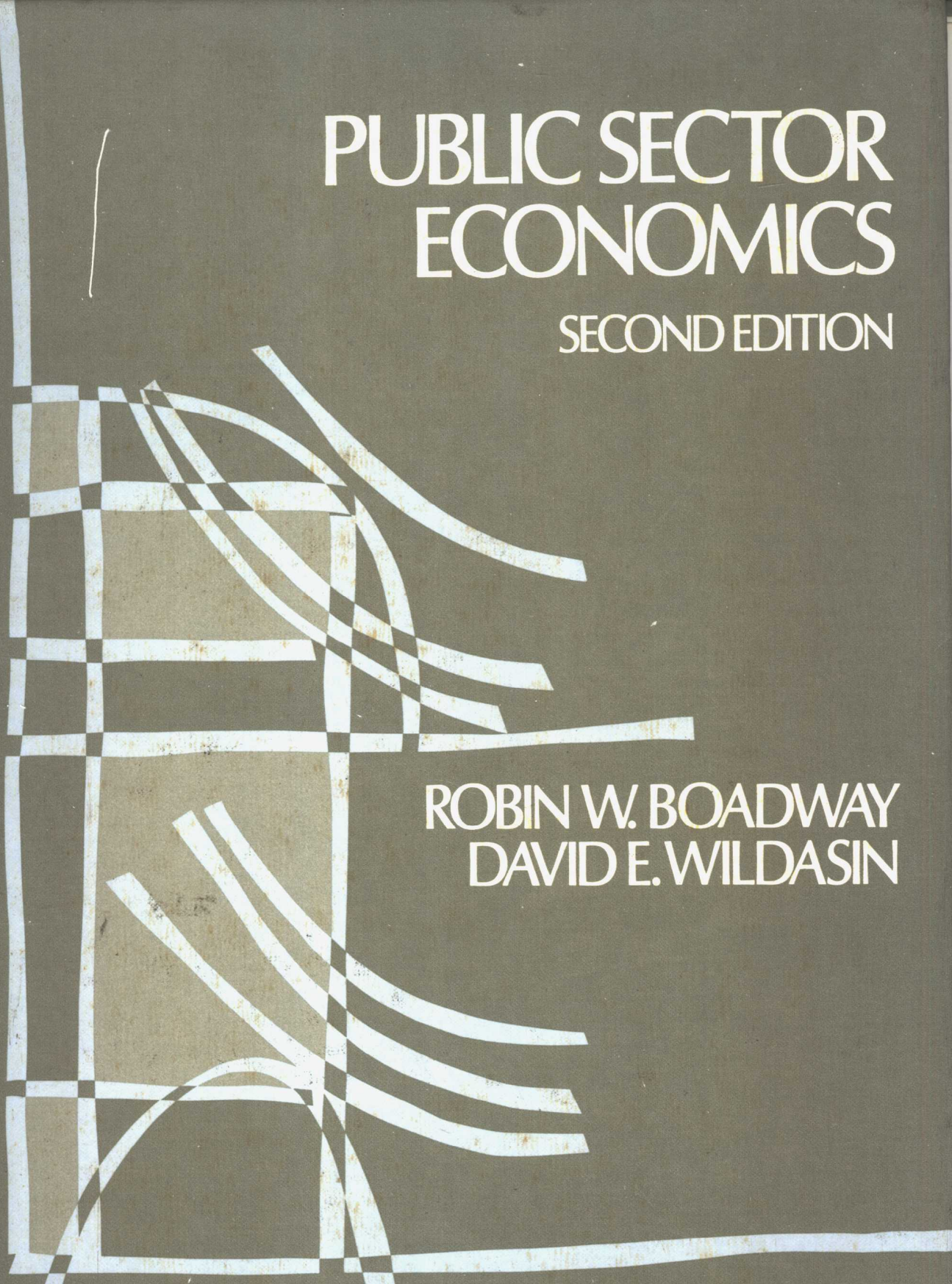
PUBLIC SECTOR ECONOMICS

SECOND EDITION



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Public Sector Economics

Second Edition

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To Bernie, Kathy, Andrew, John, and Ben

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Preface

The study of public finance is challenging, as it combines both normative and positive economic analysis. On the one hand, it seeks to answer the question: What should the role of the public sector be in influencing resource allocation in a market economy? The determination of a set of normative rules to guide public sector decision-making requires making use of the tools of modern welfare economics. As such, one might classify public finance as applied welfare economics. On the other hand, public finance involves the positive study of how the activities of government (e.g. taxation, expenditures, transfers) influence resource allocation, relative prices, and welfare in the economy. The sheer size and pervasiveness of the public sector ensure that it will play a significant role in determining how the economy's resources will be allocated by the pricing mechanism. In the positive analysis of the effects of public sector decision-making, it must be recognized that government actions will influence prices and outputs on several markets simultaneously. In other words, a satisfactory analysis of the impact of public sector decisions on the economy must take into consideration some of the general equilibrium effects of the actions.

In recent years, considerable scholarly research has been devoted to both the normative and positive analysis of public finance. New journals devoted entirely to these problems have sprung up, and more space has been devoted to them in existing journals. While much of this literature is quite technical, the results obtained are often of fundamental importance in furthering our knowledge of public sector economics and in revising previously held beliefs, and, as such, they should be accessible to the student. *Public Sector Economics* combines the traditional subject matter of public finance with the significant recent developments in the field in a way that is comprehensible to a student with a basic knowledge of conventional

microeconomics. In addition, we have tried to meld the principles developed in theory with the practice as represented by the actual fiscal system. The existing system of taxes, government expenditures, and social insurance are described and their effects in the economy are inferred on the basis of the theoretical analysis and empirical research. Also, we are able to indicate some of the structural deficiencies of existing programs on the basis of first principles.

In writing this second edition, we have had three objectives in mind. The first is to present in as non-technical and intuitive a manner as possible what we regard as important and sometimes complex analysis. While we do not ignore such important dimensions of public sector economics as uncertainty, general equilibrium, and dynamic aspects, we have tried to simplify the presentation. The second objective is to incorporate some of the more important policy debates from the political forum into the text. This includes such topics as indexation of the tax system for inflation; the desired structure of social security, unemployment insurance, and medical care; flat-rate taxation; expenditure taxation and the taxation of capital income; and redistributive transfers. The third objective is to update our discussion of principles to include the most recent theoretical and empirical developments in the evolving literature. Thus, a new or amended treatment of taxation and savings, fiscal federalism, the investment and financial decisions of firms, labor supply, social insurance and bureaucratic decision-making has been presented.

The book is divided into four parts. The first part comprises an overview of the subject matter of public economics and introduces the methodological tools of welfare economics subsequently used in the rest of the book. Included in this part is a thorough discussion of the notion of economic efficiency and of the circumstances in which markets fail to provide efficient allocations of resources. These "market failures" provide the necessary conditions for public sector intervention in the economy.

The intervention we are primarily concerned with falls into three general areas—public expenditures, taxes, and transfers. The three remaining parts of the book deal with these three areas. In Part II we cover both the normative and positive aspects of public expenditures, including the theory of public goods and externalities, voting models, pricing and investment in increasing returns industries, preference revelation mechanisms and cost-benefit analysis. Part III deals with taxation. Taxes are analyzed from three points of view—the incidence of taxes, the effect of taxes on incentives of households and firms, and the design of an efficient and equitable tax system. The basic structure of the tax system of the United States is described in the context of these principles. In Part IV we are concerned with transfers both to individuals and to governments. Individual transfers can take the form of income transfers to low income persons, transfers in kind, or social insurance programs such as social security, unemployment insurance, or medical insurance. Each of these is analyzed in detail. Transfers to government (e.g. federal-state transfers) can be conditional or unconditional

grants. The economic arguments for each of these, and their effects, are presented. In addition we review the literature on the issue of whether resources will be allocated efficiently in a federal system of government when some budgetary decisions are decentralized to lower levels of government and when labor and capital are mobile. It turns out that the existence of such mobility may provide an argument for intergovernmental grants.

In a book such as this, the selection of topics to cover is governed as much by convention as by logic. We have chosen to stress the microeconomic aspects of public finance as that field is normally defined. The theory of regulation has been omitted on the grounds that it is part of the subject matter of industrial organization. Tariffs are left out since they are part of the subject matter of international economics. The macroeconomics of the public sector (e.g. fiscal policy) has been left out since, increasingly, fiscal policy and debt management are being treated as part of a more general field of stabilization policy encompassing both these and monetary policy.

We have provided numerous citations throughout the text to guide students interested in further study of the topics covered. These citations should give readers a good start in familiarizing themselves with major writers, and should be of use to students developing term papers or seeking details of discussions that we, of necessity, have often only sketched. Needless to say, however, we have not provided a comprehensive survey of all relevant recent developments, nor have we been able to refer to all important contributions to the literature. Anyone working in this rapidly growing area will understand how selective we have had to be, especially in our citations to the now-voluminous literature.

In preparing this revised edition we are grateful for the secretarial assistance of Dorothy MacKenzie and Dorothy Edwards. Chii Chii Ashwe helped in preparing the manuscript and provided constructive comments along the way. Several other persons were kind enough to transmit suggestions on this or the earlier edition, including Neil Bruce, John Burbidge, Arthur Burditt, Mark Frankena, Jonathan Kesselman, Harry Kitchen, Wade Locke, Jack Mintz, Vasillios Rapanos, David Robinson, Anthony Scott, Dan Usher, and Sam Wilson. In addition, very helpful comments were received from the formal reviewers, David Starrett, John D. Wilson, Barry Keating, Maryann Keating, and especially Richard Tresch, whose suggestions significantly affected both the content and organization of this book. Finally, our families, Bernie and Kathy, and Ben, Andrew, and John, deserve our gratitude for their continued support of our collaborative efforts.

Contents

1

Introduction to Public Economics

MARKETS AND GOVERNMENTS: EFFICIENCY AND EQUITY

1–1 Governments play pervasive roles in modern economies. The powerful tools of government policy—taxation, spending, borrowing, regulating—bear upon the economic life of every individual and business, in their various roles as consumers, workers, savers, borrowers, employers, and producers. Not surprisingly, the growth of government involvement in the economy has been accompanied by great debate, both at the popular level and among economists, about the proper scope of government activity. In this book, our goal is to show how the tools of economic analysis can be (and have been) fruitfully applied to the study of some of the most important aspects of public policy.

Before launching into a detailed discussion of government policy in a market economy, we provide in this chapter a brief outline of some of the major themes of our study and of some of the main issues that we shall be examining. Paradoxically enough, we begin our discussion with a careful consideration of the functioning of a pure market economy with no public sector. We do this partly for the sake of a review of the basic principles in the economic theory of the household and the firm. There is a more basic reason for this orientation, however: As all readers with some background in economics must know, economists have devoted the greater part of their efforts to the analysis of how an allocation of society's scarce resources is achieved through decentralized markets, and have shown that, under certain circumstances, an allocation of resources so achieved leads to high levels

of economic "welfare." More exactly, it has been shown that competitive markets lead to outcomes that are "efficient" in a precise sense. We define "efficiency" in the next chapter; it is enough to say here that this efficiency property is one that many people find very desirable. The idea that markets are efficient has its roots in Adam Smith, and has played an historically important role in the debate about the need for government intervention in the economy. Indeed, we shall let it continue to play that role for us. Once we see how markets can allocate resources efficiently, which is one of our main objectives in the next chapter, we are naturally led to inquire why markets should not simply be left to solve society's economic problems with no government intervention.

The answer to this question is two-fold:

First, we shall find that the conclusion that markets are efficient is valid only under certain assumptions which are not always satisfied in practice. Thus, after presenting a detailed explanation of how markets can function efficiently in an ideal world, we turn in Chapter 3 to a description of possible "market failures" in which the conditions for market efficiency are not met. This leads to a search for a non-market framework through which efficiency can be achieved, and in this way we discover a possible rationale for many kinds of government intervention in the economy.

Second, even though efficiency in resource allocation is important, it is not the only relevant criterion of economic performance. In particular, efficiency does not insure that the distribution of economic well-being or welfare among the members of society is equitable or just. In a market system, the welfare of an individual or household depends on its ownership of scarce resources like labor, capital, etc., from which it derives income, and on the prices paid for the goods it buys. Underlying inequalities in the value of the scarce resources owned by different households mean that the set of consumption opportunities open to them will vary. Some households may be richly endowed, and may therefore have great opportunities to satisfy their wants, while others may do much worse. Obviously, it might be thought desirable to interfere with the market-determined distribution of welfare in order to achieve a more equitable outcome. This provides a second general rationale for government intervention in the economy. We should note immediately, however, that while economic analysis can be used to describe how the distribution of welfare is determined, and how various policies might affect the relative positions of different individuals, it cannot in itself determine what is equitable and what is not. Such judgments are inherently extra-economic, and must be based on moral or ethical considerations.

With this perspective in mind, then, we can examine various government activities and try to determine whether they might contribute to a more efficient and/or a more equitable economic outcome for society. Unfortunately, as we shall see, there may be conflicting objectives which have to be traded off one against the other, raising difficult problems for policy.

GOVERNMENT EXPENDITURES, EXTERNALITIES, AND PRICING POLICIES

1–2 In Part II of this book we will explore some of the issues raised by the market failures discussed in Chapter 3. Suppose we believe that unfettered markets may not efficiently provide highways, defense, education, electricity, or pollution abatement. What useful steps can be taken?

One possibility is that the government can become directly involved in the provision of public services. This can be especially important when markets simply fail to provide certain goods, such as defense and highways, for example. But if the market does not function efficiently, how is the government to do better? Exactly how much defense, or how many highway projects, should be undertaken? Such activities are worth something to the individual members of society, but they are not worth unlimited amounts of scarce resources. Some balance must clearly be struck between the benefits of public services and their costs. The principles of efficient public expenditure, which show how benefits and costs can be properly compared, are developed in Chapter 4.

But not all market failures necessarily justify direct government provision of goods and services. For example, consider the problem of pollution. This is an example of a broad class of situations referred to as *externalities*, where the actions undertaken by households or firms affect others outside of the framework of market transactions.

A specific case would be the noise generated around airports. Airlines have market relationships with their customers, suppliers, and employees, and are paid by them, or pay them, for goods and services supplied. Airlines do not, however, pay residents around airports for absorbing jet noise. This is an economic relationship: The residents are suffering real losses due to noise, and if they had the right to control the use of the airspace above their homes would charge airlines some amount for each flight, just as employees charge a firm for the use of their labor time. But the noise occurs outside, or is external to, the marketplace.

The economic theory developed in Chapter 5, which deals with several different types of externalities, shows that resources are not allocated efficiently in situations like this. Intuitively, this makes sense: There are resources, like peace and quiet in this example, or clean air or water in other pollution examples, that are being used up without markets to govern their allocation. In effect, social costs are imposed by polluters (or other externality-producers) who do not see these costs as relevant to their own decision-making because they are not forced, through the marketplace, to bear them. It is not surprising, then, that inefficiencies result.

What, then, can be done about externalities? One possibility is to have direct government control over the externality-producing industries or households: The government could take over ownership of the airlines (and the steel industry, and the chemical industry, and all other polluting in-

dustries). This would require extensive government intervention in broad areas of economic life, however, and would likely entail many other kinds of costs. Government ownership would also entail the sacrifice of those market institutions which are working relatively well in providing incentives for low-cost operation, in their sensitivity to consumer demands, and so on.

A less radical alternative would be to restructure the economic benefits and costs accruing to polluters and other externality-generators. A government could impose environmental quality standards on polluters, for example, and in fact such standards are widely used to deal with environmental problems in the United States and elsewhere. Economic analysis suggests that regulatory standards may have certain drawbacks, however. Other policy instruments, such as taxes or fees based on pollution emissions, have frequently been advocated by economists and deserve careful consideration. These are among the policy issues that we discuss in Chapter 5.

The principles of public expenditure and externality theory are invaluable in understanding the potential role that governments can play in enhancing the efficiency of resource allocation. However, the information required to achieve efficient levels of public expenditure, or efficient control of externalities, is not easily obtained. While markets provide indications of the (marginal) value of scarce resources through the determination of equilibrium prices, this does not occur for public goods like defense or for external effects like pollution.

How, then, can one determine the value or benefit to society from another highway, dam, waste treatment facility, or school? One seemingly simple and straightforward way to discover the value placed by downstream water-users on a treatment facility, or the value to travellers of time saved by a new road, would be to ask the beneficiaries how much these things would be worth to them. Unfortunately, as we shall see, they would have a strong incentive not to reveal this information truthfully. This is a problem of fundamental importance. It means that there is no immediately obvious way of determining what an efficient public policy would be, a fact that sometimes severely limits the applicability of public expenditure theory.

Indeed, in reality, public policy decisions need not be (and often are not) made with any conscious attempt to attain economic efficiency. Political institutions have evolved which resolve such issues without paying direct attention to principles of efficient resource allocation. Thus, whenever government intervention is proposed as a solution to some market failure, it is important to examine the process through which government policy will actually be made and to try to ascertain whether or not it is conducive to greater efficiency. In other words, we must try to understand government itself as a resource allocation mechanism, one which, like the market, may be subject to "failures." However, this non-market mechanism is less well understood than the market mechanism, in part because it has been the subject of economic study for only a few decades. Economists and other social scientists have begun to develop illuminating models of the political

decision-making process, whether it occurs through simple referendum voting, representative legislatures, or government bureaucracies. In Chapter 6 we shall examine these institutions and their implications for government policy determination. A general conclusion emerging from this discussion is that political processes offer only imperfect solutions to the problem of information-gathering and efficient decision-making. We will also consider some new approaches to this problem, which, while yet to be implemented in practice, demonstrate the potential for more satisfactory decision-making procedures.

Governments of course influence the allocation of resources in many ways other than the provision of public goods and services, and control of externalities. In addition, governments often operate, or at least regulate, public enterprises in industries such as utilities, transportation, and others. In these industries, different sorts of problems can arise in the functioning of the market. It is sometimes a characteristic of the technology in such industries, for example, that lowest-cost production is achieved only in very large scale operations, operations so large that a competitive industry structure, with many firms engaging in price competition, is unattainable. In such cases, so called "natural monopoly" will tend to emerge if market forces are left unchecked, but this will generally be incompatible with economic efficiency and may possibly be undesirable on equity grounds as well. The problem, then, is to evaluate alternative public policies to deal with market failure, and to study the functioning of publicly run enterprises if the government does assume control of the industry. We do this in Chapter 7, which deals with such questions as the proper pricing of the product of public enterprises, whether such enterprises should be subsidized, and how much capacity they should have.

Our discussion in Part II concludes with a treatment of cost-benefit analysis. The fact that governments are heavily involved in programs and projects of all kinds, whether justified in terms of market failure or not, means that economic decisions of many kinds are constantly being made in the public sector. It is clearly important to try to determine how these decisions can be made as efficiently as possible. In particular, attempts have been made to systematize public sector decision-making through careful assessment of the social benefits and costs generated by prospective government programs. We therefore examine the principles of cost-benefit analysis, and focus on a number of the more challenging problems that arise in its application. For example, many public projects are long-lived: Dams, highways, port facilities, and water treatment plants are all expected to operate for extended periods of time. How does one evaluate the future flow of benefits and costs associated with such projects? Or, consider the fact that the benefits from, say, an agricultural irrigation project are highly uncertain: The project may not have much value if rainfall turns out to be adequate; if technological change in agricultural methods or changing farm prices induce farmers to switch to different crops with different water requirements; or, indeed, if farmers remove their land from agricultural

production altogether. How should such risks be taken into account in project evaluation? These are among the important issues explored in Chapter 8.

TAXATION

1–3 Whether justifiable in terms of market failures or not, the fact is that governments are engaged, to a very substantial degree, in a wide range of resource-using activities. The amount of government expenditure in the advanced western economies has grown dramatically during this century, and such expenditures require reallocations of resources, toward the government and away from those uses to which they would otherwise be put in the private sector. Taxation is the principal mechanism through which this transfer of resources from the private to the public sector occurs, and the analysis of taxation is one of the major tasks of economists who are concerned with public sector economics.

In Part III of this book we devote five chapters to different aspects of taxation. In the first of these, Chapter 9, we introduce the general problems to be discussed and explain how taxes are important both for efficiency and equity. Taxes, unfortunately, can disturb the efficiency of resource allocation in markets that are otherwise functioning well. Income taxes, for example, may dull the incentives for individuals to undertake income-producing activities, such as working or saving. Other taxes, such as those on business, influence investment decisions or corporate financial policy. The incentive (or disincentive) effects of taxes are discussed more extensively in Chapter 11.

Chapter 10 introduces several important concepts of equity in taxation. Taxes have major effects on the distribution of welfare, and all would agree that tax burdens ought to be apportioned on a just and fair basis. The problem is to make operational this fine-sounding but rather vague goal. Consider, for example, whether individuals with higher incomes should pay higher taxes. If we agree that they should, how much higher should their taxes be? Of course, this begs the question of income as a proper object of taxation. Why not tax wealth or consumption expenditures? The latter possibility, in particular, is a live policy issue at the present time, one which definitely raises serious equity issues.

The discussion of equitable taxation is, at base, concerned with the distribution of the real burden of taxation among the members of society. This real burden can take the form of valuable resources sacrificed by individuals, or, ultimately, of losses in well-being or satisfaction of economic wants. It is extremely important to realize that this real burden, or incidence of taxation, need not coincide exactly with the flow of cash payments of taxes from the private to the public sector. To illustrate this idea with some examples, consider a tax on business income. Does this necessarily