

# Contents

Preface	ix
Acknowledgements	xi
<b>PART I INTRODUCTION</b>	<b>1</b>
1 The Foundations of Public Sector Theory	3
2 Market Failures	17
3 The Fundamental Theorems of Welfare Economics	39
Appendix: Variable Factor Supplies	54
<b>PART II PUBLIC EXPENDITURE THEORY AND POLICY</b>	<b>57</b>
4 The Social Welfare Function and the Quest for Distributive Justice	59
5 Applying the Social Welfare Function	79
6 Externalities: Theoretical Issues	99
7 Externalities: Policy Considerations	121
8 Nonexclusive Goods	143
9 Decreasing Cost Services: the Natural Monopolies	159
10 U.S. Transfer Payments: the Public Choice Perspective	177
11 Practical Issues in Designing Transfers to the Poor	195
12 Social Insurance: Social Security	211
<b>PART III TAX THEORY AND POLICY</b>	<b>241</b>
13 The Pursuit of Equity in Taxation	243
14 Applying Ability-to-Pay Principles: Federal Personal Income Tax	265

## CONTENTS

15	Taxes and Inefficiency: the Excess Burden of Taxation	289
16	The Trade-off Between Equity and Efficiency in Taxation	311
17	Taxes, Transfers, and Private Information	325
18	Tax Incidence: Theoretical Issues	343
19	Tax Incidence: Applications	363
	Appendix: CRS, Unequal Factor Intensities, and the Production Possibilities Frontier	388
<b>PART IV COST-BENEFIT ANALYSIS</b>		<b>391</b>
20	Cost-Benefit Analysis	393
<b>PART V FISCAL FEDERALISM</b>		<b>423</b>
21	Fiscal Federalism: the Assignment of Functions among Governments	425
22	Efficiency and Equity Issues with Mobile Resources	439
23	Grants-in-Aid	455
	Epilogue: A New Behavioral Public Sector Economics?	475
	Notes	483
	References	499
	Index	505

PART I

# Introduction

# The Foundations of Public Sector Theory

Two watershed presidential elections in the United States during the 20th century were the election of Franklin Roosevelt in 1932 in the depths of the Great Depression and the election of Ronald Reagan in 1980 at a time of double-digit inflation and unemployment. These two elections framed the ongoing liberal-conservative debate over economic policy.

President Roosevelt expanded the federal government's role in promoting freedom in the economic sphere. The traditional notion of economic freedom at the time was the classical definition of freedom as liberty – the freedom *to do* what one wants to do so long as others are not harmed. To this Roosevelt added the commitment to protect people so that they enjoyed freedom *from* fear and freedom *from* want. Roosevelt's two new freedoms gave rise to the Social Security Act of 1935, under which the federal government for the first time provided public insurance to prevent people from falling into poverty and public assistance to the poor. A willingness to have the government promote freedom from fear and want by combating poverty and assisting the poor is generally what people most closely associate today with the label “liberal” in the United States. Conservatives, in contrast, hold fast to the older definition of freedom as liberty and are far less willing to support public transfers to the poor.

Ronald Reagan's election was the conservatives' response to Roosevelt. Reagan campaigned on the premise that the government was the problem for the nation's economic malaise at the time, and promised to get the government “off our backs.” He proposed the largest tax cut in the nation's history, to be balanced with massive reductions in the public insurance and public assistance programs. Congress gave him the tax cut but preserved the social programs. Furthermore, despite the conservative leanings of the next three presidents following Reagan – George H. W. Bush, Bill Clinton, and George W. Bush – the shift to a more conservative Congress in 1994, and the increasingly strident debate between conservative and liberals in the media, federal social welfare spending has continued to grow rapidly since 1980. It was 10% of GDP when Reagan

took office and 13% of a much larger GDP in 2005. In truth, there appears to be far less practical difference between liberals and conservatives in the United States than the public rhetoric would suggest, even on the question of social welfare. This point should be kept in mind as you begin your study of public sector economics.

Public sector economics is the study of government economic policy, which has both positive and normative dimensions. Examples of the positive dimension are such questions as the improvement in national security that results from developing and financing a new jet fighter aircraft and the effects of taxes and transfer programs on people's incentives to work and to save. The normative dimensions focus on the questions of the appropriate economic role of the government and how government policies should be designed to promote a society's economic objectives. The normative questions are the battleground between the liberals and conservatives, and the natural place to begin. As suggested above, there happens to be a broad consensus in the United States on the answers to these questions. The liberal–conservative debate centers on the details, as we shall see.

### THE THREE MAIN DIVISIONS WITHIN PUBLIC SECTOR ECONOMICS

The normative analysis of the public sector naturally divides into three main parts: public expenditure theory, the theory of taxation, and the theory of fiscal federalism.

The fundamental normative question on which all others turn is the question of legitimacy: What economic functions should the government perform or otherwise become involved in? This question points to the expenditure side of government budgets: What expenditures do we expect to see in government budgets, and why?

Once the appropriate government functions have been determined, a subsidiary question is how the government should carry out its functions. What are the appropriate means of proceeding within each function? These are the central normative questions of public expenditure theory.

Government expenditures have to be financed, so the next question relates to the problem of raising taxes. What principles should guide the design of the government's tax policy? In other words, what makes a good tax good and a bad tax bad? Describing the appropriate design of taxes is the essence of the theory of taxation.

The final normative questions arise because the United States, and many of the other developed economies, have chosen a federalist structure of government. Federalism refers to a tiered system of governments in which each government has some jurisdiction over the governments in the tier immediately below it. The fiscal hierarchy in the United States consists of the national government, the 50 state governments, and over 89,000 local governmental bodies – cities, towns, metropolitan district commissions, regional school boards, and the like. An inherent feature of federalism is that every person in the United States is a citizen of at least three governmental bodies, and similarly for other countries. This gives rise to a fundamental sorting question: Once the legitimate

economic functions of government have been determined, which governments should perform these functions? Properly sorting the functions among the three tiers of governments is necessary to ensure that governments do not work at cross-purposes with one another. An example would be the national government trying to redistribute income from person A to person B while the state government in which the two people live is simultaneously trying to redistribute income from person B to person A. Inconsistent policies cannot possibly promote society's economic interests.

A subsidiary question is how the people should sort themselves within each tier of government below the national government. This question has economic implications because people choose to live in particular states and localities in part because of their tax and expenditure policies. Competition among governments to attract people can restrict the options available to any one government. The analysis of how to sort the economic functions of government and the people throughout the fiscal hierarchy is called the *theory of fiscal federalism*.

## HUMANISM, CAPITALISM, AND CONSUMER SOVEREIGNTY

Let's begin with the fundamental question of the legitimate economic functions of government. This question clearly has no one answer. A society's view of the legitimate role of the government largely depends on the economic system it has chosen, with the choices occurring along the spectrum from centrally planned socialism on the one end to a decentralized capitalist economy on the other end. Centrally planned socialism in its purest form is characterized by: having all important economic decisions made by a bureau of the central government; the use of a national plan to coordinate all relevant economic information and allocate resources; public ownership of capital and land; and the use of moral incentives such as encouraging citizens to perform certain economic functions for the good of the state. The government is virtually all-controlling and all-encompassing. A decentralized capitalist economy in its purest form is characterized by: decentralized decision making by individuals and business firms for nearly all economic transactions; the use of markets and prices to coordinate all relevant economic information and to allocate resources; private ownership of all factors of production; and the exclusive use of material incentives to guide economic decisions. The economic role of the government is limited to providing a legal system that establishes property rights to resources and ensures that contracts are enforced. The government might also issue the nation's currency, although this role is not essential.

All nations have chosen economic systems well within the end points of the spectrum, so that the role of the government typically ranges far beyond its minimum functions under pure market capitalism but is much less than the all-encompassing government under centrally planned socialism. For example, government expenditures in the United States are about 30% of GDP, which places the United States near the low end of the developed market economies. Nonetheless, the normative theory of the public sector as it evolved in

the West has remained quite close to the capitalist end of the spectrum. It is most definitely a theory of government in the context of a decentralized market economy.

The tying of public sector theory to the market economy has its roots in *humanism*, a philosophical revolution that swept through Europe during the 14th century and was the intellectual foundation for the Renaissance that lasted from the 14th to the 16th centuries. Humanism changed the focus of mankind's quest from the service of God to the intellectual, cultural, and economic development of the individual. It led, in turn, to the fundamental value judgment that underlies all of Western economics, *consumer (producer) sovereignty*. Consumer (producer) sovereignty is often stated as a positive principle in economic textbooks, that the consumers (producers) are the kings in a decentralized market economy because they make all the economic decisions. This is true enough, but the normative interpretation of consumer (producer) sovereignty is equally important, that consumers (producers) *ought* to make the economic decisions because they know best what promotes their own economic well-being. Once consumer (producer) sovereignty took hold, it provided the normative foundation for the rise of market capitalism. In addition, mainstream Western economists were all children of humanism and took the normative interpretation of consumer (producer) sovereignty as a first principle. This naturally led them to tie public sector theory to decentralized market capitalism. The belief in consumer sovereignty dictated not only the *legitimate functions* of government, but also the *goals* of government economic policies and the *legitimate methods* for achieving those goals.

---

## LEGITIMACY THROUGH MARKET FAILURE

Since decentralized market capitalism honors the principle of consumer (producer) sovereignty, the question of what gives the government legitimacy in the context of a market economy has a natural answer: market failure. The government should provide those economic functions that the market cannot perform at all, or that the market economy performs sufficiently badly to warrant government intervention. People can reasonably disagree over the meaning of "sufficiently badly" and also whether the government can be expected to improve upon the market in any case. Indeed these are the details over which liberals and conservatives do battle, and the details are often important. But liberals would agree with conservatives that the burden of proof is always on government intervention, that is, on market failure. No one would argue for government intervention into any economic activity that the market economy is handling well. Liberals and conservatives agree on rendering unto the market what is the markets to do.

---

## THE GOVERNMENT'S ECONOMIC OBJECTIVES

A humanistic society would presumably want to pursue the broad goal of promoting the economic well-being of its citizens. But what exactly does this mean? Humanists would

no doubt like to define the goal as maximizing everyone's well-being or, at least, allowing each person to achieve his or her maximum economic potential. As nice as these goals may sound, however, neither can be the economic goal of a society. They are not simply unattainable; they are meaningless because they violate one of the fundamental principles of economics, the Law of Scarcity. Resources are scarce, and those used to make some people better off, or to enhance their economic potential, are not available to make other people better off, or to enhance their economic potential.

A society, instead, has to choose proximate goals that relate to economic well-being, and the two most common economic goals are *efficiency* and *equity (fairness)*. People often refer to "the public interest," especially in regulatory settings. In an economic context, the public interest is understood to be the public's interest in efficiency and equity. The objectives of the government's economic policies, therefore, are to promote efficiency and equity (fairness).

## EFFICIENCY

Economics majors are aware that efficiency has a standard meaning in economic analysis, the concept of *Pareto optimality*. Since promoting individual well-being or utility is the ultimate social goal, the notion of Pareto optimality defined in terms of people applies. *An economy-wide allocation of resources is efficient if in order to increase any one person's utility at least one other person's utility must be decreased.* The common picture of Pareto optimality in terms of people is the *utility possibilities frontier* defined in terms of the utilities of two people, persons #1 and #2. Refer to Figure 1.1.

Person #1's utility is on the horizontal axis and person #2's utility is on the vertical axis. At point A, person #1 has zero utility and person #2 enjoys the maximum possible utility, and vice versa at point B. The frontier AB need not have a smooth shape but it must slope continuously from northwest to southeast so that more utility for one implies less for the other, such as in the move from C to D. That is, the Law of Substitution holds along the efficiency frontier. Conversely, all points beneath the frontier, such as E, are attainable but inefficient. By reallocating resources, it is possible to make person #2 better off without sacrifice to person #1 (move north from E to F), or make person #1 better off without sacrifice to person #2 (move east from E to G), or make both people better off (move northeast from E to a point such as H). All such moves are called Pareto-superior reallocations. Points beyond the frontier, such as J, are unattainable, given society's scarce resources.

Striving for efficiency has a compelling element of justice or equity to it. A humanistic society interested in promoting individual well-being would not want to be at inefficient points such as E, from which Pareto-superior moves to points such as F, G, and H are possible. There is, after all, no opportunity cost to these reallocations. Put differently, any point under the frontier is always dominated by some points on the frontier. Society cannot maximize everyone's well-being simultaneously, but it can strive to reach a trade-

off situation in which more utility for someone means less utility for someone else. This is all one can ask for in the name of efficiency.

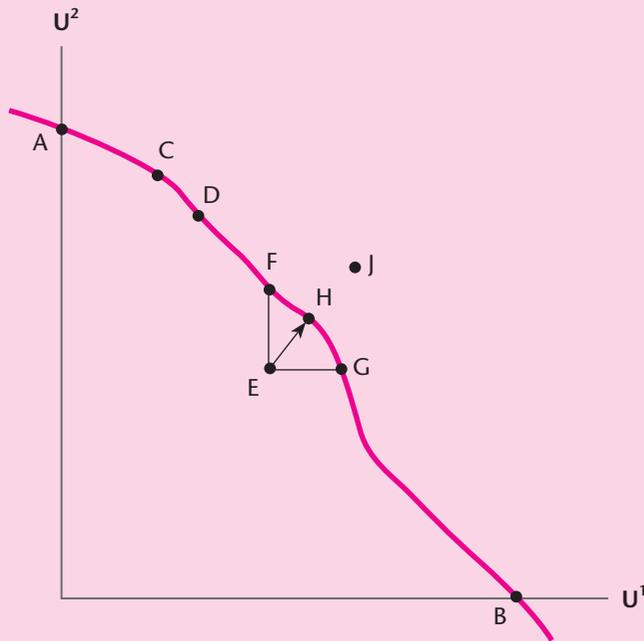


Figure 1.1

## EQUITY

Striving for equity or fairness is a much more slippery quest than striving for efficiency. The main problem is that, in contrast with efficiency, there is no consensus on the meaning of equity. Philosophers, theologians, economists, other social scientists, indeed people in all walks of life have thought about the meaning of equity or fairness without arriving at a convincing definition. The best we can do is present the most common notions of equity that exist in the economics literature, notions that do appear to have some influence with the general public when applied to economic issues.

Economists typically divide equity into two separate components, end-results equity and process equity. *End-results equity* asks whether the outcomes of economic decisions or events are fair. *Process equity* judges whether the rules of some economic endeavor are fair, independently of the outcomes. Some discussion of each of them is in order.

### End-results equity

Capitalist societies have a natural interest in end-results equity because capitalism tends to produce large disparities in income and wealth, leading to nations made up in part of

haves and have-nots. At some point people have to ask themselves how much inequality in income or wealth they are willing to tolerate. This is especially true regarding the extremes of poverty and wealth, which can tear apart the social fabric of a nation. The United States is a good example. The United States has always tolerated wide disparities in income and wealth. It has never articulated a policy regarding the overall distribution of income (or wealth). At the same time, President Johnson declared a war on poverty in 1964 with the goal of eradicating poverty in the United States, and many have expressed concern about the increasing concentration of income that started in the mid-1970s and accelerated in the early 1990s. Today over half the income generated in the United States goes to the 20% of households at the top of the income distribution, and much of the increase in income since the mid-1970s has gone to households in the top 1% of the distribution (Gordon, 2005).

Suppose a society decides that the distribution of income is too unequal and is willing to redistribute income by taxing the rich and transferring the tax revenues to the poor. All societies have made this decision to some extent. The problem becomes knowing when to stop: What is the right amount of redistribution? Alternatively, what is the optimal distribution of income? These are the fundamental questions of distributive justice in economics and their answers are by no means clear. They involve comparing the losses suffered by the rich who are taxed with the gains to the poor who receive the transfers, and no consensus has ever developed on how to do this. Most economists are skeptical that such interpersonal comparisons of utility gains and losses can ever be determined in a convincing way. Still, societies are willing to redistribute so they presumably have concluded that an extra dollar is worth less to a rich person than to a poor person at the initial distribution. But once the distribution narrows, is an extra dollar still worth more to the poorer person? Apparently not at some point, since all societies stop short of redistributing to the point of equality. How the decision to stop is made, however, is never obvious. As a consequence, the notion of achieving an optimal distribution of income or wealth, that is, of achieving distributive justice, remains at best problematic.

Two principles within end-results equity have gained widespread acceptance in economics, horizontal equity and vertical equity. *Horizontal equity* calls for equal treatment of equals. Two people who are equal in every relevant economic dimension – motivation, ability, productivity – should have the same economic outcomes. Whether or not any two people are ever equal in every respect is debatable, but the principle is clear enough. *Vertical equity* says that it is permissible to treat unequals unequally, for example asking higher income people to pay more in taxes than lower income people. But the question of just how unequally society may treat unequals is a difficult one. The quest for vertical equity is, after all, just a different way of stating the quest for distributive justice.

### Process equity

Process equity is most closely associated today with the Harvard philosopher Robert

Nozick. Nozick (1973, pp. 45–126) argues that process equity is the only form of equity that matters. His view is that any outcome of a fair game is inherently fair, so that the only requirement is to ensure that the rules by which the economic “game” is played are fair. If they are, then there is no need to make a separate judgment about the end results. Sporting events provide an obvious analogy: Who wins or loses is ultimately irrelevant so long as everyone plays by the same rules.

Nozick’s view is not entirely applicable in the economics sphere, however, if only because the rules of the economic game strike many people as inherently unfair. It is as if people begin the economic “race” to success at very different starting lines. An obvious example is children born to wealthy parents and children born to poor parents. The wealthy children have a much greater chance of enjoying economic success as adults than do the poor children. A subtler example is that children are born with different gene packs that give them different chances of succeeding in a market economy. The market tends to favor those who are bright and somewhat aggressive over those who are dull and timid. Genetic differences are somewhat less troubling than differences in parental wealth because considerable effort is required to realize inherent genetic advantages. Nonetheless, certain genetic traits do give some people an enormous advantage in the economic race. Once society concludes that the economic rules may not be fair, then it may be willing to make separate judgments about the end results. Or, some people may be willing to help the poor regardless of why they are poor. In any event, all societies do make separate end-results judgments and, as we shall see, end-results equity is a central component of public sector theory.

The quest for process equity is important in its own right, however. Two principles of process equity are widely held in the United States, equal opportunity and social mobility. *Equal opportunity*, or *equal access*, says that all people should have the right to do whatever they are willing and able to do. The “able to do” part of the principle is important; society need not guarantee to everyone the right to do anything they please. Some attention must be paid to what people are reasonably capable of doing. Equal opportunity is the economic equivalent of equality before the law. It rules out inappropriate discrimination against people in economic affairs, such as on the basis of their gender, race, and religious beliefs. It also calls for the elimination of barriers to entry in product and factor markets to promote competition.

Equal opportunity provides the one direct link between end-results and process equity in a market economy. Equal opportunity leads to horizontal equity, the equal treatment of equals, as a condition for equilibrium in the long run. For example, if a product market has equal access because there are no barriers to entry, then the entry (exit) of firms in response to profits (losses) continues until all economic profit (loss) is competed away. All investors in that market ultimately earn the same rate of return in the long run. The same would be true across markets absent barriers to entry. Investors everywhere would earn the same rate of return in the long run (standardizing for risk). Similarly, absent discrimination and other barriers in labor markets, workers will seek higher paying or more desirable jobs, and leave lower paying and less desirable jobs until identical workers receive the same level of utility no matter where they work. Any

differences in wages in the long-run equilibrium are equalizing differences – they exactly compensate workers for the relative desirability of different jobs. Equals are treated equally in terms of wages plus job satisfaction. As these examples indicate, horizontal equity is the only possible equilibrium outcome in the long run in markets with equal access or opportunity.

### Social mobility

*Social mobility* refers to the ability of households or individuals to move through the income distribution over time. Today they are in the middle of the income distribution; tomorrow they may be in the lower fifth or the top fifth of the distribution. Social mobility and equal opportunity are closely related. Social mobility is impossible in a caste system. People are destined to remain where they started out in life because economic opportunities are determined strictly by caste. Once access to opportunities becomes possible, then people are able to move through the distribution. Indeed, the so-called American dream is to create a better life for oneself and one's children by being able to take advantage of economic opportunities as they arise. The chance for success appears to far outweigh in people's minds the distressing fact that many people also move downward in the distribution over time. Maintaining the opportunity for improvement, for social mobility, is a dearly held principle of process equity in the United States.

---

## THE GOVERNMENT AS AGENT

The third implication of the belief in consumer (producer) sovereignty relates to the appropriate methods for the government to follow in carrying out its legitimate economic functions. Consumer sovereignty implies that, to the extent possible, the government is to act strictly as an agent on behalf of the citizens. If the market should fail in some way that requires the government to step in, the government officials should ask only what the citizens would like them to do to correct the failure. The individuals' preferences are the only preferences that matter, just as in the market economy itself. Abraham Lincoln, in his Gettysburg Address, spoke of government as being of, by, and for the people, and this is exactly how government is viewed in the mainstream theory of the public sector. The preferences of the president or the Speaker of the House are irrelevant per se, beyond the single voice they each have as one of the nation's citizens.

The view of government as agent has its strengths and weaknesses. On the positive side, it tends to make the theory of government a more interesting and compelling undertaking from a narrow economic perspective. A theory in which the president's preferences are dominant could become nothing more than another exercise in consumer theory. One would simply ask what economic problem the president wishes to solve: What are his objectives? What does he view as his choices or alternatives? His constraints? Then the standard techniques of consumer theory can be used to solve his problem. Relying

instead on the economic preferences of individual citizens adds much more complexity and subtlety to the government's economic problem, especially when the citizens happen to disagree on some issue. It also gives the theory much more normative clout, precisely because it pursues the economic objectives of efficiency and equity from the individuals' perspectives.

On the negative side, the government-as-agent point of view is almost entirely devoid of political content. There is only one exception. We will see in Chapter 3 that the theory requires a political solution to the problem of achieving end-results equity. Otherwise, the mainstream theory is as far removed as possible from an organic theory of the state in which the government is seen as an entity in its own right with an entire set of institutional idiosyncrasies and agendas. As such, the normative mainstream public sector theory has virtually no predictive power about how governments might actually behave or, importantly, how political considerations might influence economic outcomes when the government does intervene in the economy. The mainstream theory remains narrowly economic in scope; it is most definitely not a theory of political economy.

The government-as-agent view has one other implication. Whenever the government has to intervene in some area, public sector economists always ask whether the government policy is decentralizable. By this they mean can the government permit the failed market to continue to function and merely tweak it through some kind of tax or subsidy to achieve the desired efficiency or equity outcomes. Decentralizing government policy is not always possible, however. Sometimes a complete takeover with government provision of the service is the only viable alternative. Even so, government provision is always the option of last resort. The strong presumption is that individual preferences are more likely to be decisive in guiding government policy if the decentralized market can continue to function.

## JAMES BUCHANAN AND THE THEORY OF PUBLIC CHOICE

The principal competitor to mainstream public sector theory is the theory of public choice, whose founding father is considered to be Nobel laureate James Buchanan. Public choice remains a minority view, but it is a very important minority. Buchanan set out the underlying principles of his public choice theory in his Nobel address (Buchanan, 1987, pp. 243–50).

According to Buchanan, the mainstream theory is inherently flawed at the outset because it views people as essentially schizophrenic. They are assumed to be entirely self-interested in their private economic affairs, yet when thinking about government policies, they suddenly become other-interested, concerned with the public interest in efficiency and equity. Buchanan thinks this is nonsense. In this view people do not change their stripes when moving from the economic to the political sphere. They remain as narrowly self-interested in public matters as they are in their own economic affairs. They view the government as just another venue that allows them to pursue their economic self-interests.

This is true whether they are employed by the government or are simply affected by government spending and tax policies. Buchanan refers to people's interactions with the government as fiscal exchanges to underscore their close relationship with market exchanges.

Buchanan's second main criticism of mainstream theory is its lack of political content. He believes that to be useful an economic theory of government must have an underlying political foundation. For Buchanan, the necessary political content is process oriented, concerned primarily with establishing the appropriate rules under which economic policies are formulated. In particular, the notion of efficiency in people's fiscal exchanges with the government takes on a special meaning: The government is efficient if it establishes rules that allow people to get from the government what they want. This is potentially a very different meaning of efficiency from that of Pareto optimality.

In thinking about the political rules in this way, Buchanan followed the late 19th century Swedish economist Knut Wicksell, who thought about how the government establishes a legitimate economic link with its citizens. Wicksell argued that this could occur under only one political system: a one-person, one-vote pure democracy in which unanimity is required to pass any government policy. No one can lose under unanimity, so that the people get only the government policies that they want. This establishes the legitimate link between the government and the people. Furthermore, voting by unanimous consent is consistent with Pareto optimality since it would approve all Pareto-superior policies and only those policies. That is, voters would approve all policies that made some people better off without making anyone else worse off (those who would be no better off would presumably abstain). Once all such Pareto-superior policies were approved, society would be on its utility possibilities frontier.

The problem with a unanimous voting policy is that it is impractical. It leads to paralysis once the group of voters becomes large because virtually any government policy is bound to cause some people to suffer losses, and any potential loser has effective veto power. Pareto-superior policies are very hard to come by in practice. Wicksell recognized this limitation but nonetheless thought that unanimity was the only sure path to economic legitimacy for the government.

Buchanan understands the impracticality of unanimous voting, so he argues for solving the legitimacy problem with the following compromise. He would require unanimity, but only once, when the nation's constitution is being drafted at the constitutional convention. He argues that the rules and procedures established by a government are legitimate if and only if they have been agreed to unanimously by the members of the constitutional convention. Again the focus is on process, on establishing the rules and procedures that govern or guide economic policies; the end results or outcomes of government policies are less important in and of themselves.

As time progresses, economic situations arise that could not have been foreseen by the founding members. In these cases, an as-if test is substituted: The resulting economic policies are legitimate if people believe that the founding members would have agreed to them unanimously had they been able to foresee them. Buchanan offers as a counter-example the large federal budget deficits that existed at the time of his address. He cannot believe that such

large budget deficits would have been approved by the founding members. They would have instead supported annual balanced budgets had the problem occurred to them. Buchanan has long proposed a balanced budget amendment to the Constitution for this reason.

The government's economic policies following the constitutional convention are of two kinds, either amendments to the Constitution or the ordinary, annual tax and spending decisions that all governments make. An example of the former is the 16th amendment to the U.S. Constitution ratified in 1913, which permitted the taxation of income. Constitutional amendments would presumably require a super majority if not unanimity to pass, as they do in the United States. Proposed amendments to the Constitution must be approved by a two-thirds majority in the House and Senate, and then ratified by three-quarters of the states. The ordinary tax and spending decisions may require only a simple majority to pass, as they typically do. But they must always be consistent with the intentions of the founding members to be legitimate.

## ASSESSING THE PUBLIC CHOICE CHALLENGE

Buchanan's theory of public choice does not represent a complete break from the mainstream public sector theory. Both theories share the fundamental belief in consumer sovereignty and the primacy of individual preferences as a guide to government decision making. They agree that democracy (or a representative form of government for large societies) is the political system that is most consistent with a decentralized market economy since each honors the principle of consumer sovereignty. And both theories assume that individuals are self-interested in their own economic affairs.

These similarities notwithstanding, public choice is sufficiently different from the mainstream theory to pose a serious challenge to it. There are three main differences. First, public choice has a much richer political content. It gives essentially equal billing to political and economic concerns, whereas the mainstream theory tends to ignore political issues whenever possible. As a result, public choice is a theory of political economy, whereas the mainstream theory is more narrowly an economic theory of the public sector. A central research question for public choice economists is how political institutions influence economic policy decisions. Second, the normative thrust of public choice is narrowly focused on process, on establishing appropriate rules and procedures, whereas the normative mainstream theory is directly concerned with outcomes as well as process. In fact, mainstream public sector theory has tended to pay much more attention to outcomes than to process. Third, public choice assumes that people are narrowly self-interested in both their public and private economic affairs, whereas the mainstream theory assumes that people are narrowly self-interested only in their private affairs. When turning to public matters, they are willing to pursue the public interest in efficiency and equity, even if it might conflict with their own narrow economic self-interest.

Public choice has become an important minority viewpoint in the public sector literature and understandably so. Each of its main differences with the mainstream theory is

appealing. Because of its focus on political issues, the public choice perspective is much better able to explain and predict actual government policy decisions than is the mainstream theory. The latter necessarily remains more normative than positive in its thrust. The public choice focus on process is also attractive. People may well be more concerned about process than about outcome in many if not most areas of their lives. We saw this in the discussion of equity. U.S. citizens almost certainly care more about equal opportunity than equality per se. For example, they clearly care about ensuring equal access to labor markets but willingly accept fairly broad disparities in wages and salaries. Finally, the insistence that people are narrowly self-serving in all their economic affairs is bound to be appealing to economists, given the almost universal assumption in economic analysis that people are always trying to maximize their own utilities. If they are not self-serving utility maximizers, what then is their objective? No obvious answer comes to mind. Furthermore, politicians' motives are often self-serving, and many people do try to turn government policies to their own personal advantage in inappropriate ways, such as by cheating on their taxes.

The assumption that people are self-interested utility maximizers in their public affairs cuts both ways, however. It produces a theory of the public sector with a very thin normative base. Since governments intervene when markets fail, an economic theory of government requires a solid normative foundation to guide policy decisions. The mainstream view that people are other-interested at times, that they have a sense of community and care about the public interest in efficiency and equity, does provide a solid normative foundation for the design of public policies. Not so the public choice presumption that people view the government as just another venue for maximizing their self-interests. Self-interested behavior may be okay in a market context but it is much less attractive in a social context. It leaves out any sense of community, of shared purpose, of good citizenship, from which the norms for public behavior normally arise. It is especially wanting if government employees themselves are entirely self-interested. One might add that good citizenship and a sense of community would seem to be necessary elements for a good society. A society populated with nothing but aggressively self-interested maximizers sounds very much like a society that no one would want to live in.

The mainstream view has received support lately from a new field of economics called *behavioral economics*, which attempts to understand how people form their preferences rather than simply taking preferences as given. Researchers in this field rely heavily on conducting experiments to discern people's preferences in different situations, often with undergraduate economics majors as the subjects. Some experimental settings are market oriented, such as a game played between subjects acting as oligopolists. Other settings are public sector oriented. One common experiment gives people tokens that they can use to purchase either a publicly provided good such as defense or a private good. Spending a token on the public good benefits everyone; spending a token on the private good benefits only the purchaser. The subjects play one token each round. The payoffs of the two goods are set such that everyone is best off if all the tokens are spent on the public good, but that each person gains the most personally each round by purchasing the private

good. That is, if the subjects follow only their narrow self-interests, they will purchase only the private good each round, and pass up the larger gains to everyone by purchasing the public good. (This game will be described more fully in Chapter 8.)

The experiments show that subjects tend to follow their self-interests in the market experiments but not in the public good experiments. In the latter, most subjects buy at least some units of the public good, which goes against their narrow self-interests. They appear to exhibit two kinds of reciprocal behavior: conditional cooperation and willingness to punish. The conditional cooperation is that subjects are more likely to purchase the public good in a given round the more that others have contributed to the public good in previous rounds. Conversely, they are more likely to purchase the private good (punish the others) the less that others have contributed to the public good in previous rounds. This kind of reciprocal behavior is other-interested in the spirit of the mainstream theory, especially the tendency for conditional cooperation (Fehr and Gächter, 2000).

Whatever the truth about people's preferences may be, this textbook presents the mainstream theory of the public sector. As such, it focuses narrowly on the economic analysis of government spending and taxation, without much attention to political considerations. It also assumes that the economic goals of government policy are the public interest in efficiency and equity. Public choice perspectives are not featured, but not ignored either. They are discussed on those occasions when they have been particularly influential in the analysis of public policy.

# Index

## A

- ability-to-pay principle in taxation 251–2, 263, 265–87
- ability to trade 44, 45
- accretion standard 25
- ad valorem tax 290–1
- age tax 152–3
- aggregate externalities 101–8
  - Pigovian tax 106–8
  - social optimum 104–6
- Agricultural Support Programs, expenditure 35, 182
- Aid to the Blind (AB) 179, 181, 201
- Aid to the Disabled (AD) 180, 181, 201
- Aid to Families with Dependent Children (AFDC) 179, 181, 207
- alcohol, tax on 480
- allocation, as government function 22, 24, 32–4, 36, 37, 99, 425, 426–7, 428–31
  - economic decisions, government level 429
  - externalities and decreasing costs 429–30
  - government-as-agent principle 429
  - states rights principle 429
- altruism 184, 476
  - pure 476
  - reciprocal 476, 478
- annuities
  - advantages of 232–3
  - adverse selection 233–4
  - private, problems with 234–7
    - administrative costs 236
    - inflation risk 235
    - market risk protection 235
    - moral hazard 236–7
    - paternalism 234–5
    - retirement planning 234–5
- antipoverty transfer programs 177–82
- Arrow, Kenneth 73–4
- asymmetric (private) information, *see* private (asymmetric) information
- Atkinson, Anthony 79
- Atkinson social welfare function 79–97
  - applications of 90–5
  - assumptions 79–88, 316, 319, 320
    - diminishing marginal utility of income 81–3, 93, 316, 319
    - equal marginal social welfare weights 80, 316, 319, 320
    - identical tastes/preferences 80–1, 316, 319, 320
    - implications of 83–8, 316
  - equality of income 83–5
  - equally distributed equivalent income 93–4
  - index of inequality 94
  - marginal utility of income 89–90
  - Okun's leaky bucket 85–7
  - social cost of inequality 93–4
  - specific function 90
  - see also* social welfare function
- auction procedures
  - exclusive (private) goods 147–8
  - nonexclusive (public) goods 147, 148
  - Walrasian auction 147
- automobiles
  - congestion 139–41
  - pollution, Pigovian tax 430
- average cost pricing, natural monopolies 163, 164–5
- average indexed monthly earnings (AIME) 224, 231, 233, 236

**B**

backward induction 157  
 balanced-budget incidence 352–3  
 behavioral economics 15–16, 475  
   compartmentalization of decisions 477  
   contextual nature of behavior 476–7  
   impact of 480–1  
   inconsistent preferences 476  
   reservations about 481  
   self-control problems 476, 478–9, 480  
   social preferences 476  
 behavioral public sector economics 475  
 benefits, secondary 419  
 benefits-received principle of taxation 149–50, 153, 289  
   natural monopolies 163–5  
 benefits-received taxes 353–4  
 Benthamite (utilitarian) social welfare function 69–70, 73, 80  
 bequests 230, 233, 286, 385  
 Blackorby–Donaldson model of healthcare 335–42  
   first-best perfect information case 336–8  
   second-best private information case 338–40  
   third-best solution, subsidies to purchase medicine 340–2  
 bliss point 62–3, 66, 68, 152, 315–16, 319, 335  
 broadcasting, as natural monopoly 29  
 Buchanan, James 12–14

**C**

capital  
   compounding to future values 394  
   discounting to present value 394–5  
   durability 393–5  
   effects of inflation on 278–9  
   movement of 374, 439, 450–2  
     in the European Union 38  
   taxing of income from, inflation and 277–9  
 capital gains 253, 268–9  
 capital losses 269  
 capitalism, decentralized 5  
 certainty equivalent 405  
 charity donations 184, 197  
 Child Labor Act (1912) 178  
 cigarettes, tax on 480  
 Clarke tax 155  
 clean air rights 123–4  
 Coase Theorem 121–5  
 coinsurance 222  
 compensated demand curve 298–301  
 compensated demand (factor supply) elasticities 318  
 compensated elasticities 317  
 compensated labor supply elasticity 321, 322

compensated supply curve 303–4  
 competition, in capitalist economies 159  
 competitive pricing 150–1  
 compounding to future values 394  
 conditional cooperation 16  
 congestion on urban highways 139–41  
 constant returns to scale (CRS) production 40, 358, 363–4, 388–9  
 Constitution, U.S., amendments to 14  
 consumer externalities 101  
 consumer (producer) sovereignty 6, 11, 14  
 consumer surplus 346  
 consumer theory 19  
 consumers, indifference curves 18–19  
 consumption  
   externalities 24  
   as the ideal tax base 259–61  
   tax on 281–7  
 contract curve 43, 47, 49, 50  
 contracts, enforceable 27  
 cooperation, conditional 16  
 cooperative game theory 73  
 corporation (corporate) income tax 244, 245  
   in the European Union 452  
   incidence 344  
     in Harberger general equilibrium model of tax incidence 368–72, 376–8  
   in Pechman and Okner's central variant analysis 381  
   in Pechman and Okner's sources and uses analysis of incidence 381, 384–5  
 cost–benefit analysis 393–421  
   bogus costs and benefits 419–21  
   conclusion 421  
   contingent valuation 412–13  
   distribution of benefits and costs 414–18  
   double counting 420  
   efficiency of projects 414, 418  
   elements of 401–18  
   evaluating source of benefits 411–12  
   hedonic price estimation 412  
   intangibles 407–9  
   labor game 420  
   lumpy investments 407, 409–13  
   net benefit measurement 405, 406–14  
   non-marketed benefits and costs 407, 411–13  
   pitfalls 419–21  
   principles of 400–1  
   vs. private investment analysis 398–400  
   public rate of discount 401–5  
   regional multipliers 419  
   shadow prices 407, 413–14  
   uncertainty 405–6  
 cost disease 461–6

- cost-effectiveness analysis, of military options 408
- costs, decreasing, *see* economies of scale
- credit income tax 198–9
- crime, economic model of 327
- D**
- deadweight loss 85, 95, 289, 305–6, 326, 413–14
- minimizing 311–12, 314
  - with more than one tax 306–8, 308–9
- deadweight loss triangle 300
- defense, *see* national defense
- demand curves 298–304
- compensated 298–301
  - measuring excess burden 298–304
- democracies
- consistent social decisions? 73
  - social decision-making principles 73–6
- democracy, participatory 429, 435, 456
- differential tax incidence 357
- disability insurance 223
- discounting to present value 394–5
- diseconomies, external 101
- distribution, as government function 22, 22–4, 37, 59, 425, 427, 431–8
- competition problem 433–4
  - national-only redistributions 434–5
  - potential incompatibilities 431–3
- distributive justice
- effect of movement of people 452–3
  - mainstream theory of 65–7
    - problems in applying 67–77  - quest for 59–77
  - social welfare function and 60–5
- dynastic social welfare function 436–7
- E**
- Earned Income Tax Credit (EITC) 34, 35, 180–1, 182–3, 200, 201, 208–9
- notch problem 208–9
  - undesirable properties 209
- economic analysis, positive vs. normative 479–80
- economic impact study 420
- economies, external 101
- economies of scale 27–9, 159–60
- Edgeworth Box 42–3, 45, 46, 47, 49
- efficiency 7, 7–8, 13
- in taxation 36–7
  - efficiency–equity trade-off 314–23
  - see also* Pareto optimality
- efficiency–equity trade-off, in taxation 314–23
- efficiency goal, taxation 289, 311
- efficiency loss, elasticity measures 308–10
- deadweight loss 308–9
  - marginal loss 309–10
- efficiency unit of labor 320
- efficient pricing
- software 174–6
  - zero marginal cost natural monopolies 174
- EITC (Earned Income Tax Credit) 34, 35
- elasticity
- compensated 317
    - demand (factor supply) 318
    - labor supply 321, 322  - inverse elasticity rule (EIR) 312, 314
  - tax incidence and 346–7
- elderly people, and personal consumption tax 283
- end-results equity 8–9, 10, 12, 95, 97
- effect of movement of people 452–3
  - horizontal equity 9, 10–11
  - vertical equity 9
  - see also* distributive justice
- equal opportunity (equal access) 10, 52
- equal percentage change rule 313–14
- equality
- of income 83–5
  - as U.S. value 84–5
- equally distributed equivalent income 93–4
- equity (fairness) 7, 8–11
- end-results equity 8–9, 10, 12, 95, 97
  - horizontal equity 9, 10–11, 18
  - process equity 8, 9–11, 10, 95, 97
  - social mobility 11
  - in tax theory 243–63, 250–1
  - in taxation
    - efficiency–equity trade-off 314–23
    - equity goal 311
    - equity principle 289  - vertical equity 9
- estate tax 244
- ethical social marginal rate of substitution 68–9
- European governments, revenue sources 246
- European Union (E.U.) 425, 428
- corporate income tax 452
  - movement of capital across borders 38
- excise tax 244, 245, 294–5, 297–300
- per-unit 344
- exclusive (private) goods, auction procedures 147–8
- externalities 19–20, 24–6, 36
- aggregate 101–8
    - Pigovian tax 106–8
    - social optimum 104–6  - consumer 101
  - government intervention and 99–100
  - individualized 101–3, 108–11
  - internalizing 121

- market for 122
  - network effects 101
  - pecuniary 100
  - policy considerations 121–41
  - producer 101
  - resistance to policies 139–41
  - technological 100–1
  - terminology 100–3
  - theoretical issues 99–119
  - as third-party effects 99
  - uncorrected 124
  - see also* nonexclusive (public) goods
- F**
- factor supplies 302–4
  - fairness, *see* equity
  - federal government 425
    - expenditure 35, 37, 182
    - government functions 425–38
    - revenue sources 245
  - federal personal income tax (PIT) 265
    - ability-to-pay principle 265–87
    - adjustment for inflation 277–8
    - capital gains 268–9, 276–7
    - capital losses 269
    - The Code 265
    - dividends 268
    - exclusions/deductions 267–8
      - inefficiencies 274
      - loopholes 270–4
      - progressivity reduction 275
      - removal of 274–6
    - graduated tax rates 266–7, 280–1
      - income averaging 280
      - marriage penalty 281
    - horizontal equity and 269–76, 280
    - housing 286–7
    - hybrid tax 286–7
    - itemizing 268
    - marginal tax rates 266–7
    - personal exemptions 267, 269–70
    - personal income 267–8
    - structure 265–8
    - tax brackets 266–7
    - tax credits 275
    - vertical equity and 274, 276
  - federalism 4–5
    - movement of people 439–40
      - equity and 452–3
      - models 439–40
      - Pauly model 440, 446–50
      - Stiglitz model 440, 440–5
  - first-best analysis 316, 317
  - fiscal equalization 459, 459–61
  - fiscal federalism 4, 37–8
    - alternative model 435–8
  - fiscal hierarchy 4
  - flypaper effect 473–4
  - food, tax on 318
  - Food Stamps 35, 180–1, 182, 201
  - 401K (pension fund) plans 225, 234, 268, 286, 479
    - default options 479
  - framing 479
    - positive/negative 157–8, 477
  - free-rider problem 26–7, 37, 148, 153, 184, 186, 325
    - removal of 439
  - free riding 143, 156–8
  - freedom from fear and want 3
  - full retirement age 224
- G**
- General Impossibility Theorem (Arrow's) 73–6
    - reactions to 76–7
      - flexible form reaction 76–7
      - public choice reaction 77
      - technocratic reaction 76
  - gifts
    - to charities 197
    - parents to children 197
  - Gini coefficient 90, 92–3, 94
  - global warming 430
  - government(s)
    - economic objectives 6–7
    - legitimate economic functions 4, 5–6
      - through market failure 6
    - revenue sources 245–6
      - European governments 246
    - see also* federal government; local governments; state governments
  - government-as-agent principle 11–12, 32, 429
  - government decisions, median voter model 446–8, 471–3
  - government economic activity, branches of 22
  - government expenditure 3–4, 5
    - social welfare 3–4
    - U.S. federal, state, and local 35, 37, 182
  - government intervention 27, 30–4, 39
    - externalities and 99–100
  - government regulatory agencies 30, 34
  - government response, to U.S. market failures 34–6
  - grants-in-aid 35, 38, 437, 455–74
    - block grants 467
    - closed-ended 467, 468, 469, 471, 472–3
    - conditional (categorical) 459, 467, 468–9, 472, 473
    - economic issues 455
    - empirical issue 455, 466, 471, 474

- federal 245, 458
  - flypaper effect 473–4
  - formulas 467–71
  - local 246
  - matching 467, 469, 470, 471, 472
  - need for 456
  - non-matching 467, 469, 471
  - open-ended 467, 469, 472
  - Pigovian subsidies/tax 457
  - politics of 471–4
  - response to 466–74
  - spillovers across jurisdictions 457
  - theory of 455–66
    - alternative view 458–9
    - cost disease 461–6
    - fiscal equalization 459, 459–61
  - traditional view 456–8
    - unconditional 467, 468–9, 470, 471, 472
  - Great Depression 178
  - gross-of-tax price 345
- H**
- Haig–Simons income 253–6
    - business expenses 255–6
    - inflation indexing 256
    - as measure of utility 253, 256–9
    - sources of income 254–5
    - vs. taxable income 265, 267–9, 276, 277, 282, 323
    - uses of income 255–6
  - Harberger, Arnold 344, 354–7
  - Harberger general equilibrium model of tax incidence 363–78
    - corporation income tax incidence 368–72, 376–8
    - mobile vs. immobile factors 374–6
    - non-competitive markets 376–8
    - non-identical individuals 373–4
    - operation of 364–7
    - vs. Pechman and Okner’s sources and uses analysis 386–7
    - tax incidence equivalences 367–8
    - variable factor supplies 372–3
    - variations in baseline model 372–8
  - healthcare, Blackorby–Donaldson model 335–42
    - first-best perfect information case 336–8
    - second-best private information case 338–40
    - third-best solution, subsidies to purchase medicine 340–2
  - hedonic price estimation 412
  - Hicks’ compensating variation (HCV) 291–2, 356, 358, 409–11
  - Hicks’ equivalent variation (HEV) 291, 293, 355, 356, 358, 409–11, 418
  - horizontal equity 9, 10–11
  - hospital insurance 223
  - households, surveys of characteristics and incomes 79, 90, 91
  - Housing Assistance 35, 179, 182
  - humanism 6
- I**
- impersonality 70, 80
  - incentive compatibility (self-selection) constraints 338–40
  - income
    - concentration of 9
    - Gini coefficient 322
    - redistribution of 9
    - social marginal utilities of 318
  - income support programs, U.S. 182
  - income tax 248
    - credit income tax 198–9
    - exemption 199–200
    - highest rate 321–2
    - marginal tax rate (MTR) 200
    - negative 201
    - optimal 319–23
    - personal (PIT) 244, 245, 246
      - in Pechman and Okner’s central variant analysis 379
    - see also* corporation (corporate) income tax; federal personal income tax (PIT)
  - indifference curves
    - consumers’ 18–19
    - social welfare 60–1, 68, 69, 71–3
  - Individual Retirement Accounts (IRAs) 268, 286, 479
  - individualized externalities 101–3, 108–11
  - individualist social welfare function (Bergson–Samuelson) 59, 431, 432, 436
    - see also* social welfare function
  - inefficiency, taxes and 51–2, 289–310
  - inequality
    - aversion to 88–90, 93
    - index of 94
    - social cost of 93–4
    - U.S. attitude to 94–5
  - inflation
    - effects on capital 278–9
    - federal personal income tax adjustment for 277–8
    - in Haig–Simons income 256
    - taxing of income from capital 277–80
  - information, *see* private (asymmetric) information
  - inheritance 385
  - inheritance tax 244, 286
  - insurance 30–2
    - adverse selection 31

- coinsurance 222
  - disability 223
  - hospital 223
  - medical 31–2
    - Medicare 32, 35, 180, 182, 183, 211
    - private information and 325
    - purpose of 487
    - self-insurance 221
    - unemployment 31, 35
    - see also* private insurance; social insurance
  - interpersonal equity condition 63–4, 66, 152–3, 162, 163, 164, 193, 196, 335
  - inverse elasticity rule (IER) 312, 314
  - investments
    - compounding to future values 394
    - discount rate 397, 399–400
    - discounting to present value 394–5
    - initial investment spread 398
    - internal yield 397
    - present value formula 395–8
    - private investment analysis 399
      - vs.* cost–benefit analysis 398–400
    - ranking 397–8
    - rate of return 397
  - IRAs (Individual Retirement Accounts) 268, 286, 479
  - irrelevant alternatives 74
- J**
- jurisdictional boundaries 456
  - justice, *see* distributive justice
- K**
- Kyoto Protocol 430
- L**
- labor
    - efficiency unit of 320
    - inelastic supply 303
  - labor-leisure model of labor, work incentives 204–9
  - Law of Scarcity 7, 19
  - Law of Substitution 7, 42, 47
  - leisure, *see* labor-leisure model of labor
  - life, value of 408–9
  - life expectancy 233, 238
  - Lindahl prices 147–53
    - auction procedures 147–8
    - difficulties with 150–3
    - efficiency property 153
  - local governments
    - expenditure 35, 182
    - revenue sources 246
  - ‘log rolling’ 447
  - Lorenz curve 90–3
    - Gini coefficient 92–3
  - lump-sum taxes 65, 66, 67–8, 196, 296
    - national defense 152
    - non-distorting 64–5, 357
    - redistributional 67
    - U.S. poll tax 67
- M**
- marginal cost (MC), zero, *see* zero marginal costs
  - marginal cost pricing, natural monopolies 160, 163–5
  - marginal loss
    - per dollar of additional tax revenue 309–10, 311
    - of a tax 309
  - marginal propensity to consume (MPC) 248
  - marginal propensity to save (MPS) 248
  - marginal rate of substitution (MRS) 41, 41–2, 44–5, 48–50, 54–5, 68–9, 82
  - marginal rate of technical substitution (MRTS) 41, 46, 47–9, 55–6
  - marginal rate of transformation (MRT) 41, 48–50
  - marginal social welfare weight 63, 66, 80, 84
  - marginal utility of income 89–90
    - diminishing 81–3, 93
  - market clearance 40
  - market demand price 145–6
  - market economy
    - market assumptions 17–18, 27–34
    - technical assumptions 18–20, 24–7, 99
    - well-functioning 17–20
  - market exchanges 30
  - market failures 17–38
    - as basis for legitimate government
      - intervention 6
    - government response to 477
    - private/asymmetric information as source of 29–34
    - U.S. government response 34–6
  - market supply price 145–6
  - market transactions 99
  - markets, competitiveness 17–18, 27
  - marriage penalty 267, 281
  - means testing, in public assistance programs 212, 222
  - mechanism design problem 32, 153–5, 336
  - Medicaid 34, 180, 182–3, 222, 459, 467, 472
    - expenditure 35, 182, 458
    - variation across states 181, 201
  - medical insurance 31–2
    - Medicare 32, 35, 180, 182, 183, 211
  - medically needy families 183
  - Medicare 32, 35, 180, 182, 183, 211

minimum wage 179  
 Mirrlees, James 320  
 monopolies  
   natural, *see* natural monopolies  
   wish to avoid in capitalist societies 160–1  
 moral hazard, insurance and 31–2, 218, 220–1, 236–7  
 movement of capital 374, 439, 450–2  
   European Union 38  
 movement of people within a federal government 439–40  
   equity and 452–3  
   models 439–40  
   Pauly model 440, 446–50  
     overall search equilibrium condition 448  
     utility-maximizing condition 448  
   Stiglitz model 440, 440–5

## N

national defense 143–58  
   efficiency rule for providing 146  
   free-rider problem 153  
   how much to provide 144–8  
   lump-sum taxes 152  
   market demand 144–6  
   market demand price 145–6  
   market supply price 145–6  
   as national allocation function 431  
   payment for 149–53  
 national security provision 34  
 natural monopolies 28–9, 159–76  
   average cost pricing 163, 164–5  
   benefits-received principle 163–5  
   deficit minimizing 171–2  
   examples of 29, 160  
   government intervention in 160–1  
   investment decision 165–70  
     easy case 166, 167–8, 171  
     hard case 166, 167, 168–70, 171–2  
   lump-sum subsidies 162–3  
   marginal cost pricing 160, 163–5  
   monopoly pricing 164–5  
   Pareto-optimality condition 161, 162  
   price equal to marginal cost 162–3  
   pricing 161–3  
     of software 174–6  
   software as 29, 160  
   U.S. pricing policy 163–5  
   with zero marginal costs 172–6  
     efficient pricing 174  
     vs. nonexclusive goods 172–4  
 negative income tax 201  
 net-of-tax price 345  
 nonexclusive (public) goods 26–7, 143–58  
   auction procedures 147, 148

competitive pricing 150–1  
 efficiency rule for providing 146  
 Samuelson Rule 147, 152, 153  
 vs. zero marginal cost natural monopolies 172–4  
   *see also* Lindahl prices; national defense  
 Nozick, Robert 9–10  
 numeraire good 485

## O

OASDI (social security benefits) 34, 35, 182  
 OASDIHI, *see* Social Security Trust Fund  
 Okun's leaky bucket 85–7, 251  
 Old Age Assistance (OAA) 179, 181, 201, 223  
 OLG model, *see* overlapping generations (OLG) model  
 oligopolies 27–8, 159  
 overlapping generations (OLG) model 261, 282, 286  
   vs. Harberger model 373–4

## P

Pareto-optimal redistributions 335  
   in public assistance 186–7, 191–3  
 Pareto-optimal rule, vs. Samuelson Rule 147  
 Pareto optimality 13, 52–3  
   conditions for 41–51, 56, 65  
     consumption condition 41, 41–4, 64  
     consumption-production condition 41, 48–51  
     perfect competition and consumption efficiency 44–5  
     perfect competition and consumption-production condition 51–2  
     production condition 41, 46–8  
   definition 7  
   natural monopolies 161, 162  
 Pareto principle 61, 74  
 Pareto-superior reallocations 7, 13  
 participatory democracy 429, 435, 456  
 payroll tax 211, 236–7, 244, 246  
 Pechman and Okner's sources and uses analysis  
   of incidence 378–86  
   caveats to 383–5  
   central variant analysis/assumptions 379–83, 383  
   corporation income tax 381, 384–5  
   federal and state personal income taxes 379  
   vs. Harberger general equilibrium model 386–7  
   local property tax 382–3, 384, 385  
   long-run perspective 385–6  
   Social Security payroll tax 379–81, 383–4  
   states' general sales taxes 381–2, 383–4  
 pecuniary externalities 100

- pension funds
  - defined benefit plan 225
  - defined contribution plans 225, 227, 235
  - 401K plans 225, 234, 268, 286, 479
  - default options 479
- pensions
  - pay-as-you-go system 225–6, 226–31, 239
  - baseline overlapping generations (OLG) model 226–7, 229, 239
  - redistribution across generations 228–9
  - for private sector employees 178–9
  - see also* Social Security pensions
- people, movement of, *see* movement of people
- per-unit tax 291
- personal consumption (expenditures) tax 246–7, 281–7
  - administrative issues 283–6
  - bequests/inheritance taxing 286
  - complexity reduction 283–4
  - regressive tax 284
  - tax on real assets 284–5
  - efficiency vs. equity 282–3
- Pigovian subsidies 187–8
  - in-kind 197
- Pigovian tax 106–8, 146
  - iterating to the optimum 125–6
  - measurement problems 125–30
  - pollution externality and 122
- pollutants 127
- pollution
  - automobiles 139–41, 430
  - command and control approach (CAC) 127–30
  - disadvantage 130
  - as externality 25–6
  - and externality/jurisdictional mismatch 430
  - increasing, marginal damage 124
  - industrial 100, 101, 102–11
    - air pollution 102–11
    - taxing at source 111–19
  - industrial waste disposal 113–16
  - optimal reduction 116–17
  - pollution-proportional-to-output model 111–12, 122, 125, 128, 131
  - pricing strategies 131–7
    - marketable pollution permits 127, 132–3, 135, 135–7
    - pollution tax 130, 131, 136–7
    - subsidies 132, 133–5, 138
  - reduction
    - benefits of 127
    - marginal benefit (MB) 122–3
    - marginal cost (MC) 122–3
  - subsidizing the victims 138
  - waste treatment 137–8
  - zero pollution 117–19
- pollution permits, marketable 127, 132–3, 135, 135–7
- pollution rights 123–4
  - markets for, practical difficulties 124
- pollution tax 130, 131, 135–7
  - advantage of 130
  - marginal equivalence of 131
  - optimal 116–17
- Poor Law (England, 1601) principles 177–8, 179, 200, 201, 202
- preferences
  - affecting economic decisions and events 475
  - inconsistent 478–80
  - individual 40, 74
- present value formula 395–8
- price support program 179
- prices, relative 294–7, 303
- pricing
  - all-or-none offers 174–6
  - efficient pricing
    - software 174–6
    - zero marginal cost natural monopolies 174
- primary insurance amount (PIA) 224, 231, 233–4, 236
- private goods, *see* exclusive (private) goods
- private (asymmetric) information 29–34, 325–6
  - insurance and 325
  - in social insurance 218–21
  - as source of market failures 29–34
  - taxation and 326–34
  - transfer payments and 326, 335–42
- private insurance 212–17
  - actuarially fair insurance 214–16
  - full insurance 214–16
  - partial insurance 216
  - risk aversion 212–13, 216
  - risk premium 216–17
  - risk-neutral 216
- private investment analysis 399
  - vs. cost-benefit analysis 398–400
- private marginal costs 104, 106–7, 108–9
- process equity 8, 9–11, 95, 97
  - principles of 10
- producer externalities 101
- producer sovereignty, *see* consumer (producer) sovereignty
- producer surplus 346
- production
  - externalities 24
  - increasing, marginal benefit 124
- production possibilities frontier 388–9
- production technologies 40
- property rights 27

- property tax 244, 246, 465, 472–3  
 local, in Pechman and Okner's central variant  
 analysis 382–3, 384, 385
- pseudo-market approach 147–8  
 free-rider problem 148
- public assistance 178, 186–7  
 cash vs. in-kind 188–9  
 expenditure 182  
 goals for success 202–4  
 in-kind transfer limits and accountability  
 190–1  
 mainstream vs. public choice views 184  
 means testing 212, 222  
 Pareto-optimal redistributions 185–6, 191–3  
 provision of 34  
 public choice perspective 183–5
- public choice  
 assessing the challenge 14–16  
 as public assistance perspective 183–91  
 theory 12–14, 196–8
- public expenditure theory 4  
 tax and 249–50
- public finance 343
- public goods, *see* nonexclusive (public) goods
- public interest 7
- public rate of discount 401–5  
 marginal social rate of time preference  
 403–4, 405  
 opportunity cost view 401–2, 403–4, 405
- public sector analysis, positive/normative sides  
 479–80
- public sector economics  
 definition 4  
 divisions of 4–5  
 positive/normative dimensions 4
- public sector theory 3–4, 12, 14–16
- public utilities, as natural monopolies 29, 160
- R**
- Ramsay rule, *see* inverse elasticity rule (IER)
- Rawls, John 70–3
- Reagan, Ronald 3–4
- recreational facilities, as natural monopolies 29,  
 160
- redistribution  
 as a negative/positive-sum game 88  
 policies 184–5
- relative prices 294–7, 303
- retirement, saving for 478–80
- retirement age 224
- retirement benefits 35, 182
- retirement effect on saving 230
- retirement pensions  
 income and benefit features 223–4  
*see also* Social Security pensions
- retirement planning 232–3, 234–5  
 inadequate preparation 230
- revealed-preference argument 189
- risk neutrality 82–3
- Roosevelt, Franklin D. 3
- S**
- sacrifice principle of taxation 289
- sales tax 245, 246, 248  
 states', in Pechman and Okner's central  
 variant analysis 381–2, 383–4
- Samuelson Rule 147, 152, 153  
 vs. Pareto-optimal rule 147
- savings  
 rates of return 402–3  
 for retirement 478–80
- second-best analysis 315–16, 317
- secondary benefits 419
- self-control problems 476, 478–9, 480
- self-insurance 221
- self-selection (incentive compatibility) constraints  
 338–40
- shadow prices 407, 413–14
- sin taxes, behavioral economics and 480
- single tax incidence 354–7
- social insurance 30, 34, 35, 178, 211–12  
 adverse selection 218–20  
 benefits 221–2  
 costs 221–2  
 demand for 212, 218–22  
 expenditure 182, 211  
 goal 212  
 moral hazard 31–2, 218  
 direct/indirect 220–1, 236–7  
 no insurance 222  
 partial insurance, optimality of 222  
 private (asymmetric) information 218–21  
 risk classes of consumers 218–20  
*see also* private insurance
- social marginal utility (SMU) of income 63–4,  
 80, 93, 416, 418, 431
- social mobility 10, 11  
 and social welfare 95–7
- Social Security 211  
 benefits (OASDI) 34, 35, 182  
 expenditure 211  
 expenditure/revenue projection 211  
 as redistributive program 231–2  
 revenue 211  
 as social insurance 232–4  
 adverse selection 232, 233–4  
 annuities 232–4
- Social Security Act (1935) 178–83, 223, 435
- Social Security payroll tax, in Pechman and

- Okner's central variant analysis 379–81, 383–4
  - Social Security pensions 223–40
    - full retirement age 224
    - paternalism 234–5
    - primary insurance amount (PIA) 224
    - reform proposals 237–40
      - costs of 238–9
      - life expectancy and wage inequality 238
      - rate of return 237–8
      - system maintenance vs. replacement 239–40
    - retirement pensions income and benefit features 223–4
    - social average indexed monthly earnings (AIME) 224
    - structure of pension program 223–4  
*see also* pensions
  - Social Security Trust Fund (OASDIHI) 223, 224, 231, 239–40
    - income 223
    - legacy debt 238–9
  - social supply curves 108–10
  - social welfare
    - egalitarianism 70, 73
    - expenditure 3–4
    - indifference curves 69, 71–3
    - maximizing 311
    - principles 61
    - proxy measure of 459–61
    - Rawlsian 70–3
      - and social mobility 95–7
    - social welfare analysis, preferences and 480
    - social welfare function 59, 435–7
      - applying, *see* Atkinson social welfare function
      - Benthamite/utilitarian 69–70, 73
      - determining allocation of resources 66–7
      - distributive justice and 60–5
      - dynastic 436–7
      - flexible form approach, *see* Atkinson social welfare function
      - General Impossibility Theorem 73–6
        - reactions to 76–7
      - problems with 68–9
      - what it is 68–9
      - what it should be 69
    - socialism, centrally planned 5
    - software
      - efficient pricing 174–6
      - as natural monopoly 29, 160
    - sources and uses analysis, *see* Pechman and Okner's sources and uses analysis of incidence
    - SSI (Supplemental Security Income) 34, 35
  - stabilization, as government function 22, 425, 427–8
  - state governments
    - expenditure 35
    - revenue sources 245
  - states rights principle 429
  - subsidy 132, 133–5, 138
    - Pigovian subsidies 187–8, 197
    - wage subsidy, *see* Earned Income Tax Credit (EITC)
  - substitution effect 295–7, 303, 303–4
  - sulfur dioxide (SO<sub>2</sub>), reduction of emissions 127, 133
  - Supplemental Security Income (SSI) 34, 35, 181, 182, 201, 203
  - supply curves 299
    - compensated 303–4
    - measuring excess burden 304–6
  - supply and demand, tax incidence and 344–6
- T**
- TANF, *see* Temporary Assistance to Needy Families (TANF)
  - tax, *see* taxation; taxes; *and individual tax entries below*
  - tax amnesties 334
  - tax avoidance 326
  - tax compliance, social preferences and 477–8
  - tax credits 275
  - tax evasion 326, 477–8
    - economics of 327–9
    - increasing auditing 329, 331, 332–3
    - increasing the penalty rate 329–31, 332–3
    - increasing the probability of being caught 331
    - policies to reduce 329–31
    - tax rate changes 331–2
  - tax impact 343
    - impact-is-incidence principle 348–50
  - tax incidence 343
    - applications 363–89
    - balanced-budget incidence 352–3
    - baseline theorem 358–62
    - dependent on demand and supply elasticities 346
    - determined by market 351–2
    - differential tax incidence 357
    - distorting taxes 357–62
    - elasticities and 346–7
    - general equilibrium analysis 352–62
    - Harberger general equilibrium model, *see* Harberger general equilibrium model of tax incidence
    - impact-equals-incidence assumption 379
    - impact-is-incidence principle 348–50

- non-distorting taxes 357
- Pechman and Okner's sources and uses
  - analysis, *see* Pechman and Okner's sources and uses analysis of incidence
- side of market taxed 350–1
- single tax incidence 354–7
- supply and demand analysis 344–6
- theoretical issues 343–62
- tax incidence equivalences, in Harberger general equilibrium model of tax incidence 367–8
- tax policy, goals 247–9
- Tax Reform Act (1986) 282, 321
- tax revenues
  - disposition of 352–7
    - balanced-budget incidence 352–3
    - benefits-received taxes 353–4
    - differential tax incidence 357
    - single tax incidence 354–7
  - strategies for raising 332–4
- tax theory 4, 36–7, 249–50
  - ability-to-pay principle 251–2, 263
  - benefits-received principle 149–50, 153, 251–2
  - equity in 243–63, 250–1
  - horizontal equity 252, 252–61, 262
  - ideal tax base 252–62
  - limiting power to tax 243
  - main issues, normative/positive 243
  - vertical equity 252, 253, 262–3
  - see also* public expenditure theory
- taxable income 252, 265
  - vs. Haig-Simons income 265, 267–9, 276, 277, 282, 323
- taxation
  - ability-to-pay principle 251–2, 263, 265–87
  - benefits-received principle 149–50, 153, 289
    - natural monopolies and 163–5
  - consumption as the ideal base 259–61
  - deadweight loss 85, 95, 289, 305–6, 326, 413–14
    - minimizing 311–12, 314
    - with more than one tax 306–8, 308–9
  - efficiency in 36–7
  - efficiency costs 85–6, 95
    - administrative costs 85, 95
    - compliance costs 85–7, 95
    - deadweight loss 85, 95, 326
  - efficiency–equity trade-off 314–23
  - efficiency goal 289, 311
  - equity goal 311
  - equity principle 289
  - excess burden of 290–7, 346, 357–8
    - measuring 298–308
  - graduated rate structure 265
  - minimizing loss from 311–14
    - for optimal pollution reduction 116–17
  - optimal tax policy 108–11
  - private (asymmetric) information 326–34
  - public expenditure theory 249–50
  - sacrifice principle 289
  - taxing pollution at its source 111–19
  - transfer policy 36
  - see also* Pigovian tax
- taxes
  - ad valorem 290–1, 344, 358
  - age tax 152–3
  - on alcohol 480
  - broad-based 245, 248
    - ease of collection 247
    - ease of compliance 247
    - economic efficiency 248
    - end-results equity 249, 250–1
    - flexibility 248
    - ideal properties 247
  - on cigarettes 480
  - Clarke tax 155
  - distorting 85, 356, 357–62, 368
  - estate tax 244
  - excise tax 244, 245, 294–5, 297–300
    - per-unit 344
  - flat (rate) tax 269–70, 322
  - on food 318
  - general 36
    - equivalence of 357–62
    - properties of 358
    - vs. specific 358
  - impact and incidence of 253
  - inheritance tax 244, 286
  - introducing inefficiencies into the economy 51–2, 289
  - lump-sum 65, 66, 67–8, 196, 296
    - national defense 152
    - non-distorting 64–5, 357
    - redistributional 67
    - U.S. poll tax 67
  - main types 244–7
  - marginal loss of 309
  - as a necessary evil 249, 289, 314
  - non-distorting (lump-sum) 64–5, 357
  - payroll tax 211, 236–7
  - per-unit 291
  - specific vs. general 358
  - surrogate measure of utility 253, 256–9, 259
  - see also* federal personal income tax (PIT); income tax; taxation
- technological externalities 100–1
- telecommunications, as natural monopolies 29, 160
- Temporary Assistance to Needy Families (TANF) 34, 35, 181–2, 183, 195, 201, 203, 207–8

- as block grant 467
- expenditure 458
- stick approach 207–8
- Tiebout effects 439, 447
- transfer payments 177–93
  - broad-based
    - credit income tax 198–9
    - vs. targeted 195, 196, 198–200
  - cash vs. in-kind 195, 196, 197
  - in-kind, centralized/decentralized 195, 197
  - mainstream theory 196, 197
  - negative income tax 201
  - private (asymmetric) information 326, 335–42
  - public choice theory 196–8
  - targeted
    - vs. broad-based 195, 196, 198–200
    - with income tax exemption 199–200
  - problems with 202–9
- transfers 67–8
  - efficiency costs 85–6
    - administrative costs 85
    - compliance costs 85–7
    - deadweight loss 85
  - non-distorting 64–5
  - redistributional 67
  - see also transfer payments
- transition probability matrix 95–7
- transportation, as natural monopolies 29, 160
- 2 x 2 x 2 model, see under welfare economics

## U

- uncertainty 71, 72
  - vs. risk 71, 72
- underground economies 334
- unemployment insurance/compensation 31, 35, 179, 182
- unitary governments 495
- U.S. economy, size of 39
- utilitarian (Benthamite) social welfare function 69–70, 73, 80
- utilities, public, as natural monopolies 29
- utility possibilities frontier 7, 85

## V

- value-added tax (VAT) 244–5, 246, 247
- vertical equity 9
- Veterans benefits, expenditure 35, 182

## W

- wage subsidy, see Earned Income Tax Credit (EITC)
- Walrasian auction 147–8
- warm glow hypothesis 158
- waste treatment 137–8
- welfare, see public assistance
- welfare economics
  - 2 x 2 x 2 model
    - structure 39–40
    - variable factor supplies 54–6
    - variation of, see Harberger general equilibrium model of tax incidence
  - fundamental theorems of 39–56
  - First Fundamental Theorem of 20–1, 41–52
    - conditions for a Pareto optimum 41–51, 56, 65
    - consumption condition 41, 41–4, 64
    - consumption-production condition 41, 48–51
    - perfect competition and consumption efficiency 44–5
    - perfect competition and production-consumption efficiency 51–2
    - production condition 41, 46–8
    - production possibilities (pp-)frontier 49, 50, 51
  - Second Fundamental Theorem of 21, 22, 52–3
- Wicksell, Knut 13
- willingness to punish 16
- willingness to trade 41, 45
- work incentives 204–9
- workfare 207

## Z

- zero marginal costs, natural monopolies with 172–6
  - efficient pricing 174
  - vs. nonexclusive goods 172–4