

# Introduction: Public Economics

## 1-1 Introduction

These Lectures are concerned with the economics of the public sector. We are all constantly affected by the economic decisions of the government. This is most noticeable in the taxes we pay. Income tax, sales taxes, local taxes, and social security contributions account for a substantial proportion of our income. Owners of capital are affected by taxes on corporate profits, inheritance taxes, and capital gains taxes. Almost all of us are at one time or another recipients of income from the government: for example, via social security programmes. A large proportion of workers are paid by the government or produce goods sold to the government. Many children go to schools supported by the government. We enjoy municipal parks, swimming pools, roads, and other publicly provided facilities. Many people are concerned about public policy towards the environment or about the conservation of natural resources.

In these Lectures we attempt to describe in a systematic manner the principal consequences of such economic activities by the government and their relation to social objectives. In Part One we examine the effects of various tax and expenditure policies. This “positive” section of the book is concerned with such questions as “Does income taxation discourage work effort or risk-taking?” or “What is the incidence of the corporation tax?” In contrast, in Part Two we present the “normative” theory of public finance, which is an attempt to postulate some simple criteria for government decision-making and to follow through their logical implications. Thus, it deals with such issues as the degree of progression for the income tax, the choice between direct and indirect taxation, the provision of public goods, and pricing rules for public enterprises.

In addressing these questions, we make no attempt to provide a comprehensive coverage. The choice of the title *Lectures on . . .* is intended to dispel any impression that the book is an exhaustive account of public economics. The aim of the Lectures is to illustrate the current state of the art, to give some flavour of the strengths and weaknesses of recent developments, and to point to areas where future research is necessary.

The ways in which the book falls short of being comprehensive should be clear from the Table of Contents. Most seriously, no attempt is made to cover stabilization and macroeconomic policy. This is an essential element in any global view of the role of the government, and many issues are dominated by macroeconomic considerations. However, the economics of publishing have changed since the time when

Musgrave could devote 210 pages of *The Theory of Public Finance* (1959) to stabilization policy, and there are many excellent treatments in the literature. Our emphasis is therefore on goals other than those of stabilization.

Even with this restriction, the coverage is selective. Some readers will no doubt be horrified or disappointed by the omissions, which include the international aspects of taxation, the economics of property rights, externalities in production, the fiscal problems of economic development, and the administration of taxes and benefits. We hope however they will feel that this selective treatment is justified by the greater depth in which we have been able to discuss the subjects covered. These include, on the taxation side, income and wealth taxes, levies on the transfer of wealth, corporation tax, and indirect taxes. The expenditure side covers the provision of goods and services by central and local governments, and—to a lesser extent—transfer payments. Other subjects included are the national debt and the policy of public enterprises/utilities.

As will be clear from the Lecture titles, the book stresses those subjects in which there has been considerable recent research. This is particularly true of the incidence and design of taxation, which receives rather more emphasis than the expenditure side. The past decade has indeed seen a rapid expansion of the literature, most notably in econometric investigation of the effects of taxation and in theoretical analysis of the optimal design of tax policy.

Finally, we should emphasize the obvious fact that many areas are still unsearched. Despite the long tradition of public finance, and despite the recent influx into the field of economic theorists and econometricians, a great many important issues have yet to be discussed, let alone resolved.

## 1–2      **Role of the Government**

At the beginning of this Lecture we described some of the ways in which the government affects the typical individual. The state, however, has a much more basic role to play in that its first function is to establish and enforce the “rules of the economic game”. We are concerned with modern mixed capitalist economies, such as the United States, Canada, Western Europe, and Japan, where these rules typically include the legal enforceability of contracts, provisions for bankruptcy, laws defining property rights, and liabilities. This basic framework has much to do with how the economy performs, and the other functions of government are very much affected by the kind of ground rules under which the private economy operates. It may indeed be argued that the tax and expenditure activities of the government are of minor significance in relation to its primary function “of preserving and stabilizing the property relations of the capitalist economy” (Gordon, 1972, p. 322). This is not a view we find totally convincing, and we consider that it is still valuable to analyse, as in these Lectures, the impact of fiscal instruments within a given economic system. At the same time, we recognize that it gives only a partial picture of the state’s role in modern society, and we return to this below.

Even within the framework of a mixed capitalist economy, the government has a wide range of instruments at its disposal. These Lectures focus on taxation, public spending, and state participation in production (public enterprises/utilities); but in addition the government may make use of direct controls (e.g., rationing, central planning, zoning, licensing), regulation (e.g., of public utilities in the United States, of prices and wages in many countries), legislation controlling firms (e.g., anti-monopoly, pollution, safety) or unions, and monetary and debt policy (and the reg-

ulation of monetary institutions). These are areas of state activity that are of actual, or potential, importance. What is more, they overlap considerably with the instruments studied here. Thus, in the case of air pollution caused by automobiles, a government may decide to set minimal standards to be followed in automobile manufacture. It could, however, choose to impose taxes related to the amount of pollution, or to subsidize research into the production of pollution-free automobiles. In the same way, monetary and fiscal policy are closely interrelated.

There may therefore be difficulties in drawing precise demarcation lines. The reader also needs to bear in mind that the effects of the instruments considered may depend on other aspects of government activity. The design of taxation or expenditure may rest critically on the availability of other policies. At the same time, the fiscal instruments on which we concentrate in these Lectures are used in a major way in most modern capitalist economies. (In the Note at the end of this Lecture we provide some background evidence on the importance of different instruments.)

## Welfare Economics and Government Intervention

The standard justification of state intervention takes as its starting point the behaviour of the economy in the absence of the government, that is, in the hypothetical situation of a free market economy. From the basic theorems of welfare economics, if this economy is perfectly competitive and there is a full set of markets (conditions discussed in greater detail in Lecture 11), then, assuming that an equilibrium exists, it is Pareto-efficient; i.e., no one can be made better off without someone else being worse off. If it is assumed that social decisions should be based on individual welfare, and that individuals are likely to know better than the government what makes them happy, this creates a presumption that state intervention is not necessary on efficiency grounds. For some, this efficiency argument for decentralization understates the full value of the free market, since they value the right to choose in itself; others believe that there is a relationship between the form of economic organization and political control.

The proposition about the efficiency of competitive equilibrium is used as a reference point to explain the roles of government activity. The first of these is that Pareto efficiency does not ensure that the distribution that emerges from the competitive process is in accord with the prevailing concepts of equity (whatever these may be). One of the primary activities of the government is indeed redistribution. Ideally, this would be achieved through measures that did not destroy the efficiency properties, and much of welfare economics is based on the assumption that non-distortionary (“lump-sum”) taxes and transfers can be carried out. For reasons discussed later, such instruments are not typically available in a sufficiently flexible form, and the government has to employ income and wealth taxes, social security benefits related to unemployment or wages, etc. This introduces a trade-off between equity and efficiency which is one of the themes of Part Two of the book.

Second, the economy may not be perfectly competitive. It is the expressed object of antitrust policy to ensure that firms do not collude or that individual firms do not obtain a sufficiently large share of any market that they can, by restricting their output, increase the price to consumers. But there are some cases where it would be inefficient to have a large number of competing firms. It is widely recognized that in many production processes there is an initial stage of increasing returns to scale. If the point of minimum average costs occurs at so high an output that a single firm would have a significant portion of the market, then, although it might be feasible to divide the firm up into competing units, this would increase costs. Notable examples of such

“natural monopolies” are telephones and electricity. In the absence of government intervention, these industries would be likely to be controlled by a few firms, with consequent monopoly power. Accordingly, governments may control such industries directly (as in the United Kingdom) or regulate them (as in the United States).

One central set of economic activities in which the assumption of increasing returns to scale seems to be particularly important is research and development. There may be competition—in the sense of free entry—in these activities, yet a firm that discovers a new product or a new process has a significant effect on the market, even if only temporarily. There is not the perfect competition of the basic theorems of welfare economics, and the resource allocation generated by the market is not in general Pareto-efficient.

Even if the economy were competitive, it may not ensure a Pareto-efficient allocation of resources. The theorem requires that there be a full set of markets for all relevant dates in the future and for all risks. Typically, a full set of futures and insurance markets does not in fact exist. There may be partial substitutes, for example the stock market, but it can be shown that the allocation remains inefficient in many circumstances, and indeed opening additional markets may worsen the allocation (Newbery and Stiglitz, 1979). Similarly, the theorem presupposes perfect information, or that the information that is available is not affected by the actions of individuals. The analysis of markets with imperfect information has only recently begun, but it is already apparent that the welfare economics theorems need to be modified significantly (Stiglitz, 1980). The presence of imperfect information is likely to confer monopoly power. Where competition is maintained an equilibrium may not exist, and when it does exist it may not be Pareto-efficient.

Furthermore, the basic theorem requires that the full equilibrium should be attained. Yet, because of incomplete markets or imperfect information or other reasons, capitalist economies have frequently been characterized by under-utilization of resources (of a kind that creates a strong presumption of inefficiency). Most dramatic of these failures of the market economy are the fluctuations that periodically lead to substantial unemployment. It is now accepted as a responsibility of the government to ensure a low level of unemployment (although views as to what is acceptably “small” may change over time). More generally, the fact that the market economy can lead to such massive under-utilization of resources calls in question the appropriateness of the competitive equilibrium model. It is not obvious that—as some economists have suggested—once the problem of unemployment has been “solved”, the classical model of the market economy, with its welfare implications, becomes applicable. It is more reasonable to suppose that the problem of unemployment is only the worst symptom of the failure of the market. There are indeed many other examples that suggest the limited applicability of the competitive equilibrium model: persistent shortage of particular skills, balance of payments disequilibria, regional problems, unanticipated inflation, etc.

Even if the economy is well described by the competitive equilibrium model, the outcome may not be efficient because of externalities. There are innumerable examples where the actions of an individual or firm affect others directly (not through the price system). Because economic agents take into account only the direct effects upon themselves, not the effect on others, the decisions they make are likely not to be “efficient”. Air and water pollution are perhaps the most notable examples, and there has been much controversy about the appropriate method of handling these, e.g., regulation, taxes, or subsidies.

A particular category of commodities for which the market will not necessarily ensure the correct supply are public goods, of which defence and basic research are

conventional examples. These have the characteristic that the consumption of these commodities by one individual need not detract from that available to others. (A more precise characterization is provided in Lecture 16.) Some of these goods are specific to particular locations (e.g., the transmission of radio or television), and are referred to as *local* public goods (see Lecture 17).

Finally, there are what Musgrave (1959) has called “merit wants”. This is a category of goods where the state makes a judgement that certain goods are “good” or “bad”, and attempts to encourage the former (e.g., education) and discourage the latter (e.g., alcohol). This is different from the arguments concerning externalities and public goods, in that with merit wants, the “public” judgement differs from the private evaluation, rejecting a purely individualistic view of society. This may lead to public spending on merit goods or taxes on “demerit” goods. The ethical basis of such judgements is a question of some dispute, and some writers have tried to bring such objectives within the framework of individualistic judgements, by extending the latter to include views about the nature of society. Thus, a person may have private interest in reducing the tax on tobacco, since cigarettes enter importantly in his private utility function, but recognize in his social judgements that a reduction in cigarette consumption would be desirable.

From this brief discussion, it should be clear that, even if we accept the basic theorem on the efficiency of the competitive economy as a valuable reference point, there remain important reasons for government intervention. These may be summarized under the following headings: (1) distribution, (2) failure of perfect competition, (3) absence of futures and insurance markets, (4) failure to attain full equilibrium, (5) externalities, (6) public goods, and (7) merit wants.

## View of the State

The value of the welfare economics theorems as a reference point in explaining the role of the government may be questioned, and we need to consider in more detail what is entailed. First, it is not really being assumed that this hypothetical free market situation could be attained in the absence of the government. There is indeed little reason to believe that the market could function in the way assumed in the “no-government economy”: “one description of such a social order, and probably a highly realistic one, would be summarized by the word ‘chaos’” (Buchanan, 1970, p. 3). As we argued at the beginning of this section, the state is essential to the functioning of a modern market economy—to prevent such “chaos” developing—by legitimizing property rights, by controlling monetary and financial operations, by regulating entry to economic activities, etc. The fact that the hypothetical “no-government economy” is unrealistic and unsustainable does not by itself make the construction uninteresting. However, the adoption of this reference point does serve to divert attention from the important fact that the state is an integral part of the economic system. This was recognized clearly by classical writers, but is given little prominence in many treatments of public finance, a neglect that has been criticized both by radical economists and by the modern public choice school.

The view of the government as correcting the “failures” of the market economy may also be attacked on the grounds that it commits the functionalist fallacy of assuming that the logical existence of a role for the state can explain why it came into being and behaves as it does. The welfare economics theorems provide a framework within which we can identify potential functions for the state. It is possible that the recognition of these functions (e.g., the supply of public goods) led to the establishment of state provision, and the development of the government role may indeed

have been influenced by the rationalizations provided by economists. But they could have been motivated by quite different considerations. Understanding what functions governments have assumed in the past, and why, belongs to the “positive” theory of the state—or to the analysis of governments as institutions, rather than as “enlightened” dictators standing aloof from the economic scene.

The examination of the government as an institution, just like a firm or a household, has to take account of the fact that policies are formulated and executed by individuals, and that they in turn are affected in their actions by rules, customs, incentives, etc. They take decisions on the basis of imperfect information and subject to a variety of constraints. Those who control the government (politicians) and those who administer it (bureaucrats) may well have preferences of their own, which guide their activities and conflict with the welfare of individual citizens. The state may act in the class interests of a section of the population, and decisions reflect the relative power of different interest groups. Tax and expenditure policy may be designed more with a view to electoral success, or the goals of an established bureaucracy, than to social welfare maximization.

The analysis of the behaviour of the state is very relevant in determining the desirability of government action. The fact that the market outcome is inefficient or inequitable does not mean that one can deduce that government intervention will necessarily lead to an improvement. Such a deduction has been compared by Stigler to that of the emperor judging a musical competition between two players, who gave the prize to the second having heard only the first. It has to be shown that there exist policies that will solve, or at least alleviate, the problems, and that the government is both willing and able to implement these policies. For example, it has been argued that, although an omniscient minister of finance might be able to stabilize the economy, the imperfect information at his disposal means that government attempts to stabilize may actually be destabilizing.

The “welfare economic” view of the state is therefore one that must be applied with caution. It provides a useful organizational framework, and in what follows we relate methods of government intervention to the different reasons why competitive equilibrium may fail to exist, to be efficient, or to be equitable. Moreover, for those readers who come to the book with a background in economic theory, seeking an introduction to public economics, the development of the subject from the standard theorems of welfare economics is a natural one. At the same time, this approach does not provide a basis for understanding the full role of the state in influencing the economic system, nor does it explain the behaviour of the government as an institution.

## 1–3 Guide to the Lectures

The aim of the descriptive analysis in Part One is to compare two equilibrium situations: before and after a specified combination of policy changes. From this comparison, we can then draw conclusions about the effects of the policy. Does, for example, the impact of a particular measure correspond to its legislated intent? Is policy X equivalent in its effect to policy Y? What is the effect of policy Z on equilibrium quantities and prices? Thus, we ask about the effect of income taxation on labour supply in Lecture 2, on savings in Lecture 3, and on risk-taking in Lecture 4. Similarly, in Lecture 5 we examine the impact of corporation tax on investment by firms. The effects on product and factor prices are particularly relevant to questions of *incidence*—who bears the burden of taxation and who benefits from government

expenditure? Thus, in Lecture 6 we examine the incidence of the corporation profits tax, in terms of the effect on the rate of return (developed further in Lectures 7 and 8). In Lecture 9 we provide an explicit distributional model which can be used to assess the impact of taxation and expenditure on the inequality of incomes.

There are a number of reasons why these “positive” questions are of interest. Some can be directly related to the welfare economic framework. These include the redistributive impact and the effect on private decisions where there are grounds to expect market failure. Thus, if the government feels that the interests of future generations are inadequately taken into consideration, then it may seek tax measures which encourage the accumulation of capital. If the government is concerned with the level of risk-taking, it may wish to know whether the income tax discourages people from the choice of adventurous portfolios. In other cases, the effects on certain variables may enter directly into public debate or decision-making. For example, people may be concerned with the effect of income tax on work effort *per se*.

The specification of the *combination* of policy changes to be considered is important. We typically think in terms of a single instrument—for example, the income tax—but any policy change must in general involve altering at least two instruments. A rise in the income tax rate must be accompanied by changes in other taxes (to leave revenue unchanged), or in expenditure (to maintain a balanced budget), or in debt/monetary policy. (For an extensive discussion, see Musgrave, 1959, Ch. 10.) The choice of offsetting adjustment in other instruments may well affect the comparison of the equilibria before and after the policy change. For this reason, the analysis is best seen as tracing out the opportunity locus for the economy in policy space: i.e., the consequences for the variables of interest of different combinations of policy instruments. The comparison to which we devote particular attention is that holding constant government expenditure, and debt/monetary policy, so that there is equal revenue. This may be seen as holding “public utility” constant; and is contrasted on occasion with holding private utility constant. (We also consider “balanced growth” incidence, and other concepts discussed later.)

The analysis of a specified policy package may be considered in two stages. First, we investigate the impact on the supply and demand functions, i.e., we ask how the behaviour is affected for given values of the factor and commodity prices. We examine in Lectures 2–4 the response of households and in Lecture 5 that of firms. This provides building blocks for the second stage—the general equilibrium analysis presented in Lectures 6–9. This gives a fuller picture of the effects of policy, allowing for the changes in factor and product prices; this generality is however achieved at the expense of a less rich treatment at the sectoral level. The two levels of analysis are therefore complementary.

After investigating the behaviour of the private economy, we turn to the behaviour of the state. Lectures 10 and 11 serve to bridge the two parts of the book. The former is concerned with the “positive” analysis of the government, seeking to close the system by making the state’s decisions endogenous rather than exogenous. Whereas in Lectures 2–9 changes in taxes and expenditure are assumed to come from outside, in Lecture 10 we examine models in which public decisions are influenced by voters, political parties, legislators, and administrators.

Lecture 11 provides an introduction to Part Two. It describes some of the ways in which the objectives of the government have been formulated and the resulting criteria for decision-making. The ensuing Lectures apply these criteria to a range of issues in the design of tax and expenditure policy. Lecture 12 is concerned with the structure of indirect taxation. Given that a certain amount of revenue has to be raised by indirect taxes, should the rates be uniform on all goods or differentiated?

Lecture 13 asks similar questions about the design of income taxation and the degree of progression. These two aspects are brought together in Lecture 14, on the balance between direct and indirect taxation, which also broadens the analysis to cover the tax treatment of savings and externalities. Lecture 15 deals with public enterprise policy, Lecture 16 with public goods, and Lecture 17 with local public goods.

In this normative section, the aim is not to provide definite policy recommendations but rather to examine the structure of arguments. It is a misunderstanding of the purpose of this literature to suppose that it can yield answers such as “the optimal tax rate is 35 per cent”. What it tries to do is to examine such statements as “we should not have differential taxes because this distorts consumer choice” and to show that, for example, if by “distortion” is meant causing additional loss of welfare to the individual, then this statement is correct only in certain special circumstances. Similarly, the normative analysis seeks to investigate the sensitivity of the policies chosen to the formulation of objectives (for example, the weight attached to redistribution) and to the instruments available to the government. The intention is to illuminate debate about policy rather than to contribute to the formulation of policy itself. In the final Lecture, 18, we consider a selection of current issues and the ways in which the analysis may be of assistance in thinking about policy.

## Theoretical Framework

This book is not intended to be a treatise on pure economic theory (although we have tried to introduce some recent developments—for example, the expenditure function—and notes are appended to certain Lectures for this purpose). At the same time, the theoretical framework is an essential element. In the past, public finance has tended to lag behind best-practice economic theory, and this is still true in certain respects today.

The theoretical framework that has been increasingly adopted in modern public finance is the competitive general equilibrium model set out definitively in Debreu’s *Theory of Value* (1959). The model, albeit in highly simplified form, has been widely applied to questions of incidence (as in Lecture 6), and it underlies much of the treatment of normative questions (Part Two). In these Lectures, we have focused on this model because it represents the most fully articulated view of the workings of the modern capitalist economy. We should however emphasize our misgivings about its appropriateness in many circumstances. Recent theoretical work, concerned with non-convexities, imperfect competition and disequilibrium behaviour, has brought out the special nature of many of the results and suggested that the model may not be particularly robust. At a number of points, we have tried to show (e.g., in Lecture 7) how alternative assumptions may affect the conclusions drawn.

The reader should therefore bear in mind throughout the Lectures that the study of public policy can be no more firmly based than the economic theory on which it draws, and that the development of public economics is limited in crucial ways by the shortcomings of competitive equilibrium analysis. Moreover, advances in economic theory may involve discrete changes in the nature of the models employed. Although the mainstream research strategy has been to work sequentially, relaxing one assumption at a time, the alternative theory that emerges may have a totally different form. For example, dropping the assumption of perfect information leads naturally to the consideration of models in which non-convexities and imperfect competition play a crucial role. Thus, the relaxation of one assumption may entail other departures from the *Theory of Value* framework. From a different standpoint, radical economists argue that what is needed is a total reconstruction of economic theory.

## Features of the Analysis

Certain themes recur throughout our discussion of different areas of policy, and it may be helpful to highlight the most important here.

In the positive analysis of taxation, we stress the dependence of the results on the precise features of the tax system. This is quite obvious to practitioners—and the details of the tax system are covered extensively in many public finance textbooks. There is however a tendency for theoretical analysis to represent taxes in an oversimplified form and thus to miss essential features. A good example is provided by the corporation tax, where the impact depends crucially on the provisions for interest deductibility, for depreciation, and on the relationship between the corporate and personal tax systems. Another example is provided by the complicated budget constraints which result from the interaction of income taxation and social security benefits (see, for instance, Fig. 2–2). In this book we do not seek to go into detail on such things as the US Tax Reduction and Simplification Act, 1977, or to initiate readers into the mysteries of Subsection (l) (b), Schedule 45 of the UK Finance Act, 1975. On the other hand, we have devoted attention to features with considerable economic significance such as the provisions for loss offsets, interest deductibility, the treatment of different types of income, etc.

A second feature of the positive analysis is the emphasis on empirical evidence and the use of econometric techniques. Thus, in Lectures 2–5 we discuss the evidence available from three main sources: interview studies, econometric analysis of observed behaviour, and experiments. Considerable progress has been made in recent years, particularly in the case of the latter two types of evidence. At the same time, the problems in obtaining reliable data and interpreting the results are such that it is at present difficult to draw definitive conclusions. Once again, resolution of issues in public economics depends on progress being made in other fields.

In both positive and normative sections of the book, we emphasize the distributional aspects of public policy. For example, much of the theoretical analysis of income taxation has considered a single representative individual. This provides considerable insight, but does not get to the heart of the purpose of income taxation, which is to distribute a given tax burden according to differences in endowments. At a general equilibrium level, analysis of redistribution involves the construction of models that allow us to predict the effects of policy changes not just on aggregate variables (total wealth) but also on the distribution (the Lorenz curve for wealth). This is inherently more difficult. When it comes to the optimal design of taxation (Lectures 12–14), we argue that differences in endowments are an essential aspect of the formulation, since without such differences the problem is an artificial one.

The normative analysis may be seen as an exercise in the economics of second-best. Suppose that a first-best allocation is not attainable (for example, because the necessary lump-sum taxes for redistribution are precluded). The government has then to design a second-best policy with an eye to balancing equity goals against efficiency losses. This is of course a familiar problem. We do however stress three aspects that have tended to be overlooked. The first is the dependence of the optimal solution on the instruments available to the government—what taxes and expenditure policies are feasible. The nature of the solution may be critically dependent on whether or not a particular form of taxation can be employed. It is essential therefore to consider the information available to the government, the incentives for individuals to reveal information (e.g., about their endowments or about their preferences for public goods), and the constraints on the government's actions (e.g., those imposed by considerations of horizontal equity). The second aspect is the relationship between

the solution and differences in objectives. The second-best problems of public economics have provided considerable insight into the implications of different principles, e.g., the precise meaning of horizontal equity, and the extent to which the difference principle of Rawls (1971) is egalitarian. The third aspect is a more technical one: the ill-behaved nature of many of the second-best maximization problems. In contrast to what is commonly assumed in economics, the problems are not necessarily convex; this adds further complexity to an already complicated subject.

In the above we have tried to give some flavour of the approach adopted; in the course of the Lectures, we use the sections headed “Concluding Comments” to underline the main features of the analysis—and indicate the need for further developments.

## **Note: The Public Sector—Statistical Background**

This note provides a brief introduction to the quantitative importance of the government sector and of different forms of taxation and expenditure. It is primarily intended for the reader coming new to the subject of public finance, and makes no attempt to go into detail.

### **Size of the Public Sector**

In order to give a quantitative impression of the government budget, we need to deal with a number of definitional questions. First, what do we mean by the “public sector”? For some categories of expenditure, like defence, there is no doubt that they should be included. But many of the activities of the government are very much like private activities. Government enterprises are a case in point; for example, in the United States the Tennessee Valley Authority, the Federal Housing Agency, and the Atomic Energy Authority are all autonomous agencies, and could well be treated as part of the private sector. It depends whether one is concerned with marketed versus non-marketed output or with the extent of government control (or with other criteria). When the extent of coverage has been determined, there remains the question of the appropriate indicator of the magnitude of government activity. For example, when output is marketed, should total sales be included under revenue, and their total outlays under expenditure, or should only the net subsidy be shown as a government expenditure, and the net receipt (if there is a profit) on the revenue side? Should the magnitude of a government loan programme be measured by the values of loans advanced or by the implicit subsidy? Even if the principles of classification criterion are decided, the application is likely to involve ambiguity. If the government sets up a self-financing, independent retirement insurance programme, should this be included in the private sector? If the government regulates a private retirement insurance programme, so that its degree of autonomy is severely limited, should this be treated as in the public sector?

Second, in the case of goods and services provided by the government (e.g., defence or public education) we have to take account of the fact that the value of government expenditure on goods and services is conventionally measured by the value of the inputs rather than the value of outputs. What is measured, in other words, is the market cost of the resources used by the government sector.<sup>1</sup> This is not however fully

<sup>1</sup> There may be exceptions where the government expenditures do not measure the cost of the resources used, for example, then the government obtains services by compulsion as with the military draft, the

satisfactory. Whereas for most private goods we can ascertain individuals' relative evaluation of different commodities from the market prices, obtaining a comparable measure of the value of government services is less straightforward. Indeed, some people would assert that for some services (e.g., wars in Southeast Asia) the value is negative.

Third, transfer payments are excluded from national income on the grounds that they are simply a redistribution. If one is concerned with the direct *use* of real resources by the state sector, then transfers should also be excluded from government spending. On the other hand, it may be argued that this underestimates the true scope of government activity and that we should take a measure "gross" of transfers. The difficulty with this is the essential arbitrariness in what one calls a transfer payment. For instance, suppose the government pays a cash benefit with respect to all children. This is recorded as public expenditure. On the other hand, if the government gave a cashable tax credit, only those with tax liabilities less than the child benefit would actually receive money from the government, and the apparent expenditure would be much less than in the previous case. The two systems are, except for paperwork, fully equivalent, yet the size of the government budget looks different.<sup>2</sup> Similar problems are raised by preferential tax treatments and subsidies. If the government subsidizes an industry by not taxing it, revenue is reduced, while if the government provides a cash subsidy, there is an increase in expenditure. (Many economists have argued recently for the explicit accounting of such "tax expenditures".)

The rehearsal of these familiar difficulties shows that there are a number of different ways in which the size of the public sector can be measured (e.g., including or excluding capital items, including or excluding transfer payments), and that there is a substantial element of arbitrariness in any definition. This is the main reason why the figures for the magnitude of public spending as a percentage of gross national product (GNP) quoted in public debate appear to differ so widely.<sup>3</sup> Moreover, the same applies to a measure based on tax revenues, as the examples given earlier (e.g., of the child benefit) indicate.

Any quantitative assessment of the magnitude of the public sector must therefore be regarded with considerable caution, and evidence of the kind given in Figs. 1-1 and 1-2 considered with this qualification in mind. These figures show respectively government expenditure proportions in the United States and the United Kingdom since 1890, and the taxation shares (in gross domestic product) for the main OECD countries, as well as a broad breakdown by type of taxes. The basic variables in Fig. 1-1 are total government spending, excluding public corporations, and total spending on goods and services, each expressed as a percentage of GNP at factor cost. (The figures are for selected years and are not designed to show year-by-year changes.)

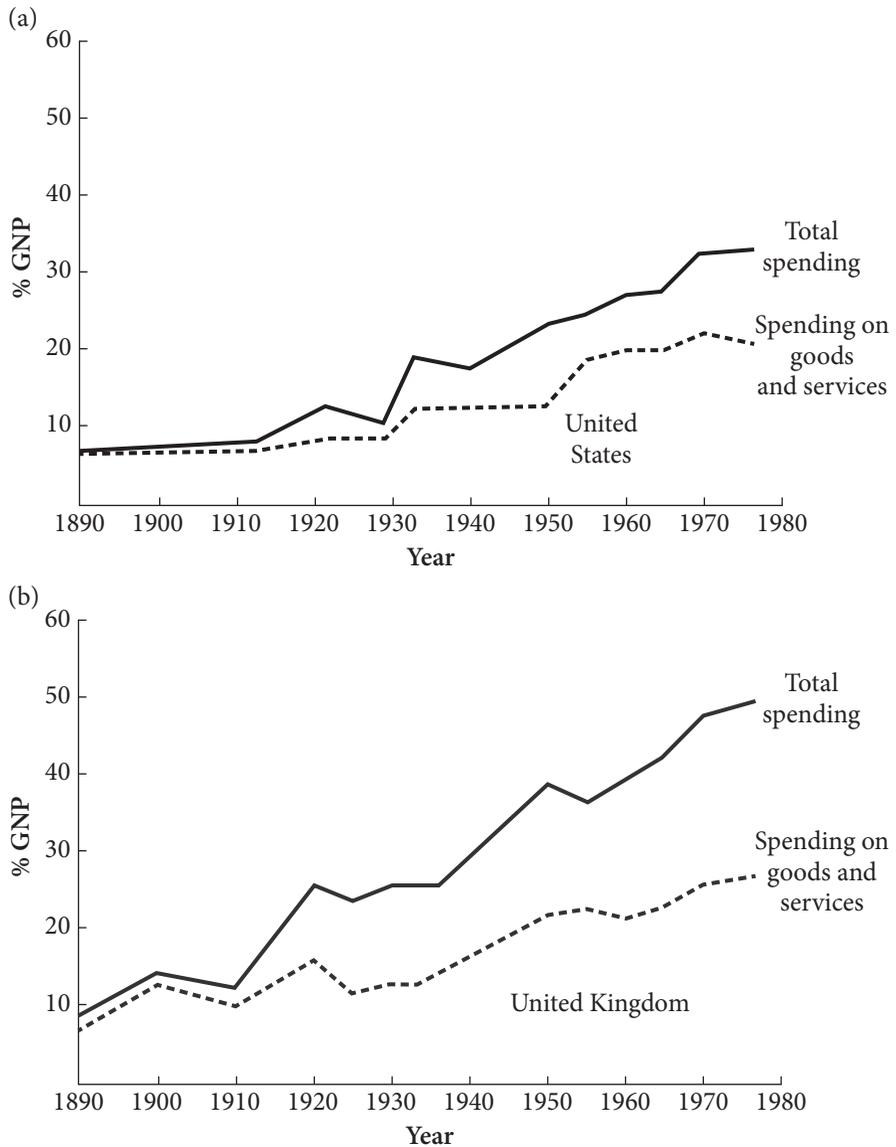
Given the difficulties described above, only the broadest of conclusions can be drawn, but it is apparent that the magnitude of the state budget is substantial, measured in terms either of total spending (or taxation) or of the absorption of

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reason for compulsion being that the wage paid is less than that at which individuals are willing to supply their services. Thus, the defence budget may underestimate the value of the inputs it uses. More generally, the opportunity cost may depart from the market price, for example, when factors are unemployed.

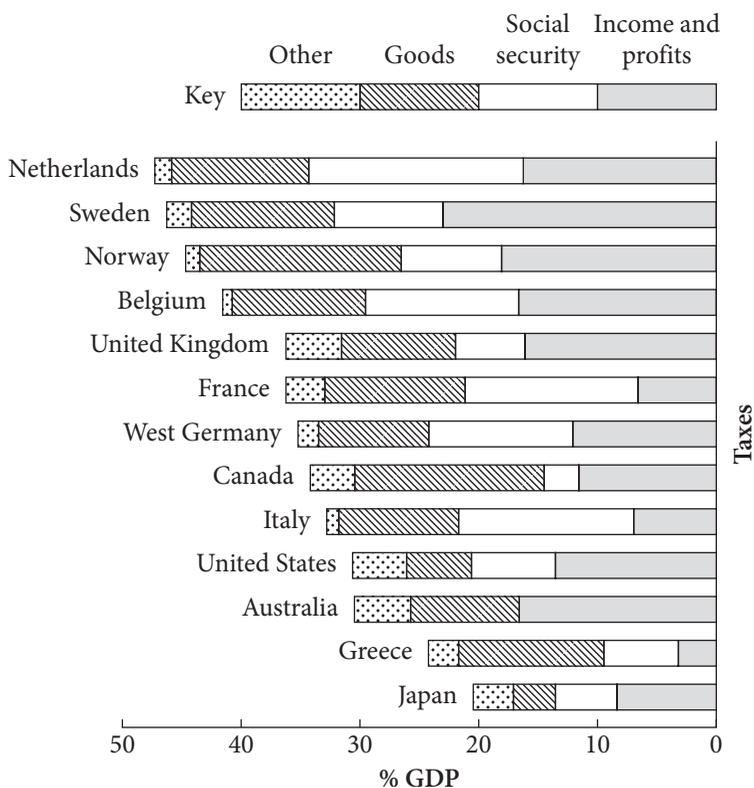
<sup>2</sup> Similarly, how should we treat interest on the national debt, which is also often excluded as being a "transfer"? There are arguments in favour of excluding it; on the other hand, why should bonds be treated differently from rentals of post offices, which also are transfer payments in this sense?

<sup>3</sup> For example, for the United Kingdom the public sector in 1975 could have been represented as 58 per cent of GNP (at factor prices) or 24 per cent, the former figure including public corporations, capital outlay, debt interest, and transfers, the latter excluding them.



**Figure 1-1** Growth of public spending in the United States and United Kingdom. (Sources: (a) United States total spending 1890–1950 from Musgrave and Musgrave (1976, Table 6–2). Spending on Goods and Services 1890–1950 from *Long Term Economic Growth*, US Department of Commerce, 1966, basic data. Figures 1950–77 from *Economic Report of the President*, US Government Printing Office, various years. (b) United Kingdom figures 1890–1950 from Peacock and Wiseman (1967, Tables A-6 and A-12). Figures 1950–77 from *National Income and Expenditure*, Central Statistical Office, various years.)

real goods and services. Taking the figures at face value, we can see that the United Kingdom is shown as having had a higher level of spending (relative to GNP) than the United States over the whole of this century. In both countries there has been a large increase over the period in spending as a proportion of GNP. The tax shares in the thirteen OECD countries shown in Fig. 1-2 exhibit a considerable range: from 20 per cent to nearly 50 per cent. Some of the hypotheses that have been advanced to explain



**Figure 1-2** Tax revenues in different countries (percentages of GDP at market prices), 1975. (Source: *Revenue Statistics of OECD Member Countries 1965–1975*, OECD, 1977, Tables 3 and 6.)

the development of the public sector over time and its variation across societies are discussed in Lecture 10.

## Structure of Taxation

Problems of definition arise also when we consider the breakdown of expenditure and tax revenue, and any classification involves a degree of judgement in its application. Thus, the distinction between an income tax and a social security tax may not be one of great substance as far as economic effects are concerned, but this involves taking a view about the likely incidence of the taxes. Here we retain the conventional categories, largely derived from administrative practice, and postpone any discussion of their economic significance.

In Table 1-1 we show for the United States the sources of revenue as a percentage of the total in 1977. The table covers federal, state, and local levels of government. We have first listed those taxes (“benefit taxes”) and charges that are closely linked with particular government services, e.g., highways at the federal level and at the local level, fuel taxes, and charges for the provision of local public services. As we have noted earlier, it is debatable whether we should include “gross” measures of federal receipts or restrict ourselves to the net profit (or loss).

General taxes are divided in Table 1-1 into two categories: taxes on factors and taxes on commodities (outputs). The former may differentiate among different sources of

**Table 1–1 United States tax revenues**

		Percentage of total revenue in 1977		
		Federal	State and local	Total
Factor taxes	I Benefit taxes or charges	1.2	3.8	5.0
	II Individual income tax	26.9	5.1	32.0
	III Wage taxes (social security)	19.7	3.6	23.3
	IV Capital taxes			
	Property	—	10.6	10.6
	Profits	10.2	1.7	11.9
	V Estate taxes	1.2	0.4	1.6
Commodity taxes	VI Sales taxes	1.7	10.6	12.3
	VII Customs duties	0.9	—	0.9
Total*		62.1	37.9	100

Source: *Survey of Current Business*, US Department of Commerce, July 1978, Tables 3.2 and 3.4.

\* Includes certain items not identified above.

income; commodity taxes may differentiate among different uses. Historically, the major source of revenue at the federal level has been the general income tax and this is reflected in the space devoted to the income tax in Lectures 2–4. At the same time, social security wage taxes have increased very substantially in recent years. These special taxes on wages in 1977 exceeded (at the federal level) those on capital (category IV). (The implications of differential factor taxes are discussed in a general equilibrium context in Lectures 6–8.) The most significant tax specifically on capital is the corporation tax. The estate taxes are another type of capital tax—on wealth that is not consumed in the individual’s lifetime. The fact that the revenue is a relatively small percentage does not mean that it has no important economic effects (a tax set at prohibitive rates would raise no revenue at all). Like other taxes, they may have strong incentive effects in encouraging certain activities and discouraging others. At the state and local level, the most significant tax in this group is the property tax. The nature of this tax has given rise to considerable debate but we have classified it here as a capital tax.

Taxes on commodities are particularly important for state and local governments, accounting for nearly a third of their revenue. At the federal level, duties on spirits and tobacco are two of the larger commodity taxes; the rationale for this is perhaps that these are “evils” which should be discouraged—the “demerit” goods referred to earlier. Alternatively, there is the view that they impose externalities, e.g., drunken driving, health costs, etc. The tax is then an attempt to bring the private cost into accord with social cost—as discussed in Lecture 14. It is unlikely however

that externalities would justify the present tax rates; probably more important is the feeling that alcohol, tobacco, and other taxed commodities (e.g., perfume) are luxuries; the fact that the individual can purchase these is a better measure of his true state of wellbeing than just income alone.

The differing tax structure in different countries is illustrated for 1975 in Fig. 1–2. Inter-country comparisons need again to be made with caution, but it appears that taxes on income and profits are more important in the Anglo-Saxon and Scandinavian countries, and social security contributions larger in Belgium, France, Germany, Italy and the Netherlands. Taxes on goods and services are relatively small in both the United States and Japan, and more significant in the EEC countries.

## Structure of Expenditure

The classification of expenditure is again a matter where there is considerable scope for judgement. In Table 1–2 we show the percentage of total expenditure accounted for by different programmes in the United States, where these largely correspond to administrative categories rather than having clear functional significance.

**Table 1–2 Public expenditure by type and level of government in United States in 1977**

	Percentage of total expenditure	
	Federal (%)	State and local (%)
National defence and related	16.5	—
International affairs	0.8	—
Space research and technology	0.6	—
Education and manpower	1.0	17.7
Income maintenance	21.2	6.1
Veterans	3.1	—
Health and hospitals	0.8	3.9
Transportation	1.6	3.7
Commerce (regulation and promotion of business)	—	0.3
Agriculture and rural development	1.4	0.3
Natural resources and environment	0.8	1.2
Housing and community development	0.6	—
Police, prisons and fire	—	3.2
Sewerage and sanitation	—	1.3
Administration and justice	2.5	4.3
Interest	4.7	–1.0
<b>Total*</b>	<b>57.1</b>	<b>42.9</b>

Source: *Survey of Current Business*, US Department of Commerce, July 1978, Table 3.14.

—denotes less than 0.25 per cent (in some cases no spending under this heading at this level of government).

\* Includes other items not listed.

The table is broken down by level of government, and it can be seen that over half of all spending was carried out by the federal administration (spending is allocated to the level responsible for the outlay; a substantial part may be financed by inter-governmental grants). The major items at the federal level are national defence and income maintenance, which together account for some two-thirds of total federal expenditures. The next largest item is debt interest. State and local governments are concerned mainly with education, health, transportation, income maintenance (welfare), and the provision of such local services as police, fire, and sanitation.

The reader may like to consider how the categories of expenditure listed in Table 1–2 can be related to the reasons for government intervention discussed in Section 1–2 and summarized on page 7. In particular, how do different items serve the functions of (1) redistribution, (2) antimonopoly (regulation and public enterprises), (3) correcting for the absence of futures and insurance markets, (4) eliminating persistent disequilibria, (5) correcting externalities, (6) providing public goods, and (7) merit wants? (N.B. expenditures can perform several functions.)