4 Public Sector Statistics

4.1 Introduction

In 1913 the Sixteenth Amendment to the US Constitution gave Congress the legal authority to tax income. In so doing, it made income taxation a permanent feature of the US tax system and provided a significant source of additional tax revenues. Revenue collection passed the $1 billion mark in 1918, increased to $5.4 billion by 1920, and reached $43 billion in 1945. It was not until the tax cut of 1981 that this process of growth showed any marked sign of slowing. This growth in tax revenue was matched by an equal growth in government expenditure. The US experience is typical of similar developments in all industrialized economies.

This chapter provides a statistical overview of the public sector in modern market economies. Data are presented on government expenditure and revenue. The purpose is to give both a historical perspective and an insight into the current situation.

From the numerous items of expenditure and sources of revenue, we can observe the extent and range of activities in which the public sector is involved. A surprising feature that the data reveals is the similarity in public sector behavior in countries that are otherwise very diverse culturally. Specifically, the difference in the size of the public sector between the social-market economies of northern Europe and the free-market economies of North America and Asia is rather less than might be imagined.

4.2 Historical Development

The historical development of the public sector over the past century can be summarized as one of significant growth. For the typical industrially developed economy, government expenditure was only a small proportion of the gross domestic product (GDP) at the start of the twentieth century. Expenditure then rose steadily over the next sixty years, leveling out toward the end of the century. The details behind this broad-brush description are illustrated in the figures that follow.

Figure 4.1 shows the growth of public spending during the last century for five developed economies. This depicts expenditure as a percentage of gross domestic product to give an idea of the size of the public sector relative to the economy as a whole. Only a selection of years is plotted, but the figure provides a clear impression of the overall trend. Although there is a persistent difference in the levels of expenditure

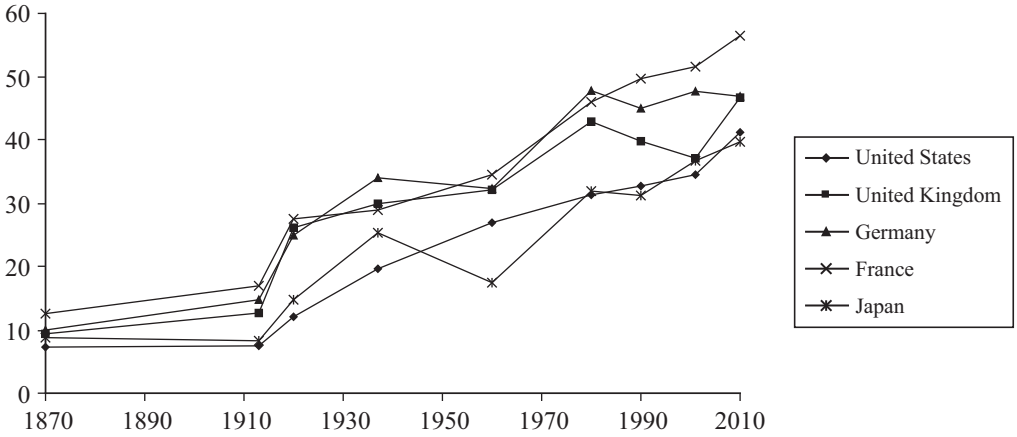


Figure 4.1
Total expenditure, 1870 to 2010 (% of GDP)

among the three European countries (France, Germany, and United Kingdom) and the non-European countries (Japan and United States) the pattern of growth is the same for all. These five economies had a clear long-run upward path in public spending relative to the gross domestic product. Starting with a level of public spending around 10 percent of the gross domestic product in 1870, this increased markedly around 1910 and then continued to rise afterward. In 1996 the United States had the lowest public spending level of the five countries at 32.4 percent, but even this is one-third of the gross domestic product. France had the highest level at 55 percent. A number of explanations for this long-run increase have been proposed. These explanations are presented in chapter 5.

A more detailed view of the changes in the level of expenditure over the last thirty years is provided in figure 4.2. The picture displayed is of a slowing, or even a stagnation, of the growth in public sector expenditure, particularly over the past twenty years. Although expenditure was higher in 2007 than in 1970 for the six countries shown, the increases for the United Kingdom and the United States were very small (from 38.8 to 43.9 percent for the United Kingdom and from 31.7 to 36.9 percent for the United States). For the United Kingdom especially, expenditure was clearly higher in the early 1980s (peaking at 47.5 percent in 1981) than in 2007. This picture was changed significantly by the financial crisis. Expenditure rose sharply for all the countries between 2008 and 2009 as the governments increased spending to reflate their economies. There has been a small fall in expenditure since the peak in 2009, but it remains at a level about that of 2007. Overall, the figure suggests that there has been convergence in

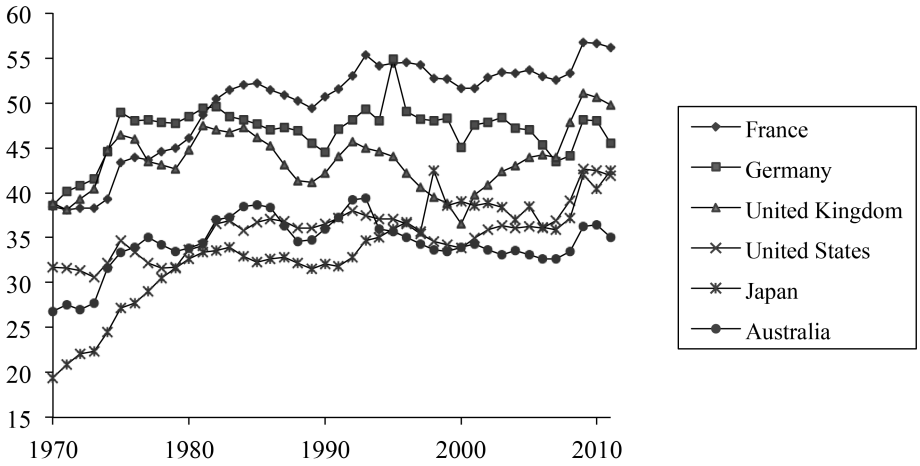
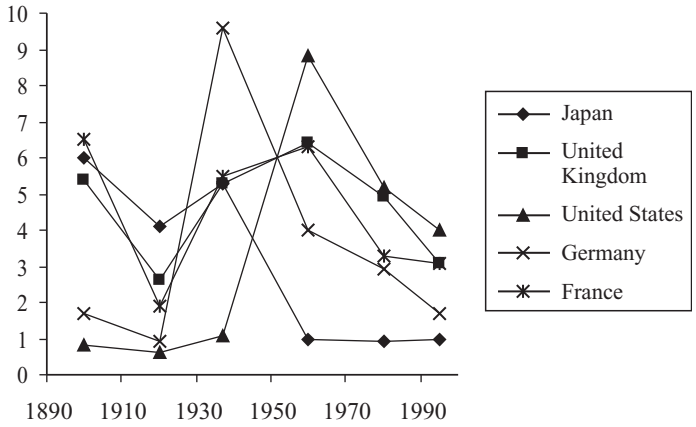


Figure 4.2
Total expenditure, 1970 to 2011 (% of GDP)

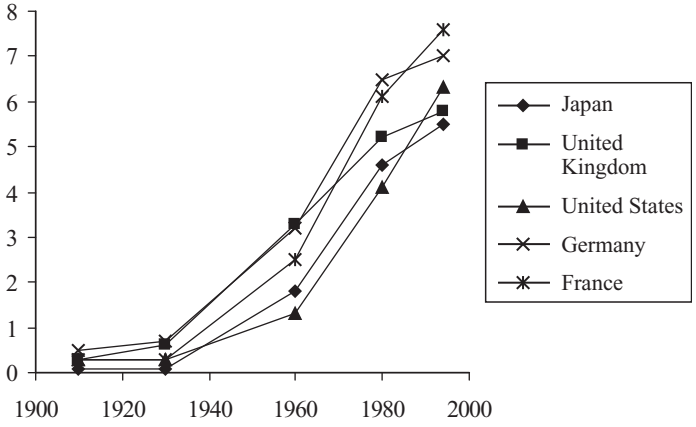
the level of expenditure between the countries. For example, in 1970, expenditure in Japan was approximately half that in France, Germany, and the United Kingdom, but by 2002, it had reached 38.8 percent in Japan and almost matched that in the United Kingdom. The gap has widened again since (to 6.3 percentage points), as the United Kingdom has been affected more than Japan by the financial crisis.

Figure 4.3 shows the path of expenditure in selected subcategories of public spending during the last century, again expressed as a percentage of gross domestic product. This breakdown into categories is helpful in understanding the composition of the long-run increase in figure 4.1. Defense spending constituted one of the largest items of public spending in the late nineteenth century. It has since been somewhat erratic and driven in large part by the history of international relations. In all cases defense spending peaked at midcentury and has fallen continually since. In 1996 the United States spent the largest proportion its gross domestic product on defense (4 percent).

The most marked rises have come from social spending on items such as education, health, and pensions. Expenditure on education and pensions has risen sharply as a share of the gross domestic product in all five countries since the early twentieth century but particularly so since midcentury (and perhaps slightly earlier in the United Kingdom). In all five countries it is currently around 5 percent of the gross domestic product. Health expenditure has risen more rapidly. Even in the United States, which has a primarily private health care system, the public sector expenditure on health was 6.3 percent of the gross domestic product in 1994. The significant increase in expenditure on pensions is



a. Defense

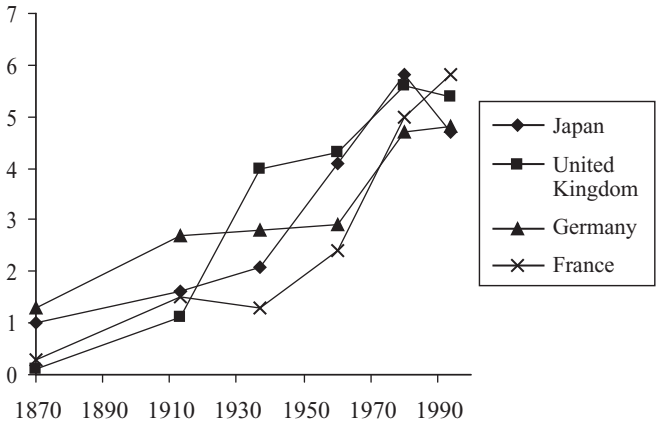


c. Health

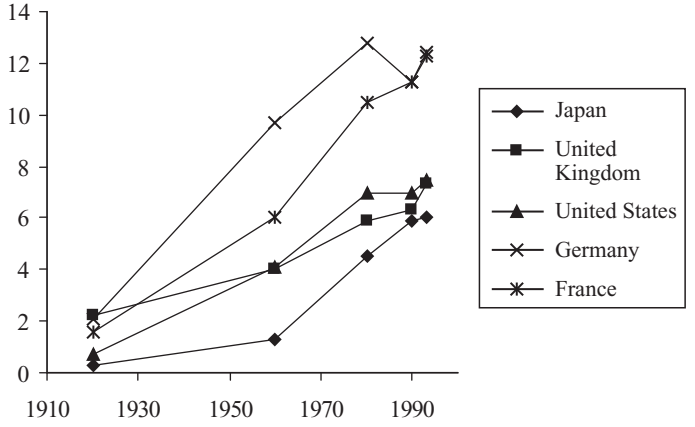
Figure 4.3
Individual expenditure items (% of GDP)

important from a policy perspective. As discussed further in chapter 23, many countries are facing a "pensions crisis" in which the current rate of expenditure on state pensions is unsustainable. The basis of this is clearly apparent in the rate of expenditure increase in France and Germany.

Data on public sector expenditure for a wider range of countries in 2010 is given in figure 4.4. This includes developed, developing, and transition economies. The figure clearly justifies the claim that the public sector is significant in countries across the world. France has the highest level of public sector expenditure (at 56.6 percent) and



b. Education



d. Pensions

Figure 4.3
(Continued)

Korea the lowest (at 21 percent). All have "mixed economies" characterized by substantial government involvement. They are clearly not free-market economies with minimal government intervention. These values for the size of the public sector emphasize the importance of studying how government should best choose its means of revenue collection and its allocation of expenditure.

As a final point, it is worth noting that data on expenditures typically understate the full influence of the public sector on the economy. For instance, regulations such as employment laws and safety standards affect economic activity but do not directly

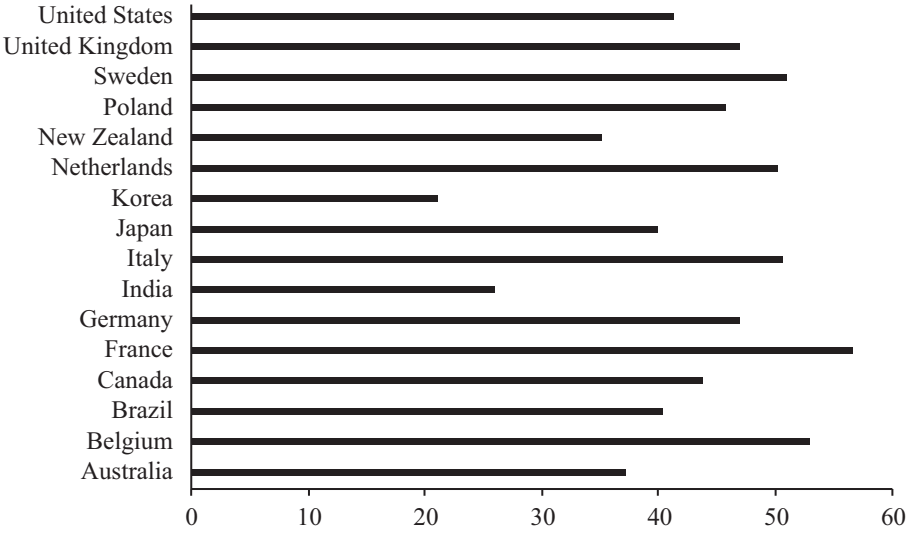


Figure 4.4
Government expenditure, 2010 (% of GDP)

generate any measurable government expenditure or income. Analysis of statistics on government expenditures do not therefore capture the effects of such policies. This point is explored further in section 4.6.

4.3 Composition of Expenditure

The historical data display the broad trend in public expenditure. This section looks in more detail at the composition of expenditure. Expenditure is considered from the perspective of its allocation between various levels of government and its division into categories.

Figure 4.5 allocates expenditures among the different levels of government (net of all transfers between levels). The significant difference between the United Kingdom, which has no expenditures at the state level, and Germany and the United States is explained by their political structures. Germany and the United States are *federal countries* that have central government, state government, and local government. In contrast, the United Kingdom is a *unitary country* that has only central and local governments. The figures reveal that expenditure at the state level is similar in Germany and the United States (20 and 22 percent respectively), although local government is

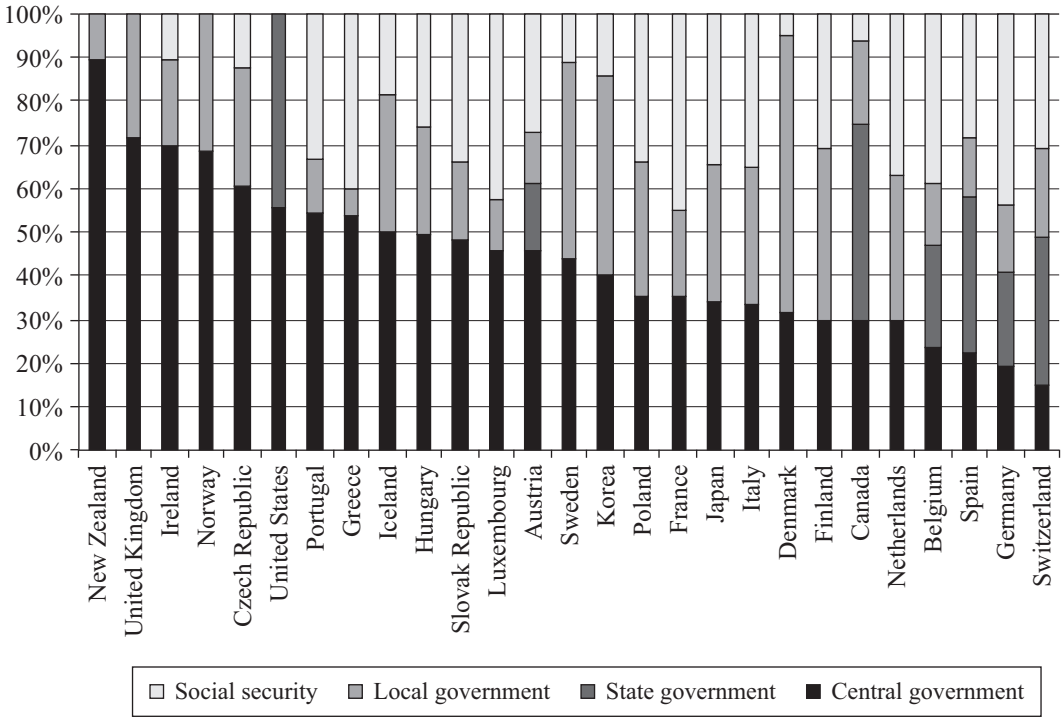


Figure 4.5
Share of expenditure by levels of government, 2009

larger in the United States (26 percent compared to 15 percent). Despite the different political structure in the United Kingdom, the proportion of expenditure at the local level is identical to that in the United States (26 percent). By definition, central expenditure in the United Kingdom (73 percent) is then equal to the proportions of central plus state in the United States.

Figure 4.6 displays the different compositions of general spending in the United States, United Kingdom, and Germany. The diversity of public sector activity is clear from the list of spending categories. Interestingly, spending on the goods associated with the core functions of the state—defense and public order—is relatively minor and forms about 10 percent of spending when averaged across the countries. Administrative and governmental costs are recorded under the heading of general public services and add no more than another 12 percent on average.

Health and education, despite providing benefits of an arguably largely private nature, are substantial in all three countries (e.g., education is 17 percent and health 21 percent

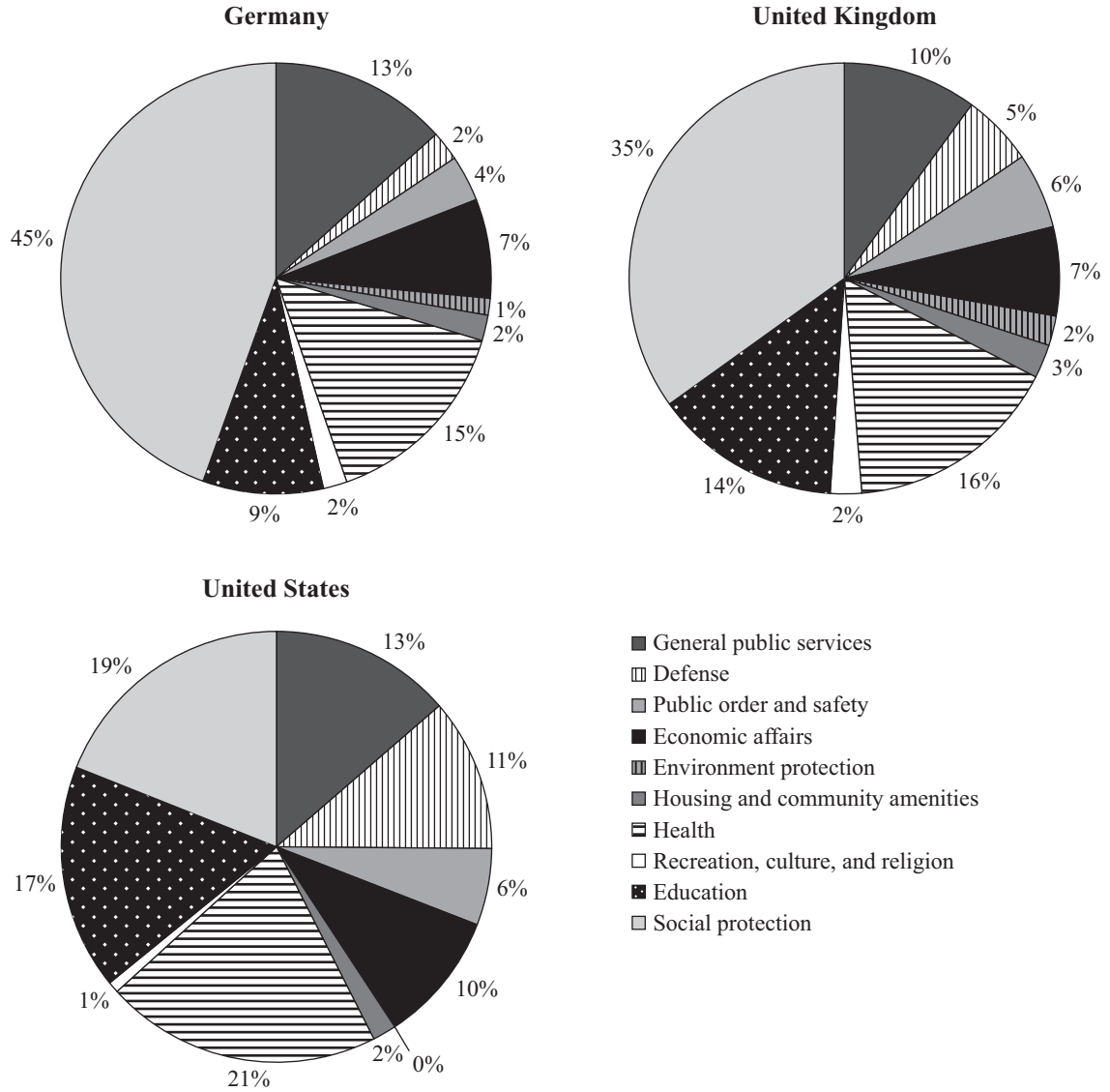


Figure 4.6
Composition of general spending, 2007

in the United States). Spending on housing and community amenities, on recreation and culture, and on transport and communications sectors are comparatively small. Subsidies to the agriculture, energy, mining, manufacturing, and construction sectors are brought together here under the heading of other economic affairs and also appear relatively minor. Social security and welfare spending is the largest single item in all countries under this classification. This is so even in the United States where, at 19 percent, it is noticeably smaller than in Germany and the United Kingdom (44 and 35 percent respectively). Averaged across the three countries it constitutes over a third of spending.

Figures 4.7 to 4.9 show how spending responsibilities are allocated among different tiers of government in the United States, United Kingdom, and Germany. This provides an interesting contrast between the two federal countries (Germany and the United States) as compared with the unitary country (United Kingdom). Yet, even though the political structures are significantly different, some common features can be observed. Certain items such as defense are always allocated to the center. Redistributive functions also tend to be concentrated centrally, for the good reason that redistribution between poor and rich regions is only possible in that way and also because attempts at redistribution at lower levels are vulnerable to frustration through migration of richer individuals away from localities with internally redistributive programs. Education, in contrast, is largely devolved to lower levels, either to the states or to local government. Public order is also typically dealt with at lower levels. Health spending is always substantial at the central level but can also be important at lower tiers, as in Germany.

The fact that spending is made at a lower level need not mean that it is financed from taxes levied locally. In most multiple-tier systems the central government partly finances lower tier functions by means of grants. These have many purposes, including correcting for imbalances in resources among localities and among tiers given the chosen allocation of tax instruments. Sometimes grants are lump sum, and sometimes they depend on the spending activities of the lower tiers. In the latter case the incentives of lower tiers to spend can be changed by the design of the grant formula, and central government can use this as a way to encourage recognition of externalities between localities.

4.4 Revenue

The discussion of public sector expenditure is now matched by a discussion of revenue. The following figures first trace the historical path of tax revenues and then relate revenues to different tax instruments and to alternative levels of government.

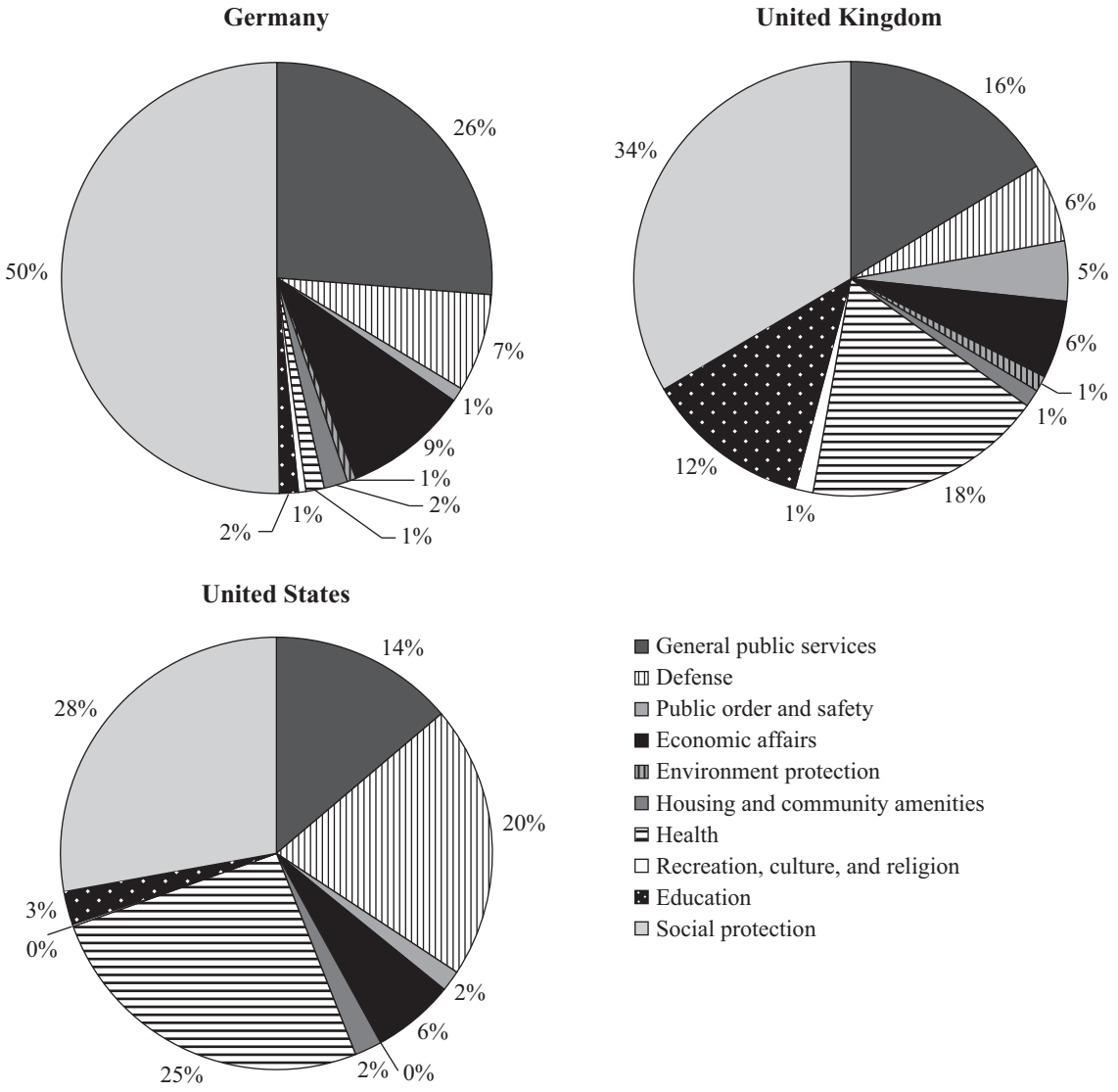


Figure 4.7
Composition of central spending

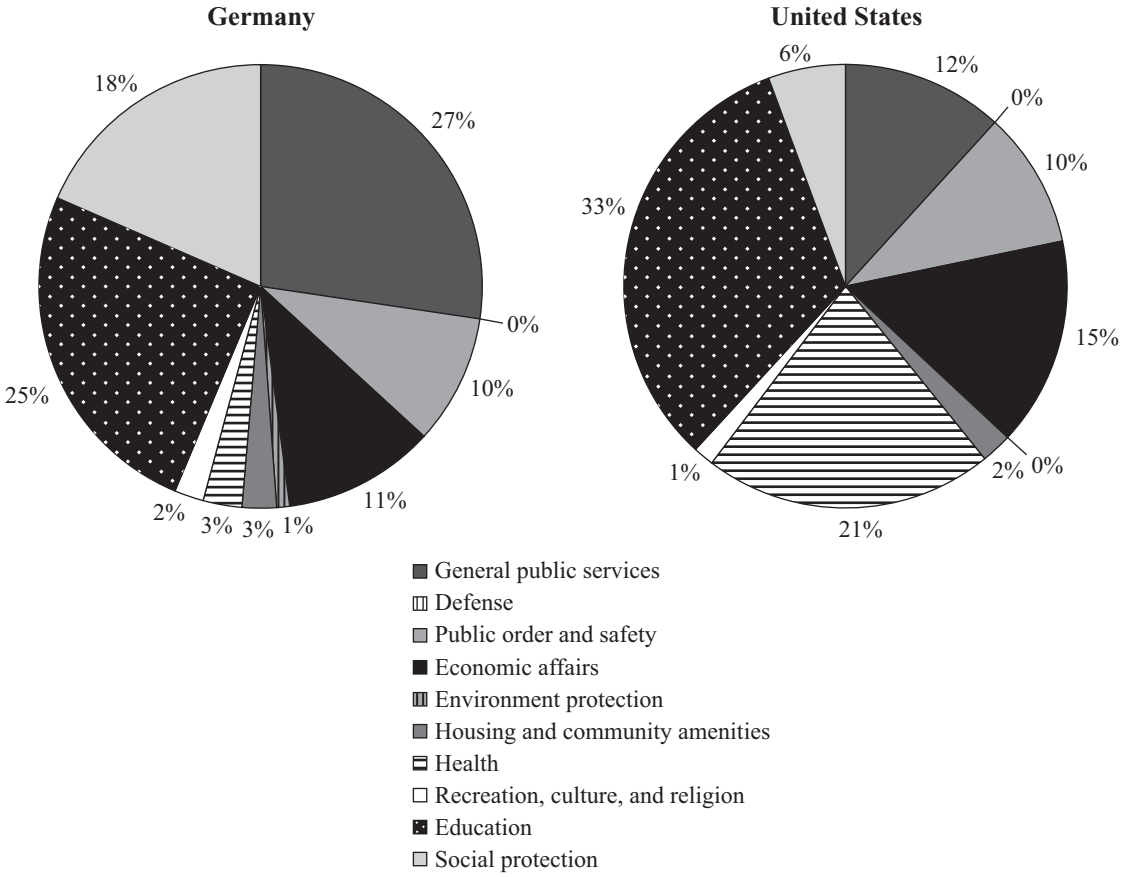


Figure 4.8
Composition of state spending

The first set of statistics consider the growth of total tax revenue from 1965 to 2009. Figure 4.10 charts total tax revenue for seven countries expressed as a percentage of the gross domestic product. The general picture that emerges from this mirrors that drawn from the expenditure data. All of the countries have witnessed some growth in tax revenue over the period, and there has also been a degree of convergence. The financial crisis and resulting recession have caused tax revenues to fall from 2007 to 2009. In 2009 government revenue in these countries ranged between 24 and 42 percent of the gross domestic product.

Looking more closely at the details, France (42 percent) and the United Kingdom (34 percent) have the highest percentage, closely followed by Canada (32 percent). Japan

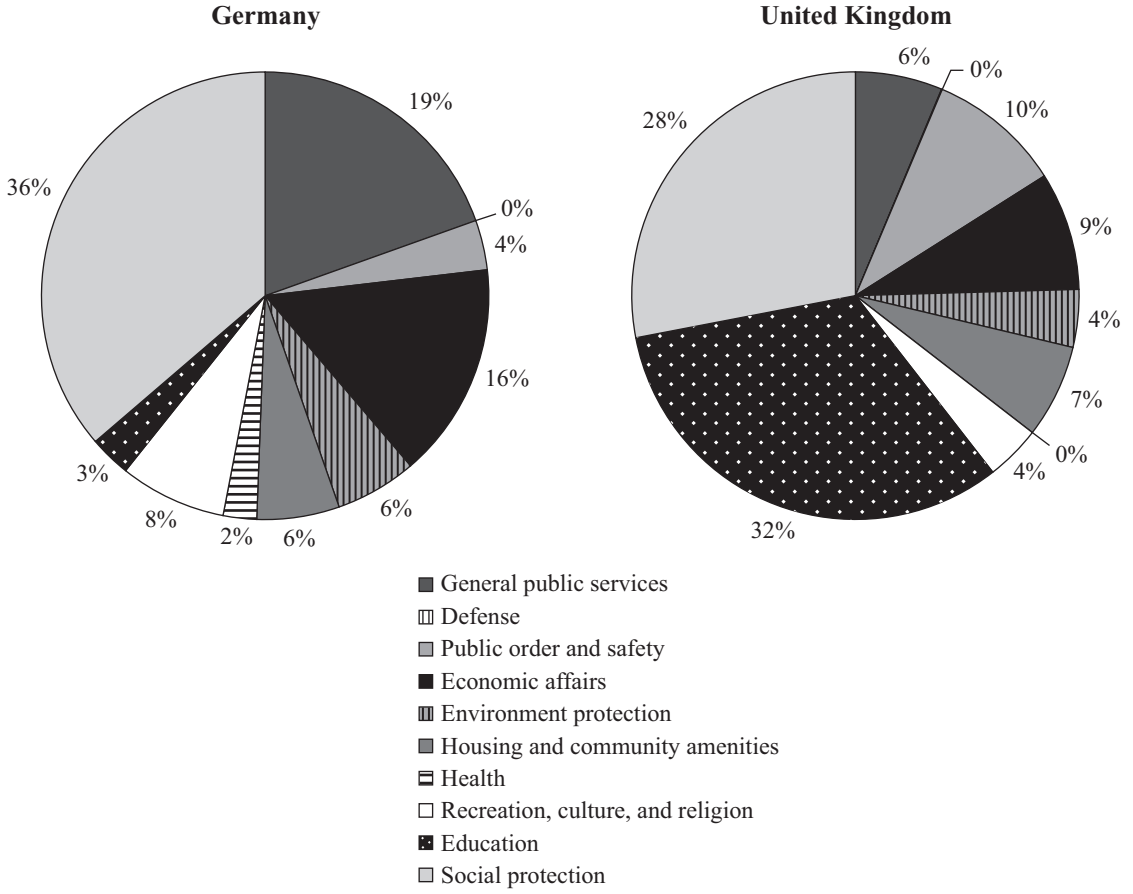


Figure 4.9
Composition of local spending

(27 percent), Turkey (25 percent), and the United States (24 percent) are somewhat lower. The country with the most growth in tax revenue is Turkey, with revenue rising from 11 percent of the gross domestic product in 1965 to 33 percent in 2000 (but declining since then). Tax revenue also grew strongly in Japan between 1965, when it was 11 percent of the gross domestic product, and 1990, when it reached 30 percent, but has leveled off since. Overall, the data show surprising uniformity among these countries with all achieving a similar outcome. The figures that follow present the details behind these aggregates.

Figure 4.11 shows at the proportion of tax revenue raised by six categories of the tax instrument in 2009. Note that income and profit taxes raise the largest proportion of

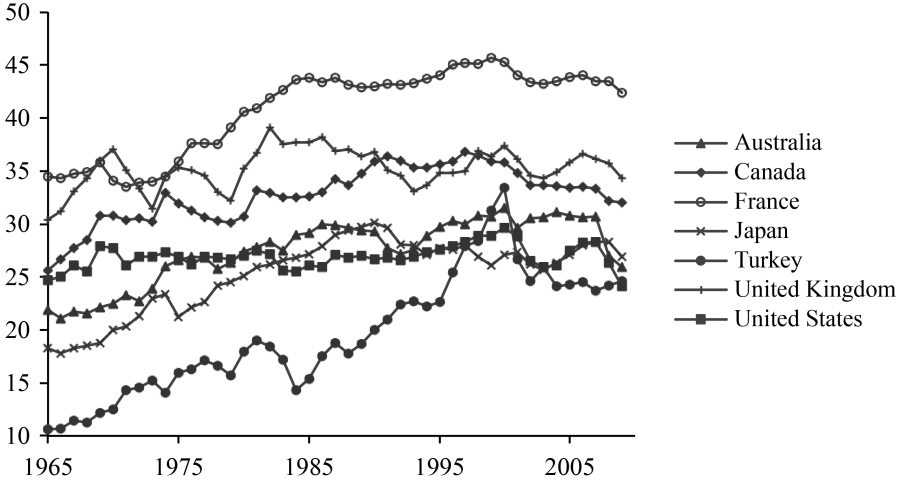


Figure 4.10
Tax revenues, 1965 to 2009 (% of GDP)

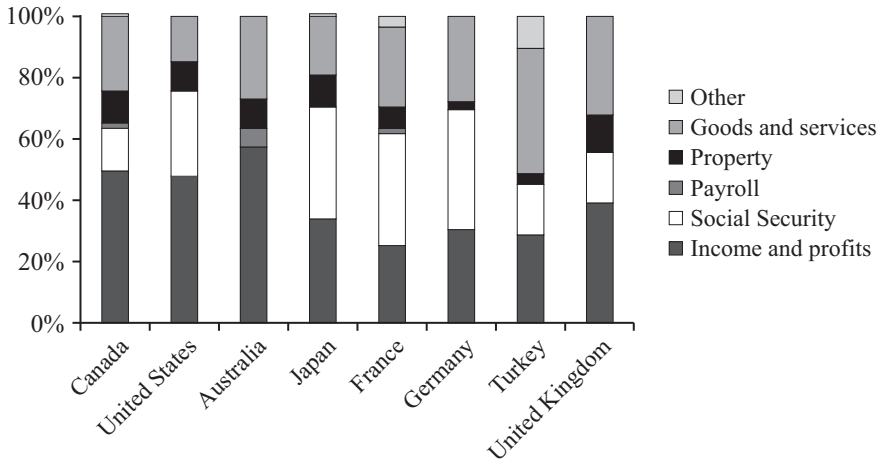


Figure 4.11
Tax revenue for category of taxation, 2009

revenue in Australia (56 percent), Canada (47 percent), the United States (41 percent), and the United Kingdom (39 percent). Social security taxes are the largest proportion in Japan (40 percent), France (39 percent), and Germany (39 percent). Taxes on goods and services are the most significant item in Turkey (46 percent) and Korea (32 percent). There is also noticeable division between the European countries, where taxes on goods and services are much more significant, and the United States. For instance, taxes on goods and services raise 29 percent of revenue in the United Kingdom, but only 18 percent in the United States. This is a reflection of the importance of value-added taxation (VAT) in Europe where it has been a significant element of EU tax policy. Property taxes are significant in the majority of countries (14 percent in the United States, 12 percent in the United Kingdom, and 12 percent in Korea). Payroll taxes are only really significant in Australia (5 percent).

The next two figures display the proportion of tax revenue raised by each level of government. Figure 4.12 shows the proportions in five federal countries. In contrast, figure 4.13 shows the five unitary countries. For all the federal countries the central government raises more revenue than state government. The two are closest in Canada, with the central government raising 42 percent and the provinces 39 percent, and in Germany, with the central government raising 31 percent and the provinces (*Bundeslander*) 22 percent. The federal governments in Australia and the United States raise considerably more revenue than the states (80 and 16 percent for Australia and 34 and

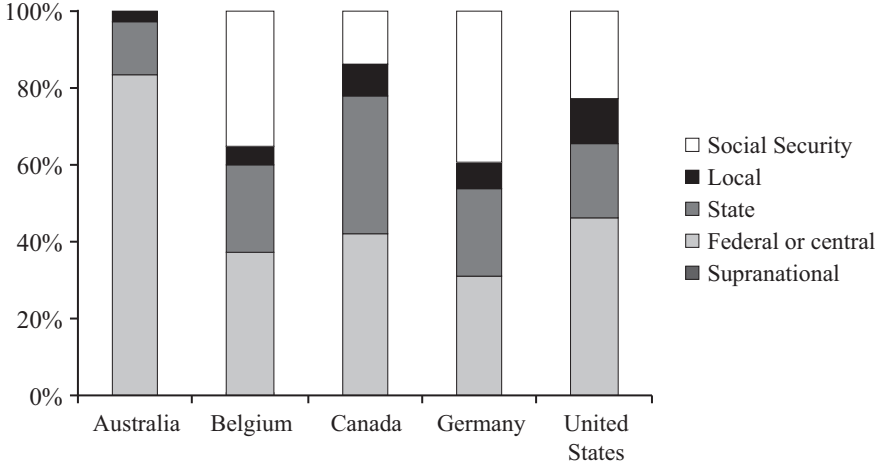


Figure 4.12
Tax revenue by level of government, federal countries, 2009

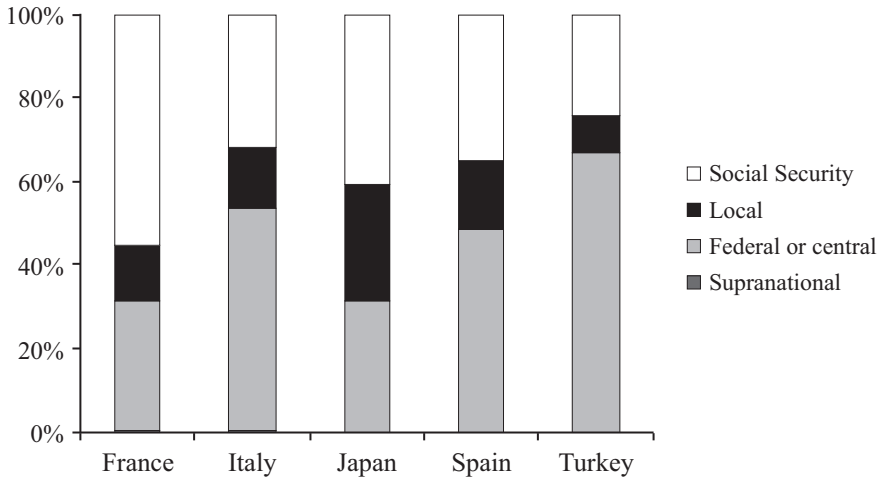


Figure 4.13
Tax revenue by level of government, unitary countries, 2009

21 percent for the United States). In all countries local government raises the smallest proportion of revenue. The US local government raises 17 percent of revenue, which is the largest value among these countries. The smallest proportion of revenue raised by local government is 3.5 percent in Australia.

The unitary countries in figure 4.13 display the same general feature: that the central government raises significantly more revenue than local government. The largest value is 67 percent in Turkey and the smallest 31 percent in France. Local government is most significant in Japan (28 percent) and least significant in Turkey (9 percent).

From comparing the federal and unitary countries, it can be seen that local government raises slightly more revenue on average in the unitary countries than the federal countries. What really distinguishes them is the size of central government. The figures suggest that the revenue raised by central government in the unitary countries is almost the same on average as that of central plus state in the federal countries. The absence of state government does not therefore put more emphasis on local government in the unitary countries. Instead, the role of the state government is absorbed within central government.

The final set of figures presents the share of revenue raised by each category of tax instrument at each level of government for two federal countries, the United States and Germany, and two unitary countries, Japan and the United Kingdom. Most of the previous figures have shown remarkable similarities in the behavior of a range of

countries. In contrast, allocating revenues to tax instruments for the alternative levels of government reveals some interesting differences.

For the United States figure 4.14 shows that the importance of income and profits taxes falls as the progression is made from central to local government (90 percent for central, 5 percent for local). Their reduction is matched by an increase in the importance of property taxes from 2 percent for central government up to 73 percent for local government. It would be easy to argue that this is the natural outcome since property is easily identified with a local area but income is not. However, figure 4.15 for Germany shows that the opposite pattern can also arise with income and profit taxes becoming more important for local government (78 percent of revenue) than for central government (38 percent of revenue). Despite this difference Germany and the United States do share the common feature that property taxes are more important for local government than for central government.

The same data are now considered for two unitary countries. In Japan (figure 4.16) income and profits taxes are almost equally important for both central government (50 percent of revenue) and local government (51 percent). They are also more important for both levels of government than any other category of tax instrument. Where the difference arises is that property taxation is much more significant for local government (raising 30 percent of revenue) than for central (6 percent). For central government, general taxes (24 percent of revenue) make up the difference. The UK data, in figure 4.17,

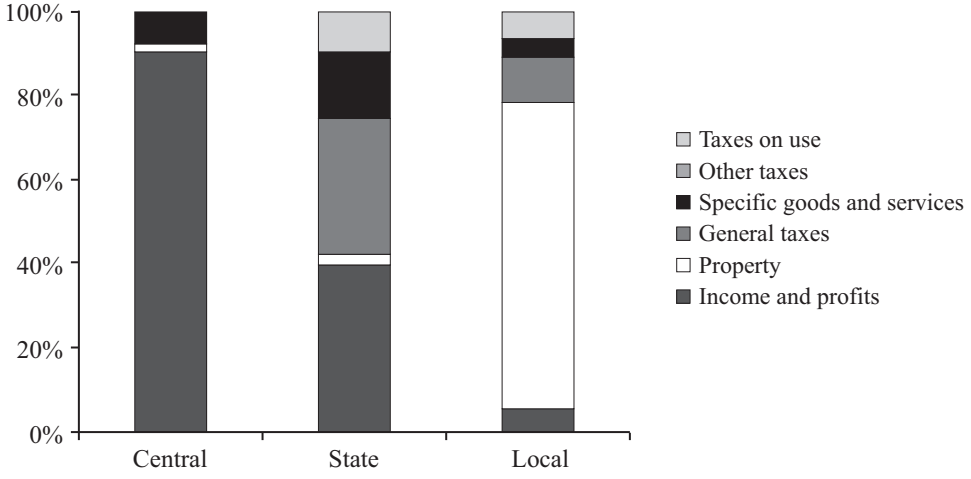


Figure 4.14
Tax shares at each level of government, United States, 2009

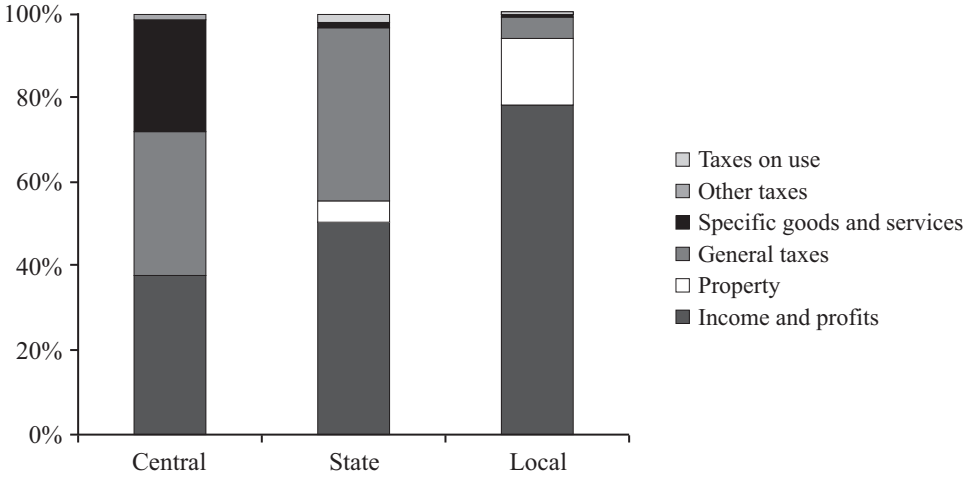


Figure 4.15
Tax shares at each level of government, Germany, 2009

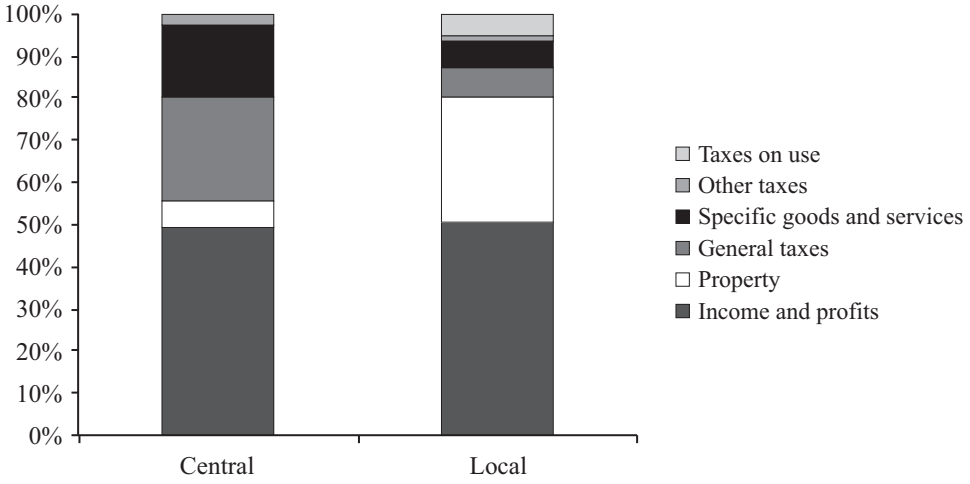


Figure 4.16
Tax shares at each level of government, Japan, 2009

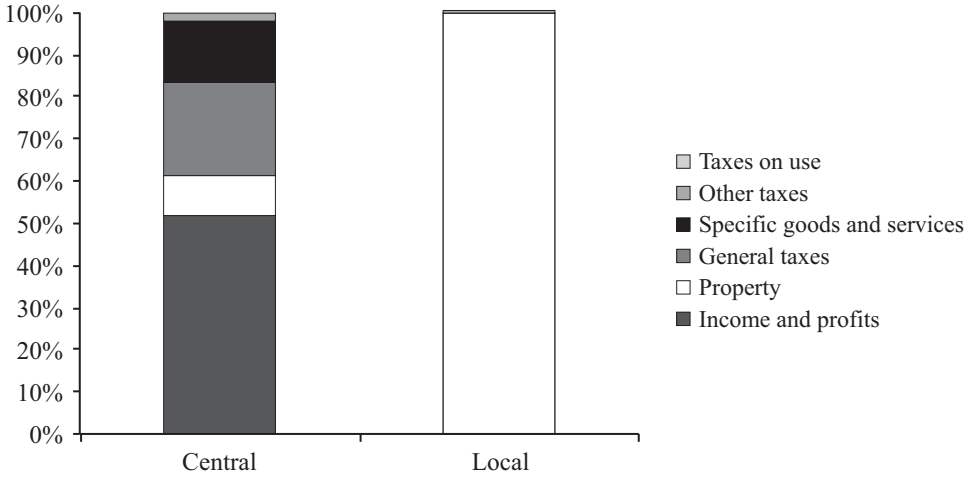


Figure 4.17
Tax shares at each level of government, United Kingdom, 2009

present an extreme version of the importance of property taxation for local government. As the figure shows, property taxes raised 100 percent of tax revenue for local government. No revenue is raised by local government in the United Kingdom from income and profit taxes.

As compared, the data for the unitary and federal countries do not reveal any standard pattern of revenues within each group. In fact the differences are as marked within the categories as they are across the categories. The one feature that is true for all four countries is that property taxes raise a larger proportion of revenue for local government than they do for central government.

This section has looked at data on tax revenues from an aggregate level down to the revenue raised from each category of tax instrument for different levels of government. What the figures show is that at an aggregate level there are limited differences among the countries. Those for which data are reported have converged on a mixed-economy solution with tax revenues at a similar percentage of the gross domestic product. The most significant differences emerge when the source of revenue for the various levels of government is analyzed. Even countries that have adopted the same form of government structure (either unitary or federal) can have very different proportions of revenue raised by the various categories of tax instrument.

4.5 Government Debt

When the level of government expenditure exceeds the value of revenue, the budget is in deficit. Deficits are financed by issuing debt, so the stock of debt represents an accumulation of past deficits. Debt can be viewed as the substitution of current government expenditure for future expenditure. It imposes a cost (the service and repayment of the debt) on future taxpayers in order to provide expenditure for current taxpayers. The level of government debt has become an issue of major policy importance due to the increasing debt levels in many countries. The increase in debt has occurred for two reasons. First, many governments have responded to the global financial crisis by boosting expenditure at a time of falling revenues. Second, the operation of the euro has provided poor incentives for fiscal prudence in the European Union countries that adopted the single currency.

The debt levels of governments are usually sustainable—in the sense that promised payments on the debt can be made—but there are occasions when governments cannot make the promised payments. In such cases the government defaults on the promises to pay. When a corporation defaults on debt, it is put into liquidation by the holders of the debt and the value of its assets is distributed among them. In contrast, a default by a government (a *sovereign debt default*) cannot be met with liquidation of the country. The only consequence for a county is future difficulty in borrowing, and the higher rates that will have to be paid on future debt to compensate for the perceived increase in risk. If a country issues debt in its own currency, then it need not default (although some countries, such as France in the sixteenth century, have chosen to repudiate debt). Instead, a country has the option of simply printing more money to repay the debt but then has to live with the inflationary consequences. The more significant problems arise when a country either issues debt denominated in a foreign currency (e.g., a South American country issuing bonds denominated in dollars) or, as in the unique case of the euro, issues debt in its own currency but cannot unilaterally print more money.

The roots of the global financial crisis are usually traced to the bursting of a bubble in the United States housing market after it peaked in 2007. The bubble had been financed by extensive mortgage borrowing at cheap rates. These mortgages were securitized (bundled together and sold in packages) and then traded as financial securities (*securitized mortgage obligations*) in their own right. As mortgage borrowers began to default on their loans, the securitized mortgage obligations became risky and collapsed in value. This undermined the financial position of the holders of these securities. The consequence was acute liquidity problems in the US banking system in 2008, and the failure

of major financial institutions in the United States and elsewhere. The level of credit available declined, causing a slowdown in real economic activity and the recession of 2009. The response of many governments was to boost their economies through fiscal stimulus and monetary expansion. Significant expenditure was also made to provide support and bailouts for financial institutions. These actions lead to rising government debt.

The story for the euro countries is partly related to the debt crisis and partly to the operational structure of the euro. Ireland, in particular, has incurred debts because of the financial crisis. The Irish economy had its own boom and became over-inflated through the 1990s. The onset of recession elsewhere in the world in 2008 hit the Irish economy hard. An alternative story is appropriate for Greece. After joining the euro Greece enjoyed much lower interest rates than it had previously faced. It chose to borrow heavily at these new low rates to finance higher levels of current consumption. This reflected a combination of a simple change in the intertemporal trade-off and the intention of the incumbent government to secure short-term popularity.

The time path of the budget deficit for several countries is shown in figure 4.18 for 1996 to 2009. A noticeable feature of the data is that the deficits in Germany and Italy do not show any marked variation over the time interval. The effect of the financial

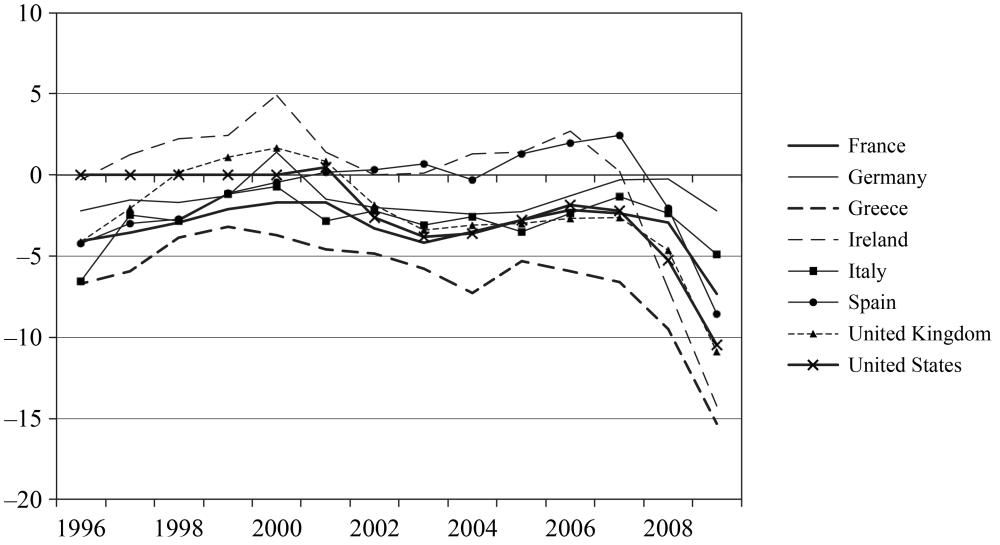


Figure 4.18
Budget deficit (% of GDP)

crisis can be seen from 2008 but the effect does not push the deficits significantly below the long-term trend. In contrast, the other countries show strongly widening deficits from 2006. The largest increases were in Greece and Ireland, which explains why these countries have been at the center of the crisis in the euro area. The United Kingdom and the United States follow fairly similar paths that reflect the use of fiscal stimulus policies in both countries.

High and rising debt is a source of justifiable concern. It is not only government debt that has grown but also corporate and household debt. Over the past thirty years the ratio of total debt to gross domestic product in advanced economies has risen from 167 percent in 1980 to 314 percent in 2011. This level of debt is unprecedented. Figures 4.19 to 4.21 show the growth in this debt for a range of countries. With the exception of Japan, corporate debt has shown a general tendency to rise, and it has risen sharply in most countries from 2000 to 2010. The growth of government debt is particularly marked in Japan and Greece, but all the countries shown had higher levels of debt in 2010 than in 1980. The pattern for household debt is not so uniform. Italy, France, and Spain have had significant increases in household debt, but in Italy and France this has been from a very low level in 1980. In contrast, household debt fell between 2000 and 2010 in Germany and Japan.

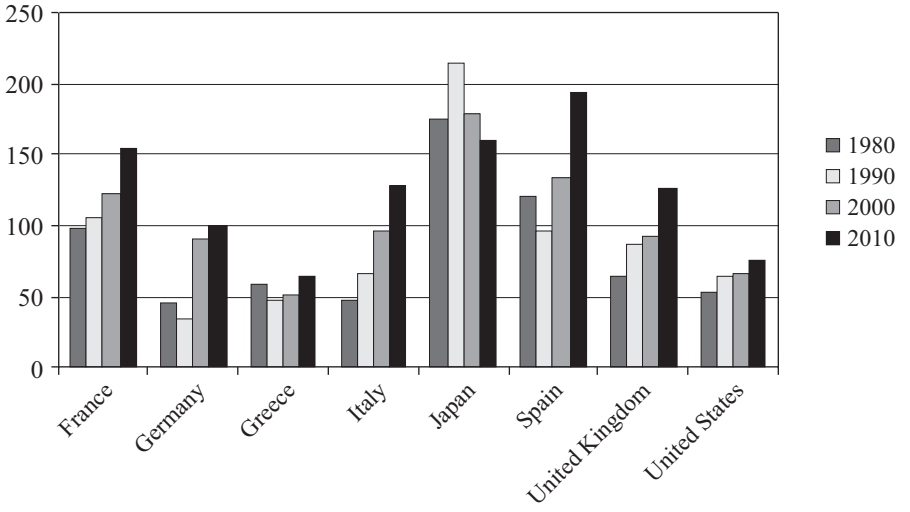


Figure 4.19
Corporate debt of nonfinancial corporations (% of GDP)

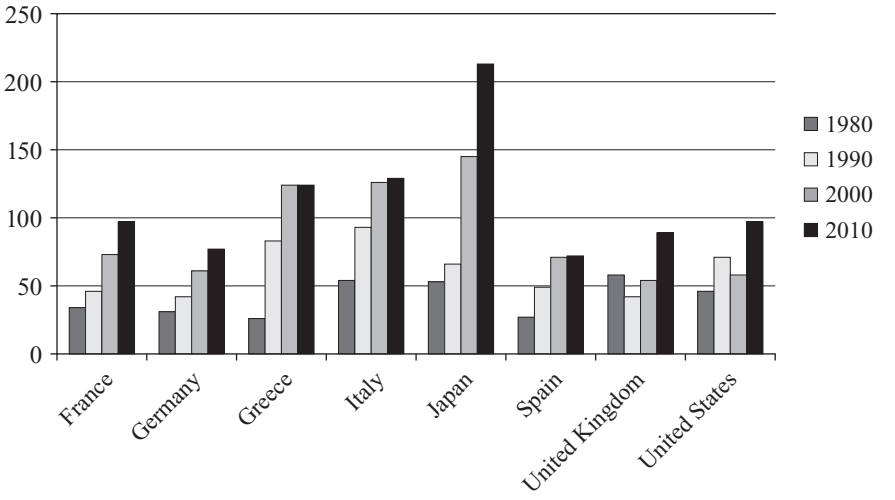


Figure 4.20
Government debt (% of GDP)

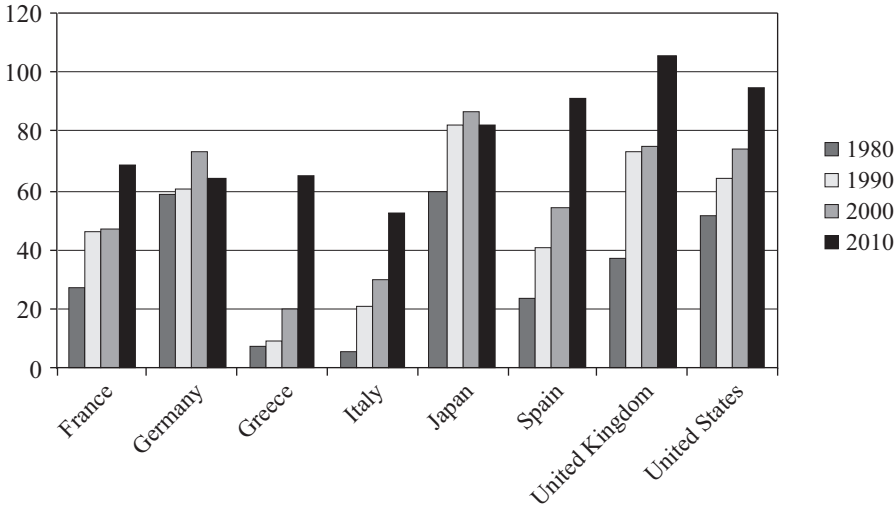


Figure 4.21
Household debt (% of GDP)

The level of debt accumulated by some euro area countries has led to a crisis for the currency. The crisis has involved several countries (Greece, Ireland, and Italy being the notable examples) coming close to defaulting on their debts and requiring financial bailouts. The increase in aggregate debt of the 17 countries that have adopted the euro is shown in figure 4.22. The level was steady at around 70 percent of the gross domestic product until the financial crisis of 2008; then it rose sharply to 90 percent in 2011. This level of indebtedness has arisen despite the countries being notionally subject to the conditions of the Stability and Growth Pact, which requires the government deficit to be less than 3 percent of the gross domestic product and debt to be less than 60 percent of the gross domestic product. It is clear that these conditions were simply not enforced because of the lack of any credible enforcement mechanism.

Details of the debt levels in individual euro area countries is reported in figure 4.23. Over the period in which the euro had been in existence, the debt to the gross domestic product ratios have increased significantly (with the exception of Spain). Ireland had the greatest increase relative to the gross domestic product, which is why it required a financial bailout in 2010. Greece has the highest debt ratio in 2010 at 152.6 percent of the gross domestic product, followed by Italy at 119.5 percent of the gross domestic product. Both countries came close to defaulting on debt in 2011. The lowest levels of

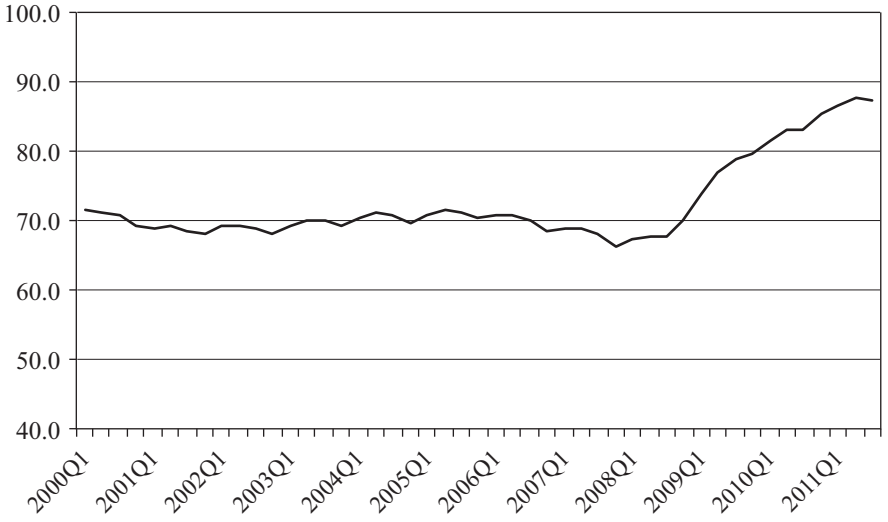


Figure 4.22
Aggregate debt of the 17 euro area countries (% of GDP)

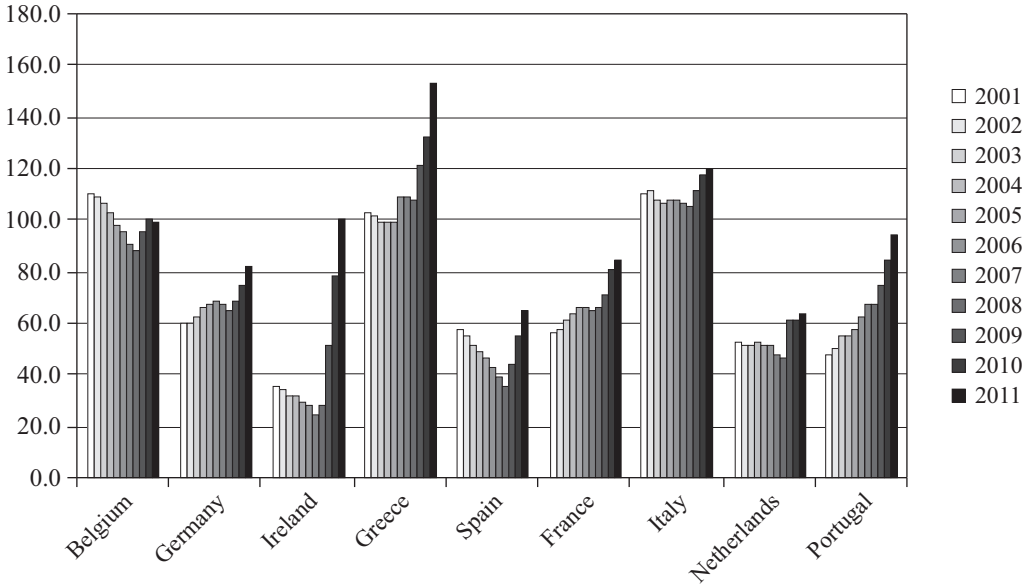


Figure 4.23
Debt in euro area countries (% of GDP)

debt to the gross domestic product ratio are found in the Netherlands (63 percent) and Spain (64 percent).

The past two decades witnessed a massive accumulation of debt across the world. Corporations, governments, and households have contributed to this process. The figures have revealed how the level of debt was increased by the global financial crisis. Debt places a burden on the public finances of a country. Countries can usually print money to avoid default, but this is not an option for euro area countries where debt is causing some of them very severe problems.

4.6 Measuring the Government

The figures examined above have provided several different viewpoints on the public sector. They have traced both the division of expenditure and the level of expenditure. For the purpose of obtaining a broad picture of the public sector, these are interesting and informative statistics. However, they do raise two important questions that must be addressed in order to gain a proper perspective on their meaning.

The first issue revolves around the fact that the figures have expressed the size of the public sector relative to the size of the economy as a whole. To trace the implications of this, take as given that there exists an accurate measure of the expenditure level of the public sector. The basic question is then: What should this expenditure be expressed as a proportion of? The standard approach is to use the nominal gross domestic product (i.e., gross domestic product measured using each year's own prices), but this is very much an arbitrary choice that can have a significant impact on the interpretation of the final expenditure figure.

Recall from basic national income accounting that the size of the economy can be measured in either nominal or real terms, using gross output or net output. Domestic or national product can be employed. Outputs can be valued at market prices or factor prices. For many purposes, as long as the basis of measurement is made clear, the choice of measure does not make much real difference. Where it can make a critical difference is in the impression it gives about the size of the public sector. By adopting the smallest measure of the size of the economy (which depends on a number of factors, e.g., the level of new investment relative to depreciation, the structure of the tax system, and income from abroad), the apparent size of the public sector can be increased by several percentage points over that when using the largest expenditure level.

While not changing anything of real economic significance, such manipulation of the figures can be very valuable in political debate. There is a degree of freedom for those who are supportive of the public sector, or are opponents of it, to present a figure that is more favorable for their purposes. This may be useful for those wishing to push a particular point of view, but it hinders informed discussion. Consequently, as long as the figures are calculated in a consistent way, it does not matter for comparative purposes which precise definition of output is used. In contrast, for an assessment of whether the public sector is "too large," it can matter significantly.

The second issue of measurement concerns what should be included within the definition of government. To see what is involved here, consider the question of whether state-run industries should be included. Assume that these are allowed to function as if they were private firms, so that they follow the objective of profit maximization and simply remit their profits to the government. In this case they should certainly not be included, since the government is acting as if it were a private shareholder. The only difference between the state-run firm and any other private firm in which the government is a shareholder would be the extent of the shareholding. Conversely, assume that the state-run firm was directed by the government to follow a policy of investment in impoverished areas and to use cross-subsidization to lower the prices of some of its

products. In this case there are compelling reasons to include the activities of the firm within the measure of government.

What this example illustrates is that it is not government expenditure per se that is interesting to the economist. What is instead really relevant is the degree of influence the government has over the economy. When the government is simply a shareholder, it is not directly influencing the firm's decisions. The converse is true when it directs the firm's actions. Looked at in this way, measuring the size of government via its expenditure is a means of estimating government influence using an easily observable statistic. In fact the extent of government influence is somewhat broader than just its expenditure. What must also be included are the economic consequences of government-backed regulations and restrictions on economic behavior. Minimum wage laws, weights and measures regulation, health and safety laws, are all examples of government intervention in the economy. However, none of these would feature in any observation of government expenditure.

What this discussion shows is that there is a degree of flexibility in interpreting measures of government expenditure. Furthermore government influence on the economy is only approximately captured by the expenditure figure. The true extent, including all relevant laws and regulations, is most certainly much larger.

4.7 Conclusions

This chapter has reviewed the expenditures and revenues of the public sector using data from a range of countries. Despite their clear cultural differences the countries considered have all experienced the same phenomenon of significant public sector growth in the last century. From being only a minor part of the economy at the start of the last century, the public sector had grown to be significant proportion of the gross domestic product in all developed countries by the end of the century. There is some variation within the figures for the precise level of public expenditure, but the pattern of growth is the same for all. There is also evidence that the growth has now ceased, and unless there is some major upheaval, the size of the public sector will now remain fairly constant.

In terms of the composition of public sector revenue and expenditure, it can be noted that there are differences in the details among countries. However, there is common reliance on similar tax instruments. Spending patterns are also not too dissimilar. It is

these commonalities that make the ideas and concepts of public economics so broadly applicable.

Further Reading

Detailed evaluations of the different areas of public expenditure can be found in:

Miles, D., Myles, G. D., and Preston, I. 2003. *The Economics of Public Spending*. Oxford: Oxford University Press.

The data for figures 4.1 and 4.3 are taken from:

Tanzi, V., and Schuknecht, L. 2000. *Public Spending in the 20th Century: A Global Perspective*. Cambridge: Cambridge University Press.

Figure 4.2 is compiled using data from:

OECD *Economic Outlook*, vols. 51 and 73.

The expenditure data in figures 4.5 to 4.9 are from:

IMF. 1998. *Government Finance Statistics Manual*. Washington: IMF.

IMF. 2001a. *Government Finance Statistics Yearbook*. Washington: IMF.

IMF. 2001b. *Government Finance Statistics Manual*. Washington: IMF.

Data on revenues in figures 4.10 to 4.17 are from:

OECD. 2002. *Revenue Statistics 1965–2001*. Paris: OECD.

The source of the data on debt in figures 4.19 to 4.21 is

Cecchetti, S. G., Mohanty, M. S., and Zampolli, F. 2011. The real effects of debt. Bank for International Settlements, Basel.

Exercises

4.1 What factors might have been responsible for the growth of government expenditure between 1920 and 1940?

4.2 Obtain data on public sector expenditure and estimate the growth trend:

a. Over the last 50 years.

b. Over the last 20 years.

Has there been a structural break (a point at which the rate of growth distinctly changed)?

4.3 Why may expenditure data underestimate the influence of the public sector on the economy?

4.4 Does recent experience suggest that the growth of expenditure has now ceased?

4.5 In the 1980s both the United Kingdom and the United States had governments that aimed to cut expenditure and reduce the role of government. Did they succeed? Could any government now cut expenditure?

4.6 Is expenditure to combat market failure greater than expenditure for redistributive purposes?

4.7 What is the "pensions crisis"? How can this be solved?

4.8 Comparing figure 4.2 to figure 4.10 shows that taxation is a smaller proportion of the gross domestic product than expenditure. How can this be so?

4.9 Why is income taxed rather than wealth?

4.10 What explains the limited revenue from property taxation?

4.11 Should social security taxes be viewed as a second component of income taxation?

4.12 (Malcolmson 1986) It is natural to wonder whether there is a limit to the size of the public sector. One way to think about this is to consider the Laffer curve. This curve graphs the amount of government revenue as a function of the tax rate. A limit to the size of government will be reflected in this curve first increasing, reaching a maximum, and then decreasing. The maximum represents the largest size of government that can be sustained.

Consider a consumer with preferences $U = \ln(x) + \ln(1 - \ell)$, where x is consumption and ℓ is labor supply. Let the budget constraint be $x = (1 - t)\ell$ where t is the tax rate.

a. Find the labor supply of the consumer by eliminating x from the utility function.

b. Use the solution for labor supply to calculate tax revenue.

c. Plot revenue as a function of the tax rate. Comment on the form of the function.

4.13 Explain why defense spending is organized centrally and education locally.

4.14 Is there any logic to the division of spending responsibilities between different levels of government?

4.15 Does the division of political responsibility among different levels of government have any economic implications?

4.16 Provide an interpretation of the EU structure from the perspective of the division of tax collection.

4.17 Should the collection of taxes on consumption (VAT in the European Union, sales tax in the United States) be centralized?

4.18 How could a minimum wage law be evaluated as government intervention?

4.19 Do increases in public expenditure cause an increase in national income, or vice versa? How would you test which is the case?

4.20 The value of the gross domestic product for several measures is given in the table below. If public expenditure is $10 billion, what are the largest and smallest proportional measures of the public sector? Does the difference matter?

Measure	Factor prices	Market prices	Domestic product	National product
Value ($billion)	30.2	32.3	31.2	31.5

4.21 There is good evidence that much economic activity is unrecorded in official statistics. This "hidden economy" includes legal activities that are not reported to the authorities in order for tax to be evaded and illegal activities. Should official statistics ignore the hidden economy (which is the current practice) or make an effort to incorporate an estimated value in national accounts?