long-run financial integrity of such programs. Since 1983, the Social Security system has been operating under a partial reserve method of funding.

The law provides for the appointment of an Advisory Council on Social Security to review the status of the OASDI and Medicare trust funds and to make recommendations with respect to scope of coverage, adequacy of benefits, and other aspects of these programs. Each year the trustees of the trust funds issue an annual report on the status of the OASI, DI, HI, and Supplementary Medical Insurance (SMI) Trust Funds.

THE 2003 ANNUAL REPORT OF THE BOARD OF
TRUSTEES OF THE FEDERAL OLD-AGE AND
SURVIVORS INSURANCE AND DISABILITY
INSURANCE TRUST FUNDS

COMMUNICATION

FROM

THE BOARD OF TRUSTEES, FEDERAL OLD-AGE
AND SURVIVORS INSURANCE AND DISABILITY
INSURANCE TRUST FUNDS

TRANSMITTING

THE 2003 ANNUAL REPORT OF THE BOARD OF TRUSTEES OF THE
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The term actuarial soundness refers to the ability of insurance programs to provide sufficient payments to eligible recipients at the time they come due. According to the 2003 report, the combined OASDI Trust Funds are projected to become insolvent in 2042 under the long-range intermediate assumptions. For the trust funds to remain solvent throughout the 75-year projection period, the combined payroll tax rate could be increased immediately by 1.92 percentage points, benefits could be reduced immediately by 13%, a transfer of \$3.5 trillion in general revenue could be made, or some combination of approaches could be adopted. Significantly larger changes would be required to achieve solvency beyond 75 years (.). Because the SMI Trust Fund is financed on a year-to-year basis, premiums and federal general revenues are adjusted annually to meet anticipated needs.

15.4.2.2 Equity

Most economists agree that practically all of the burden of the “employer” portion of the Social Security tax falls on the worker in the form of lower wages (Pechman et al., 1968; Brittain, 1971, 1972; Pechman, 1983; Musgrave and Musgrave, 1989). Yet, some have argued that this may not always be fully shifted from employers to employees (Vroman, 1974a, 1974b; Leuthold, 1975; Hamermesh, 1979).

Horizontal equity refers to whether a given tax or benefit structure treats parties in similar circumstances similarly. *Vertical equity* refers to whether a given tax or benefit structure treats differently situated parties differently according to a rational scheme. A *progressive* tax structure levies a higher proportion of income as tax on higher-income parties than on lower-income parties, while a progressive benefit structure bestows a higher proportion of benefits on lower-income parties than higher-income parties. On the other hand, a *regressive* tax structure levies a higher proportion of income as tax on lower-income parties than higher-income parties, while a regressive benefit structure bestows a higher proportion of benefits on higher-income parties than lower-income parties. *Inter-generational equity* refers to whether a given

tax or benefit structure will result in disproportionate transfers of taxes or benefits across generations. Generally, most studies of the Social Security program show that the benefit structure is progressive, that single-earner married couples receive the most favorable treatment, that single men receive the least favorable treatment, and that people who retired during the years shortly after Social Security was first put into place received more favorable treatment than more recent retirees did (Pellechio and Goodfellow, 1983; Boskin et al., 1986).

Thompson (1983) described three conceptual frameworks for analyzing the equity of the Social Security system: the tax-transfer model, the insurance model, and the annuity-welfare model.

The *tax-transfer model* separates the program into two distinct aspects: benefit transfers or expenditures and payroll taxes or revenues. According to the tax-transfer model, there is no *a priori* reason to expect that taxes for any given beneficiary will bear a necessary relationship with the benefits received at retirement. Most analysts using the tax-transfer model have found that the Social Security program has been very effective at redistributing income to those in the lowest income groups (Lampman, 1971; Ozawa, 1976; Danziger, 1977; Danziger and Plotnick, 1977).

The *insurance model* compares Social Security taxes to the expected value of the present discounted value of the retirement benefit stream. Social Security is viewed as a risk-pooling instrument (Campbell and Campbell, 1967; Brittain, 1972; Chen and Chu, 1974; Freiden et al., 1976; Okonkwo, 1976; Ozawa, 1976; Aaron, 1977; Leimer and Petri, 1981; Pellechio and Goodfellow, 1983; Moffit, 1984; Ferrara and Lott, 1985; and Hurd and Shoven, 1985).

Brittain (1972) found contribution/benefit ratios (C/B) ranging from 0.36 to 2.08, with lower ratios found for married couples relative to single individuals and for women relative to men. Chen and Chu (1974) found contribution/benefit ratios ranging from 0.08 to 0.46, with lower ratios for average earners relative to high earners and couples relative to singles.

Okonkwo (1976) found higher rates of return for couples relative to singles, nonwhites relative to whites, and households in the South relative to those in the North, and found that rates of return are inversely related to the level of education. Expected real rates of return for hypothetical workers retiring in 1974 ranged from a high of 11.2% for one-earner couples with 8 years of education living in the South to a low of 6.7% for single men with 16 or more years of education living in the South. Freiden et al. (1976) found significantly higher rates of return for low-income earners versus high-income earners and for women relative to men. Average rates of return varied from a high of 29% for low-earning women to 8.5% for high-earning men. Aaron (1977) counters that benefit-cost ratios actually increase with income. As such, Aaron (1977) concludes that Social Security will become regressive for future retirees. Pellechio and Goodfellow (1983) found that net Social Security wealth declined with age, the likelihood of negative net Social Security wealth (NSSW) estimates increased for younger age groups, and the absolute size of NSSW was highest for one-earner couples where the wife works and lowest for single men. Moffit (1984) found that the NSSW, the difference between the present value of retirement benefits and tax contributions, increased for all age groups reaching retirement age up to 1977, but the growth rate has fallen over time. Hurd and Shoven (1985) found that the Social Security program is progressive over individual life cycles for both past and future retirees. Ferrara and Lott (1985) found rates of return ranging from 2.75% for low-income, one-earner couples to -1.5% for higher-earner single workers.

The *annuity-welfare model* separates the program into insurance and transfer components and employs an actuarial standard of fairness to compare the actual benefits to be received by a beneficiary with that which would have been obtained by purchasing an annuity with tax contributions (Burkhauser and Warlick, 1981). Using an annuity-welfare model, Burkhauser and Warlick (1981) found that all income classes of 1972 beneficiaries received retirement benefits in excess of annuity payments. Transfers from Social Security

benefits were larger in both absolute and percentage terms for earlier retirees than more recent retirees. Middle-income beneficiaries received the largest transfers.

The rapid rise in the birth rate after World War II combined with the relatively low birth rate in recent years will have a major impact on the viability of the Social Security system in the 21st century. A 1994 Gallup poll found that 69% of respondents expect Social Security benefits to be eliminated or reduced in the future (EBRI, 1994). The Social Security system represents a transfer of resources from one generation to another with no commensurate system of compensation. Beneficiaries who retire in the early years of a pay-as-you-go program receive much higher returns than do later retirees. Retirees in the early years faced lower contribution requirements and obtained higher benefit levels. As a long-term old-age pension system, because of legal, economic, and institutional constraints, Social Security can provide an average annual rate of return of no more than the real rate of economic growth in the economy.

Brittain (1972) and Chen and Chu (1974) concluded that the average Social Security beneficiary obtains a "fair" lifetime rate of return on his or her contributions. Burkhauser and Warlick (1981) found a general decline in relative transfers over time. Leimer and Petri (1981) projected that individuals born in 1917 would receive a return of approximately 7%, while those born later would receive a steadily decreasing rate of return, with those retiring after 2005 receiving an approximately 2 to 3% return. Hurd and Shoven (1985) projected that rates of return will decline steadily from 1970 to 2020. Hurd and Shoven (1985) estimated that the median real rate of return of Social Security contributions for those born in 1905 was about 8.5%. Boskin et al. (1986) estimated that the real rate of return for hypothetical couples born in 1915 ranges from 5.2 to 6.6%, depending on income. Likewise, Freiden et al. (1976) and Duggan et al. (1993) found relatively high rates of return on Social Security contributions.

Pellechio and Goodfellow (1983) and Boskin et al. (1986) found that older generations fared much better than younger ones did and that some workers retiring in the future are

projected to receive negative returns. However, Boskin et al. (1986) also found that for those born in 1945, the rates of return on Social Security will be 3.74% for single-earner couples with low income, 2.3% for couples with moderate income, and 1.95% for couples with high income. Boskin et al. (1986) also found that couples fare better than singles do, and single-earner couples fare better than double-earner couples do. Steuerle and Bakija (1994) found that although the difference between lifetime benefits and taxes will decline for future generations of retirees, most will still receive a relatively high return. According to Schultz (1995: 180): "Social Security benefits will continue to remain a 'good buy' for almost anyone — and remain so for many years to come."

15.5 CONCLUSION

The effect of taxes on labor supply is an important issue in economic theory, econometrics, and public finance. Since the largest share of federal revenue is derived from individual income taxes, corporate income taxes, and Social Security taxes, the impact of federal taxes on labor supply is certainly significant. The potential effects of federal taxes on labor supply are important because of the heavy and growing reliance on direct taxation.

Economic theory in the absence of empirical evidence cannot predict whether cutting taxes will increase the economy's supply of labor. One of the most daunting tasks concerning the effect of taxes on labor supply is measuring empirically the direction and magnitude of the effect. Because of the complexities and subtleties of the tax code, little definitive knowledge can be gleaned by a theoretical analysis of the effect of taxation alone. In fact, it is difficult to determine whether an increase in tax rates will increase or decrease hours worked in a particular case. Nor is it straightforward to determine how an increase in exemptions or other similar changes will affect hours worked. Thus, the only reliable means of determining the direction and magnitude of the effect of taxation on labor supply is through empirical investigation of specific instances.

Another important aspect of the effect of taxation of labor supply is its effect on economic welfare. Because income taxes are generally progressive, while payroll taxes are generally regressive, the redistributive aspect of these taxes is critical. Generally, social insurance programs have a more pronounced impact on labor supply decisions than do changes in wages and taxes.

Although estimates of how taxpayers would respond to changes in taxes on labor are subject to considerable uncertainty, the evidence suggests that a reduction in tax rates could affect the economy's supply of labor. The total wage elasticity for the labor supply of the economy seems to range somewhere between zero and 0.3.

Although there is no consensus in the literature about taxation on the subject of who bears the burden of the corporate income tax, it is generally agreed that individuals will bear burdens according to the sources of their income or the uses of that income. Because of this, the corporate income tax also has the potential to have a significant impact on labor supply.

One of the most important factors influencing the labor supply is the retirement decision. Most particularly, the influence of Social Security benefits on the retirement decision seems to be much larger than the influence of income from other assets. Social Security and pension eligibility are significant factors for individuals who choose to retire before age 65. According to one study, a \$1000 increase in annual Social Security benefits increases the probability of retirement by about eight percentage points.

15.A1 APPENDIX 1: OVERVIEW OF THE U.S. FEDERAL INDIVIDUAL INCOME TAX SYSTEM*

15.A1.1 JOBS AND GROWTH TAX RELIEF RECONCILIATION ACT OF 2003

In 2003, President George W. Bush signed into law the Jobs and Growth Tax Relief Reconciliation Act. The Act:

- Accelerated 2004 and 2006 tax rate cuts to 2003
- Reduced the marriage penalties through an acceleration of increases in the standard deduction from 2009 to 2003 and the width of the 15% rate bracket for joint filers from 2008 to 2003
- Accelerated the increase in the width of the 10% rate bracket for single and joint filers from 2008 to 2003
- Accelerated the increase to \$1000 in the child tax credit from 2010 to 2003
- Lowered the tax rate on dividends and capital gains to 15%
- Increased the alternative minimum tax (AMT) exemption level
- Increased the maximum amount of investment in equipment that small businesses can expense from \$25,000 to \$100,000
- Increased the first-year bonus depreciation deduction for small businesses from 30 to 50% for qualified investments

According to estimates compiled the U.S. Department of the Treasury, the Act is expected to provide 91 million taxpayers with an average tax cut of \$1126 in 2003. Accelerating the 2004 and 2006 rate cuts in 2003 is expected to provide 32 million taxpayers with an average tax cut of \$1060. Accelerating the expansion of the 10% rate bracket is expected to reduce taxes for 69 million taxpayers, on average, by \$76. Enacting marriage penalty relief in 2003 is expected to reduce

* Adapted from Joint Committee on Taxation, *Overview of Present Law and Issues Relating to Individual Income Taxes* (JCX-18-99), April 14, 1999.

taxes for 34 million married couples by an average of \$589. Increasing the child tax credit to \$1000 in 2003 is expected to provide 26 million families with an average tax cut of \$623. Lowering the tax rates on capital gains and dividend income is expected to reduce taxes for 26 million taxpayers with income from these two sources by an average of \$798.

15.A1.2 SOURCES OF INCOME

Taxable income equals the taxpayer's total gross income less certain exclusions, exemptions, and deductions. Graduated tax rates are then applied to a taxpayer's taxable income to determine his or her individual income tax liability. A taxpayer may reduce his or her income tax liability by any applicable tax credits.

Under the Internal Revenue Code of 1986 (the "Code"), gross income means "income from whatever source derived" except for certain items specifically exempt or excluded by statute. Sources of income include compensation for services, interest, dividends, capital gains, rents, royalties, alimony and separate maintenance payments, annuities, income from life insurance and endowment contracts, pensions, gross profits from a trade or business, income from the discharge of indebtedness, income in respect of a decedent, and income from S corporations, partnerships, trusts, or estates. Statutory exclusions from gross income include death benefits payable under a life insurance contract, interest on certain state and local bonds, employer-provided health insurance, employer-provided pension contributions, and certain other employer-provided fringe benefits.

The gross income of most individuals is derived from underlying trade or business activities. Exceptions are amounts received from governmental or charitable organizations. Individual gross income may take the form of income from labor, income from passive investments in businesses, or income of business activities that are reported directly by the individual.

Some income derived from trade or business activities is subject to one level of tax, while other such income is subject

to two levels of tax. For federal income tax purposes, a corporation generally is treated as a separate taxpayer apart from its shareholders. Any net income earned by the corporation is subject to the corporate income tax. Such corporations generally are referred to as “C corporations” because the tax rules governing the relationship between such corporations and their shareholders are found in subchapter C of the Code. In determining its taxable income, a corporation generally is allowed deductions for its ordinary and necessary business expenditures. Thus, amounts paid to independent contractors and employees for services and to creditors as interest are subject to one level of tax because such amounts are deductible by the payor corporation, and are includible in the incomes of the recipient service providers or creditors. Conversely, distributions from a corporation with respect to its stock are subject to two levels of tax because such amounts are not deductible by the corporation but are includible in the income of the individual shareholders. Some entities, on the other hand, generally are not subject to an entity-level tax. A small business corporation and its shareholders may elect to be treated in a manner similar to the treatment of a partnership and its partners. Such corporations generally are referred to as “S corporations” because the tax rules governing the treatment of such entities are found in subchapter S of the Code. In addition, a single level of tax is accorded to certain investment vehicles under various statutory regimes. Instead, income earned by pass-through entities, whether distributed or not, is taxed directly to the owners in proportion to their interests in the entities, and distributions from the entities generally are tax free. Losses and tax credits from a pass-through entity generally may not be claimed by an individual unless the individual is “at risk” with respect to, and “materially participates” in, the activities of the entity. Similarly, income earned by a sole proprietorship is taxed directly to the individual owner.

The major source of individuals’ income subject to tax is wages and salaries, which constitute nearly 73% of all such income. The next most significant sources of income for individuals are business and farm incomes, which constitute just

over 7%, and taxable amounts from pensions and individual retirement arrangements (“IRAs”), which constitute just under 7% of such income.

15.A1.3 EXCLUSIONS FROM INCOME

Present law provides specific exclusions from gross income for certain items of income. Exclusions from income are frequently provided for nontax policy reasons, such as to encourage particular behavior or in situations in which income inclusion has been determined to be inappropriate. For example, the exclusion from income for employer-provided health care is provided in order to encourage employers to provide health insurance for their employees and to encourage employees to prefer to receive some part of their compensation in the form of health insurance. Some exclusions are also provided for administrative reasons. For example, property or services provided by an employer are excludable from gross income as a *de minimis* fringe benefit if the value is so small as to make accounting for it unreasonable or administrably impracticable.

The benefit of an exclusion from income increases as the taxpayer’s marginal tax rate increases. That is, the higher an individual’s marginal tax rate, the more the individual saves in taxes by reason of an exclusion. In the case of items that are excludable from wages for employment tax purposes, the individual benefits from reduced employment taxes. However, the individual may also have reduced Social Security benefits in the future as a result of the exclusion.

15.A1.3.1 Employer-Provided Fringe Benefits

Contributions for and amounts received under employer-provided accident or health plans and employer contributions to medical savings accounts generally are excludable from gross income and from wages for employment tax purposes. The exclusion is limited in the case of a self-insured medical reimbursement plan, which discriminates in favor of highly compensated employees.

Up to \$5250 annually of employer-provided educational assistance is excludable from gross income and wages, if the

assistance is provided pursuant to a separate written plan of an employer that does not discriminate in favor of highly compensated employees and if certain other requirements are satisfied. In the absence of the exclusion, employer-provided educational assistance is excludable from gross income and wages only if the educational assistance relates to the employee's current job.

Up to \$3000 for the care of a single individual, and up to \$6000 for the care of two or more individuals, of employer-provided dependent care assistance is excludable from gross income and wages annually if the assistance is provided pursuant to a separate written plan of an employer that does not discriminate in favor of highly compensated employees and meets certain other requirements. The amount excludable cannot exceed the earned income of the employee or, if the employee is married, the lesser of the earned income of the employee or the earned income of the employee's spouse.

Up to \$10,000 per child of employer-provided adoption assistance is excludable from gross income. The exclusion is phased out between \$150,000 and \$190,000 of modified adjusted gross income.

Gross income and wages do not include the cost of up to \$50,000 of group term life insurance provided by the employer. The exclusion is limited in the case of a group term life insurance plan that discriminates in favor of key employees.

The following miscellaneous fringe benefits are excludable from income and wages if certain requirements are satisfied: (1) services provided at no additional cost to the employer; (2) qualified employee discounts; (3) working condition fringe benefits; and (4) *de minimis* fringe benefits. In addition, up to \$100 per month (for 2003) of van pooling or transit passes provided by the employer and up to \$190 per month (for 2003) of qualified parking are excludable from income and wages. Amounts paid by an employer for moving expenses that would be deductible by the employee are excludable from income. The value of the use of certain on-premises gyms and other athletic facilities is excludable from income and wages.

The value of meals or lodging furnished to an employee and his or her spouse or dependents for the convenience of

the employer are excludable from income and wages. In the case of meals, the meal must be furnished on the business premises of the employer in order for the exclusion to apply. The exclusion for lodging generally does not apply unless the employee is required to accept the lodging on the business premises of the employer as a condition of employment.

Under present law, compensation generally is includible in gross income in the year in which it is actually or constructively received. An amount is constructively received if it is made available to the taxpayer. Under one exception to the constructive receipt rules, no amount is includible in the gross income of a participant in a cafeteria plan meeting certain requirements merely because the participant can choose between cash and certain nontaxable benefits. This exception generally also applies for purposes of employment taxes. If the individual elects to take cash rather than benefits, then the amount of cash received is includible in income and wages.

The constructive receipt exception is not available if the individual is permitted to change a benefit election during a period of coverage in the absence of a change in family status or certain other events. Furthermore, the constructive receipt exception is limited if the cafeteria plan discriminates in favor of highly compensated employees or if the nontaxable benefits provided to key employees exceed a certain percentage of the benefits provided for all employees under the plan. A similar exception to the constructive receipt doctrine applies if an employee is offered a choice between cash and nontaxable parking or van pooling, a transit benefit.

15.A1.3.2 Qualified Scholarships

Gross income does not include amounts received as a qualified scholarship by an individual who is a candidate for a degree at a qualified education institution or tuition reduction provided to an employee of an educational institution for education. Neither exclusion applies to amounts that are compensation for services required as a condition of receiving the scholarship or tuition reduction, nor does the exclusion apply to amounts attributable to room and board.

15.A1.3.3 Social Security Benefits

Under present law, taxpayers receiving Social Security benefits are not required to include any portion of such benefits in gross income if their “provisional income” does not exceed \$25,000, in the case of unmarried taxpayers, or \$32,000, in the case of married taxpayers filing joint returns. For purposes of these computations, a taxpayer’s provisional income is defined as adjusted gross income plus: (1) tax-exempt interest; (2) only excludable interest on educational savings bonds; (3) adoption assistance payments; (4) certain deductible student loan interest; (5) certain foreign source income; (6) certain U.S. possession income; (7) certain income from Puerto Rico; and (8) one-half of the taxpayer’s Social Security benefits. A second-tier threshold for provisional income is \$34,000, in the case of unmarried taxpayers, or \$44,000, in the case of married taxpayers filing joint returns.

If the taxpayer’s provisional income exceeds the lower threshold but does not exceed the second-tier threshold, then the amount required to be included in income is the lesser of (1) 50% of the taxpayer’s Social Security benefits or (2) 50% of the excess of the taxpayer’s provisional income over the lower threshold.

If the amount of provisional income exceeds the second-tier threshold, then the amount required to be included in income is the lesser of (1) 85% of the taxpayer’s Social Security benefits; or (2) the sum of (a) 85% of the excess of the taxpayer’s provisional income over the second-tier threshold, plus (b) the smaller of (i) the amount of benefits that would have been included if the 50% inclusion rule were applied, or (ii) one-half of the difference between the taxpayer’s second-tier threshold and lower threshold.

15.A1.3.4 Life Insurance and Accelerated Death Benefits

Under present law, the investment income earned on premiums credited under a life insurance contract is not subject to current taxation. Amounts received under a life insurance

contract by reason of the death of the insured or with respect to an insured who is terminally ill or chronically ill are excludable from income. Thus, neither the policyholder nor the policyholder's beneficiary is ever taxed on the inside buildup if the proceeds of the policy are paid to the policyholder's beneficiary by reason of the death of the insured or of the insured being terminally or chronically ill. In the case of payments with respect to a chronically ill individual, the exclusion may be limited in certain circumstances.

15.A1.3.5 Gifts and Inheritances

Gross income does not include the value of property acquired by gift, bequest, devise, or inheritance. The value of items so acquired may, however, be subject to the estate and gift tax.

15.A1.3.6 Military Benefits

Gross income does not include certain benefits provided to members of the armed forces and their families.

15.A1.3.7 Education Savings Bonds

Gross income does not include interest earned on an education savings bond to the extent used to pay qualified higher education expenses. For 2003, the exclusion is phased out for individuals with modified adjusted gross income between \$57,600 and \$72,600 in the case of a single taxpayer and \$86,400 and \$116,400 in the case of a married taxpayer filing a joint return.

15.A1.3.8 Compensation for Personal Injuries or Sickness

Gross income does not include amounts received under workers' compensation acts as compensation for personal injuries or sickness. In addition, gross income does not include amounts received as damages on account of personal physical injuries or physical sickness.

15.A1.3.9 Step-Up of Basis at Death

Under present law, gain is generally recognized on the sale or exchange of property to the extent the amount received exceeds the individual's basis. In general, the basis is the individual's cost of acquiring the property. In the case of property acquired from a decedent, the basis of the property to the individual receiving the property is generally equal to the fair market value of the property on the date of the decedent's death (i.e., there is a "stepped-up basis"). The effect of the stepped-up basis is to provide an exclusion for the amount of gain that would have been recognized had the property been sold on the date of the decedent's death.

15.A1.3.10 Citizens Living Abroad

U.S. citizens generally are subject to U.S. income tax on all their income, whether derived in the United States or elsewhere. A U.S. citizen who earns income in a foreign country also may be taxed on such income by that foreign country. However, the United States generally cedes the primary right to tax income derived by a U.S. citizen from sources outside the United States to the foreign country where such income is derived. Accordingly, a credit against the U.S. income tax imposed on foreign source taxable income is provided for foreign taxes paid on that income.

U.S. citizens living abroad may be eligible to exclude from their income for U.S. tax purposes certain foreign earned income and foreign housing costs. In order to qualify for these exclusions, a U.S. citizen must be either (1) a bona fide resident of a foreign country for an uninterrupted period that includes an entire taxable year or (2) present overseas for 330 days out of any 12-consecutive-month period. In addition, the taxpayer must have his or her tax home in a foreign country.

The exclusion for foreign earned income generally applies to income earned from sources outside the United States as compensation for personal services actually rendered by the taxpayer. The maximum exclusion for foreign earned income for a taxable year is \$80,000 (in 2003).

The exclusion for housing costs applies to reasonable expenses, other than deductible interest and taxes, paid or incurred by or on behalf of the taxpayer for housing for the taxpayer and his or her spouse and dependents in a foreign country. The exclusion amount for housing costs for a taxable year is equal to the excess of such housing costs for the taxable year over an amount computed pursuant to a specified formula. In the case of housing costs that are not paid or reimbursed by the taxpayer's employer, the amount that would be excludible is treated instead as a deduction.

The combined earned income exclusion and housing cost exclusion may not exceed the taxpayer's total foreign earned income. The taxpayer's foreign tax credit is reduced by the amount of such credit that is attributable to excluded income.

Special exclusions apply in the case of taxpayers who reside in one of the U.S. possessions.

15.A1.3.11 Tax-Exempt Interest

Interest on certain debt obligations of states, territories, and possessions of the United States is exempt from the regular individual. Interest on the federal government's debt is taxable, but repayment is guaranteed by the United States. With the exception of state and local government bonds guaranteed under certain grandfathered programs that were in existence before 1985, interest on state and local government bonds is not permitted to be both tax-exempt and federally guaranteed. Interest on debt of local governments generally receives identical treatment to that provided for states. Interest on these "state and local government bonds" may, in certain cases, be includible in calculating the individual alternative minimum tax. Interest on private activity bonds is a preference item in calculating the individual alternative minimum tax. Additionally, state and local government bond interest is included in determining whether a portion of Social Security benefits is taxable under the regular individual income tax.

The state and local government bond interest exemption applies to two principal types of bonds. First, interest is tax-exempt on bonds issued to finance public activities conducted

and paid for by state and local governments themselves (“governmental bonds”). Examples of activities financed with governmental bonds are schools, courthouses, roads, public mass transit systems, and governmentally owned and operated water, sewer, and electric facilities. State and local government bonds used to finance the acquisition of existing output property are treated as private activity bonds even if the property is to be governmentally owned and operated, unless (1) the same service was provided to the area to be served by the acquiring governmental entity during the 10-year period before the acquisition, or (2) the area to be served is contiguous to the annexing governmental unit, does not exceed 10% of the service area of the acquirer, and is annexed in a qualifying annexation. States and local governments also may issue limited amounts of tax-exempt working capital debt to cover cash-flow shortfalls pending receipt of tax and revenue anticipation notes (TRANs). Further, for federal income tax purposes, interest paid by these governments under installment sales contracts and finance leases is treated as bond interest.

The second major category of state and local government bonds on which interest is tax exempt consists of bonds issued by these governmental units acting as a conduit to provide financing for private persons (“private activity bonds”). Unlike governmental bonds, tax-exempt private activity bonds generally may only be issued for purposes specified in the Code. The specified purposes generally relate to privately operated transportation facilities, privately provided municipal services, economic development, and certain social programs. The typical private activity bond issue involves a state or local government as a nominal borrower, with the funds being simultaneously relent to the ultimate private borrower. Repayment of most private activity bonds comes exclusively from the ultimate private borrower; bond documents may state that there is neither a legal nor a moral obligation of the issuing governmental unit to repay the bonds.

Private activity bonds are classified into several major categories: exempt-facility bonds; qualified redevelopment

bonds; qualified small-issue bonds; mortgage revenue bonds; qualified student loan bonds; bonds for charitable organizations exempt from tax under code section 501(c)(3), and bonds for businesses located in federal empowerment zones and enterprise communities. Because these bonds provide financing for private business or personal activities, are repaid or secured by private funds, and would not otherwise be subject to federal restrictions, the Code includes detailed targeting provisions. Further, issuance of most private activity bonds is subject to annual state volume limitations.

15.A1.3.12 Sales of Principal Residence

A taxpayer generally is able to exclude up to \$250,000 (\$500,000 if married filing a joint return) of gain realized on the sale or exchange of a principal residence. To be eligible for the exclusion, the taxpayer must have owned the residence and used it as a principal residence for at least 2 of the 5 years prior to the sale or exchange. A taxpayer who fails to meet these requirements by reason of a change of place of employment, health, or unforeseen circumstances is able to exclude a fraction of the \$250,000 (\$500,000 if married filing a joint return) equal to the fraction of the 2 years that the requirements are met. For example, an unmarried taxpayer who owns and uses a principal residence for 1 year, has a change in place of employment, and sells the residence at a realized gain of \$500,000 may exclude \$125,000 of gain (half of \$250,000). Similarly, an unmarried taxpayer who owns and uses a principal residence for 1 year, has a change in place of employment and then sells the residence at a realized gain of \$50,000 may exclude the entire \$50,000 of gain since it is less than half of \$250,000.

15.A1.4 DEFERRALS OF INCOME

Present law provides that the inclusion of certain items of income is deferred until a later year. The benefit of deferral depends in part on the tax rate the individual will face in the future compared with current rates. If an individual expects that his or her tax rate will be lower in the future or that tax

rates in the future will be lower due to changes in the law, then the individual may wish to defer a portion of his or her income. Even in the case of stable tax rates over time, the deferral of income provides the taxpayer with a time value of money benefit. Many of the provisions providing for the deferral of income are intended to encourage savings by individuals.

15.A1.4.1 Individual Retirement Arrangements

Present law provides tax-favored treatment for individual retirement arrangements (“IRAs”). The tax treatment depends on whether an individual makes deductible IRA contributions, contributions to a Roth IRA, or nondeductible IRA contributions. The benefit of the provisions relating to deductible and Roth IRAs is similar. The tax benefit of making nondeductible contributions to an IRA is different. Deductible IRAs and Roth IRAs effectively exempt earnings on invested sums from tax, while the nondeductible IRA taxes earnings, but on a deferred basis.

Under present law, an individual may make deductible contributions to an IRA up to the lesser of \$3,000 (\$3,500 if 50 or older) or the individual’s compensation if the individual and the individual’s spouse are not active participants in an employer-sponsored retirement plan. In the case of a married couple, deductible IRA contributions of up to \$3,000 (\$3,500 if 50 or older) can be made for each spouse, if the combined compensation of both spouses is at least equal to the contributed amount. If the individual (or the individual’s spouse) is an active participant in an employer-sponsored retirement plan, the deduction limit is phased out for taxpayers with adjusted gross income (“AGI”) over certain levels for the taxable year.

The AGI phase-out limits for a single individual who is an active participant in an employer-sponsored retirement plan are as follows: for 2003, \$40,000 to \$50,000; for 2004, \$45,000 to \$55,000; and for 2005 and thereafter, \$50,000 to \$60,000.

The AGI phase-out limits for a married individual filing a joint return who is an active participant in an employer-sponsored plan are as follows: for 2003, \$60,000 to \$70,000;

for 2004, \$65,000 to \$75,000; for 2005, \$70,000 to \$80,000; for 2006, \$75,000 to \$85,000; and for 2007 and thereafter, \$80,000 to \$100,000.

If the individual is not an active participant in an employer-sponsored retirement plan, but the individual's spouse is, the deduction limit is phased out for taxpayers with AGI between \$150,000 and \$160,000.

Amounts held in a regular IRA are includible in income when withdrawn. Includible amounts withdrawn prior to attainment of age 59½ are subject to an additional 10% early withdrawal tax, unless the withdrawal is due to death or disability, is made in the form of certain periodic payments, is used to pay medical expenses in excess of 7.5% of AGI, is used to purchase health insurance of an unemployed individual, is used for education expenses, or is used for first-time home-buyer expenses of up to \$10,000.

Individuals with AGI below certain levels may make nondeductible contributions to a Roth IRA. The maximum annual contribution that may be made to a Roth IRA is the lesser of the deduction limit or the individual's compensation for the year. The contribution limit is reduced to the extent an individual makes contributions to any other IRA for the same taxable year. As under the rules relating to IRAs generally, a contribution of up to \$3,000 (\$3,500 if 50 or older) for each spouse may be made to a Roth IRA provided the combined compensation of the spouses is at least equal to the contributed amount. The maximum annual contribution that can be made to a Roth IRA is phased out for single individuals with AGI between \$95,000 and \$110,000 and for married individuals filing joint returns with AGI between \$150,000 and \$160,000.

Taxpayers with modified AGI of \$100,000 or less generally may convert a deductible or nondeductible IRA into an Roth IRA. The amount converted is includible in income as if a withdrawal had been made, except that the 10% early withdrawal tax does not apply and if the conversion occurred in 1998, the income may be spread over four years. An individual who converts a regular IRA into a Roth IRA may recharacterize the Roth IRA back to the prior form of IRA and, subject

to limitations on frequency and timing, may reconvert the recharacterized IRA back to a Roth IRA.

Amounts held in a Roth IRA that are withdrawn as a qualified distribution are not includible in income, nor subject to the additional 10% tax on early withdrawals. A qualified distribution is a distribution that is made (1) after the 5-taxable-year period beginning with the first taxable year for which the individual made a contribution to a Roth IRA, and (2) after attainment of age 59½, on account of death or disability, or for first-time homebuyer expenses of up to \$10,000.

To the extent attributable to earnings, a distribution from a Roth IRA that is not a qualified distribution is includible in income and subject to the 10% early withdrawal tax. The same exceptions to the early withdrawal tax that apply to regular IRAs apply to Roth IRAs. The early withdrawal tax will apply, however, to any portion of a distribution attributable to a conversion from a deductible or nondeductible IRA if the distribution occurs within the 5-taxable-year period beginning with the taxable year in which the conversion occurs.

To the extent an individual cannot or does not make deductible contributions to an IRA or contributions to a Roth IRA, the individual may make nondeductible contributions to an IRA. Distributions from a nondeductible IRA are includible in income and subject to the 10% early withdrawal tax to the extent attributable to earnings.

15.A1.4.2 Employer-Sponsored Retirement Plans

A plan of deferred compensation that meets the qualification standards of the Internal Revenue Code is accorded special treatment under present law. Employees do not include qualified plan benefits in gross income until the benefits are distributed, even though the plan is funded and the benefits are nonforfeitable. The employer is entitled to a current deduction for contributions to a qualified plan even though the contributions are not currently included in an employee's income. Contributions to a qualified plan are held in a tax-exempt trust.

The tax treatment of contributions under qualified plans is essentially the same as that of deductible IRAs. However,

the limits on contributions to qualified plans are much higher than the IRA contribution limits, so that qualified plans provide for a greater accumulation of funds on a tax-favored basis. In return for greater tax benefits, qualified plans are subject to rules that do not apply to IRAs, such as nondiscrimination rules designed to help ensure that a qualified plan benefits a broad group of employees and does not discriminate in favor of highly compensated employees.

Qualified plan benefits are generally subject to tax when received under rules similar to those that apply to IRA withdrawals.

A qualified cash or deferred arrangement, commonly referred to as a 401(k) plan, is one type of qualified plan frequently used by employers. In general, a cash or deferred arrangement is an arrangement under which an employee can elect to receive an amount in cash or have it contributed to a tax-qualified pension plan. Amounts that are contributed to the plan are not included in income until withdrawn from the plan. Qualified cash or deferred arrangements are subject to the rules applicable to qualified plans generally, and are also subject to additional rules, including special nondiscrimination rules. The maximum annual amount that an employee can elect to have contributed to a cash or deferred arrangement is limited to \$12,000 in 2003 and increases \$1000 per year till the year 2006, when it reaches \$15,000.

Under present law, some individuals defer significant amounts of compensation pursuant to so-called nonqualified deferred compensation plans. These plans are not provided for under specific Code provisions and are not subject to specific rules in the Code as are tax-qualified and similar plans discussed in the text. Rather, the deferral occurs pursuant to the generally applicable income tax rules, discussed above.

Present law contains provisions relating to a variety of other types of employer-sponsored retirement plans, which have the same tax benefits as tax-qualified plans. These include SIMPLE (Saving Incentive Match Plan for Employees) retirement plans, simplified employee pensions, and tax-sheltered annuities.

15.A1.4.3 Coverdell Education Savings Accounts

Taxpayers may establish certain trusts or custodial education savings accounts (ESAs) created exclusively for the purpose of paying qualified higher education expenses of a named beneficiary. Annual contributions to ESAs may not exceed \$2,000 per designated beneficiary and may not be made after the designated beneficiary reaches age 18. The contribution limit is phased out for taxpayers with modified AGI between \$95,000 and \$110,000 (\$190,000 and \$220,000 for taxpayers filing joint returns). The AGI of the contributor controls whether a contribution is permitted by the taxpayer. No contribution may be made to an education IRA during any year in which any contributions are made by anyone to a qualified state tuition program on behalf of the same beneficiary.

Earnings on contributions to an ESA generally are subject to tax when withdrawn. However, distributions from an ESA are excludable from the gross income of the distributee to the extent that the distribution does not exceed the qualified higher education expenses incurred by the beneficiary during the year the distribution is made. The earnings portion of an ESA distribution not used to pay qualified higher education expenses is includible in the gross income of the distributee and generally is subject to an additional 10% tax.

15.A1.4.4 Qualified State Tuition Programs

Present law provides tax-exempt status to “qualified state tuition programs,” meaning certain programs established and maintained by a state under which persons may (1) purchase tuition credits or certificates on behalf of a designated beneficiary that entitle the beneficiary to a waiver or payment of qualified higher education expenses of the beneficiary, or (2) make contributions to an account that is established for the purpose of meeting qualified higher education expenses of the designated beneficiary of the account. Under present law, distributions from, and earnings under, a qualified state tuition program are included in the gross income of a contributor to, or beneficiary of, such a program, except that

(1) amounts distributed for educational benefits provided to a beneficiary are included in the beneficiary's gross income to the extent such amounts or the value of the educational benefits exceed contributions made on behalf of the beneficiary, and (2) amounts distributed to a contributor or another distributee are included in the contributor's/distributee's gross income to the extent such amounts exceed contributions made on behalf of the beneficiary. Earnings on an account may be refunded to a contributor or beneficiary, but the state or instrumentality must impose a more than *de minimis* monetary penalty unless the refund is (1) used for qualified higher education expenses of the beneficiary, (2) made on account of the death or disability of the beneficiary, or (3) made on account of a scholarship received by the designated beneficiary to the extent the amount refunded does not exceed the amount of the scholarship used for higher education expenses.

15.A1.4.5 Deferred Annuities

Present law provides that income credited to a deferred annuity contract is not currently includible in the gross income of the owner of the contract. In addition, the income is not taxed to the insurance company issuing the contract. No deduction is provided for, and no dollar limits are imposed on, amounts used to purchase annuity contracts. In general, amounts received by the owner of an annuity contract before the annuity starting date are includible in gross income as ordinary income to the extent that the cash value of the contract exceeds the owner's investment in the contract. In addition, a portion of each distribution received after the annuity starting date is treated as ordinary income based on the ratio of the investment in the contract to the total distributions expected to be received.

A 10% additional income tax is imposed on certain early withdrawals under an annuity contract. This additional tax does not apply to any distribution made after the owner of the contract attains age 59½, receives annuity payments under the contract, or satisfies certain other requirements.

15.A1.4.6 Life Insurance

No federal income tax generally is imposed on a policyholder with respect to the earnings under a life insurance contract (“inside buildup”). Further, death benefits paid under a life insurance contract are excluded from income, so that neither the policyholder nor the policyholder’s beneficiary is ever taxed on the inside buildup if the proceeds of the policy are paid to the policyholder’s beneficiary by reason of the death of the insured. In addition, certain amounts received under a life insurance contract on the life of a terminally ill or chronically ill individual are treated as being received by reason of the death of the insured and therefore are excludable from income. This same favorable tax treatment applies to amounts received from the sale or assignment to a viatical settlement provider of a life insurance contract on the life of a terminally ill or chronically ill individual. The favorable tax treatment for life insurance contracts is available only if the policyholder has an insurable interest in the insured when the contract is issued and if the life insurance contract meets certain requirements designed to limit the investment character of the contract.

Distributions from life insurance contracts that are made prior to the death of the insured generally are includible in income only to the extent that the amounts distributed exceed the taxpayer’s investment in the contract; such distributions generally are treated first as a tax-free recovery of the taxpayer’s investment in the contract and then as income. In the case of a modified endowment contract, distributions are treated as income first, loans are treated as distributions, and an additional 10% tax is imposed on the income portion of distributions made before age 59½ and in certain other circumstances. A modified endowment contract is a life insurance contract that does not meet a statutory “7-pay” test, i.e., generally is funded more rapidly than seven annual level premiums.

No deduction is provided for, and no dollar limits are imposed on, amounts used by an individual to purchase life insurance contracts.

15.A1.4.7 Incentive Stock Options

An incentive stock option (“ISO”) is an option granted to an employee of a corporation in connection with the employee’s performance of services for the corporation that meets certain specified requirements. For example, the option must be granted pursuant to a plan, which includes the aggregate number of shares which may be issued under options and the employees who may receive the options. The option must be granted within 10 years of the date the plan is adopted, must be exercisable no more than 10 years following the grant of the option, and meet certain other requirements.

In absence of a special rule, upon exercise of an ISO the individual generally would have ordinary income equal to the excess of the fair market value of the stock on the exercise date over the option price. If the option itself had a fair market value, then the value of the option generally would be includible in income. However, under a special rule, no amount is includible in the income of an individual due to the exercise of an ISO. Rather, the individual will have income only to the extent of gain realized upon disposition of the stock acquired pursuant to the ISO. At that time, the income realized would be capital gain rather than ordinary income if the individual disposes of the stock more than one year after exercise of the ISO and two years after grant of the ISO.

15.A1.4.8 Sales of Stock to Employee Stock Ownership Plans

An individual who sells certain stock to an employee stock ownership plan (“ESOP”) defers recognition of gain on the sale to the extent the individual uses the proceeds to purchase qualified replacement property. In general, qualified replacement property is defined as any security issued by a domestic operating company that does not have passive investment income of more than 25% of the gross receipts of the company. Gain may be deferred until the individual disposes of the qualified replacement property. This treatment applies only to the sale of stock issued by a domestic corporation that does

not have any outstanding stock that is readily tradable. This treatment does not apply unless the employee stock ownership plan owns at least 30% of the stock of the corporation that issued the stock after the sale.

15.A1.4.9 Property Received in Connection with the Performance of Services

An individual who receives property in connection with the performance of services for the party that transfers the property generally does not include the value of the property in income as long as the property is both nontransferable and is subject to a substantial risk of forfeiture. Property is subject to a substantial risk of forfeiture if the recipient's rights to full enjoyment of the property are conditioned upon future performance of substantial services by any individual. At the first time the property becomes either transferable or nonforfeitable, the recipient generally recognizes as ordinary income the fair market value of the property at such time. When the recipient disposes of the property, any gain attributable to increase in the value of the property after the property first becomes transferable or nonforfeitable will be capital gain. The recipient may elect to recognize ordinary income equal to the fair market value of the property on the date of transfer even though the property is both nontransferable and subject to a substantial risk of forfeiture. If the recipient makes this election, any increase in the value of the property after the date of transfer will be capital gain.

15.A1.4.10 Other Nontaxable Exchanges

Present law includes a number of provisions under which no gain or loss is recognized on the exchange or transfer of certain types of property. Recognition of gain is deferred until the property acquired in the exchange is disposed of. These provisions include: exchanges of like-kind property; involuntary conversions of property; exchanges of insurance policies; and transfers of property incident to divorce.

15.A1.5 DEDUCTIONS FROM INCOME

Tax deductions are subtractions from the ordinary tax base that are allowed for specific purposes defined by law. Tax deductions effectively reduce the amount of income subject to taxation.

15.A1.5.1 Above-the-Line Deductions

Once an individual determines his or her gross income by including those income items that are subject to the individual income tax and omitting those items that are deferred or excluded, the individual determines his or her adjusted gross income (“AGI”). An individual’s AGI is determined by subtracting certain “above-the-line” deductions from gross income. These deductions include trade or business expenses, certain capital losses, contributions to a tax-qualified retirement plan by a self-employed individual, contributions to IRAs, interest on certain student loans, alimony payments, and certain moving expenses.

15.A1.5.2 Personal Exemptions

In order to determine taxable income, an individual reduces AGI by any personal exemption, deductions, and either the applicable standard deduction or itemized deductions. Personal exemptions generally are allowed for the taxpayer, his or her spouse, and any dependents. For 2002, the amount deductible for each personal exemption is \$3,000. This amount is indexed annually for inflation. This adjustment is made in reference to the Consumer Price Index (“CPI”). The deduction for personal exemptions is phased out (PEP) for taxpayers with incomes over certain thresholds. These thresholds of PEP are indexed annually for inflation. Under PEP, the applicable thresholds for 2002 are \$127,300 for single individuals, \$206,000 for married individuals filing a joint return, \$171,650 for heads of households, and \$103,000 for married individuals filing separate returns. For 2002, the point at which a taxpayer’s personal exemptions are completely phased out are \$259,800 for single individuals, \$328,500 for

married individuals filing a joint return, \$294,150 for heads of households, and \$164,250 for married individuals filing separate returns.

15.A1.5.3 Standard Deduction

A taxpayer also may reduce AGI by the amount of the applicable standard deduction. The basic standard deduction varies depending upon a taxpayer's filing status. For 2002, the amount of the standard deduction is \$4,700 for single individuals, \$6,900 for heads of households, \$7,850 for married individuals filing jointly, and \$3,925 for married individuals filing separately. Additional standard deductions are allowed with respect to any individual who is elderly or blind. For 2002, the additional amount for married individuals is \$900, while the additional amount for single individuals and heads of households is \$1,150. The amounts of the basic standard deduction and the additional standard deductions are indexed annually for inflation.

The Jobs and Growth Tax Relief Reconciliation Act of 2003 provides that the basic standard deduction amount for married taxpayers filing a joint return is twice the basic standard deduction amount for single individuals for 2003 and 2004. The standard deduction for single taxpayers will be \$4,750 and the standard deduction for married taxpayers will be \$9,500. For taxable years beginning after 2004, the relationship between the standard deduction for joint filers and single filers reverts to present law.

15.A1.5.4 Itemized Deductions

In lieu of taking the applicable standard deductions, an individual may elect to itemize deductions. The deductions that may be itemized include charitable contributions; home mortgage interest; state and local income, real property, and certain personal property taxes; medical expenses (in excess of 7.5% of AGI); certain investment interest expense; nonbusiness casualty and theft losses; gambling losses; and certain miscellaneous expenses (in excess of 2% of AGI).

Generally, a taxpayer who itemizes deductions may deduct cash contributions to charity, as well as the fair market value of contributions of property. The amount of the deduction allowable for the taxable year with respect to a charitable contribution may be reduced, depending on the type of property contributed, the type of charitable organization to which the property is contributed, and the income of the taxpayer.

Qualified residence interest is deductible notwithstanding the general rule that personal interest is nondeductible. Qualified residence interest generally is interest on (1) debt to acquire, construct, or substantially improve a principal or second residence (up to a total debt of \$1 million), plus (2) debt (not in excess of \$100,000) secured by a principal or second residence.

Itemizers may deduct three types of state and local taxes that are not incurred in a trade or business or in an investment activity — individual income taxes, real property taxes, and personal property taxes.

Medical expenses in excess of 7.5% of AGI generally are deductible if not reimbursed by insurance or otherwise. Medical expenses eligible for the deduction are amounts paid by the taxpayer for (1) certain health insurance; (2) the diagnosis, treatment, or prevention of disease or malfunction of the body; (3) transportation primarily for and essential to medical care; and (4) qualified long-term care services.

The amount of investment interest an individual may deduct in a taxable year is limited to the amount of net investment income for that year. Excess amounts of investment interest are carried forward. To the extent that an individual elects to treat long-term capital gain as investment income, for purposes of computing the investment interest limitation, that amount of net capital gain does not qualify for preferential capital gains treatment.

Individuals who itemize deductions may deduct losses of property not connected with a trade or business or a transaction entered into for profit if the loss arises from theft or from fire, storm, shipwreck, or other casualty. Only the amount of the loss in excess of \$100 per casualty loss can be deducted. In addition, the casualty losses of a taxpayer for a

taxable year may be deducted only to the extent that the sum of such losses exceeds 10% of the taxpayer's AGI.

Gambling losses are allowed as an itemized deduction only to the extent of gains from gambling.

An individual may claim an itemized deduction for certain miscellaneous expenses in excess of 2% of AGI. These expenses include unreimbursed employee expenses such as certain business and professional dues, job search expenses, uniform costs, and home office deductions. To be deductible, an unreimbursed employee business expense must be (1) paid or incurred during the taxable year; (2) for carrying on the trade or business of being an employee; and (3) an ordinary and necessary business expense. Generally, the taxpayer applies the 2% AGI limit after any other deduction limit.

The total amount of itemized deductions allowed is reduced but not eliminated for taxpayers with incomes over a certain threshold amount, which is indexed annually for inflation. This deduction limitation is referred to as the "Pease" limitation. The threshold amount for 2002 is \$137,300 (\$68,650 for married individuals filing separate returns). All itemized deductions are subject to the limit except (1) medical expenses; (2) investment interest expenses; (3) nonbusiness casualty and theft losses; and (4) gambling losses. For those deductions that are subject to the limit, the total amount of itemized deductions is reduced by 3% of AGI over the threshold amount but not by more than 80% of itemized deductions subject to the limit. Therefore, all individuals subject to the limitation may deduct at least 20% of those deductions if they choose to itemize their deductions.

15.A1.6 TAX RATES

To determine tax liability, a taxpayer generally must apply the tax rate schedules (or the tax tables) to his or her taxable income. The rate schedules are broken into several ranges of income, known as income brackets, and the marginal tax rate increases as a taxpayer's income increases. The income bracket amounts are indexed for inflation. Separate rate schedules apply based on an individual's filing status. In order

to limit multiple uses of a graduated rate schedule within a family, the net unearned income of a child under age 14 is taxed as if it were the parent's income. The Jobs and Growth Tax Relief Reconciliation Act of 2003 accelerates the increase in the taxable income levels of the 10% rate bracket so that the income levels currently scheduled for 2008 become effective in 2003 and 2004. Thus, for 2003, the taxable income level for the 10% regular income tax rate bracket for single individuals is increased from \$6,000 to \$7,000, and for married taxpayers filing joint returns from \$12,000 to \$14,000. For 2004, these amounts are indexed for inflation. For taxable years beginning after December 31, 2004, the taxable income levels for the 10% rate bracket revert to the levels provided under present law. The Act also increases the size of the 15% regular income tax rate bracket for married taxpayers filing joint returns to twice the width of the 15% regular income tax rate bracket for single returns for taxable years beginning in 2003 and 2004. For taxable years beginning after 2004, the rate brackets revert to present law. The Act also accelerates the reductions in the regular income tax rates that are scheduled for 2004 and 2006. Thus, for 2003 and thereafter, the regular income tax rates in excess of 15% are 25, 28, 33, and 35%. For 2003, the individual income tax rate schedules are shown in Table 15.1.

In general, gain or loss reflected in the value of an asset is not recognized for income tax purposes until a taxpayer disposes of the asset. On the sale or exchange of capital assets, any gain generally is included in income, and the net capital gain of an individual is taxed at maximum rates lower than the rates applicable to ordinary income. Net capital gain is the excess of the net long-term capital gain for the taxable year over the net short-term capital loss for the year. Gain or loss is treated as long term if the asset is held for more than one year.

Capital losses generally are deductible in full against capital gains. In addition, individual taxpayers may deduct capital losses against up to \$3,000 of ordinary income in each year. Any remaining unused capital losses may be carried forward indefinitely to another taxable year.

TABLE 15.1 Federal Individual Income Tax Rates for 2003

| Taxable income | Tax rate (%) |
|--|--------------|
| Single | |
| \$0 to \$7,000 | 10 |
| \$6,001 to \$27,950 | 15 |
| \$27,951 to \$67,700 | 25 |
| \$67,701 to \$141,250 | 28 |
| \$141,251 to \$307,050 | 33 |
| \$307,051 and over | 35 |
| Married Filing Jointly or Qualifying Widow(er) | |
| \$0 to \$14,000 | 10 |
| \$12,001 to \$56,800 | 15 |
| \$56,801 to \$112,850 | 25 |
| \$112,851 to \$171,950 | 28 |
| \$171,951 to \$307,050 | 33 |
| \$307,051 and over | 35 |
| Married Filing Separately | |
| \$0 to \$6,000 | 10 |
| \$6,001 to \$23,350 | 15 |
| \$23,351 to \$56,425 | 25 |
| \$56,426 to \$85,975 | 28 |
| \$85,976 to \$153,525 | 33 |
| \$153,526 and over | 35 |
| Head of Household | |
| \$0 to \$10,000 | 10 |
| \$10,001 to \$37,450 | 15 |
| \$37,451 to \$96,700 | 25 |
| \$96,701 to \$156,600 | 28 |
| \$156,601 to \$307,050 | 33 |
| \$307,051 and over | 35 |

A capital asset generally means any property except (1) inventory, stock in trade, or property held primarily for sale to customers in the ordinary course of the taxpayer's trade or business, (2) depreciable or real property used in the taxpayer's trade or business, (3) specified literary or artistic property, (4) business accounts or notes receivable, or (5) certain

U.S. government publications. In addition, the net gain from the disposition of certain property used in the taxpayer's trade or business is treated as long-term capital gain. Gain from the disposition of depreciable personal property is not treated as capital gain to the extent of all previous depreciation allowances. Gain from the disposition of depreciable real property is generally not treated as capital gain to the extent of the depreciation allowances in excess of the allowances that would have been available under the straight-line method of depreciation.

The tax rates that apply to a net capital gain are generally lower than the tax rates that apply to other income. These lower rates are called the maximum capital gain rates. The term "net capital gain" means the amount by which your net long-term capital gain for the year is more than your net short-term capital loss. The maximum capital gain rate can be 5, 8, 15, 25, or 28%. The maximum capital gain rate does not apply if it is higher than the applicable regular tax rate. These rates apply for purposes of both the regular tax and the alternative minimum tax.

The Jobs and Growth Tax Relief Reconciliation Act of 2003 reduces the 10 and 20% rates on capital gains to 5 (zero, in 2008) and 15%, respectively. These lower rates apply to both the regular tax and the alternative minimum tax. The lower rates apply to assets held more than one year. The provision applies to sales and exchanges (and payments received) on or after May 6, 2003 and before January 1, 2009. Under the Act, dividends received by an individual shareholder from domestic and qualified foreign corporations generally are taxed at the same rates that apply to capital gains. This treatment applies for purposes of both the regular tax and the alternative minimum tax. Thus, under the provision, dividends are taxed at rates of 5 (zero, in 2008) and 15%.

15.A1.7 TAX CREDITS

A tax credit results in a reduction in tax liability. A refundable tax credit may exceed the actual tax liability of the taxpayer,

in which case the taxpayer would receive a net refund. A nonrefundable tax credit is limited by the amount of the actual tax liability. If a nonrefundable credit exceeds the taxpayer's tax liability, the taxpayer would not be entitled to a refund of the difference.

15.A1.7.1 Child

Present law provides a \$1,000 tax credit for each qualifying child under the age of 17. A qualifying child is defined as an individual for whom the taxpayer can claim a dependency exemption and who is a son or daughter of the taxpayer, a stepson or stepdaughter of the taxpayer, or an eligible foster child of the taxpayer. The child credit is nonrefundable for taxpayers with fewer than three children but may be partially refundable for certain taxpayers with three or more children.

For taxpayers with modified AGI in excess of certain thresholds, the otherwise allowable child credit is phased out. Specifically, the otherwise allowable child credit is reduced by \$50 for each \$1,000 of modified AGI in excess of the threshold ("the modified AGI phaseout"). For married taxpayers filing joint returns, the threshold is \$110,000. For taxpayers filing single or head of household returns, the threshold is \$75,000. For married taxpayers filing separate returns, the threshold is \$55,000. These thresholds are not indexed for inflation. The length of the phase-out range is affected by the number of the taxpayer's qualifying children. In 2003, the length of the phase-out range is \$10,350 of modified AGI for each qualifying child. For example, in 2003 the phase-out range for a single person with one qualifying child is between \$75,000 and \$85,350 of modified AGI. The phase-out range for a single person with two qualifying children is between \$75,000 and \$95,700 of modified AGI in 2003. For 2003, the increased amount of the child credit (up to \$400) will be paid in advance, beginning in July 2003, based on the information contained in the taxpayer's return for 2002. Under the Jobs and Growth Tax Relief Reconciliation Act of 2003 the amount of the credit reverts to \$600 after 2004.

15.A1.7.2 Earned Income

Certain eligible low-income workers are entitled to claim a refundable earned income credit on their income tax return. A refundable credit is a credit that not only reduces an individual's tax liability but allows refunds to the individual in excess of income tax liability. The amount of the credit an eligible individual may claim depends upon whether the individual has one, more than one, or no qualifying children, and is determined by multiplying the credit rate by the individual's earned income up to an earned income amount. In the case of a married individual who files a joint return with his or her spouse, the income for purposes of these tests is the combined income of the couple. The maximum amount of the credit is the product of the credit rate and the earned income amount. The credit is phased out above certain income levels. For individuals with earned income in excess of the beginning of the phase-out range, the maximum credit amount is reduced by the phase-out rate multiplied by the earned income in excess of the beginning of the phase-out range. For individuals with earned income in excess of the end of the phase-out range, no credit is allowed.

15.A1.7.3 Dependent Care

A nonrefundable credit against income tax liability is available for up to 30% of a limited dollar amount of employment-related child and dependent care expenses. The credit may be claimed by an individual who maintains a household that includes one or more qualifying individuals. A qualifying individual is a child or other dependent who is under the age of 15, a physically or mentally incapacitated dependent, or a physically or mentally incapacitated spouse.

Employment-related expenses are expenses for the care of a qualifying individual, if incurred to enable the taxpayer to be gainfully employed. The amount of employment-related expenses that may be taken into account in computing the credit generally may not exceed an individual's earned income or, in the case of married taxpayers, the earned income of the spouse with the lesser earnings. Thus, if one spouse is not

employed, no credit is generally allowed. Eligible employment-related expenses are limited to \$2,400 if there is one qualifying individual and \$4,800 if there are two or more qualifying individuals.

The 30% credit rate is reduced by one percentage point for each \$2,000 of AGI above \$10,000. Because married couples must file a joint return to claim the credit, a married couple's combined AGI is used for purposes of this computation. Individuals with more than \$28,000 of AGI are entitled to a credit equal to 20% of allowable employment-related expenses.

15.A1.7.4 Education

Individual taxpayers are allowed to claim a nonrefundable HOPE credit against federal income taxes up to \$1,500 per student for qualified tuition and fees paid during the year on behalf of a student who is enrolled in a post-secondary degree or certificate program at an eligible post-secondary institution on at least a half-time basis. The HOPE credit is available only for the first two years of a student's post-secondary education. The credit rate is 100% of the first \$1,000 of qualified tuition and fees and 50% on the next \$1,000 of qualified tuition and fees.

The HOPE credit amount that a taxpayer may otherwise claim is phased out for taxpayers with modified adjusted gross income (AGI) between \$41,000 and \$51,000 (\$82,000 and \$102,000 for joint returns). The \$1,500 maximum HOPE credit amount and the AGI phase-out range are indexed for inflation.

If a student is not eligible for the HOPE credit, individual taxpayers are allowed to claim a nonrefundable Lifetime Learning credit against federal income taxes equal to 20% of qualified tuition and fees paid during the taxable year on behalf of the taxpayer, the taxpayer's spouse, or a dependent. In contrast to the HOPE credit, the student need not be enrolled on at least a half-time basis in order to be eligible for the Lifetime Learning credit, which is available for an unlimited number of years of post-secondary training. Up to \$5,000 of qualified tuition and fees per taxpayer return will

be eligible for the Lifetime Learning credit. The Lifetime Learning credit amount that a taxpayer may otherwise claim is phased out over the same modified AGI phase-out range as applies for purposes of the HOPE credit.

15.A1.7.5 Elderly and Disabled

Present law provides a nonrefundable credit against income tax liability for individuals who are age 65 or over, or who have retired on permanent and total disability. For this purpose, an individual is considered permanently and totally disabled if he or she is unable to engage in any substantial gainful activity by reason of any medically determinable physical or mental impairment that can be expected to result in death, or which has lasted or can be expected to last for a continuous period of not less than 12 months. The individual must furnish proof of disability to the IRS.

The credit equals 15% of an initial base amount, as specified in the statute, that is reduced by the amount of certain tax-free income received by the taxpayer and by one-half of the taxpayer's AGI exceeding a specified threshold.

The initial base amount is \$5,000, in the case of an unmarried elderly or disabled individual or in the case of a married couple filing a joint return if only one spouse is eligible for the credit; \$7,500, in the case of a married couple filing a joint return with both spouses eligible for the credit; or \$3,750, in the case of a married couple filing separate returns. For a disabled individual who is under age 65, however, the initial base amount is the lesser of the applicable specified amount or the individual's disability income for the year. Consequently, the maximum credit available is \$750, \$1,125, or \$562.50, depending on the initial base amount applicable to the taxpayer.

The initial base amount is reduced by the amount of certain nontaxable income of the taxpayer, such as nontaxable pension and annuity income or nontaxable Social Security, railroad retirement, or veterans' nonservice-related disability benefits. In addition, the initial base amount is reduced by one-half of the taxpayer's AGI in excess of \$7,500, in the case

of a single individual; \$10,000, in the case of married taxpayers filing a joint return; or \$5,000, in the case of married taxpayers filing separate returns.

15.A1.7.6 Adoption

Taxpayers are entitled to a maximum nonrefundable credit against income tax liability of \$10,000 per child for qualified adoption expenses paid or incurred by the taxpayer.

Qualified adoption expenses are reasonable and necessary adoption fees, court costs, attorneys' fees, and other expenses that are directly related to the legal adoption of an eligible child. All reasonable and necessary expenses required by a state as a condition of adoption are qualified adoption expenses. Otherwise qualified adoption expenses paid or incurred in one taxable year are not taken into account for purposes of the credit until the next taxable year unless the expenses are paid or incurred in the year the adoption becomes final.

An eligible child is an individual (1) who has not attained age 18 or (2) who is physically or mentally incapable of caring for himself or herself. No credit is allowed for expenses incurred (1) in violation of state or federal law, (2) in carrying out any surrogate parenting arrangement, (3) in connection with the adoption of a child of the taxpayer's spouse, (4) that are reimbursed under an employer adoption assistance program or otherwise, or (5) for a foreign adoption that is not finalized.

The credit is phased out ratably for taxpayers with modified AGI above \$150,000 and is fully phased out at \$190,000 of modified AGI.

15.A1.8 ALTERNATIVE MINIMUM TAX

Present law imposes a minimum tax on an individual to the extent the taxpayer's minimum tax liability exceeds his or her regular tax liability. This alternative minimum tax ("AMT") is imposed upon individuals at rates of (1) 26% on the first \$175,000 of alternative minimum taxable income in excess of a phased-out exemption amount and (2) 28% on the

amount in excess of \$175,000. The exemption amounts are \$49,000 in the case of married individuals filing a joint return and surviving spouses; \$35,700 in the case of other unmarried individuals; and \$24,500 in the case of married individuals filing a separate return. These exemption amounts are phased-out by an amount equal to 25% of the amount that the individual's alternative minimum taxable income exceeds a threshold amount. These threshold amounts are \$150,000 in the case of married individuals filing a joint return and surviving spouses; \$112,500 in the case of other unmarried individuals; and \$75,000 in the case of married individuals filing a separate return, estates, and trusts. The exemption amounts, the threshold phase-out amounts, and the \$175,000 break-point amount are not indexed for inflation. The lower capital gains rates applicable to the regular tax also apply for purposes of the AMT. The Jobs and Growth Tax Relief Reconciliation Act of 2003 increases the alternative minimum tax exemption amount for married taxpayers filing joint returns and surviving spouses to \$58,000, and for unmarried taxpayers to \$40,250 for taxable years beginning in 2003 and 2004.

15.A2 APPENDIX 2: OVERVIEW OF THE U.S. FEDERAL CORPORATE INCOME TAX SYSTEM*

15.A2.1 STRUCTURE OF THE CORPORATE INCOME TAX

15.A2.1.1 Tax Unit

Incorporated businesses with fewer than 35 shareholders and capital receipts of less than \$1 million can choose to be taxed as a subchapter S corporation. The income of a subchapter S corporation is taxed like that of a partnership. In other words, the income of the company is attributed to its owners in proportion to their share of ownership and taxed as personal income. Unlike sole proprietorships or partnerships, corporations have a legal identity that is separate and distinct from the identities of its owners. The incomes of businesses organized in the U.S. as subchapter C corporations are subject to the corporate income tax. For tax purposes, the income of subchapter C corporations is distinct from the incomes of its owners. The income of the corporation is subject to a separate tax with its own tax rate schedule. Shareholders are not directly taxed on income earned from the corporation unless and until it is distributed to them.

Corporations that are affiliated through 80% or more corporate ownership may elect to file a consolidated return in lieu of filing separate returns. Corporations filing a consolidated return generally are treated as a single corporation; thus, the losses of a corporation can offset the income of other affiliated corporations. Also, corporations that file a consolidated return may engage in many types of transactions with their affiliates without immediate recognition of gain or loss. Corporations that are American subsidiaries of foreign corporations headquartered in other countries are also subject to the corporate tax. However, corporations may receive a tax

* Adapted from Joint Committee on Taxation, *Background Materials on Business Tax Issues Prepared for the House Committee on Ways and Means Tax Policy Discussion Series* (JCX-23-02), April 4, 2002.

credit for corporation income taxes paid to foreign governments. Multinationals also get a credit for foreign taxes paid by their foreign subsidiaries.

15.A2.1.2 Tax Base

Corporations organized under the laws of any of the 50 states (and the District of Columbia) generally are subject to the U.S. corporate income tax on their worldwide taxable income. Although the corporate income tax is applied to net income, this is not necessarily the same as the corporation's profits. In fact, the actual tax base for the corporate income tax does not precisely mirror accounting profit or economic profit. Not all accounting or economic costs are treated as deductible under the Internal Revenue Code (IRC). Although wage and salary outlays, depreciation on capital invested, and interest paid on loans are counted as costs, a normal return for invested capital is not included as a cost. This means that the base is really equal to the normal return to capital invested plus any economic profits (Browning and Browning, 1987).

The taxable income of a corporation generally is composed of gross income, less allowable exclusions, exemptions, and deductions. Gross income generally is income derived from any source, including gross profit from the sale of goods and services to customers, rents, royalties, interest (other than interest from certain indebtedness issued by state and local governments), dividends, gains from the sale of business and investment assets, and other income. Aside from these deductions, corporations do not get the personal deductions available to individuals, except the deduction for charitable donations. Corporations can deduct the value of charitable donations only up to a maximum of 10% of corporate income. However, donations over this limit can be carried forward and deducted from corporate income within five years.

Allowable deductions include ordinary and necessary business expenditures, such as salaries, wages, contributions to profit-sharing and pension plans and other employee benefit programs, repairs, bad debts, taxes (other than federal income taxes), contributions to charitable organizations (subject

to an income limitation), advertising, interest expense, certain losses, selling expenses, and other expenses. Expenditures that benefit future accounting periods (such as the purchase of plant and equipment) generally are capitalized and recovered over time through depreciation, amortization, or depletion allowances. A net operating loss incurred in one taxable year may be carried back two years and carried forward 20 years and allowed as a deduction in another taxable year. Deductions are also allowed for certain amounts despite the lack of an underlying expenditure. For example, a deduction is allowed for all or a portion of the amount of dividends received by a corporation from another corporation. The following equations outline the derivation of taxable income.

- $\text{Total Income} = \text{Gross Profit} - \text{Dividends} - \text{Interest} - \text{Gross Rents} - \text{Gross Royalties} - \text{Capital Gain Net Income} + \text{Other Income}$
- $\text{Gross Profit} = \text{Gross Receipts} - \text{Cost of Goods Sold}$
- $\text{Total Deductions} = \text{Compensation of Officers} + \text{Salaries and Wages} + \text{Repairs and Maintenance} + \text{Bad Debts} + \text{Rents} + \text{Taxes and Licenses} + \text{Interest} + \text{Charitable Contributions} + \text{Depreciation} + \text{Depletion} + \text{Advertising} + \text{Pension and Profit-Sharing Plans} + \text{Employee Benefit Programs} + \text{Other Deductions} + \text{Net operating loss (NOL) deduction}$
- $\text{Taxable Income} = \text{Total Income} - \text{Total Deductions}$

The Code also specifies certain expenditures that may not be deducted, such as dividends paid to shareholders, expenses associated with earning tax-exempt income such as exempt state and local obligations, certain entertainment expenditures, certain executive compensation in excess of \$1,000,000 per year, a portion of the interest on certain high-yield debt obligations that resemble equity, and fines, penalties, bribes, kickbacks, and illegal payments.

The main complication in defining taxable business income is determining the cost of doing business. The IRC defines the cost of doing business as all outlays that are “ordinary and necessary” for carrying on the trade or business.

15.A2.1.3 Tax Rates

Similar to the individual income tax, the corporate tax rate structure is graduated. Most corporate income is taxed at the 35% rate. A corporation's income tax liability is found by applying the graduated corporate tax rate schedule to its taxable income. These rates apply to the income of a consolidated group of corporations as if it were a single company. As with the personal tax rate schedules, these are marginal tax rates and apply only to the amounts of income within the tax brackets. A corporation's regular income tax liability is determined by applying the following tax rate schedule to its taxable income. For 2003, the corporate income tax rate schedule is shown in Table 15.2.

The first two graduated rates described above are phased out for corporations with taxable income between \$100,000 and \$335,000. As a result, a corporation with taxable income between \$335,000 and \$10,000,000 effectively is subject to a flat tax rate of 34%. Also, the application of the 34% rate is gradually phased out for corporations with taxable income between \$15,000,000 and \$18,333,333; a corporation with taxable income of \$18,333,333 or more effectively is subject to a flat rate of 35%.

The maximum rate of tax on the net capital gains of a corporation is 35%. A corporation may not deduct the amount of capital losses in excess of capital gains for any taxable year. Disallowed capital losses may be carried back three years and carried forward five years.

TABLE 15.2 Federal Corporate Income Tax Rates for 2003

| Taxable income | Tax rate (%) |
|------------------------------|--------------|
| \$0 to \$50,000 | 15 |
| \$50,001 to \$75,000 | 25 |
| \$75,001 to \$100,000 | 34 |
| \$101,001 to \$335,000 | 39 |
| \$335,001 to \$10,000,000 | 34 |
| \$10,000,001 to \$15,000,000 | 35 |
| \$15,000,001 to \$18,333,333 | 38 |
| \$18,333,334 and over | 35 |

Like individuals, corporations may reduce their tax liability by any applicable tax credits. Tax credits applicable to businesses include credits for producing fuels from nonconventional sources, investment tax credits (applicable to investment in certain reforestation, renewable energy property, and the rehabilitation of certain real property), the alcohol fuels credit (applicable to production of certain alcohol fuels), the research credit (applicable to the incremental investment in certain research and experimental activities), the low-income housing credit (applicable to the investment in certain low-income housing projects), the enhanced oil recovery credit (applicable to the recovery of certain difficult-to-extract oil reserves), the empowerment zone employment credit (applicable to wages paid to certain residents of empowerment zones), the renewable energy production credit, the employer-provided child care credit, and the disabled access credit (applicable to expenditures by certain small businesses to make the business accessible to disabled individuals). The credits generally are determined based on a percentage of the cost associated with the underlying activity and generally are subject to certain limitations.

15.A2.2 DEDUCTIONS FROM INCOME

15.A2.2.1 Costs

Generally, inputs, such as the materials and labor used in the production process, are consumed in the same year that they are purchased. Outlays on inputs may be expensed, meaning that they can be deducted from business income in the year the outlay is made or accrued. Other expensed outlays may include real and personal property rentals, lease payments, insurance, legal and accounting expenses, royalty payments, expenditures on advertising and business promotion, and research and development expenditures. However, not all expenditures pertain to the current period. Many expenditures may not be current inputs because they may benefit the firm over several years rather than just in the year the outlay is made. They may be expensed nonetheless, meaning that the business receives the tax deduction sooner than the sales

revenue generated by the outlay. Alternatively, the corporation may choose to capitalize some expenses into the future if current income is insufficient to take full advantage of the deduction (Bruce, 1998)

15.A2.2.2 Interest and Taxes

In addition to the costs of current inputs, businesses can also expense state and local taxes and interest payments to creditors. State and local taxes on business income, payrolls, and property are deductible from business income for the federal corporate income tax. Sales taxes on inputs may also be deducted as part of the cost of the inputs. Although foreign income taxes are deductible, most businesses find it more advantageous to use the foreign tax credit instead. However, federal income taxes are not deductible, except the employer's half of the Social Security payroll tax, which is deductible as an employment expense.

15.A2.2.3 Depreciation

One of the most important deductions available to corporations is the deduction for depreciation. Property used in a business, including intangible assets like patents and copyrights, can be depreciated if it is subject to exhaustion, wear and tear, or obsolescence. In other words, depreciable property has a useful life that can be determined with reasonable accuracy. Land cannot be depreciated because it does not have a finite life expectancy. Depreciation is an annual income tax deduction that allows for the recovery of the cost or other basis of certain property over the time the property is used. It is an allowance for the wear and tear, deterioration, or obsolescence of the property.

Most types of tangible property (except land), such as buildings, machinery, vehicles, furniture, and equipment, may be depreciated. Certain intangible property, such as patents, copyrights, and computer software, may also be depreciated. To be depreciable, the property must meet all the following requirements:

- It must be property that is owned.
- It must be used in a business or income-producing activity.
- It must have a determinable useful life.
- It must be expected to last more than one year.
- It must not be excepted property.

For tax purposes, the cost of the capital equipment is a legitimate expense, which must be subtracted from revenues in determining net income. From a purely economic view, the timing of depreciation deductions should be consistent with the actual economic life of the asset. However, the timing of the recovery of capital cost is important because the present value of tax liability is reduced when depreciation is charged. The sooner capital costs can be recovered, the lower the effective rate of tax and the higher the rate of return. Accelerated depreciation occurs when depreciation schedules allow a business to depreciate an asset more quickly than it is actually wearing out. Accelerated depreciation is advantageous to businesses because it essentially reduces the effective tax rate by pushing the tax liability into the future.

Consistent with this, the Economic Recovery Tax Act of 1981 dramatically reduced recovery periods. In 1981, the schedules for most depreciable assets were significantly accelerated when the Accelerated Cost Recovery System (ACRS) replaced an older system of depreciation rules. This was designed to offset the impact of inflation and to provide an investment incentive. Further changes in depreciation rules were made in 1982 and 1986. The new rules determining the depreciation deductions for tax purposes were created by the Tax Reform Act of 1986. The present Modified Accelerated Cost Recovery System (MACRS) distinguishes nine asset classes. Under MACRS, each asset is assigned a prescribed recovery period or class and a prescribed method of recovery. Method of recovery refers to whether the annual deduction is a fixed dollar amount in each year of the recovery period, called straight-line depreciation, or a constant percentage of the remaining undepreciated cost, called declining-balance depreciation. Most equipment falls into a 7-year class, with

residential structures in a 27.5-year class and other structures in a 39-year class. Real estate is depreciated with the straight-line method. In the straight-line method, the amount of the depreciation deduction is constant over the recovery period. Depreciable property other than buildings and structures is put into one of seven recovery classes and is depreciated according to the declining-balance method. Recovery periods range from three to 25 years. With the declining-balance method, the depreciation deduction is calculated as a fixed percentage of the undepreciated cost of the asset. The undepreciated cost decreases each year, so the dollar amount of the depreciation deduction is largest in the first year and declines in subsequent years. Regardless, of the depreciation schedule used, businesses cannot deduct more than 100% of the dollar cost of the asset.

Presently, the Modified Accelerated Cost Recovery System (MACRS) must be used to depreciate most property. MACRS is used to recover the basis of most business and investment property placed in service after 1986. MACRS consists of two depreciation systems, the General Depreciation System (GDS) and the Alternative Depreciation System (ADS). Generally, these systems provide different methods and recovery periods to use in figuring depreciation deductions.

Use of either GDS or ADS to depreciate property under MACRS determines what depreciation method and recovery period must be used. Generally, GDS should be used unless specific provisions require ADS or it is affirmatively elected. ADS must be used for the following property:

- Listed property used 50% or less for business
- Any tangible property used predominantly outside the United States during the year
- Any tax-exempt use property
- Any tax-exempt bond-financed property
- All property used predominantly in a farming business and placed in service in any tax year during which an election not to apply the uniform capitalization rules to certain farming costs is in effect
- Any imported property covered by an executive order of the president of the United States

Although property may qualify for GDS, ADS may be used electively. The election generally must cover all property in the same property class placed in service during the year. However, the election for residential rental property and non-residential real property can be made on a property-by-property basis. Once the election is made, it can never be revoked.

The following is a list of the nine property classes under GDS and examples of the types of property included in each class:

- Three-year property
 - Tractor units for over-the-road use
 - Any race horse over two years old when placed in service
 - Any other horse over 12 years old when placed in service
 - Qualified rent-to-own property
- Five-year property
 - Automobiles, taxis, buses, and trucks
 - Computers and peripheral equipment
 - Office machinery
 - Any property used in research and experimentation
 - Breeding cattle and dairy cattle
 - Appliances, carpets, furniture, etc., used in a residential rental real estate activity
 - Any qualified Liberty Zone leasehold improvement property
- Seven-year property
 - Office furniture and fixtures
 - Agricultural machinery and equipment
 - Any property that does not have a class life and has not been designated by law as being in any other class
- Ten-year property
 - Vessels, barges, tugs, and similar water transportation equipment
 - Any single purpose agricultural or horticultural structure
 - Any tree or vine bearing fruits or nuts

- Fifteen-year property
 - Certain improvements made directly to land or added to it
 - Any retail motor fuels outlet, such as a convenience store
 - Any municipal wastewater treatment plant
- Twenty-year property. This class includes farm buildings.
- Twenty-five-year property. This class is water utility property, which is either of the following.
 - Property that is an integral part of the gathering, treatment, or commercial distribution of water, and that, without regard to this provision, would be 20-year property
 - Any municipal sewer
- Residential rental property. This is any building or structure, such as a rental home, if 80% or more of its gross rental income for the tax year is from dwelling units. A dwelling unit is a house or apartment used to provide living accommodations in a building or structure. It does not include a unit in a hotel, motel, or other establishment where more than half the units are used on a transient basis. If the owner occupies any part of the building or structure for personal use, its gross rental income includes the fair rental value of the part that is owner occupied.
- Nonresidential real property. This is section 1250 property, such as an office building, store, or warehouse, that is neither residential rental property nor property with a class life of less than 27.5 years.

Under GDS, property that is not qualified Indian reservation property is depreciated over one of the recovery periods listed in Table 15.3.

The recovery periods for most property generally are longer under ADS than they are under GDS. Table 15.4 shows some of the ADS recovery periods.

MACRS provides three depreciation methods under GDS and one depreciation method under ADS:

TABLE 15.3 General Depreciation System
Recovery Periods

| Property | Class recovery period (years) |
|------------------------------|-------------------------------|
| 3-year property | 3 ^a |
| 5-year property | 5 |
| 7-year property | 7 |
| 10-year property | 10 |
| 15-year property | 15 ^b |
| 20-year property | 20 |
| 25-year property | 25 ^c |
| Residential rental property | 27.5 |
| Nonresidential real property | 39 ^d |

^a 5 years for qualified rent-to-own property placed in service before August 6, 1997.

^b 39 years for property that is a retail motor fuels outlet placed service before August 20, 1996 (31.5 years if placed in service before May 13, 1993), unless elect to depreciate it over 15 years.

^c 20 years for property placed in service before June 13, 1996 or under a binding contract in effect before June 10, 1996.

^d 31.5 years for property placed in service before May 13, 1993 (or before January 1, 1994, if under a binding contract in effect before May 13, 1993, or if construction began before May 13, 1993).

TABLE 15.4 Alternative Depreciation System
Recovery Periods

| Property | Recovery period (years) |
|--|-------------------------|
| Rent-to-own property | 4 |
| Automobiles and light duty trucks | 5 |
| Computers and peripheral equipment | 5 |
| High technology telephone station equipment installed on customer premises | 5 |
| High technology medical equipment | 5 |
| Personal property with no class life | 12 |
| Single purpose agricultural and horticultural structures | 15 |
| Any tree or vine bearing fruit or nuts | 20 |
| Nonresidential real property | 40 |
| Residential rental property | 40 |
| Unlisted Section 1245 real property | 40 |
| Railroad grading and tunnel bore | 50 |

- The 200% declining balance method over a GDS recovery period
- The 150% declining balance method over a GDS recovery period
- The straight-line method over a GDS recovery period
- The straight-line method over an ADS recovery period

15.A2.2.4 Inventories

Another important deduction from income for businesses is inventory cost. Outlays for inputs that go into the firm's inventory are not expensable in the year the outlays are made. Rather, the cost of inventory may not be deducted until the period in which the goods are actually sold. As such, the method for accounting for inventories may have a substantial impact on taxable income for businesses. When products are sold from inventory, the firm may deduct the cost of the items from its business income. There are two generally accepted inventory accounting systems. The first-in, first-out (FIFO) system assumes that the oldest goods in inventory are sold first, while the last-in, first-out (LIFO) system assumes that the newest goods in inventory are sold first. FIFO tends to increase the dollar value of a firm's income. On the other hand, LIFO tends to lower the value of a firm's income. If inflation is relatively low, the inventory valuation difference between FIFO and LIFO is small. However, during periods of high inflation, the FIFO system understates actual inventory expenses. Once selected, the procedure must continue to be used by the firm.

15.A2.3 ALTERNATIVE MINIMUM TAX

A corporation is subject to an alternative minimum tax payable, in addition to all other tax liabilities, to the extent that it exceeds the corporation's regular income tax liability. The tax is imposed at a flat rate of 20% on alternative minimum taxable income in excess of a \$40,000 exemption amount. Credits that are allowed to offset a corporation's regular tax liability generally are not allowed to offset minimum tax liability. If a corporation pays the alternative minimum tax, the

amount of the tax paid is allowed as a credit against the regular tax in future years. A corporation with average annual gross receipts of less than \$7.5 million for the prior three years is exempt from the corporate alternative minimum tax.

Alternative minimum taxable income is the corporation's taxable income increased by the corporation's tax preferences and adjusted by determining the tax treatment of certain items in a manner that negates the deferral of income resulting from the regular tax treatment of those items. Among the preferences and adjustments applicable to the corporate alternative minimum tax are accelerated depreciation on certain property, certain expenses and allowances related to oil and gas and mining exploration and development, certain amortization expenses related to pollution control facilities, and certain tax-exempt interest income. In addition, corporate alternative minimum taxable income is increased by 75% of the amount by which the corporation's "adjusted current earnings" exceeds its alternative minimum taxable income (determined without regard to this adjustment). Adjusted current earnings generally are determined with reference to the rules that apply in determining a corporation's earnings and profits.

15.A3 APPENDIX 3: OVERVIEW OF THE U.S. SOCIAL SECURITY SYSTEM*

15.A3.1 OLD-AGE INSURANCE

15.A3.1.1 Coverage

Presently, nearly all employment performed within the United States or U.S. territories, regardless of citizenship, age, or sex, is covered under the Social Security Act. In addition, the program also covers employment outside the U.S. performed by a U.S. citizen or resident aliens who are:

- Employed by a U.S. employer
- Employed by a foreign affiliate of a U.S. employer electing coverage for its employees
- Employed on U.S. vessels or aircraft outside the U.S., in most instances
- Self-employed, in most instances

The majority of noncovered workers are:

- Federal civilian employees hired before January 1, 1984
- Railroad workers (who are covered under the railroad retirement system which is coordinated with the Social Security system)
- Employees of state and local governments not covered by a voluntary agreement
- Household workers and farm workers who do not earn enough or work long enough to meet minimum qualifications
- Persons with very low net earnings from self-employment

Employees of state and local governments not covered under a retirement system are required to participate in the

* Adapted from John D. Wong, "Federal Payroll Taxes: Pensions and Health Care." In *Handbook on Taxation*, edited by W. Bartley Hildreth and James A. Richardson. New York: Marcel Dekker, 1999.

Social Security program. Those covered under a retirement system may be covered under agreements between the states and the Department of Health and Human Services (HHS). Each state decides what groups of eligible employees will be covered by the Social Security program. Approximately 75% of state and local government workers are covered by Social Security.

The professional services of ministers, members of religious orders who have not taken a vow of poverty, and Christian Science practitioners are automatically covered under provisions applicable to the self-employed unless an exemption is claimed based on religious principles or conscience. Religious orders whose members have taken a vow of poverty may make an irrevocable election to cover their members as employees.

Since 1957 the base pay of members of the uniformed services on active duty or on active duty for training has been covered under regular contributory provisions. In addition, noncontributory wage credits of up to \$1,200 per year are provided to take into account remuneration received in kind. Noncontributory wage credits of \$160 per month are also provided to most veterans for each month of active military service from September 1940 through December 1956.

Generally, these wage credits may not be used if another federal, non-Veterans' Administration retirement or survivor benefit is being paid simultaneously based on the same period of service. However, individuals with continued military service after 1956 are given credit for service during the 1951 through 1956 period even if the service is used for purposes of benefits paid by the uniformed services.

For service from 1957 through 1977, military personnel are credited with \$300 in additional earnings for each quarter in which active duty basic pay was received. For service in 1978 and later, every \$300 in active duty basic pay qualifies for an additional \$100 in earnings up to a maximum of \$1,200 per year. Nonactive duty service in the armed forces reserve has been covered by Social Security since 1988. Federal general revenues are applied to reimburse the Social Security Trust Funds for noncontributory wage credits.

15.A3.1.2 Eligibility

To qualify for personal Social Security benefits and those for eligible family members or survivors, a potential beneficiary must demonstrate participation in the labor force as indicated by a specified period of covered employment. Generally, the period of covered employment covered is related to the length of time an individual could be expected to have worked under the program, subject to a maximum requirement of 10 years and a minimum requirement of 1.5 years.

Individuals born in 1929 or later (reaching age 62 in 1991 or later) will be required to have 10 years of covered employment to qualify for retirement benefits. The length of time an individual is required to spend in covered employment to be insured is measured in Social Security credits. A worker can receive up to four credits of coverage per year, depending on the attainment of minimum covered annual earnings. In 2003, one credit is earned for each \$890 in covered earnings. The formula used to calculate covered earnings is:

$$\$250 \times \frac{\text{National average wage two years earlier}}{\$9,226.48}$$

(Rounded to the nearest \$10)

To receive most types of benefits, the worker must be fully insured. Generally, to be fully insured, an individual must have at least as many quarters of covered employment as the number of full calendar years passing between age 21 and age 62, death, or disability, whichever occurs first. For those who reached age 21 before 1951, the requirement is one quarter of coverage for each calendar year after 1950 and before the year of retirement age, disability, or death.

15.A3.1.3 Benefits

Monthly retirement benefits are payable at age 62 to a retired insured worker and to the spouse of a retired worker when the spouse reaches age 62. However, these benefits are permanently reduced if claimed before the normal retirement age, presently age 65. Individuals born after 1937 will no

TABLE 15.5 Age to Receive Full Social Security Benefits

| Year of birth | Full retirement age | Early retirement reduction (%) |
|-------------------|------------------------|--------------------------------|
| 1937 or earlier | 65 years | 20.00 |
| 1938 | 65 years and 2 months | 20.83 |
| 1939 | 65 years and 4 months | 21.67 |
| 1940 | 65 years and 6 months | 22.50 |
| 1941 | 65 years and 8 months | 23.33 |
| 1942 | 65 years and 10 months | 24.17 |
| 1943 through 1954 | 66 years | 25.00 |
| 1955 | 66 years and 2 months | 25.83 |
| 1956 | 66 years and 4 months | 26.67 |
| 1957 | 66 years and 6 months | 27.50 |
| 1958 | 66 years and 8 months | 28.33 |
| 1959 | 66 years and 10 months | 29.17 |
| 1960 or later | 67 years | 30.00 |

longer be able to retire with full benefits at age 65 (See Table 15.5). Although individuals born after 1937 will continue to be able to claim early retirement benefits at age 62, the actuarial reduction in benefits will be greater than that for those born in 1937 or before. Full benefits are payable to the spouse of a retired worker at any age if the spouse is caring for a child, under age 16 or disabled, who is entitled to benefits earned by the worker. Child benefits are paid to the retired worker's unmarried child under age 18 or from age 18 to 19 if the child is a full-time student in elementary or secondary school. Child benefits are also paid regardless of age if the child has been disabled since before age 22.

A worker's Social Security benefit is based on average covered earnings computed over a period of time during which the individual could reasonably have been expected to work in covered employment. For persons who first became eligible before 1979, the actual average monthly earnings (AME) are used in the computation. For persons who first became eligible in 1979 or later, the actual earnings are indexed to reflect increases in average wage levels over time. Each year's earnings up to age 60 are adjusted upward based on historical changes in average wages throughout the whole economy. The

actual years selected for the computation period are the years of highest indexed earnings after 1950. Usually, 35 years of earnings after 1950 are used to calculate the benefit. No less than two years can be used in the averaging period. Years before age 22 and years after age 61 may be substituted for years with lower earnings between the ages of 21 and 62. Only earnings resulting from work covered under the Social Security program are counted. Credited earnings are limited to amounts below a legislated maximum earnings ceiling. This constitutes the worker's average indexed monthly earnings (AIME).

First, earnings covered by Social Security are listed starting with 1951. Second, earnings are adjusted for changes in average wages over time. Third, from this list, the highest years of earnings are selected to figure the worker's primary insurance amount (PIA). Fourth, the earnings for these years are totaled and divided by 420 to obtain AIME. This figure is then used to determine the benefit rate.

A benefit formula is applied to the worker's AIME to determine the worker's PIA, which provides the basis for all Social Security benefits related to a worker's earnings. A three-level formula is applied to AIME to arrive at an actual benefit rate. The results are summed and rounded down to the next lower dollar. Beginning at age 62, the PIA is subject to an annual cost-of-living adjustment, which keeps the real value of the PIA constant unless the worker continues working and earns higher real earnings than those already included in the formula. For 2003, the PIA at first eligibility is based on:

- 90% of AIME up to and including \$606, plus
- 32% of AIME between \$606 and \$3,653, plus
- 15% of AIME above \$3,653

The dollar amounts defining PIA brackets, also called "bend points," are adjusted annually based on changes in national average earning levels. Generally, after a worker's initial Social Security benefit has been determined, it is increased automatically each December. If, after retirement, the worker

has additional earnings that would increase PIA, the benefit may be recomputed. The monthly benefit for a worker retiring at the full benefit level (presently age 65) is equal to the PIA. The benefit formula is weighted in favor of low wage earners to give the program a progressive benefit structure. In 2003, estimated average Social Security benefits were:

- \$895 for all retired workers
- \$1,483 for aged couples, both receiving benefits
- \$1,838 for widowed mothers with two children
- \$862 for aged widow(er)s alone
- \$1,395 for disabled workers with a spouse and one or more children
- \$833 for all disabled workers

In 2003, the maximum basic monthly benefit for workers who retire at age 65 was \$1721. According to Social Security Administration estimates, initial Social Security benefits are expected to replace approximately 25% of the earnings of beneficiaries with covered lifetime earnings above the maximum. Initial benefits for those with covered lifetime above-average earnings would have a replacement rate of about 33%. Initial benefits for those with covered lifetime earnings at the average wage level would replace approximately 40% of preretirement earnings. Initial benefits for those with below average covered lifetime earnings would have a replacement rate of about 54%.

15.A3.1.4 Timing

Early retirement benefits may be paid to beneficiaries at ages 62 to 64, but these benefits are actuarially reduced to take into account the longer period over which they will be paid. Presently, a worker who retires at age 62 receives 80% of the full benefit amount. A spouse who begins to receive benefits at age 62 receives 75% of the amount that would have been payable at age 65. A worker who retires at age 63 receives 86.67% of the full benefit amount. A worker who retires at age 64 receives 93.33% of the full benefit amount.

TABLE 15.6 Benefit Increases
for Delayed Retirement

| Year of birth | Yearly rate of increase (%) |
|-------------------|--------------------------------|
| 1917 through 1924 | 3.0 |
| 1925 through 1926 | 3.5 |
| 1927 through 1928 | 4.0 |
| 1929 through 1930 | 4.5 |
| 1931 through 1932 | 5.0 |
| 1933 through 1934 | 5.5 |
| 1935 through 1936 | 6.0 |
| 1937 through 1938 | 6.5 |
| 1939 through 1940 | 7.0 |
| 1941 through 1942 | 7.5 |
| 1943 or later | 8.0 |

On the other hand, delayed retirement credits are given to workers age 65 or older who continue working and, as a result, do not receive their entitled benefits. These credits take into account the benefits forgone by persons who continue to work past age 65 (See Table 15.6). Gustman and Steinmeier (1983 and 1985) estimated that raising the delayed retirement credit from 3 to 8% would only increase the average retirement age by 2.4 months. Fields and Mitchell (1984a) found very little change from increasing the delayed retirement credit. Burtless and Moffitt (1984) concluded that even if the benefit structure were actuarially fair at the two acceptance ages, the average retirement age would only increase by 4.5 months.

15.A3.1.5 Family Benefits

Benefits for eligible family members are based on a percentage of the worker's PIA. For a spouse or divorced spouse at full retirement age, the benefit is 50% of the worker's PIA, with reduced benefits available at age 62. If an individual is eligible for a personal benefit as well as that of an eligible family member or survivor, the individual may elect the larger of the two benefits but may not receive both. This benefit equals 100% of the basic benefit for the spouse of a deceased

worker age 65 or over or for a spouse of a deceased worker with a child in need of care. Reduced benefits are available for the spouse of a deceased worker age 60 to 64 and to a disabled spouse of a deceased worker aged 50 to 59. Children's benefits are equal to 50% of the worker's basic benefit. If the spouse begins collecting benefits at age 64, the benefit amount would be reduced to about 46% of the full benefit amount. If the spouse begins collecting at age 63, benefits would be reduced to about 42%, and 37.5% at age 62. These benefits may be paid to a spouse and to each child under age 18, subject to the family maximum. For retirement and survivor benefits, the family maximum benefit (FMB) formula limits the total amount of benefits payable on the earnings record of each worker. For 2003, the FMB formula was:

- 150% of the first \$774 of PIA, plus
- 272% of PIA between \$774 and \$1,118, plus
- 134% of PIA between \$1,118 and \$1,458, plus
- 175% of PIA above \$1,458

15.A3.1.6 Special Minimums

A "special minimum PIA" is payable to some persons who have had covered employment or self-employment for many years at low earnings. It only applies if the resulting payment is higher than the benefit computed by any other method. To qualify for such benefits an individual must have at least 11 "years of coverage." To earn a year of coverage for purposes of the special minimum, a person must earn at least a certain proportion (25% for years before 1991, and 15% for years after 1990) of the "old-law" contribution and benefit base. The special minimum benefit is based on the length of employment only, instead of average earnings. The amount of the special minimum is computed by multiplying the number of years of coverage, in excess of 10 and up to 30, by \$9.00 for benefits payable for years before 1979. Multiply the number of years of coverage, in excess of 10 and up to 30, by \$11.50 for benefits payable for 1979 and later. Cost-of-living increases apply to the special minimum PIA beginning in 1979. The maximum special minimum PIA in 2003 is \$625.60, while the maximum

special minimum family benefit is \$939.10. Fewer than 1% of OASDI beneficiaries qualify for this benefit.

15.A3.1.7 Windfall Elimination Provisions

Two special provisions apply to retirees who worked for employers who were not required to withhold Social Security taxes and who received alternative pensions instead. The “government pension offset” provision applies if the retiree receives a government pension and is eligible for Social Security benefits as a spouse or survivor of a deceased spouse. The “windfall elimination” provision affects the manner in which retirement or disability benefits are calculated if a pension from employment not covered by Social Security is received. The provision primarily affects workers who spent part of their working life working for an employer not subject to Social Security taxes but who also worked at other jobs covered by Social Security long enough to qualify for benefits. Prior to 1983, workers who worked in jobs not covered by Social Security had their benefits computed as if they were long-term, long-wage earners. Thus, they received the advantage of receiving the special inflated minimum benefit as well as another pension. A special adjustment is applied to these individuals to eliminate this windfall (See Table 15.7). For workers who reach age 62 or become disabled in 1990 or later, the 90% AIME factor is reduced for workers with fewer than 30 years of substantial earnings subject to Social Security taxes.

15.A3.1.8 Earnings Test

Social Security beneficiaries may receive benefits and work at the same time. However, depending on age, benefits could be reduced if earnings are over certain amounts. A law that went into effect January 1, 2000, changed the way benefits are affected when working while receiving benefits. The benefit amount will now be reduced only until the beneficiary reaches full retirement age (age 65 and 2 months in 2003), not up to age 70 as the previous law required. If the beneficiary is under full retirement age when he or she begins

TABLE 15.7 Reduction in
AIME Factor for Workers with
Limited Covered Employment

| Years of substantial earnings | Percentage reduction |
|----------------------------------|-------------------------|
| 30 or more | 90 |
| 29 | 85 |
| 28 | 80 |
| 27 | 75 |
| 26 | 70 |
| 25 | 65 |
| 24 | 60 |
| 23 | 55 |
| 22 | 50 |
| 21 | 45 |
| 20 or less | 40 |

receiving Social Security benefits, \$1 in benefits will be deducted for each \$2 earned above the annual limit. For 2003, that limit is \$11,520. In the year the individual reaches full retirement age, \$1 in benefits will be deducted for each \$3 the beneficiary earns above a different limit, but only for the months before the month he or she reached the full retirement age. For 2003, this limit is \$30,720. Starting with the month the beneficiary reaches full retirement age, he or she can receive full benefits with no limit on earnings.

According to Vroman (1971) and Burtless and Moffitt (1984), the earnings test does have a significant impact on the amount beneficiaries are willing to work.

15.A3.1.9 Taxation of Benefits

Since the Social Security Amendments of 1983, a portion of Social Security benefits were to be included in gross income for beneficiaries whose total income exceeded certain base amounts:

- \$25,000 for unmarried taxpayers
- \$32,000 for married couples filing jointly
- \$0 for married couples filing separately

Beneficiaries whose incomes exceed the base amount are required to include one-half of their benefits or one-half of the difference between their incomes and the base amount, whichever is less, for tax purposes.

OBRA '93 added a second tier of base amounts:

- \$34,000 for unmarried taxpayers
- \$44,000 for married couples filing jointly

Beneficiaries with incomes up to and including the second-tier base amounts continue to be subject to income taxes on their benefits. Beneficiaries whose incomes exceed the second-tier amount are required to include for tax purposes, the lesser of 85% of benefits or:

- \$4,500 for unmarried taxpayers
- \$6,000 for married couples filing jointly
- Plus 85% of the excess of their incomes over the second-tier base amount.

For married taxpayers filing separately, taxable income includes the lesser of 85% of benefits or 85% of their incomes.

Since these thresholds are not indexed for inflation, an increasing proportion of beneficiaries is likely to become subject to the tax in the future.

However, most studies have concluded that the retirement test has very little impact on labor force participation (Burtless and Moffitt, 1984; Honig and Reimers, 1989; and Packard, 1990).

15.A3.1.10 Benefits Abroad

Generally, Social Security benefits are payable to U.S. citizens regardless of place of residence, with the exception of Cambodia, Cuba, North Korea, Vietnam, and many of the former republics of the Union of Soviet Socialist Republics (USSR), except Estonia, Latvia, and Lithuania. However, benefits cannot be paid to an alien who is outside the U.S. for more than 6 months unless exempted by a specific exception. In addition, the U.S. Social Security system is coordinated with the systems of a number of other nations. These international totalization agreements eliminate dual coverage and contributions

with respect to the same work under the systems of the countries that are parties to the agreement. Agreements also prevent the impairment of benefits that results when an individual works under multiple systems but is not eligible for benefits in one or more countries upon retirement, disability, or death. As of 2003, the U.S. had agreements with 20 nations: Italy (1978), Germany (1979), Switzerland (1980), Belgium (1984), Norway (1984), Canada (1984), the United Kingdom (1985), Sweden (1987), Spain (1988), France (1988), Portugal (1989), the Netherlands (1990), Austria (1991), Finland (1992), Luxembourg (1993), Ireland (1993), Greece (1994), Chile (2001), South Korea (2001), and Australia (2002).

15.A3.2 SURVIVORS INSURANCE

15.A3.2.1 Eligibility

In 1939, Congress extended the Social Security program to include monthly benefits payable to covered beneficiaries' survivors and dependents. If an individual dies before becoming fully insured, survivor benefits may be paid to the surviving spouse with children if the individual is "currently insured." An individual is currently insured with six credits in the 13-calendar-quarter period ending with the quarter in which death occurred. If the worker was born in 1929 or before, one credit is needed for each year after 1950, up to the year of death. If the worker was born in 1930 or later, one credit is needed for each after age 21, up to the year of death (See Table 15.8).

15.A3.2.2 Benefits

Monthly survivor benefits are payable to:

- A surviving spouse age 65 or older (100% of deceased worker's full benefit)
- A surviving spouse at age 60, or, if disabled, at age 50 (between 71 and 94% of deceased worker's full benefit)
- A surviving spouse at any age caring for a child, under age 16 or disabled, who is entitled to benefits earned by the worker (75% of deceased worker's full benefit)

TABLE 15.8 Credits Needed for Survivors Benefits

| Worker's age at death | Number of credits needed |
|-----------------------|--------------------------|
| 28 or younger | 6 |
| 30 | 8 |
| 32 | 10 |
| 34 | 12 |
| 36 | 14 |
| 38 | 16 |
| 40 | 18 |
| 42 | 20 |
| 44 | 22 |
| 46 | 24 |
| 48 | 26 |
| 50 | 28 |
| 52 | 30 |
| 53 | 31 |
| 54 | 32 |
| 55 | 33 |
| 56 | 34 |
| 57 | 35 |
| 58 | 36 |
| 59 | 37 |
| 60 | 38 |
| 61 | 39 |
| 62 | 40 |

- Unmarried children under age 18, from age 18 to 19 if in elementary or secondary school full time, and at any age if the child has been disabled since before age 22 (75% of deceased worker's full benefit)
- Grandchildren under certain circumstances
- A dependent parent age 62 or older
- A former spouse married at least 10 years not otherwise entitled to an equal level of benefits

For a surviving spouse at full retirement age, the benefit is equal to 100% of the deceased worker's PIA. Reduced benefits are available at age 60 or age 50 if the dependent is disabled. A widow(er) who begins to receive benefits at age

60 receives 71.5% of the deceased spouse's basic benefit. A disabled widow(er) age 50 to 59 receives 71.5% of the deceased spouse's basic benefit. However, if the deceased worker retired before attaining full retirement age, the survivor benefit is limited to the larger of the deceased worker's benefit or 82.5% of the survivor's PIA. Generally, surviving spouses lose eligibility for survivors benefits upon remarriage. However, if the remarriage occurs after age 60, or after age 50 for the disabled, eligibility for benefits is unaffected. If the remarriage occurs at age 62 or older, the surviving spouse may claim the higher of the two benefits based on the records of the deceased spouse and the new spouse.

Under some circumstances, benefits may also be paid to the unmarried minor children and disabled adult children, dependent parents, divorced spouses of retired, deceased, or disabled workers, and remarried widows or widowers of deceased workers. For a surviving spouse with a qualifying child to care for, the benefit is equal to 75% of the deceased worker's PIA. For each eligible child, there is also a benefit equal to 75% of the deceased worker's PIA. Beginning at age 62, a dependent parent can receive a benefit equal to 82.5% of the deceased worker's PIA or 75% of the worker's PIA for each parent, if both parents are dependent.

Generally, there is a limit to the total survivors benefits that are payable based on a deceased worker's Social Security record. The limit is generally between 150 and 187.5% of the deceased worker's full benefit.

A lump-sum benefit of \$255 is also payable on the death of an insured worker to the surviving spouse or children eligible for monthly survivor benefits.

A divorced spouse can get benefits based on a worker's Social Security record if the marriage lasted at least 10 years. The divorced spouse must be 62 or older and unmarried. For a divorced spouse to receive benefits, the worker also must be at least 62. If they have been divorced at least two years, the claiming spouse may receive benefits even if the worker of record is not retired. The two-year waiting period may be waived if the worker was receiving benefits before the divorce.

Generally, divorced spouses of deceased workers may be eligible for survivor benefits if the marriage lasted 10 years or more and the surviving former spouse would otherwise be entitled to a lower benefit amount based on his or her own record. The divorced spouse is not required to meet the length of marriage requirement if the spouse is caring for a child who is otherwise eligible for benefits under the deceased's record. In general, surviving spouses lose eligibility to collect survivor benefits upon remarriage. However, if the surviving spouse remarries after age 60, eligibility for survivor benefits is unaffected. If remarriage occurs at age 62 or older, the surviving spouse may also be eligible for the higher of the two benefits amounts between the deceased and new spouse.

15.A3.3 DISABILITY INSURANCE

15.A3.3.1 Coverage

The scope of the Social Security program was significantly broadened with the addition of disability insurance in 1956. Benefits were to be provided for disabled workers age 50 to 64 suffering from severe disabilities of "long-continued and indefinite duration" and for adult disabled children of deceased and retired workers. In 1958, disability coverage was expanded to include benefits for dependents of disabled workers similar to those proved for dependents of retired workers. In 1960, the minimum age restriction was removed so that disability benefits could be payable at any age before 65. A trial work provision was also added to encourage disabled workers to attempt to return to work. In 1965, the definition for disability was modified to include severely disabled individuals whose impairment was expected to last 12 months or more. An error in the indexing formula in the 1972 Social Security Amendments disproportionately increased real benefits for disabled workers with short earnings records beginning in 1975. The Social Security Amendments of 1977 subsequently reduced benefit awards to all new beneficiaries beginning in 1979. In 1980, changes were made in the disability insurance program to remove possible work

disincentives and to improve overall program administration. In order to maintain eligibility for disability benefits, beneficiaries with nonpermanent disabilities were required to have their cases reviewed at least once every three years. The Social Security Disabilities Reform Act of 1984 established a medical improvement standard for determining if a disability beneficiary's benefits should be terminated because the individual is no longer disabled.

Benefits may be terminated only:

- If there is substantial medical evidence of improvement in the beneficiary's impairment,
- If advances in medical or vocational therapy enable the beneficiary to perform SGA,
- If evidence based on new or improved diagnostic techniques indicate a beneficiary's condition is less disabling than originally diagnosed and that the beneficiary is able to perform SGA, or
- If there is substantial evidence indicating that the prior determination was in error or was fraudulently obtained.

Presently, the nature and severity of the disability and whether it is expected to improve determines the frequency of review:

- If improvement is expected, a case review will generally occur six to 18 months after the onset of the disability.
- If improvement is possible but cannot be predicted, a case review will generally occur about once every three years.
- If improvement is not expected, the case will be reviewed about once every five to seven years.

15.A3.3.2 Eligibility

To receive disability benefits, an individual must be fully insured and meet a test of substantial recent covered work during which the worker must have one credit for each year since age 21 and at least 20 credits over the last 40 quarters

TABLE 15.9 Credits Needed for Disability Benefits

| Born after 1929, become disabled at age: | Born before 1930, become disabled before age 62: | Number of credits needed |
|--|--|-----------------------------|
| 31 through 42 | | 20 |
| 44 | | 22 |
| 46 | | 24 |
| 48 | | 26 |
| 50 | | 28 |
| 52 | | 30 |
| 53 | | 31 |
| 54 | | 32 |
| 55 | | 33 |
| 56 | | 34 |
| 57 | 1986 | 35 |
| 58 | 1987 | 36 |
| 59 | 1988 | 37 |
| 60 | 1989 | 38 |
| 61 | 1990 | 39 |
| 62 or older | 1991 or later | 40 |

prior to the disability. For workers who become disabled before age 24, six credits in the three-year period prior to the disability are needed. For workers disabled before age 31, credit must be obtained for one-half of the quarters after age 21, with a minimum of six quarters (See Table 15.9). Blind workers need only be fully insured to qualify for benefits.

The disability benefit is 100% of the worker's PIA. Monthly disability benefits are payable to a disabled worker under age 65 after a waiting period of five full calendar months and terminate if the individual recovers or returns to substantial work. When the workers reaches age 65, he or she is transferred to the old-age insurance program. After receiving disability benefits for two years, beneficiaries automatically become eligible for Medicare benefits.

15.A3.3.3 Disability Requirement

A major barrier to qualifying for disability benefits is the multiple tests of eligibility:

- Determination of insured status,
- Assessment of physical condition and level of functional impairment, and
- Determination of ability to work.

Disability for Social Security purposes is defined as:

inability to engage in any substantial gainful activity (SGA) by reason of any medically determinable physical or mental impairment which can be expected to result in death or which has lasted or can be expected to last for a continuous period of not less than 12 months.

The impairment must be so severe that the individual is unable to engage in any kind of substantial gainful employment that exists, regardless of whether such work exists in the immediate area in which the individual lives, or whether a specific job vacancy exists for that person, whether the individual would be hired upon. Under Social Security, blindness constitutes vision which cannot be corrected to better than 20/200 in the better eye, or if the corrected visual field is 20 degrees or less. In 2003, average monthly earnings of more than \$800 are presumed to be substantial gainful activity. Average monthly earnings below \$300 are presumed to indicate the lack of SGA.

15.A3.3.4 Family Benefits

Family members of disabled workers may also qualify for benefits:

- Spouse, age 65 or older (50% of worker's full benefit)
- Spouse, age 62 or older (at least 37.5% of worker's full benefit)
- Spouse, at any age, caring for a child under age 16 or a disabled child (50% of worker's full benefit)
- Unmarried former spouse, married at least 10 years, age 62 or older, not otherwise eligible for an equal level of benefits
- Children, under age 18 (50% of worker's full benefit)
- Children, under age 19, attending high school (50% of worker's full benefit)
- Disabled children, at any age, if disability occurred before age 22 (50% of worker's full benefit)

Benefits for family members of a disabled worker are payable under the same conditions as for family members of retired workers. Generally, there is a limit to the total family benefits that are payable based on a worker's Social Security record. For disability benefits, the family maximum benefit is the smaller of (1) 85% of AIME (or 100% of PIA, if larger) or (2) 150% of PIA.

Monthly benefits at a permanently reduced rate are payable to disabled widows and widowers beginning at age 50, based on the same definition of disability applicable to workers. The widow or widower must have become totally disabled within seven years after the spouse's death or within seven years after the end of a previous entitlement to benefits as a mother or father or to widow's or widower's benefits based on a disability. A disabled widow(er) age 50 to 59 receives 71.5% of the deceased spouse's basic benefit.

Benefits are also payable to a disabled worker's adult children who have become disabled before age 22, based on the same definition of disability applicable to workers. Disability benefits are based on average indexed monthly earnings and are calculated using the same formula and the same minimum benefit provisions as retirement benefits. In 1981, Congress passed a disability "Megacap" on disability benefits reducing the sum of all benefits payable under certain federal, state, and local public programs to 80% of average current earnings.

15.A3.4 MEDICARE

The Social Security Amendments of 1965 established two related health insurance plans covering most persons age 65 or older: (1) A basic compulsory program of hospital insurance (HI), sometimes referred to as Part A, and (2) a voluntary program of supplementary medical insurance (SMI), sometimes referred to as Part B.

The Social Security Amendments of 1972 extended Medicare coverage to certain severely disabled persons under age 65 and persons suffering from end-stage renal (kidney) disease. The Omnibus Budget Reconciliation Act of 1981 (OBRA '81) increased the Part A deductible by 12%. The Tax Equity and Fiscal Responsibility Act (TEFRA) of 1982 added hospice

coverage for hospital insurance beneficiaries who were terminally ill. A series of Social Security Amendments during the late 1980s increased mental health benefits under Medicare by eliminating the annual reimbursement limit and covering partial hospitalization and the services of independent clinical psychologists and social workers.

15.A3.4.1 Hospital Insurance (Part A)

Individuals age 65 and older are eligible for premium-free Medicare hospital insurance (HI) if they:

- Receive Social Security or railroad retirement benefits,
- Are entitled to receive Social Security benefits based on spouse's work record, and the spouse is age 62 or older, or
- Are a federal, state, or local government worker qualified for Medicare coverage.

Some individuals under age 65 may also qualify for benefits if they:

- Have been receiving disability benefits for 24 months,
- Are a federal, state, or local government worker who meets the requirements of the Social Security disability program, or
- Qualify for railroad retirement disability and have completed the waiting period.

Individuals at any age with end-stage renal failure may qualify for benefits if they:

- Receive or have worked long enough to be insured by the Social Security or railroad retirement systems,
- Are a spouse or dependent child of a worker receiving or have worked long enough to be insured by the Social Security or railroad retirement system, or
- Are a federal, state, or local government worker qualified for Medicare coverage.

TEFRA required that as of January 1983, federal employees be covered for hospital insurance protection. Federal workers employed during January 1983 were permitted upon

retirement to use federal wage quarters earned before 1983 to establish qualification for hospital insurance benefits, if needed. Hospital insurance benefits are also available to non-insured persons who were over 65 in July 1966 and to other persons age 65 and over who voluntarily enroll and pay a monthly premium for HI protection if also enrolled for SMI.

The hospital insurance program provides basic coverage for the costs of inpatient hospital services and related post-hospital extended care. Under HI, beneficiaries receive the following services:

- Inpatient hospital care
- Certain post-hospital care
- Home health care
- Hospice care

Once a Medicare beneficiary has paid the inpatient hospital deductible (\$840 in 2003), all remaining costs of covered hospital services for the first 60 days in a benefit period are paid by Medicare. From the 61st through the 90th day in a benefit period, the patient pays a daily coinsurance amount equal to one-fourth the inpatient hospital deductible (\$210 in 2003). Each hospital insurance beneficiary also has a "lifetime reserve" of 60 additional hospital days that may be used when the covered days within a benefit period have been exhausted. Lifetime reserve days may be used only once and the daily coinsurance amount is one-half the inpatient hospital deductible (\$420 in 2003).

Hospital insurance tax receipts are earmarked and channeled into a separate Federal Hospital Insurance Trust Fund. All hospital insurance benefits and administrative costs are paid from this trust fund. The Hospital Insurance Trust Fund is reimbursed from federal general revenues for the cost of providing hospital insurance benefits for certain aged persons not covered by the OASDI or railroad retirement programs.

The Secretary of Health and Human Services has overall administrative responsibility for the hospital insurance program. The Social Security Administration is responsible for the initial determination of program eligibility and maintaining the master beneficiary records. In 1977, the Health Care

Financing Administration (HCFA) was created to assume direct responsibility for administering the Medicare program. HCFA is empowered to enter into agreements with state agencies and private organizations to assist in administering the hospital insurance program. HCFA is also responsible for developing regulations and guidelines for provider participation in the program.

In 1972, Professional Standards Review Organizations (PSROs) were created in order to improve the quality and effectiveness of Medicare services. In 1982, PSROs were replaced with Peer Review Organizations (PROs). Each state is required to have a PRO, composed of local practicing physicians, which is responsible for:

- Ensuring that the care provided to Medicare beneficiaries is medically necessary and reasonable and provided in the appropriate setting
- Reviewing the validity of hospitals' diagnostic information
- Reviewing the appropriateness of admissions and discharges
- Deciding whether professionally accepted standards of quality are being met
- Reviewing the appropriateness of care for which additional payment is sought for extraordinarily costly cases

Hospitals and skilled-nursing facilities nominate a fiscal intermediary to process claims for hospital insurance benefits and to make payment settlements. HCFA assigns intermediaries on a regional basis. Both Blue Cross/Blue Shield and commercial insurance companies are eligible to serve as financial intermediaries. The intermediaries' responsibilities include:

- Determining costs and reimbursement amounts
- Maintaining records
- Establishing controls
- Safeguarding against fraud and abuse or excess use
- Conducting reviews and audits
- Making the payments to providers for services
- Assisting both providers and beneficiaries as needed

Reimbursement for services provided is made directly to hospitals, skilled nursing facilities, and home health service agencies. Skilled-nursing facilities, home health agencies, and some hospitals are reimbursed on the basis of reasonable costs, subject to certain caps. Most hospitals are paid under a prospective payment system with rate determined in advance and related to the patient's diagnosis. Ordinarily, payments are made only for services provided in the U.S. or otherwise on U.S. territory.

Medicare has greatly increased the demand for medical care. This is an example of the problem of *moral hazard*. Providing health care at a near-zero price provides Medicare beneficiaries with little incentive to economize on the use of services. In addition, until the early 1980s, providers had few incentives to hold costs down. The combination of these two effects led to spiraling health care cost inflation during the 1970s and 1980s. In 1983, in an attempt to control rising health care costs, Congress passed legislation mandating a prospective payment system where payment amounts are determined by the average cost of providing the treatment for a particular diagnosis, adjusted to reflect the wage level in the local community, the higher costs of teaching hospitals, whether the hospital has an exceptionally large number of low-income, Medicaid patients, and whether the hospital is in an urban or rural area. Under this system, the payment amount is determined for each hospital admission based on one of 477 diagnosis-related groups (DRGs). The DRG system is designed to discourage overtreatment and reduce administrative costs by eliminating the processing and review of numerous treatment/test charges involved in hospital admissions. As physicians and hospitals have adjusted to the new rules, more services have been moved out of the hospital and into ambulatory settings, leading to an increase in spending for physician and other outpatient services. The annual increase in Medicare hospital costs dropped from 12 to 1% four years after introducing DRGs; however, as a result of cost shifting to ambulatory facilities, overall hospital expenditures had returned to pre-DRG levels by 1992 (Schultz, 1995).

15.A3.4.2 Supplementary Medical Insurance (Part B)

Generally, a person is eligible to enroll in the voluntary supplemental medical insurance program by paying a monthly premium if the individual is:

- Entitled to premium-free hospital insurance coverage or
- Age 65 or older, a resident of the U.S., and either: (a) a citizen of the U.S., or (b) an alien lawfully admitted for permanent residence who has resided in the U.S. continuously during the five years immediately prior to the month in which the individual applied for enrollment

Certain Part A participants are required to enroll in Part B also:

- Those with end-stage renal failure
- Those not insured under the Social Security or railroad retirement systems but who wish to receive Medicare benefits

Supplemental medical insurance cost-sharing requirements include:

- Monthly premiums (\$58.70 in 2003)
- Coinsurance payments (usually 20% of allowable charges)
- An annual deductible (\$100 in 2003)
- A blood deductible
- Charges above the Medicare allowable charge
- Payment for any services not covered by SMI

The monthly premium is deducted from Social Security, railroad retirement, or federal civil service retirement payments. The premium rate is adjusted annually. SMI costs not covered by premiums are financed from federal general revenues. In some instances, individuals may be eligible for state social service or medical assistance payment of the premium on their behalf. Persons may withdraw from the SMI program at any time by filing a notice with the Social Security Administration. However, if an individual seeks to reenroll at a later date, a 10% penalty is added for each full year out of the program.

Historically, payments for covered services were made on either a cost or a charge basis. Services reimbursed on a charge basis may be made in one of two ways:

- The service provider may accept assignment and submit a claim directly for payment, agreeing to accept Medicare's determination of reasonable charges as payment in full.
- The service provider may submit the bill to the beneficiary without accepting assignment, and the patient remains responsible for the total bill and is reimbursed by Medicare.

Service providers who do not accept assignment may charge no more than 115% of Medicare-approved fees. Presently, less than one-half of physicians accept assignment.

Prior to 1992, the Medicare reasonable charge was the lowest of:

- The customary charge (generally the charge most frequently made) by each physician and supplier for each separate service or supply furnished to patients in the previous year
- The prevailing charge (the amount that is high enough to cover the customary charges in three out of four bills submitted in previous year for each service and supply) for each covered service and supply
- The actual charge

The Omnibus Budget Reconciliation Act of 1989 (OBRA '89) provided for the phased replacement of the customary and prevailing charge system with fee schedules. New fee schedules were formulated based on a resource-based relative value scale (RBRVS) for physician services that takes into account such factors as skill, time expended, and geographic cost variations. The RBRVS for any medical service has three components:

- A measurement of the work provided by physicians in providing the service
- A measure of their office expenses
- A measure of malpractice insurance costs

Work is measured by the time and intensity of effort required. A geographic practice cost index is used to adjust for differences among localities. Under the RBRVS system, primary care physicians will receive higher Medicare payments, while surgeons and radiologists will receive relatively lower fees for particular services performed. Coordinated care plans may also contract with Medicare to provide services. Coordinated care plans are prepaid, managed care plans, such as health maintenance organizations (HMOs) or preferred provider organizations (PPOs), which provide or arrange for a wide range of services and generally charge fixed monthly premiums.

The supplementary medical insurance program is financed through the Federal Supplementary Medical Insurance Trust Fund, which is the repository for premiums paid by enrollees and the transfers from federal general revenues. As with the hospital insurance program, administration of the SMI program was transferred from the Social Security Administration to the Health Care Finance Administration in 1977. Likewise, HCFA enters into contracts with financial intermediaries for claims processing.

15.A3.4.3 Catastrophic Illness Insurance

In 1986, Secretary of Health and Human Services Otis R. Bowen proposed new government action to help Americans meet the costs of catastrophic illnesses requiring long hospital or nursing home stays. The Medicare Catastrophic Coverage Act (MCCA) of 1988 provided the single largest expansion of Medicare since the program's inception. Beneficiaries were to receive coverage for the costs of catastrophic medical care and outpatient prescription drugs. Although an annual deductible was required (\$544), a cap was imposed on total out-of-pocket costs for Medicare-covered services (approximately \$1800). Coverage for prescription drugs was to be available, with Medicare paying 80% of the costs after an initial deductible was met. The new provisions also expanded short-term nursing home and home health care benefits. The benefits were to be financed by a premium increase and an income-related supplemental premium to be paid by individuals eligible for

Part A coverage. The monthly premium for Part B of Medicare was to be raised \$4 in 1988 and an additional premium charge for the drug benefit was to be phased in. This basic premium increase was to be supplemented by a surtax charged only to those beneficiaries with federal income tax liabilities. However, amid protests from senior citizen groups, in 1989 Congress repealed what many had earlier hailed as the most significant expansion of Medicare since its inception in 1965. The Medicare Catastrophic Coverage Repeal Act (MCCRA) of 1989 repealed the catastrophic and outpatient prescription drug benefits as well the accompanying premium increases.

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Wealth, Property, and Asset-Building Policy in the U.S.

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16.1 INTRODUCTION

Why study wealth policy when poverty is the problem that needs to be solved? This chapter shows how well-designed fiscal policy with regards to wealth accumulation can have a substantial impact on all socioeconomic groups, and may ultimately do more to lift populations out of poverty than transfers and other income-based assistance can. If ill-designed, however, wealth policy may redistribute resources from low-wealth to high-wealth populations, or create inefficiency by redirecting resources to lower-valued uses in the economy. Sherraden (1991, 148) argues for a complete redesign of welfare

policy to focus on asset accumulation, not income support for the poor:

[A]ssets have a variety of important social, psychological, and economic effects. Simply put, people think and behave differently when they are accumulating assets, and the world responds to them differently as well. More specifically, assets improve economic stability; connect people with a viable, hopeful future; stimulate development of human and other capital; enable people to focus and specialize; provide a foundation for risk taking; yield personal, social, and political dividends; and enhance the welfare of offspring.

16.2 ORDINARY WEALTH AND ITS EFFECT ON FINANCIAL STATUS

When measuring the welfare of citizens, it is tempting for many to view income as the primary determinant of financial well-being. However compelling a raise or a cut in salary to one's sense of financial security, income alone provides only an incomplete picture of fiscal health. Consider the following two single individuals' contrast in circumstances:

Shareen is 24 years old and earns \$30,000 annually. Pat is 68 years old and earns \$25,000 (mostly in Social Security and earnings from savings and investments). Because Pat is over 65, she gets a higher standard deduction on her state and federal income taxes. Pat's Social Security earnings are not subject to state and federal income taxes. Also, Pat qualifies in her state for a partial property tax rebate.

Shareen appears to be faring better financially than Pat, even considering their after-tax incomes. However, it is important to look at their current expenses and net worth to determine the differences in their financial well-being:

Shareen leases a car for \$300 per month. Her apartment rent is \$700 per month. Shareen also pays \$200 per month in student loan payments. When possible, she saves a

little toward retirement by putting some money into an Individual Retirement Account. Finally, she pays \$200 monthly for her health insurance policy. She has saved \$2000 for retirement, but she owes \$10,000 in student loans, so her net worth is negative (−\$8,000).

Pat paid off her mortgage several years ago so she owns her own home, which is worth about \$200,000. She also owns one car with no debt. Her kids are grown and are finished with college. Pat's health care is paid for by Medicare, but supplemental insurance and prescription drugs cost her about \$200 per month total. She has enough retirement savings to sustain her as well as provide for the possibility of an extended stay in a nursing home. Her retirement savings, of which some of the earnings are not taxed, total \$425,000. She pays property taxes (after the state rebate for senior citizens) of about \$1,800 per year. Her net worth is \$625,000, not including the value of her car.

Assuming that Pat's taxable annual income is \$10,000 and Shareen's taxable annual income is \$27,700, Table 16.1 shows their monthly spending patterns.

Here, we see how even nonliquid wealth figures prominently in daily financial decisions. A person owning a home outright no longer pays mortgage or rent payments, which can constitute up to half of disposable income for many low-income populations. Other types of debt such as college loans, auto loans, and credit card debt also require monthly payments that further reduce an individual's disposable income.

A little bit of wealth, in the form of some home equity or a small retirement account, provides the basis for further wealth accumulation via home value appreciation and investment earnings compounding year after year. Thus, even at low levels of income, assets profoundly affect a person's well-being, current spending ability, and opportunity to get ahead financially. Neither income nor wealth alone provides an accurate measure of financial well-being. The appendix shows an example of how policy makers and researchers can combine income and wealth into a composite measure of financial capacity.

TABLE 16.1 The High Cost of Low Wealth (All Values in Dollars)

| | Monthly after-tax income | Housing costs | Retirement savings | Medical costs | Car payments | Student loan payments | Remaining spendable income |
|---------|--------------------------------|------------------|-----------------------|------------------|-----------------|-----------------------------|----------------------------------|
| Shareen | 2275 | 700 | 100 | 200 | 300 | 200 | 775 |
| Pat | 2075 | 150 | 0 | 200 | 0 | 0 | 1725 |

16.2.1 WEALTH DISPARITY ACROSS GENERATIONS

As people age, they accumulate retirement savings, pay off their home mortgages, and build business equity. Therefore, we expect elders to have more wealth than their children or grandchildren and do not necessarily see policy failure in the fact that people in their early 20s have little or no wealth, while cohorts above age 60 are comfortably well off. However, a variety of changes in retirement savings vehicles, property value trends, taxation, and the timing of the economic boom of the 1980s and 1990s have been especially propitious for the generation that is currently retired or on the threshold of retiring.

Data from the Survey of Consumer Finances illustrates a striking shift in wealth toward older generations. The Survey of Consumer Finances, a 4,400-family triennial nationwide study of detailed household assets, debt, income, and expenditures, provides one of the principal sources of wealth data in the U.S. The 2001 survey revealed significant gains in wealth among U.S. elders (Figure 16.1). Note how the

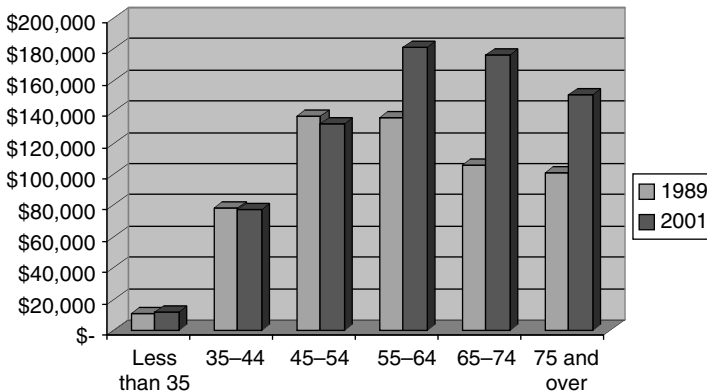


Figure 16.1 Median family net worth by age group, 1989 and 2001 surveys. *Sources:* Aizcorbe AM, Kennickell AB, and Moore KB. *Federal Reserve Bulletin* 89:1-32, 2003; and Kennickell AB, Starr-McCluer M, Surette BJ. *Federal Reserve Bulletin* 86:1-29, January 2000, from Survey of Consumer Finances data. Figures are in 2001 dollars.

pattern of wealth accumulation suggests that older Americans still spend down some of their net worth when they are in retirement, yet the age of maximum net worth has clearly shifted to an older cohort. The U.S. WWII or “silent” generation, born 1925 to 1945, is clearly going to make its mark on succeeding generations when it passes. This “bequest wave” has been cited to be anywhere from \$10 trillion (Avery and Rendall, 1993) to \$136 trillion (Havens and Schervish, 1999) over the next 50 years.

16.2.2 OTHER DEMOGRAPHIC DIMENSIONS OF WEALTH DISPARITY

Although wealth is most often measured at a family or household level, thereby blurring the distinction between male and female wealth, IRS estate tax return data reveal certain patterns in wealth accumulation that differ by gender. Because women have a longer life expectancy, they are more often the surviving spouses, and married men tend to give the entire or very large portions of their estate to their wives (Eller, 2001). It is expected, therefore, that elderly women in the next few decades will hold considerably more wealth than in previous generations.

The lifetime returns of a college education also show up clearly in wealth distribution of U.S. families, as shown in Figure 16.2. Thurow (1999) and other researchers attribute the increase in wealth accumulated by college-educated professionals to a shift in the U.S. economy’s reliance on knowledge-based industries, compared to the predominance of manufacturing in previous decades. Even more striking than differences in education levels are the levels of wealth according to employer. Those who own their own businesses, though facing more income risk, are far more likely than others to accumulate sizable wealth (which includes the value of the business owned).

Racial groups show extraordinary disparity in wealth holdings. Wealth, as illustrated in Figure 16.2, is concentrated in white populations, which is partially explained by the concentration of wealth in older populations (younger generations

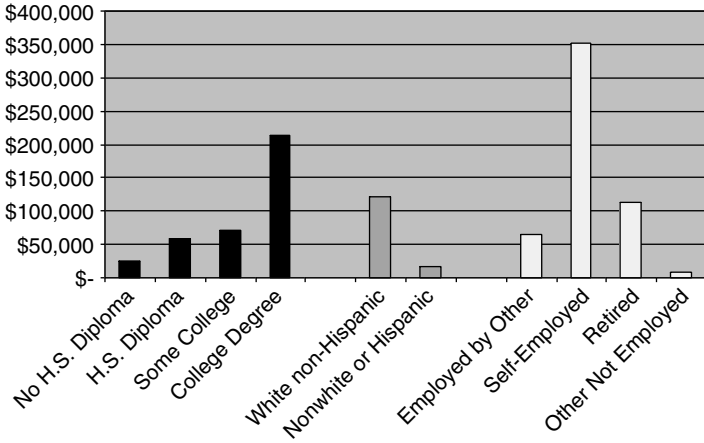


Figure 16.2 Median family net worth in 2001 by education, race, and work status of head of household. *Source:* Aizcorbe AM, Kennickell AB, and Moore KB. *Federal Reserve Bulletin* 89:1–32, 2003 with 2001 Survey of Consumer Finances data.

have proportionally more nonwhite or Hispanic members). Conley (1999, 2000) and Avery and Rendall (2002), among others, have discussed the racial wealth gap, noting that wealth inequality is perpetuated over time as minority individuals receive fewer and smaller inheritances than whites receive.

16.3 EXTRAORDINARY WEALTH

Beyond the asset accumulation that tends to occur as people age, acquire a home, build a business, and prepare for retirement, some families in the U.S. acquire very large fortunes, even over the course of just one generation. The numbers of unusually high-wealth families in the U.S. have significantly grown over the past two decades, and the amount of wealth that those high-wealth families have gathered has also sharply grown. The amount of wealth concentration at the top of the U.S. household wealth continuum is one way to illustrate the increasing disparity of personal wealth in the

U.S. The share of wealth held by the top 1% of the U.S. households declined to a historically low percentage of 22% in 1975, then climbed to over 35% of total U.S. wealth by 1998. The high wealth disparity of recent years actually mirrors U.S. wealth patterns of much earlier generations prior to the stock market crash of 1929 (Wolff, 2002).

As will be seen in the next section, the amount of wealth held by wealthy families in the U.S. is strongly dependent on stock values and business equity because a significant percentage of their wealth is held in the form of businesses and corporate stocks (see Figure 16.3). Although the recent decline in corporate stock values implies a substantial reduction in wealth at the upper end of the wealth distribution, which temporarily tempers the wealth inequality seen in 2001, the conditions under which income inequality accelerated in the 1980s and 1990s are still in place and portend no permanent reversal of the trend toward higher wealth disparity in the U.S. population.

16.3.1 STOCK HOLDINGS

Corporate stock values have a considerable effect on wealth accumulation. For example, from 1962 to 1976, the share of wealth of the top 1% of the wealth holders in the U.S. declined from 31.8 to 19.9%. During this same time, stock values (as measured by the Standard & Poor's 500 Index) skidded, with an annual average rate of return of only 2.76%. In contrast, from 1976 to 1997, when the share of top wealth holders rose from 19.9 to 40.1%, the soaring stock market returned an average of 10.3% annually over the two decades. A rising stock market disproportionately benefits high-wealth households because high-wealth households invest the most heavily in stocks (Figure 16.3).

Table 16.2 shows how the composition of household wealth varies with wealth levels, illustrating how families with low net worth hold wealth primarily in automobiles and principal residences, while high wealth shows up in a broad variety of investments.

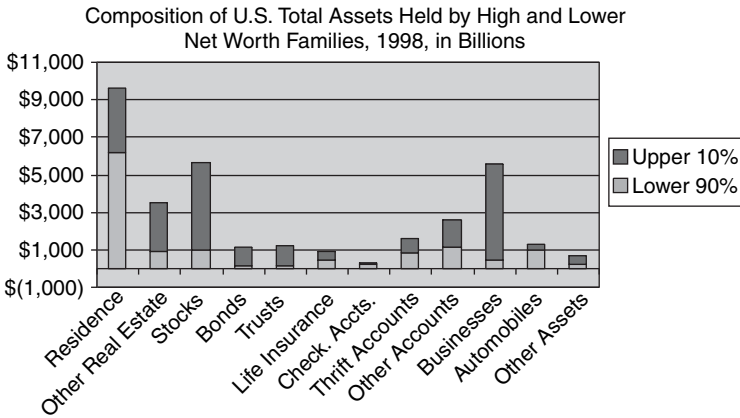


Figure 16.3 Composition of U.S. total assets held by high and lower net worth families, 1998, in billions of dollars. *Source:* Kennickell AB. An examination of changes in the distribution of wealth from 1989 to 1998: evidence from the Survey of Consumer Finances. Prepared for the Conference on Saving, Intergenerational Transfers, and the Distribution of Wealth, Jerome Levy Economics Institute, Bard College, June 7–9, 2000, revised version March 29, 2001.

16.3.2 THE ECONOMICS OF WEALTH ACCUMULATION

The motivations for accumulating wealth (instead of increasing consumption) include retirement funding (as described by Ando and Modigliani's [1963] life cycle model), miscalculation of the expected date of death, and the desire to leave bequests for heirs (Kotlikoff and Summers, 1981). Menchik and David (1983) refute the life cycle hypothesis with data showing that people do not deaccumulate wealth in old age. Others have noted that the uncertainty of the date of death and even the possibility of catastrophic health care costs leads people to overaccumulate in order to avoid drawing down the estate too low late in life; this suggests that at least some of the bequests seen are accidental, rather than altruistic (Yaari, 1965; Dynan et al., 2002). In addition, Gale and Scholz (1994) measured large transfers of funds from parents to children and other relatives (such as college education funding, assistance with

TABLE 16.2 Percentage Share of Total U.S. Assets and Liabilities Held by High and Lower Net Worth Families, 1998

| Asset or liability type | Net Worth Group | | |
|--------------------------|---------------------------------------|-----------|-----------------------|
| | Lower 90% of Families ^a | Upper 10% | Upper 1% ^b |
| | Assets ^c | | |
| Automobile | 75 | 25 | 6 |
| Principal residence | 65 | 36 | 9 |
| Checking accounts | 57 | 43 | 16 |
| Thrift accounts | 53 | 47 | 13 |
| Life insurance | 49 | 51 | 10 |
| Other financial accounts | 44 | 56 | 17 |
| Other assets | 32 | 68 | 30 |
| Nonresidence real estate | 26 | 75 | 26 |
| Stocks | 18 | 82 | 43 |
| Bonds | 14 | 86 | 43 |
| Trusts | 10 | 90 | 51 |
| Businesses | 9 | 91 | 65 |
| | Liabilities ^d | | |
| Non-real estate debt | 76 | 24 | 8 |
| Principal residence debt | 75 | 25 | 5 |
| Nonresidence R/E debt | 34 | 66 | 26 |
| Total assets | 37 | 63 | 30 |
| Total liabilities | 70 | 30 | 9 |
| Total U.S. net worth | 31 | 69 | 34 |

^a The lower 90% of families includes all households in the 0 to 89.9th percentile of net worth distribution.

^b The upper 1st percentile is included in the upper 10th percentile category as well.

^c Assets include thrift accounts (pension funds and retirement accounts), other financial assets (savings bonds, savings accounts, money market accounts, and certificates of deposit), and other assets (art, jewelry, musical instruments, other collectibles, futures contracts, oil leases, etc.).

^d Liabilities include non-real estate debt such as credit card debt and other installment credit debt.

Source: Adapted from Kennickell AB. An examination of changes in the distribution of wealth from 1989 to 1998: evidence from the Survey of Consumer Finances. Prepared for the Conference on Saving, Intergenerational Transfers, and the Distribution of Wealth, Jerome Levy Economics Institute, Bard College, June 7-9, 2000, revised version March 29, 2001.

purchasing the first home, etc.), concluding that overaccumulation of wealth and altruistic transfers are intentional. Whether wealth accumulation is intentional or accidental, selected policy strategies can affect the ability of different population groups in their efforts to increase their net worth. In the next section, we will explore a range of policies that impede or enhance the ability to save, invest, and grow personal wealth.

16.4 POLICIES AFFECTING WEALTH ACCUMULATION

Given this distribution of financial wealth and property in the U.S., what federal, state, and local policies affect this distribution and what policies might be adopted to change it?

Income taxes, sales taxes, and user fees certainly affect the amount of after-tax income a household can save in order to accumulate wealth, but the discussion here will focus on more direct forms of wealth and property taxation.

16.4.1 TAX EXEMPTIONS AFFECTING HOME OWNERSHIP

In the U.S., prevailing wisdom that home ownership is a key to not only household economic stability, but also *social* stability, may stem from early American beliefs in the power of democratic governance and a participating, land-owning citizenry. Land and home ownership have been encouraged by the U.S. government since its foundation, as exemplified by the Homestead Act of 1862. Rohe et al. (2000) review the various social benefits and costs of home ownership, finding under certain conditions that home ownership has salutary effects on household and societal well-being. For the median household, the primary residence is the largest household asset (see Figure 16.3). For very high wealth households, however, the value of the primary residence is only a small proportion of total net worth.

The interest paid on a home mortgage can be deducted from personal income taxes. All tax exemptions are popular

among their beneficiaries, but this federal income tax deduction has massive support nationwide because such a large proportion of the population owns a home. This tax exemption is not targeted well, however, if its intention was to encourage first-time homebuyers to enter the market. Although low-wealth, first-time homebuyers benefit from the mortgage interest deduction, so do very high-wealth households. Note that mortgage interest on the primary residence is deductible for very large amounts of mortgage interest paid. For example, a homeowner can deduct the interest from a mortgage loan of up to \$1 million, which is far out of range of the typical first-time home purchase.

Poterba (1992) noted that the effect of this tax expenditure on the housing market is more complex than a simple increase in the number of first-time homebuyers entering the market. The exemption also encourages the entire range of homebuyers to purchase bigger homes with larger mortgages. More investment in the national economy is directed toward residential housing (as opposed to other forms of potentially more productive investment), and even suburban sprawl could be partially blamed on the overstimulus of the mortgage interest deduction.

Two more important tax exemptions related to home ownership are the deductibility of property taxes and exclusion of realized capital gains from taxation. Because local property taxes are deductible from federal (and many state) income taxes, benefits from this exemption accrue to those with the largest property holdings. Renters pay some property taxes via higher rents because the property tax burden is at least partially shifted from the owner of the property to the renter. However, renters usually cannot deduct any portion of this shifted property tax burden from their income taxes.* Therefore, the property tax deduction is likely to redistribute resources toward higher-wealth populations.

* Some states have renter rebate programs, where low-income renters receive income tax deductions or credits.

16.4.2 TAX EXEMPTIONS RELATED TO SAVINGS AND RETIREMENT ACCOUNTS

The federal government encourages accumulation of retirement savings in a number of ways. Before those are described, however, it should be noted that savings account interest is taxed. This is aggravating to many an economist, since the interest taxation acts to dampen savings rates, which are disturbingly low in the U.S. compared to other countries. Exempting savings interest from taxation might be a particularly smart way to benefit middle-income populations who are trying to build up their assets (for example, saving for a down payment to purchase a home). Savings accounts are popular among lower-wealth populations, and due to their comparatively low interest earnings, are not a favored investment vehicle for the wealthy. Allowing interest to accumulate tax free would benefit middle-income populations much more than, for example, reducing taxes on stock dividends would.*

Retirement income and savings promotion policy comes in a variety of forms, most of which overwhelmingly benefit higher-income populations. Sherraden reports (1991, 67), “[A]bout seven-eighths of all tax expenditures for income security go to retirement benefits, mostly for people who have incomes far above the poverty level.” That is, Social Security is regressive in taxation (taxing a greater percentage of the incomes of low-income populations than of higher-income populations) and in its distribution, effectively transfers resources from the lower- to higher-income populations.

Individual Retirement Accounts (IRAs) allow wage earners and their spouses to place money in a tax-deferred account and receive an income tax deduction. Thus, savers are rewarded for accumulating some retirement savings, and the restrictions on withdrawal encourage conservative stewardship of their funds. Very low-income populations, however, are not particularly attracted to IRAs because the tax deductibility

* Exempting interest from income taxation would have a negligible effect on low-income populations, because their tax bill is already very low or zero.

means little to those with no income tax liability. For middle-income populations — especially those with no employee retirement account — the IRA provides an attractive incentive to accumulate retirement assets. Given the apparent tax advantages of IRAs, it is puzzling to some that IRAs are underutilized. One reason may be that IRA contributions are not automatically deducted from employee earnings on a regular basis (as is the case with employee contributions to work-based retirement plans). It could be that the structure of the program — requiring deliberate accumulation of savings by individuals and sporadic contributions to IRA accounts — is inconvenient enough to discourage full participation in the program.

Employment-based retirement plans, such as pension plans, 401(k)s (for employees of private firms), 403(b)s (for employees of nonprofit organizations and government agencies) and Keogh plans (for self-employed individuals), are where Middle America salts away its retirement savings. Employer contributions and matching programs encourage even the least frugal wage earners to save some tax-deferred money toward retirement. Employee contributions, like IRA contributions, are deductible from income taxes (up to a generous proportion of income), providing strong incentive for workers to accumulate assets for retirement. In some cases, these accounts can be withdrawn early to fund other asset-related purchases, such as college tuition or a down payment on a home. Unfortunately, low-income populations are least likely to have jobs that provide retirement pensions, so 401(k)-type benefits are not often available to them.

16.4.3 TAXES ON DIVIDENDS AND CAPITAL GAINS

Dividends are portions of corporate profit returned to stockholders, and are currently taxable as income (unless the stock is held in a tax-deferred retirement account). Not all stocks earn dividends, as some firms prefer to retain all earnings in order to facilitate growth of the firm. Since stock ownership is heavily concentrated amongst high-wealth households, the effects of a tax on dividends fall squarely on households of considerable means.

TABLE 16.3 Median and Mean Family Holdings of Unrealized Capital Gains, by Income Group, in 2001

| Income group | Median family holdings of capital gains | Mean family holdings of capital gains |
|---------------------------------------|---|---------------------------------------|
| Less than 20 th percentile | <\$50 | \$17,500 |
| 20 to 39.9 th percentile | \$1,400 | \$41,400 |
| 40 to 59.9 th percentile | \$9,500 | \$46,600 |
| 60 to 79.9 th percentile | \$28,000 | \$86,900 |
| 80 to 89.9 th percentile | \$55,000 | \$142,000 |
| Top 10 th percentile | \$161,000 | \$785,000 |
| All families | \$15,000 | \$131,200 |

Source: Aizcorbe AM, Kennickell AB, and Moore KB. *Federal Reserve Bulletin* 89:1–32, 2003.

A capital gain is an increase in the value of an asset, after subtracting out the initial cost of the asset, and a “realized” gain is the gain incurred after the sale of the property.

Combining all types of unrealized capital gains held in the form of stocks, businesses, and real estate equity, Table 16.3 illustrates the concentration of capital gains wealth in the families with the highest levels of income. Unrealized capital gains are normally subject to taxes when the asset is sold, but a large exemption is granted for personal residences. A reduction in the tax rate on additional types of realized capital gains (i.e., stocks) would benefit those holding assets that have appreciated over the years. In short, because high-wealth families hold the majority of the nation’s corporate stock, reducing taxes on capital gains (as well as dividends) would imply a redistribution of resources toward high-wealth households. The keen observer of history and politics will note periodic attempts by Congress to adjust or eliminate capital gains taxes.*

* One interesting project might be to determine whether increased political activity to reduce or eliminate the capital gains tax coincides with periods of strong stock market growth.

16.4.4 PROPERTY TAXATION

Although collection practicalities result in the property tax being levied primarily at the local level, not state or federal, the property tax nevertheless constitutes the closest, largest, and most prevalent form of wealth taxation. Property taxes vary widely from local jurisdiction to jurisdiction. The property tax rate, determined by local preferences for services funded by bond levies, is often expressed as a dollar amount rather than a percentage rate. For example, a property tax rate of 3.25% is expressed as “\$3.25 per \$100 of assessed value.” That assessed value can range from a high of the property’s current market value to any fraction of the appraised value of the property (for example, 80%), to the price of the property when it was last sold (which could be decades ago). Property tax exemptions are often allowed for categories of individuals such as veterans and senior citizens. Finally, homestead exemptions allow subtraction of a minimum assessed value base (say, \$50,000) from taxation, so that very modest homes are not heavily taxed (Mikesell, 1999).

Because it is possible to design a property tax to avoid taxation of low-value properties, property taxes can constitute a progressive form of taxation, with much more property tax revenue generated from high-income and high-wealth populations. However, the burden of the property tax does not neatly fall on high-wealth populations in practice. One problem is that property taxes are levied on the value of the property, rather than the equity (net of what the property owner owes on the mortgage). Homeowners who just purchased a home and have very little equity in the property pay just as much property tax as homeowners who own their residence outright. Another problem is that renters also pay property taxes, since the increased cost of the property taxes is at least partially shifted to the renters in the form of higher monthly rent.

16.4.5 WEALTH TAXES

Another type of property tax, often referred to as an “intangible property tax,” effectively functions as a tax on high wealth. Wolff (2002) reports that 11 Organisation for Economic

Co-operation and Development (OECD) countries out of 24 directly tax wealth. A few states in the U.S. tax holdings of corporate stocks and other financial assets, above threshold allowances for retirement investments and personal savings. To illustrate, Florida levies an annual intangible property tax of 1% on stocks, bonds, and a few other financial assets if they total over \$60,000. Retirement assets are exempted. A wealthy Floridian holding \$10 million (over the exemptions) in corporate stock would have to pay \$10,000 in intangible property taxes. As lucrative as this may seem, Florida does not gather much revenue from the intangible property tax. Bowman et al. (1990) reported that intangibles taxation had gradually dwindled in importance over the previous decade, and only a couple of states actually derive more than 1% of their revenue from this form of wealth taxation. It is a notoriously difficult tax to enforce and collect, and state residents facing a tax on financial assets might find other places to store wealth (art, luxury items, etc.). Nevertheless, with the increasing disparity of wealth in the U.S., this trend away from intangibles taxation may reverse, as states see a voter-friendly way to diversify a revenue stream constrained by limits on property, income, and sales taxes.

16.4.6 ESTATE TAXATION

How much of household net worth comes from inheritance? Estimates range from 20 to 80%, but it appears that most studies show roughly 50% of personal wealth coming from intergenerational transfers (Avery and Rendall, 2002). Surprisingly, Bowles and Gintis (2002) express doubt that intergenerational transfers play an important role in income and wealth inequality in the U.S. because so few (3% or so) estates are even large enough to face estate taxes. Note, however, that just because an estate is not large enough to be subject to estate taxes does not mean that the estate is insignificant. A \$400,000 bequest to an heir catapults that heir to the top of the net worth charts (see Figure 16.2). Bowles and Gintis later acknowledge that parental wealth is one of three factors (the others are schooling and race) that are strongly related to inheritance of economic status.

Estate taxes are a natural target for taxation, based on the “ability to pay” principle. With a high enough threshold, only the largest estates will be subject to tax, and it cannot be argued that the decedent still needs the assets. Johnson and Eller (2001, p. 7) provide an entertaining history of U.S. estate taxes, quoting one 19th-century author, “Steep [inheritance] taxes...would decrease the number of social drones.” Many wealthy individuals, including Andrew Carnegie and Warren Buffet, have argued in favor of estate taxes because they feel that personal initiative is deadened by inherited wealth (Gates and Collins, 2003).

The arguments against estate taxes center on the rights of individuals to own property, the rights to pass property to one’s children, and the disincentive to work hard, take risks, and acquire a fortune when one is aware that the estate cannot be passed on to heirs. Regardless of the theoretically transparent advantages and disadvantages of the estate tax, its reality is much murkier. Avoiding the estate tax is not difficult if one spends down the estate prior to death and protects assets in trusts (so much so that some economists have labeled the estate tax as “voluntary”). The federal estate tax was repealed in the Economic Growth and Tax Relief Reconciliation Act of 2001 but the repeal is temporary, so the estate tax may resurface in 2011. Even if the estate tax is resurrected (pun intended), ever-larger estates will go untaxed because the threshold of the estate subject to tax has grown from \$675,000 to \$3.5 million in 2009. Because of these generous thresholds, the estate tax affects only a very small proportion of the nation’s wealthiest families.

16.4.7 INDIVIDUAL DEVELOPMENT ACCOUNTS

What if everyone were actively encouraged to save for future needs — not just for retirement, but also college education and a home? Sherraden (1991) and Kazis and Miller (2001) have promoted asset building as an effective social policy that may do more to lift low-income individuals out of poverty than the more traditional approach of income maintenance would. The structure of an Individual Development Account (IDA) system is as follows: Similar to IRAs, individuals may deposit

funds into an IDA to earn tax-deferred interest or other earnings. For low-income, low-wealth individuals, the earnings may be subsidized by the government. As income increases, the subsidy decreases and is eventually phased out. Withdrawals are restricted to uses such as college tuition, personal residence down payments, starting a business, and retirement.

The emphasis on self-sufficiency expressed in Sherraden's IDA appealed to legislators on both sides of the political spectrum, and 28 states built IDAs into their Temporary Assistance for Needy Families programs (Kazis and Miller, 2001) in the late 1990s. The critical test is whether or not the lowest-income citizens can effectively build assets with an IDA. Unlike Individual Retirement Accounts, which are not utilized by low-income populations, it is hoped that more subsidy of savings, plus an "automatic" savings mechanism, similar to 401(k)s, will induce asset accumulation in an IDA. Sherraden (1991, 155) was convinced that ownership of assets will foster an orientation toward the future, unlike income transfers. "[If] a young mother owns her house, she begins to pay more attention to real estate values, property taxes, the cost of maintenance, and so forth...Note that *it is the assets themselves that create this effect.*" On the other hand, skeptics may predict that the subsidies provided to an IDA account holder could end up being used as income enhancements rather than for investment-oriented purchases. With the development of IDA programs in so many states, data will soon be available to allow measurement of the long-term success or failure of this new policy initiative.

16.4.8 COLLEGE FUNDING

Figure 16.2 starkly shows the returns to a college education. Bowles and Gintis (2002), among many other researchers, note how inequality of income and wealth can be perpetuated over time, as families with financial means fund their children's higher education, but far fewer low-income families send their children to college. Since the early 1980s, private college tuition increases have outpaced inflation rates (McPherson and Schapiro, 1998). This discourages low-income students from attending college — low-income students have

been found to have a very elastic demand with respect to college tuition prices — and if they do finish, they start their careers with a much higher burden of loans than students in previous decades faced.

Increasing financial aid specifically to low-income students would be a logical strategy to ensure equal opportunity for disadvantaged populations. Lowering university tuition, however, would not be a well-targeted approach to assist students from low-income families, since the majority of college students are from families with above-average wealth and income. Note that it is not a simple matter to increase financial aid to low-income students. Universities do not necessarily have the incentive to allocate all of their scholarship funding to low-income students. Instead, universities prefer to invest in the most talented students, regardless of income level, because top students bring many returns to the university over the course of their careers.

16.5 THE WEALTH AND PROPERTY POLICY AGENDA

You will notice the absence of wealth policy relating to automobile ownership. Certainly, there are state and local taxes based on the value of vehicles owned by households. However, there are no policies actively encouraging the acquisition of automobiles. A sizable portion of the population would be very happy to have the purchase of their first car (or an upgrade) subsidized. The key problem with this particular asset is its inability to gain value over time. Over the years, houses increase in value with inflation, stocks appreciate in value and earn dividends, and savings earns interest. Cars, however, rust.* It is no surprise, therefore, that governments prefer other asset-building reward systems such as mortgage-interest deduction, 401(k) benefits, and other policies to encourage the accumulation of wealth for financial stability.

* Aside from the occasional car that becomes a collector's item, aided by extensive care and low use.

Since the proportion of total U.S. wealth owned by the top 10% and even the top 1% of households in the U.S. has grown dramatically since 1975, it appears that wealth accumulation policy has been very successful for these households. The task remains, then, to determine how to assist low- and middle-income households in their efforts to accumulate wealth and gain financial stability. The practical solution may lie in scaling back thresholds of benefits, so that wealth-accumulation incentives are not provided to so many wealthy families. Examples might include scaling the estate tax threshold back to \$1 million (permanently) and reducing the mortgage interest tax deduction so that median house value mortgage interest is deductible (but not on \$1 million homes). Social Security, currently a source of redistribution from lower-income populations to higher-income elders, could be means-tested. That is, retirees are allowed to enjoy full returns from contributing to the Social Security system, plus annual interest earnings on those contributions, but above that, Social Security could be provided as income support only for low- and middle-income elders.

From the suggestions above, it is easy to see that a change in wealth and property policy can focus merely on scaling back the breadth of the beneficial policies so that their target population no longer includes the wealthiest families. The revenues gained from scaling back such tax expenditures can be applied to more productive uses in the economy. For a more aggressive wealth-promotion policy, governments should consider subsidizing automatic savings mechanisms (IDAs) similar to 401(k)s for very low-income and low-asset households. The ideal — and the policy challenge — is to encourage the entire nation of households to invest in their futures.

APPENDIX: MEASURING FINANCIAL CAPACITY BY COMBINING NET WORTH AND INCOME

Radner (1989) describes a variety of methods used by several researchers to measure economic well-being of households, including converting flows of income to wealth stocks or vice versa, converting wealth to income flows. Here, we show Weisbrod and Hansen's (1968) derivation of "permanent income" as an example of how to convert net worth into an annuity value for the remainder of the individual's life. In essence, we are adding a portion of personal wealth to each annual income figure. The older the person is, the more of his wealth he or she can "spend" and still have enough to fund his or her remaining years. Permanent income is calculated by the following sum of current income and annuitized wealth:

$$Y_t^* = Y_t + (NW_t \cdot A_n)$$

where Y_t = current income, net of earnings from assets; NW_t = net worth, including assets such as personal residence equity, corporate stock, interest-bearing accounts, farm equity and commercial property equity; and A_n = an n -year annuity at interest rate r whose present value = \$1.

$$A_n = \frac{r}{1 - (1+r)^{-n}}$$

The number of years n is the remaining life expectancy.

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International Trade and Public Policy: The Big Picture

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17.1 INTRODUCTION

Debate over international trade policy never seems to go away. Most economists support the policy of free international trade. Yet many other economists argue that free trade may not always be beneficial; in certain situations, some countries could gain more by imposing trade barriers or by adopting so-called strategic trade policies. This public policy debate has been ongoing from the days of the English economists Adam Smith and David Ricardo, who supported free trade in the late 18th and early 19th centuries, respectively. The contemporary debate has brought little new to the public policy table. At the same time, the debate directs policymakers and public

attention away from two more important forces: the effect of trade on political international conflict and the effect of trade on the global ecosystem. Once these two forces are considered, there are important implications for public policy.

The issues discussed in this chapter are complex and could each become subjects of book-length manuscripts in their own right. Facing analytical complexity, one could choose to ignore some of these issues. In contrast, one could choose to avoid detailed discussion yet present the full picture. In evaluating these two approaches in the context of public policy analysis, this chapter will employ the second approach.* Public policy analysis needs to consider the big picture before focusing on any of its parts. Failing to do so can lead to bad policy, where costs outweigh benefits.

This chapter is organized as follows: Section 17.2 illustrates the scope of contemporary international trade. Section 17.3 explains the economic gains from trade. Section 17.4 discusses policies of trade restriction, and Section 17.5 explains the causes of these policies. Section 17.6 presents the mainstream economic argument in support of free trade. Section 17.7 focuses on the international distribution of the gains from trade, and Section 17.8 and Section 17.9 bring international politics into the picture. Section 17.10 and Section 17.11 consider the effects of trade on the global environment, and Section 17.12 concludes the chapter.

17.2 THE SCOPE OF CONTEMPORARY INTERNATIONAL TRADE

In recent decades, the scope of world trade has grown faster than world economic output. From 1950 to 2001, world merchandise exports grew about 20-fold, whereas world gross domestic product (GDP) grew 6.7-fold. The economic importance of world trade is measured by the ratio of world exports to world GDP (higher ratio implies higher importance). This

* Additional readings on the topic discussed in this chapter are suggested in Appendix.

ratio grew from 32.4% in 1990 to 40% in 2000 (World Trade Organization, 2002).^{*} The importance of trade also grew for many nations. For example, in 1990 and 2000 the ratio of total trade (import plus export) to GDP was respectively 15.8% and 20.7% for the United States (U.S.), 120.3% and 138.1% for Belgium; 43.8% and 75.8% for Canada; and 32.1% and 60.8% for Mexico (World Development Indicators – WDI, 2002: 332–334).

The U.S. economy relies relatively less on trade than the economies of other countries do. Although some of the U.S. imports are not produced at home (e.g., coffee, banana, tungsten, chromium), or are scarce at home (e.g., petroleum, copper), if the U.S. should decide to sever all trade ties, its standard of living would not suffer drastically. Given their higher trade-to-GDP ratios, the same cannot be said, for example, of Belgium. At the same time, the U.S. trade-to-GDP ratio has increased since the 1970s. The U.S. trade deficit — export value minus import value — also has increased. In 2001, the U.S. trade deficit was 349 billion dollars (U.S. Department of Commerce, 2002).

How can a country buy from foreign nations more than it sells to them? The problem facing the U.S. is not unlike the one facing individuals who spend more than their income. Individuals cover their overspending by using their savings, taking a loan, or selling their assets. Countries basically do the same: they use their reserves of foreign currency, and borrow from, or sell assets to, other countries. If the trade deficit is chronic, the country may run out of reserves or assets, and foreigners may eventually refuse to lend the country more money or buy its assets. The U.S. also has been able to cover some of its trade deficit by paying foreigners with its own currency (dollars). This is not an option for most other countries. The details of financial flows between countries can be complex. In this chapter, it is assumed — unless otherwise

^{*} Merchandise trade does not include trade in services, which is much smaller than trade in goods. Gross domestic product (GDP) is the value of output produced in a country.

specified — that the income a country derives from its exports covers the cost of its imports.

The next section considers two trading countries that can produce all traded goods at home. This immediately raises another question: if countries can produce all traded goods at home, why do they trade with one another? The answer has to do with economic gains from trade.

17.3 ECONOMIC GAINS FROM TRADE

In the 17th and 18th centuries, international economic relations were dominated by the doctrine of mercantilism. This doctrine called on nations to export more than they imported and settle trade surpluses in gold. A country with more gold was considered more powerful. To achieve a trade surplus, a nation had to stimulate its exports and restrict its imports. Naturally, when some nations run trade surpluses, others run deficits. In addition, the amount of gold in the world at any given point in time is finite. Hence, mercantilism implied that nations could gain from trade only at the expense of others. Adam Smith and David Ricardo argued that free trade could benefit all nations.

17.3.1 COMPARATIVE ADVANTAGE

The economic gains from trade can be illustrated by using a numerical example. France and Italy each produce two goods, wheat and steel. They have equal endowments of production inputs that can be used for that purpose (e.g., labor, machines) and can produce different amounts of steel and wheat by allocating their inputs to produce the two goods. Figure 17.1 and Figure 17.2 present outcomes from different input allocations to steel and wheat.

17.3.1.1 Production Possibility Frontier

The lines in Figure 17.1 and Figure 17.2 are denoted as production possibility frontiers. Points A to E in Figure 17.1, and F to L in Figure 17.2 represent the maximum amounts

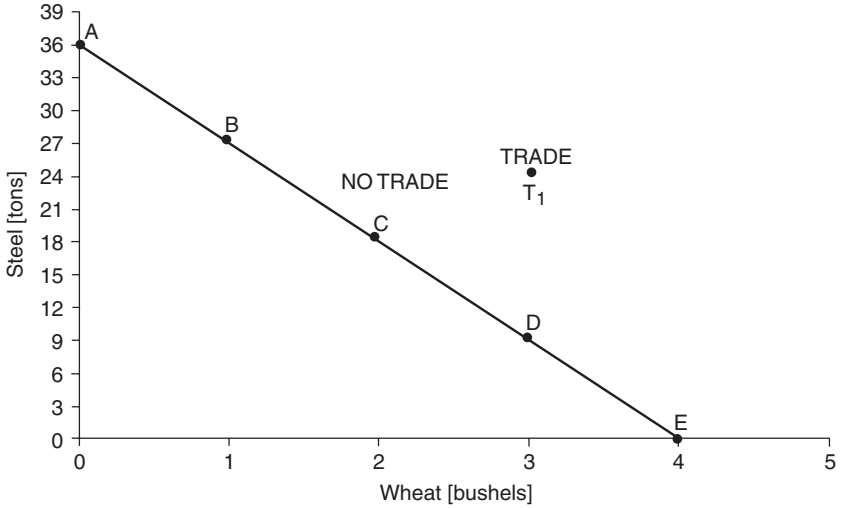


Figure 17.1 Production possibility frontier of Italy.

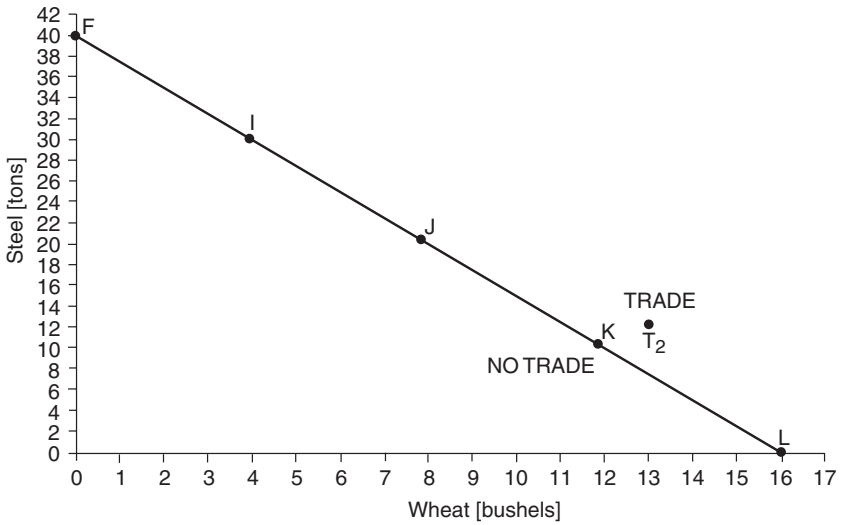


Figure 17.2 Production possibility frontier of France.

of steel and wheat each country can produce by using the best technology available and various allocations of inputs to produce the two goods. For example, if Italy allocates all inputs to steel, it will produce 36 tons (Point A, Figure 17.1); If Italy allocates all inputs to wheat, it will produce 4 bushels (Point E, Figure 17.1). If France allocates all inputs to steel, it will produce 40 tons (Point F, Figure 17.2); If France allocates all inputs to wheat, it will produce 16 bushels (Point L, Figure 17.2). All units of the same type of input are assumed to have the same quality. Points below the lines may also be chosen, but they are inefficient because they imply that some inputs of production are not utilized. Points above the lines cannot be obtained since they require more inputs of production than are available.

17.3.1.2 Absolute Advantage

A nation that can produce a good at a lower cost than another nation can is defined to have an absolute advantage in that good. Adam Smith considered a situation when one country had absolute advantage in producing one good, while the other country had absolute advantage in producing another good. He then demonstrated that if each country produced only its good of absolute advantage and traded some of it with the other country, both countries would gain from the trade.

In our example, France has absolute advantage in steel and wheat, relative to Italy. To see that, recall that if France and Italy produce only steel, they will get 40 and 16 tons, respectively. Similarly, if France and Italy produce only wheat, they will get 16 and 4 bushels, respectively. Therefore, France is more efficient than Italy in producing both goods. To produce one unit of steel or wheat, France would need fewer inputs than Italy would. Hence, the cost of producing both steel and wheat in France is lower than in Italy. Can France gain from trade with Italy? This question was first analyzed by David Ricardo. The modern formulation of his approach is based on the concept of opportunity cost.

17.3.1.3 Opportunity Cost

The opportunity cost of an economic activity is the gain forfeited by not doing another activity. Consider Figure 17.1 again. To get one more bushel of wheat, Italy gives up 9 tons of steel. To get one more ton of steel, it gives up $\frac{1}{9}$ bushel of wheat. Similarly (see Figure 17.2), to get one more bushel of wheat, France gives up 2.5 tons of steel. To get one more ton of steel, it gives up $\frac{2}{5}$ bushel of wheat.

17.3.1.4 Comparative Advantage

Country X has comparative advantage in producing some good relative to country Z, if the opportunity cost of the good in country X is smaller than in country Z. The opportunity cost of wheat in France is 2.5 tons of steel, and in Italy the cost is 9 tons. Thus, France has comparative advantage in steel relative to Italy. The opportunity cost of steel in France is $\frac{2}{5}$ bushels of wheat, and in Italy the cost is $\frac{1}{9}$ bushels. Thus, Italy has comparative advantage in wheat relative to France.

17.3.1.5 Gains from Trade

According to the principle of comparative advantage, if the opportunity costs of goods differ between two nations, they could both gain from trade by focusing on producing the good of their comparative advantage and trading it with the other. To see that, let us assume that without trade, France produces and consumes 12 bushels of wheat and 10 tons of steel (Point K, Figure 17.1), and Italy produces and consumes 18 tons of steel and 2 bushels of wheat (Point D, Figure 17.1). When France produces only wheat, its good of comparative advantage, it gets 16 bushels (Point L, Figure 17.2). When Italy produces only steel, its good of comparative advantage, it gets 36 tons (Point A, Figure 17.1). If Italy gives 12 tons of steel to France, and gets in return 3 bushels of wheat from France, it will have 24 tons of steel ($36 - 12$) and 3 bushels of wheat (Point T_1 , Figure 17.1). France will have 13 bushels of wheat ($16 - 3$), and 12 tons of steel (Point T_2 , Figure 17.2). Thus, with trade

Italy and France increase their consumption of both goods, compared to no trade.

17.3.1.6 Total Production

Without trade, the two countries produce 28 tons of steel ($18 + 10$) and 14 bushels of wheat ($12 + 2$). With trade, there are 36 tons of steel (produced by Italy) and 16 bushels of wheat (produced by France). Hence, with trade the total production of both goods rises relative to no trade, a point that will be discussed further in Section 17.4 and Section 17.10.

17.3.2 SOURCES OF COMPARATIVE ADVANTAGES

We saw that a smaller opportunity cost implies a smaller production cost, relative to another country. Assuming that France and Italy produce both wheat and steel, and prices equal production cost per unit, it is possible to show that the opportunity cost of wheat in each country equals the price of wheat relative to the price of steel (P_W/P_S). Accordingly, if France has comparative advantage in wheat production relative to Italy, the relative price of wheat is lower in France than in Italy. Relative prices of goods can differ across countries for the following reasons.

17.3.2.1 Factor Abundance and Intensity

According to the Heckscher–Ohlin theory, relative prices differ across countries because factor abundances and intensities differ across countries. This theory assumes there are two countries, two traded goods, and two factors of production, labor and capital. A country is defined as labor abundant if it has a higher ratio of total amount of labor to total amount of capital than the other country. A good is defined as labor intensive if its production employs a higher labor-to-capital ratio than the other good. Capital abundance and intensity are defined in a similar manner. In a labor-abundant country, labor is cheaper than capital. Therefore, a labor-intensive good will be relatively cheaper in that country than a capital-intensive good would be. For example, if France is labor abundant,

and Italy is capital abundant, France will have comparative advantage in the labor-intensive good (wheat) and Italy in the capital-intensive good (steel).

17.3.2.2 Economies of Scale

With economies of scale, production cost per unit falls as production size rises. Hence, economies of scale can generate comparative advantages. More complex theories from this idea also assume that similar goods, while sharing traits, are not exactly the same products across countries. Such goods are denoted as differentiated products. For example, French steel may be a bit stronger and less flexible than Italian steel. A situation with differentiated products and economies of scale can exhibit intraindustry trade. For example, France and Italy trade one variety of steel for another because their relative prices differ due to economies of scale, and since consumer demand for the two varieties of steel differs across the two countries.

17.3.2.3 Technological Gap

If France finds a new, more efficient way to produce steel that is not known in Italy, the price of French steel relative to wheat will fall. As a result, France may acquire comparative advantage in steel, and Italy's comparative advantage will change to wheat. However, new production technology tends to flow across countries. Eventually, Italy will learn the new technology and perhaps improve it to regain comparative advantage in steel production.

17.3.2.4 Governmental Assistance

Governmental assistance to producers can change relative prices of goods and result in changes to comparative advantages. For example, relatively new or infant industries cannot compete well in world markets because they face competition from older, more efficient foreign industries. With governmental assistance (e.g., loans, tax benefits, trade barriers on competing imports), infant industries can grow and become more

efficient as they gain experience in their field and develop strategies to best utilize economies of scale. Governmental assistance to infant industries is but one example of trade protectionism policies.

17.4 TRADE PROTECTIONISM POLICIES

Virtually all governments impose some restrictions on their imported goods. These policies are denoted as protectionism since their goal is to protect the domestic industry from competing foreign goods. Basically, protectionism policies all work in the same way: they raise the prices of imported goods, thus making them less competitive relative to domestic goods. This section discusses primary protectionism policies.

17.4.1 TARIFFS

Tariffs are taxes imposed on imports. They are relatively easier to collect than income taxes and can provide substantial revenues for governments. Tariffs raise the prices of imported goods. As a result, the domestic demand for imports declines. Tariff levels vary across goods and countries. Compared with other countries, the average U.S. tariff level is currently relatively low (about 3%), but it was higher in past years. The most notorious tariff in U.S. history was the Smoot–Hawley Tariff of 1930. This legislation raised the average U.S. tariff level to about 60%. In retaliation, other countries raised their own tariffs. As a result of these trade wars, in the 1930s, the volume of world trade declined about 70%. This drastic decline stimulated the formation of the General Agreement on Tariffs and Trade (GATT) and its successor the World Trade Organization (WTO), the primary goal of which is to promote free trade.

17.4.2 QUOTAS

Quotas are quantity limits placed on imports, thereby raising domestic production. With a tariff, the government collects revenue from foreigners. With a quota governments do not collect revenues unless they sell the quota to foreign producers. Quotas

are nevertheless widely used since they are less visible to the public than tariffs are. The effects of a quota are quite similar to those of a tariff with two main differences. When domestic demand rises, with a given tariff level, price and domestic production do not change, but the quantity of import rises; with a set quota, the quantity of import does not change, but price and domestic production rise. Second, the effect of a quota on import level is certain; the effect of a tariff on import level is not known for sure since demand and supply curves are not known with certainty (and need to be estimated statistically).

17.4.3 VOLUNTARY EXPORT RESTRAINTS (VER)

Imposing new tariffs is not allowed by the WTO. However, when faced with strong domestic demands for protection, governments often offer assistance to their producers. To avoid visible trade barriers, which may be politically problematic, governments can pressure exporters to voluntarily restrict their exports. These pressures can be effective when initiated by powerful nations such as the U.S. The effects of VER on trade are similar to those of quotas, limiting the quantity of imports and raising their prices. Domestic production and the price of product substitutes also rise. Foreign producers can gain from VER (and quotas) if the price of import rises more than the quantity of import falls, resulting in an increase in revenue (given as price times quantity).

17.4.4 STRATEGIC TRADE POLICY

Strategic trade policies are used, to a varying degree, by most developed countries (DC). This approach argues that governments can generate a comparative advantage through a combination of temporary protectionism, tax benefits, subsidies, and financial and/or research and development cooperation with the private sector. The focus is on high tech sectors deemed important for national standard of living (e.g., computers, telecommunications, aircraft). These sectors are considered to be risky, require large production to be profitable, and need large up-front investments. However, growth of these winning sectors can generate highly beneficial spillovers into

the entire economy. The strategic trade policy approach resembles the infant industry approach, except that it is advanced in the context of DC, while the infant industry approach is advanced in the context of less developed countries (LDC).

17.4.5 REGULATIONS

International trade can be hampered by various domestic regulations. For example, a country may restrict imports of food or medicines that do not meet certain health standards. Governments may require that imports undergo lengthy inspections, ultimately raising their price. Also, some countries have laws requiring governments to buy a certain amount of goods from domestic producers (procurement policies). Regulations can represent legitimate requirements. However, they may also represent attempts to protect domestic producers from foreign competition.

17.5 REASONS FOR PROTECTIONISM

Section 17.3 has shown that trade is economically beneficial, whereas Section 17.4 has discussed trade restrictions. If trade is economically beneficial, why do governments restrict it? Fluctuations in the level of protectionism are driven by forces of two types. One type includes forces that affect the demand of protectionism from the government. The second type includes forces that affect the supply of protectionism by the government.

Trade generates winners and losers in the domestic economy. The losers are sectors that see their market share shrink due to competing imports. The winners are exporting sectors and consumers. Consumers benefit from trade mainly because it tends to lower prices due to increased competition. The losers are motivated to obtain protection because their burden is acute and immediate. When facing protectionism, consumers typically do not organize to demand free trade since the cost to the individual consumer to make this demand is typically larger than the cost of protectionism would be. However, consumers can affect trade policy indirectly by voting. Elections determine the agents of trade policy from interest groups,

political parties, Congress or Parliament members, and executives. Each of these agents is primarily responsive to different sources of policy influence. Interest groups represent sectors that gain or lose from trade; the positions of political parties and elected officials depend on whom they represent; while executives may take a broader national perspective.

17.5.1 DEMAND FOR PROTECTIONISM

Groups that feel threatened by trade may seek protection from governments. The question is what triggers greater or lesser demands for protection from trade competition.

17.5.1.1 Trade Interest Groups

The analysis of trade interest groups is predicated on the Stolper and Samuelson theorem, which follows from the Heckscher–Ohlin model. This theorem predicts that protectionism will benefit owners of factors with which a country is poorly endowed. Thus, capital owners will demand protection in a labor-endowed country; labor will demand protection in a capital-endowed country. Whether these groups achieve their goals depends on how strong groups are. Trade policies are the outcome of a struggle among groups that gain from protectionism, groups that lose from it, and the politicians who seek the support of both types of groups. The more numerous, geographically spread, and politically powerful the interest groups are, the greater their success. Export-oriented industries and firms using imported inputs of production tend to support free trade. Declining and inefficient industries that produce for the local market tend to demand protection. Since protectionism represents government–interest group deals, protectionism, once attained, tends to remain for relatively long periods.

17.5.1.2 Macroeconomic Variables

Business cycles — fluctuations in macroeconomic performance — promote demand for free trade in good times and protectionism in bad times. Unemployment, particularly in

sectors that compete with imports, raises demand for protectionism. A persistent national surplus capacity — a situation in which domestic demand is chronically smaller than domestic supply — also induces demand for protectionism because imports are perceived as intensifying the problem. An appreciation of the domestic currency (a rise in the price of domestic currency in terms of foreign currency) reduces the price of imports expressed in domestic currency and, therefore, raises protectionist pressures. High inflation leads to domestic currency devaluation (a fall in the price of domestic currency in terms of foreign currency). This raises the prices of imports expressed in domestic currency and, therefore, reduces demand for protectionism.

17.5.1.3 Export Orientation

Export-oriented sectors prefer free trade over protectionism because trade barriers at home tend to lead to trade barriers abroad. As the economic significance of exporting firms rises, leaders become increasingly sensitive to their preferences. The interaction of export-dependence and multinational firms can further reduce protectionism. For example, export-oriented, multinational firms in the U.S. provided the critical domestic support for the open trading regime established by the U.S. after World War II. Although the 1930s and 1970s experienced recessions, the 1970s were markedly less protectionist than the 1930s because more firms in the 1970s were export and multinational oriented. After World War II, the world economy had become more economically interdependent (or interconnected) and world protectionism had declined, suggesting that economic interdependence promotes free trade.

17.5.2 SUPPLY OF PROTECTIONISM

Protectionism is supplied by governments, conceptualized here broadly to include bureaucrats, elected officials, and executives. We now consider several forces that can affect the trade policy behavior of governments.

17.5.2.1 Institutions

Institutions can affect trade policy. For example, the GATT and WTO — founded under U.S. leadership — support free trade. Once established, they constrained domestic practices. Institutional changes also have played an important role in shaping the U.S. trade policy. To enable freer trade to come about in the U.S., the influence of Congress on trade policy had to be reduced because Congress generally responds to interest groups. In the 1950s, Congress delegated trade policy authority to the president. The shift was aided by the relatively small importance of trade for the U.S. at that time, U.S. global economic dominance, and the necessity of supporting Cold War allies by opening up U.S. markets to allies despite their protectionism. Beginning in the 1970s, U.S. global economic supremacy eroded and the volume of U.S. trade expanded, thereby expanding the pool of domestic losers from trade. As the Cold War faded, the security rationale for accepting allies' protectionism became awkward. The argument for free trade also suffered from economic successes enjoyed by strategic trade policies of major economic competitors. As a result, Congress began responding anew to injured U.S. trade interests.

17.5.2.2 Hegemonic Stability

Free trade implies greater sensitivity to external markets and, therefore, greater need to make internal adjustments. These adjustments can be costly and threaten domestic stability. Larger, more economically developed countries are less vulnerable to this problem than smaller, less economically developed countries are, because they are generally less exposed to trade, and it is generally easier for them to make adjustments. Their smaller vulnerability gives large economies an edge in dealing with weaker countries. Large and developed economies, therefore, should lose interest in free trade once they have lost their competitive edge. A hegemon, a country whose economy is the largest and most developed in the world, should particularly favor free trade as long as

it maintains its global lead. Smaller economies have too much to lose from closure to stray from the hegemon's free trade camp. Accordingly, the world economic system tends to become more open to trade when the hegemon is ascending or is maintaining its global lead, and vice versa.

17.5.2.3 Ideas

Policymakers generally come to accept ideas that shape their subsequent behaviors. Proponents of free trade gained an ideological basis with the works of Adam Smith and David Ricardo. The movement toward free trade in 19th century Britain is often seen as a result of this work. The lessons of the Great Depression further led to the acceptance of free trade after 1945. Since the 1970s, however, U.S. support of free trade suffered from successes enjoyed by protectionist policies of others. Despite this success, the U.S. commitment to free trade has slowed a return to a full-blown protectionism. Another idea that shapes trade policy is reciprocity: do to others what they do to you. This approach guided countries in the 1930s trade wars and was institutionalized in the U.S. in 1934 when Congress delegated the president authority to grant reciprocal tariff reductions. Reciprocity has become more apparent since the 1980s, when countries have imposed more nontariff trade barriers.

17.5.2.4 Trade Balance

Smith's and Ricardo's calls for free trade were based on the expectation that the value of imports would roughly equal the value of exports. In reality, nations can run trade deficits. A chronic trade deficit can have harmful results, similar to those of other forms of indebtedness. Export is the primary source of foreign currency for most nations. As noted, to cover trade deficits, nations can use their foreign reserves, sell assets to foreigners, or take on loans. They also can try to pay foreigners using their own currencies, respectively, but this option is not viable for most nations. Taking loans also is problematic, as the interest payments could become a hurdle. A chronic trade deficit can dwindle foreign reserves, reduce foreign investors'

willingness to provide more loans, and trigger a sell-off of a country's currency — financial crisis — at which time a nation's ability to import can fall considerably. Most nations, therefore, try to minimize their trade deficits, and one way to do so is by restricting imports and promoting exports.

17.6 THE MAINSTREAM ECONOMIC ARGUMENT FOR FREE TRADE

Mainstream economics assumes that people want to maximize consumption. At the macroeconomic level, the ultimate goal of policymaking is to promote economic growth. This, the argument contends, will ensure a continuously rising consumption. Free markets are said to be the best social mechanisms to promote economic growth. The mainstream argument for free trade — or free international markets — is an application of the general argument for free domestic markets. Nationality is not a variable in the assumptions describing the behavior of people in mainstream economics. To put it in another way, economics does not distinguish between the interactions of producers from Philadelphia and consumers from Baltimore, for example, or producers from France and consumers from Italy. Since free markets make sense domestically, they also make sense internationally.

In principle, the above explanation has said it all. Nevertheless, many economists write on the benefits of free trade. According to one argument, the economic benefit from trade outweighs the cost. Thus, the winners can compensate the losers. Second, as shown in Section 17.3, free trade raises consumption, which is considered desirable and beneficial. Third, trade barriers reduce international competition. Competition is desirable since it promotes lower prices and, therefore, raises consumption. Competition also stimulates firms to become more efficient; firms that fail to adapt will ultimately fail in the marketplace. Protectionism maintains inefficiencies in place by shielding firms from the need to improve. Fourth, economists agree that countries could gain from strategic trade policies at the expense of others. But this gain can be realized only if other nations do not impose strategic trade

policies of their own. Since the idea of reciprocity guides trade policy, countries do retaliate, and the expanded trade restrictions harm all countries.

Finally, economists explain that trade stimulates economic growth through several channels:

1. Export promotes fuller utilization of underemployed domestic inputs, since it provides larger, external outlets for domestic production. Import can stimulate domestic demand, ultimately enabling larger domestic production.
2. By expanding production, trade promotes more efficient division of labor between production activities and enables economies of scale.
3. Trade transmits new ideas and technologies. When countries restrict trade, they also curtail flows of technologies and improved products, which harms economic growth.
4. By increasing the number of producers in the marketplace, trade pushes domestic producers to become ever more efficient and, therefore, accelerates economic growth.

17.7 DISTRIBUTING THE GAINS FROM TRADE

Mainstream economics hails comparative advantage as one of the deepest insights offered by the profession. To recount, even when nation X produces all goods less efficiently than nation Y, trade can be economically beneficial to both nations. But, is this story so profound? In fact, it is not. David Ricardo's insight is simply the story of day-to-day interactions between people in the market. Consider, for example, a lawyer who is better than a secretary at typing and at contract law. The lawyer focuses on contract law and trades with the secretary, who focuses on typing. This logic does not depend on the nationality of the lawyer or the secretary.

The comparative advantage model does not determine the distribution of trade gains among nations. The gains can be divided in many economically beneficial ways relative to

no trade. But in some cases, one side would gain more than the other. The question of who gains more from trade is generally ignored in mainstream economics or discussed in passing. It is assumed that nations will agree on some rate of exchange. In other words, it is assumed (implicitly or explicitly) that trade will not promote political conflict.

Economists are generally aware that markets require political stability. However, they take it for granted. Political conflict is bad for business. Why should the lawyer and the secretary quarrel over trade gains when they can both gain from trade? In other words, trade is expected to promote peace even if it intensifies income inequality. This expectation is driven by the assumption that actors want to maximize their consumption — the basic assumption in economics. However, the international system is not about homo-economicus actors, but rather about homo-political-economicus actors. As such, income inequality could promote political conflict.

Standard economics shows that competitive markets — free markets with many sellers and buyers — lead to a “Pareto-optimal” situation (named after early 20th-century Italian economist Wilfredo Pareto). In this situation, one could not change the allocation of goods in society without reducing the utility (pleasure) of someone else. The problem is that a situation can be Pareto-optimal even when most people are very poor, as long as the poor cannot be made better off without reducing the utilities of the rich. In short, a perfectly competitive market can result in a perfectly repugnant society, where a few people reap the lion’s share of the gains. All that free trade is doing is expanding the market beyond national borders.

International trade has expanded in recent decades.* At the same time, the income gap between poor and rich nations has also grown. For example, in the late 1990s, the 20% of global population living in the richest nations had 74 times

* See Section 17.2. Trade is one aspect of economic globalization. Other salient aspects of economic globalization include international financial capital flows and multinational corporations.

the income of the 20% living in the poorest nations. In 1960, the ratio was 30 to 1 (Human Development Report [HDR], 1999: 36). The annual growth rate of real GDP per capita from 1975 to 2000 was 2.1% in rich nations and 1.5% in poor nations (HDR, 2000: 193). In 2000, 40.6% of the world's population lived in low-income nations (yearly income per capita \$1980), 33.8% lived in lower middle-income nations (\$4600), 10.7% in upper middle-income nations (\$9210) and only 14.9% in high-income nations (\$27,770) (WDI, 2002: 20). The current income of the richest 25 million Americans is equal to the income of the poorest 2 billion people in the world; 2.8 billion people make less than \$2 per day, out of which 1.2 billion make less than \$1 a day (HDR, 2002: 17–19). Compared to the 20% of people living in the poorest nations, the 20% of people living in the richest nations consume 16 times as much overall, 17 times as much energy, 49 times as much telephone lines, 77 times as much paper, and 145 times as much automobiles (HDR, 1998: cover).

The highly skewed global distribution of income across nations is caused by several forces, including trade. The terms of trade (what can be imported for one's export) for LDC (excluding fuels) have declined in real terms since the 1950s.* DC also impose relatively high trade barriers on the exports of LDC. On average, LDC exports to DC are subject to twice as many trade barriers as DC exports are, and the DC industries that the LDC compete with are highly subsidized by the DC governments (HDR, 2002: 32–33). In addition, the gains from trade tend to go to nations whose exports exhibit economies of scale. Since DC generally have more economies of scale than LDC do, they gain more from the trade. Finally, trade involves intermediary actors (i.e., traders) who keep a portion of the gains from trade. These traders typically reside in DC.

* If its terms of trade improve, a nation can import more in return for its export. For numerical details on the terms of trade of LDC see Russett et al. (2004) (cited in Appendix).

Most people accept the domestic distribution of income as part of “this is the way it is.” The lawyer is richer than the secretary and still they trade, and most of us trade with Microsoft’s Bill Gates. Some people even find virtue in the uneven distribution of trade gains, arguing that it propels economic growth by providing incentives to become innovative in order to become rich. However, nations have domestic mechanisms that transfer wealth from the rich to the poor (e.g., progressive taxation, Medicaid, food stamps). In contrast, the international system does not have such mechanisms, as there is no world government that could enforce them. Consequently, the large gap between rich and poor nations is not likely to disappear any time soon.

17.8 TRADE AND INTERNATIONAL POLITICS

In mainstream economic models, trade takes place in a political vacuum between nameless “homo-economicos” actors that do not carry a national flag. When the flag is included in the analysis, however, there are implications for trade theory and policy. The global system is, and will continue to be for the foreseeable future, built from states. States compete with one another. Of course, not all states compete as intensely as others do. Some even compete over world political-economic leadership. Despite this reality, many economists believe that trade politics mainly involves conflicts of interests within, rather than between countries. This view basically assumes that the lawyer–secretary trade, and international trade, are governed by the same forces. But, is this necessarily so? The answer is “it depends.” Trade between Belgium and Denmark is one thing. Trade between the U.S. and China or trade between the Israelis and Palestinians is a different thing, because these cases involve forces generally ignored in economics: political rivalry and conflict. Thus, international trade needs to be analyzed from a broader perspective that considers economic goals, foreign policy goals, and the effect of trade on political relations.

17.8.1 TRADE POLICY IS FOREIGN POLICY

Trade policy is at times a reflection of foreign policy. The use of trade in this manner has been prevalent since the time of ancient Greece. The idea was further developed during the 17th and 18th centuries when mercantilism examined the use of international economic policies as instruments in the service of a state's larger foreign policy interests.

The contemporary discussion is framed in terms of trade interdependence, trade dependence, and influence. When two countries trade, each country is sensitive to, or is affected by, the economic policies of the other. However, the extent of their sensitivity may differ. As such, trade interdependence can provide possibilities to influence other nations politically. The term trade dependence denotes asymmetric trade interdependence — a situation that arises when one trade partner needs the benefits of trade more than its partner does. Since both partners gain economically from trade, both lose economically when their trade ends. But the partner that values the gains from trade more is more vulnerable to the interruption. For example, one partner may not have readily available substitutes for import or may not be able to export to other destinations.

These considerations are particularly important for nations facing potential or actual foes. The use of trade policy to influence a rival is likely to be more effective when traded goods are considered to be strategic for the rival (important goods that do not have readily available substitutes). Another foreign policy-related aspect of trade policy involves the distribution of the gains from trade. As we have seen in Section 17.3, trade enables a more efficient allocation of national production; thus it can enhance military capabilities of potential rivals. In such cases, relative gain calculations — which side gains more from trade — can further affect trade policy.

In extreme cases, countries may use trade sanctions as a tool of political influence. Trade sanctions threaten to cut off export and/or import unless the targeted country complies with some external demand. In most cases, this policy has been used by major countries for reasons related to political conflict. For example, the U.S. used trade sanctions against

the former Soviet Union and recently against Iraq. That said, trade sanctions also have been used by smaller nations. For example, the Arab states imposed an oil embargo — a total restriction of oil exports — on Western countries in the 1970s in order to affect their treatment of Israel.

17.8.2 THE EFFECT OF TRADE ON POLITICAL CONFLICT

The effect of trade on political conflict is debated. The liberal approach to international relations argues that trade causes international peace. The realist and neo-Marxist approaches argue that trade promotes conflict. Some realists also argue that in many cases trade policy is an extension of foreign policy. As such, trade can be used as a tool to promote international cooperation through compliance.

The view that trade causes international cooperation and peace can be traced to the English economist Adam Smith. The modern formulation of this view considers nation X that contemplates hostile actions against its trade partner nation Y. The leaders of X believe that hostility will be beneficial (otherwise why would they contemplate it?). But they also expect that the hostility will reduce the volume of trade between X and Y and, therefore, will reduce the gain X realizes from trade with Y. If the gain from trade is large, nations are expected to be averse to political conflict with their trade partners — hence, trade promotes international peace.

The realist channel from trade to international cooperation involves the use of trade as a foreign policy tool to achieve political compliance. When the flow of trade stops, the country that finds trade more important to its economy may have no other choice but to comply with its trade partner's political dictates — consequently, trade causes international cooperation, albeit with bad feelings.

Scholars in the neo-Marxist tradition argue that trade promotes political friction and competition among nations and enhances their attempts at outward expansion. Countries compete for scarce external resources and markets. As the competition intensifies, state power is used to guarantee national access to external resources and markets. When the

level of state intervention in international markets rises, there will likely be a rise in the frequency and intensity of trade wars, economic penetration of other countries, imperialism, intervention in local conflicts, and an overall rise in the level of international conflict. It is also argued that trade enables rich nations to exploit poor nations, generating conflict in the process (as the poor nations protest).

Realism argues that with trade interdependence, states are no longer able to steer their own policies independently of other states' goals. Consequently, conflicts arise. It is also argued that when trade occurs between actual or potential rivals, states seek to maximize relative gains from trade (gain more than their partner). These concerns are particularly important when trade can affect the distribution of political and military power among nations. In such cases, states' pursuit of relative gains from trade can induce conflict. Dependence on the import of strategic goods from a potential or actual rival can further increase the likelihood of conflict, since countries tend to pursue aggressive, at times expansionist, policies in order to ensure the supply of these goods in the future.

We can summarize that the theoretical effect of trade on political relations is complex. All the processes discussed above have been observed in the real world. It follows that trade is not necessarily a panacea for peace. And why should it be? Again, trade is simply another name for the market. Is the market a sure recipe for peace? The answer is not necessarily. Conflicts have their own reasons. Trade could aggravate or diminish them, depending on the goals of the actors, a point illustrated next.

17.9 A U.S.–CHINA HYPOTHETICAL ILLUSTRATION

U.S.–China trade is beneficial economically to both sides. However, the case of China is complex. China is not a democracy, it threatens to invade Taiwan, it aspires to become a regional (and maybe global) leader, it supports North Korea, and it conquered Tibet. The Chinese regime has demonstrated its willingness to crush its opposition on numerous occasions.

China's economy is now the second largest in the world and is growing fast, but its energy sources are dwindling. Moreover, China fought a war with India in 1962 and is now competing with India for regional supremacy. China is selling weapons to developing countries, including North Korea and Iran, and there are also reports concerning a joint Chinese-Russian effort to challenge U.S. global supremacy. Any of these issues could lead to a crisis with global implications that could be important for the U.S. In 1996, the U.S. and China almost went to war over Taiwan, and recently the two have disputed bitterly over the U.S. flying surveillance planes along China's coasts.

What should the trade policy of the U.S. be toward China? Let us assume that the U.S. and China engage in free trade. One nation may gain more from the trade than the other, but this possibility will be ignored to make a different point. The crucial question for U.S. national security is what China will do with the wealth acquired from trade. Will it become secure in its economic power and reduce its stock of weapons, or will it divert this wealth to military buildup? In the latter case, how will the U.S. react? Will an arms race result? U.S.-China trade, then, implies a threat to the national security of the U.S. (and China), which is inherent to the trade process itself. This threat is not unique to the case of the U.S. and China. However, it is more important when countries could become, or already are, political rivals. In such cases, trade can reduce political stability and promote international conflict.

According to the standard story, international trade allows countries to use their inputs endowments more efficiently. The standard story stops here. However, in the real world the inputs of production made available relative to a no-trade situation could be used in three ways:

1. Increase consumption while keeping military expenditure at a no-trade level
2. Increase military expenditure while keeping consumption at a no-trade level
3. Increase both consumption and military expenditures in some combination

Trade frees production inputs for China, relative to no trade. Will China devote these inputs to the production of consumption goods, military goods, or both? The answer depends on China's larger goals. Given the difference in political regimes, it is conceivable that as China gets richer, it will increase its military expenditures more than the U.S. does. This expectation generally seems to fit empirical observations.

Facing a Chinese armed forces buildup, the U.S. may decide to follow suit. In principle, then, the stocks of weapons held by the U.S. and China under free trade may be larger than their stocks held under no trade. Whether or not this would occur depends on countries' preferences. As long as the preferences for national security relative to consumption do not decline due to the trade process itself, trade may reduce political stability. While this argument is about the link between trade and stocks of weapons, it is also about trade and conflict. Arms races promote international tension and therefore raise the likelihood of disputes escalating to wars.

The trade story told here applies more to political rivals than to allies. But rivalry is a prevalent feature of international relations. Nations generally seek to maximize both consumption and national security. Many states, particularly major powers, also seek to maximize political status and power. Automatically ignoring this feature of international relations in favor of the simpler conventional trade story about actors that only care for consumption can be politically dangerous.

17.10 TRADE AND THE ENVIRONMENT

So far, we have considered the effect of trade on conflict, which is not included in the standard story. This section considers another important issue that is typically ignored in mainstream economics. Economists support free trade because it promotes economic growth. But is growth a suitable goal? This question may seem silly. Promoting growth is the hallmark of contemporary economic policy. Free markets promote growth. Free trade is simply another name for free (international) markets. Thus, free trade promotes growth, and this

is the end of the story. But is it? The global economy is embedded within the global ecosystem. Economies use natural resources and discharge pollution and waste into the environment. A larger economy needs more resources and generates more pollution and waste. Making economic growth the goal assumes there are enough resources and that environmental damages can be alleviated. Otherwise, economic growth and free trade could prove to be illusive goals.

17.10.1 GLOBAL ENVIRONMENTAL DATA

At this stage, it is beneficial to inspect recent data on the global ecosystem in three important areas: energy and climate change, food, and water.

17.10.1.1 Energy and Climate Change

Energy is a vital input to production. Today, about 90% of world energy consumption comes from fossil fuels (Vital Signs [VS], 2001: 40; 2002: 39). Naturally, a larger economy consumes more energy. World consumption of fossil fuels (coal, oil, natural gas) has more than quadrupled since 1950 (VS, 2002: 39), primarily driven by DC. Energy use per capita in DC is currently about 10 times larger than in LDC (WDI, 2002: 160), and this proportion was higher in the past.

Fossil fuels cause the gravest environmental problem of all: climate change (Intergovernmental Panel on Climate Change (IPCC), 2001). In the 20th century, the frequency and duration of warm periods rose, glaciers retreated, and the sea level rose about 0.2 m. Since the 1950s, average global temperature has risen about 0.1°C per decade, winter snow covers have declined 10%, summer Northern sea ice coverage fell 15%, Northern ice thickness fell 40%, and the frequency and damage of weather disasters has grown. The bulk of climate change is due to carbon dioxide emissions from burning fossil fuels. Since 1950, world carbon dioxide emissions have more than quadrupled. The 20% of world population in DC has generated more than 53% of these emissions; the U.S. alone generated 24% (HDR, 1998: 4; WDI, 2002: 164). Deforestation also plays a role in climate change because forests absorb

carbon dioxide. Today, about 50% of the Earth's original forest cover is gone, and the health of another 30% is highly degraded (VS, 2002: 104).

17.10.1.2 Food

A growing economy with more people requires more food. In the late 1990s, more than 1 billion people were undernourished, virtually all living in LDC (WDI, 2002: 116). Bad public policy is part of the problem, but environmental pressures are as important. Grain accounts for approximately 50% of the world's crop land, provides 50% of the protein and calories for humans, and is a major feed source for milk, egg, and meat production. Global grain production per capita has been falling since 1984. Grain inventories per capita peaked in 1987 at 104 days' use, falling to 60 days in 2001 (VS, 1999: 42; 2001: 28; 2002: 27). Per capita global grain production area fell from 0.23 hectares in 1950 to 0.11 in 1999. It is estimated that by 2020 the majority of Asians, Latin Americans, and Africans will depend on imported grain (VS, 2000: 44; World Resources, 1997: 238). Fish is the main source of protein for 15% of the global population. Per capita fish production (excluding China, whose numbers are considered unreliable) fell from 14.6 kg in 1987 to 13.1 in 2000. Currently, about 65% of the world's oceanic fisheries are being fished at approximate capacity, and another 10% are overdepleted (The State of the World Fisheries and Aquaculture, 2002).

17.10.1.3 Water

A growing economic system also requires more water for drinking, agriculture, and industry. Since there is only so much fresh water in the world, when population grows, water availability per capita falls. Today, 1.1 billion people lack access to safe (drinkable) water. In addition, 2.3 billion people experience water stress, of which 1.7 billion experience the more severe situation of water scarcity (VS, 2001: 94-95). Virtually all of these people live in low-income countries. Water availability per capita today is 60% of the 1970 level. Moreover, 97% of the world's unfrozen fresh water sources are

extracted faster than their rate of replenishment (VS, 2000: 123-125). By 2050, 42% of the global population is expected to exhibit water stress and another 17% will experience water scarcity (WDI, 1999: 118–119).

Water-stressed countries typically import a big part of their grain, since raising grain requires relatively large volumes of water. Currently, water-stressed countries import about 26% of the global grain export. As water stress spreads and intensifies, current grain importers will have to import more of their grain, and more countries will become grain importers. By 2025, the projected water deficits for China and India alone are expected to increase world demand for grain import by about 100 million tons per year. This amount is larger than the entire U.S. export of grain (VS, 2002: 134–135).

17.10.2 ENVIRONMENTAL KUZNETS CURVE

The global economy has been generally growing since 1950. But the data presented above indicate the onset of a clash between a growing global economy and the capacity of the ecosystem to sustain it. The growth-oriented consumption culture of 20% of the global population living in DC has been responsible for more than 50% of the rise in resource use since 1950 (HDR, 1998:4). Despite this picture, mainstream economists argue that economic growth ultimately reduces environmental damage. According to the environmental Kuznets curve theory, environmental damage rises with income per capita when income per capita is low. As income per capita rises above a certain level, people shift to cleaner technologies and goods and support more environment preservation. Trade is said to be good for the environment because it promotes economic growth. This is denoted as the *income effect* of trade. However, trade also increases production, which tends to generate more pollution and waste. This is denoted as the *scale effect* of trade. After passing through an initial “dirty” phase of development, the income effect of trade is expected to become larger than the scale effect, leading to higher environmental quality.

Trade can also affect the environment by changing the composition of goods produced in a country. The *composition effect* of trade may promote environmental damage. For example, consider a country that produces two goods: one good is timber intensive, and the other is labor intensive. If the country is timber abundant (highly forested), it will have comparative advantage in timber. Therefore, trade will increase the production of the timber-intensive good and promote deforestation. If the country is labor abundant, it will have comparative advantage in the labor-intensive good. Therefore, trade will increase production of the labor-intensive good, which will reduce deforestation. Empirical evidence indicates that trade and economic growth promote commercial logging and encroachment of agriculture into forested areas, the two primary causes of deforestation.

17.11 LIMITS TO GROWTH

In empirical analyses of the environmental Kuznets curve theory, some pollutants do not exhibit a turning point beyond which their quantities fall. For pollutants that do decline at high levels of development, the income per capita thresholds found are much larger than the income per capita of LDC. Since the majority of the global population lives in LDC, global environmental degradation is not likely to decline with economic growth in the foreseeable future.

Let us assume, however, that the environmental Kuznets curve theory is ultimately correct, and attaining the standard of living in DC is the answer to environmental degradation. If so, can the standard of living in LDC grow to the level of DC, and can both levels continue to grow forever? The English economist Thomas Malthus, a contemporary of David Ricardo, believed there were limits to economic growth. In the long run, the growth of food would fall below population growth and society would converge in a state of poverty and conflict. Modern economists have criticized Malthus for ignoring the role of technological progress in alleviating environmental pressures, and his ideas subsequently lost favor. If Malthus

was wrong, then either no limits to growth exist or technological progress can expand the limits forever. One way to evaluate these issues is to first evaluate whether perpetual growth is feasible with the current state of technology, and then consider the possible effects of technological progress.

17.11.1 CURRENT TECHNOLOGY

Can all nations attain the current U.S. standard of living with the current technology? The study of this question employs “ecological footprints” — land and water area required to sustain actual production, waste, and pollution — and “bio-capacities” — land and water area available for this purpose. The current ecological footprint of the U.S. is 10.3 hectares per capita, but the world’s bio-capacity is 2.1 hectares per capita. It is estimated that by 2050 the world’s bio-capacity per capita will decline to 1.2 hectares due to population growth. Thus, it is impossible for all nations to attain the current U.S. standard of living with the current technology, and this impossibility is unlikely to simply disappear.

Mainstream economists argue that as natural resources are depleted, their prices rise, stimulating a shift to substitutes and promoting technological progress to generate new materials. Scholars estimate that if all nations would adopt the current rate of mineral consumption of DC, half of their known reserves would be exhausted by 2050. While new reserves might be discovered, these estimates illustrate the extent of substitution and innovation required to alleviate the impending mineral shortages.

Assuming there are 9 billion people in 2050, and economic growth has continued at current rates, world energy consumption would double. Where will this additional energy be found? There is no magic solution. Oil stocks are expected to decline. Coal is currently abundant, but its use will speed climate change. Wind and sun sources are irregularly available. The source of hydrogen for a global economy is problematic. Relying on biomass energy as the only source would require an area now allocated to agriculture. The feasibility

of nuclear fusion is debated. Only nuclear energy is a readily available viable option, but at current consumption rates the known amounts of uranium-235 (a metal used in the generation of nuclear energy) would not sustain the world for long.

17.11.2 TECHNOLOGICAL PROGRESS

The discussion so far illustrates the problems in sustaining perpetual growth with the current technology. Can perpetual growth be sustained with technological progress? Standard economic analysis concludes that with technological progress, no limits to growth exist. In this analytical framework, people are assumed to constantly generate technological progress; depleted resources are replaced by new materials; and progress continuously promotes labor productivity and cleaner and less resource-intensive production. There is also an assumption that social institutions and markets work smoothly. These assumptions all but directly drive the conventional theoretical conclusion. In other words, this conclusion may not necessarily hold in the real world.

In fact, while this optimism agrees with the historical experience of DC, it generally does not agree with the data concerning LDC. Various forces in LDC impede the supply of technological progress. Among them, natural resource scarcity and political conflict can be acute enough to disrupt the operation of institutions necessary for generation of progress and use of current technology, as well as stimulate rent seeking, reducing the funds available for technological progress.

Resource scarcity also could stimulate progress, as necessity is the mother of invention. However, this argument assumes that actors know the costs and benefits. When property rights are not well developed, as is true in many LDC, or when innovations exhibit public good characteristics, actors become unsure of costs and benefits. Solving such problems requires institutional changes, which are typically slow. Innovation to alleviate environmental degradation and resource scarcity exhibits these problems and is, in fact, slow. Solving complex problems requires substantial wealth and expertise, neither of which are plentiful in LDC. Resource scarcity also

may require diverting investments to pressing needs, thereby impeding research and development.

The nature of technological progress is yet another relevant issue. The mainstream economic approach assumes that technological progress is always beneficial. However, in reality technology may have nonbeneficial impacts. For example, current energy technology generates greenhouse gases, causing climate change. The conventional approach also assumes that human ingenuity and technological progress have no bounds. However, in reality there could be cognitive limits to understanding the complex dynamic interactions of global ecological, social, political, and economic forces, and progress can exhibit limits. For example, energy efficiency has risen since the mid-1970s in DCs, but this improvement has slowed down. After early successes, agricultural yields fell in many Green Revolution regions, and the response of crops to fertilizers is lessening. Agricultural output growth requires irrigation, which exhibits shortages. These examples do not mean to argue that technological progress must stop in the future. However, they imply a need for caution when it comes to public policy.

17.12 CONCLUSION

Mainstream economics assumes that nations seek to maximize consumption. This assumption only captures part of the picture: nations also seek to maximize various political goals, including national security, political power, and political status. The conventional approach also assumes implicitly or explicitly that trade promotes international peace and cooperation. A wider theoretical perspective, as well as empirical findings, demonstrate that trade can also promote international political conflict.*

* To mention a few examples, consider the major powers before World War I, the U.S. and Japan before World War II, the U.S. and the Soviet Union during the Cold War, the U.S. and Russia after 1991, the U.S. and China since 1970, the U.S. and Iraq in the 1990s and early 2000s, and the Israelis and Palestinians since 1994.

Trade may benefit one nation more than the other. The standard trade story acknowledges this possibility (in passing), but it tends to ignore the resulting spillovers into international relations. In reality, tensions over division of trade gains, and the possibility that trade will change the distribution of political and military power in the international system, can promote international conflict, particularly when the trading nations are also potential or actual political rivals.

The global distribution of income is highly skewed. DC could presumably ignore this point. This would be ethically problematic, as it ignores the fact that the plight of LDC is partly due to the past actions of DC, as well as politically dangerous. Historically, highly skewed distributions of income have led to armed conflicts (e.g., French and the Russian Revolutions, strife in many LDC). In light of the proliferation of weapons of mass destruction in LDC and the rise in terrorism directed at DC, ignoring the plight of LDC is a risky policy.

It is important that LDC attain the standard of living in DC. But with the current state of technology the biosphere cannot sustain a rich nation's standard of living for all nations. Whether technology could solve the dilemma is unclear. But even if progress can ultimately sustain global economic growth and alleviate environmental pressures simultaneously, this process will not happen quickly. The delay could upset global political stability. For example, one could envision interstate conflicts over dwindling oil stocks while alternatives are not ready for use. Suppose that global warming causes sea levels to rise. LDC are expected to experience higher damages than DC. Major LDC such as China might then blame the U.S. consumption culture for causing these damages and demand compensation. The road from this scenario to global political instability may not be a long one.

Human ingenuity might yet save the day. Then again, it might not. For now, it seems that the best reason we have to reject the Malthusian prediction is that in the past human ingenuity has found solutions to some, but not all, problems. There is a need for caution. As noted by Robert Ayres (see Appendix), extrapolating a technological growth rate based on earlier trends implies that vehicles would have attained

the speed of light in 1982 or that humans would have almost achieved immortality by 2000. These predictions have proven inaccurate.

The processes discussed here involve uncertainty. Facing uncertainty, one could take a “wait and see” position or choose to act now. Since the ecosystem provides nonsubstitutable services to society (e.g., biodiversity, hospitable climate), it is important to minimize the risks associated with the effects of economic activity on the ecosystem and reject the “wait and see” position.

Mainstream economists believe that free domestic and international markets can solve all problems. However, mainstream economic analysis is not known for its ability to accurately predict the direction domestic economies will be heading in the near future, let alone the direction the global economy will be heading. Our ability to predict global ecological–political–economic outcomes is even more limited. Given the potentially great ecological costs associated with free trade–driven continuous global economic growth, and the political implications of trade and income inequality for political stability, a more cautious approach is warranted.

The bigger perspective taken here indicates the need for giving up the goals of free trade and global economic growth. In their place, one should pursue economic growth in LDC, while at the same time contracting DC economies. The combination of economic contraction in DC and economic expansion and population stabilization in LDCs will reduce the expected increase in damage to the ecosystem due to growth in LDC. There are two main problems in implementing this approach. First, since socio-economic-ecological processes are slow, the benefits from this approach may not be apparent for some time. Second, there also could be problems of international collective action, as countries will try to shift the burden of adjustment to others. These difficult issues require separate analyses. That said, economic contraction in DC could be achieved, for example, by increasing taxes. The extra revenues could be transferred from DC to LDC in various forms, including technology, training, and physical capital. DC also could forgive all outstanding LDC debts to DC.

DC probably will not agree to curb their pursuit of wealth, let alone transfer considerable wealth to LDC, any time soon. Societies will continue to muddle around for some time, and the pressures on the biosphere will continue to rise. The proposed approach might be initiated eventually in response to some massive ecological–social–political crisis. However, such a crisis also might cause extensive damages. If this turns out to be the case, whether or not the damages could be alleviated would depend on the nature of the crisis and the extent of the damages up to that point.

In the end, whether the DC accept the view advocated here has to do with one's attitude toward risk. People typically purchase insurance when the expected cost (probability multiplied by cost) is high, not when the probability of the damage per se is high. While it is not possible to suggest precise numbers at this time, I believe that if we continue with business as usual, the expected cost of a possible global ecological–social-political crisis will most likely rise quickly, which supports the adoption of the approach advocated here sooner, rather than later in response to the crisis. As the saying goes, better to be safe than sorry.

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