

## Government Debt

*The budget should be balanced, the treasury refilled, public debt reduced, the arrogance of officialdom tempered and controlled, and the assistance to foreign lands curtailed, lest Rome become bankrupt.*

– Quintus Tullius Cicero (102–43 BCE)

**W**hen a government spends more than it collects in taxes, it runs a budget deficit, which it finances by borrowing from the private sector or from foreign governments. The accumulation of past borrowing is the government debt (which is also referred to as public debt or the national debt). Government debt differs from the private debt of individuals. For individuals, there are periods of their lives when they need to borrow, and other periods when they can afford to pay off their debts, and perhaps save a little. When individuals are young their income is usually insufficient to cover, for example, the cost of buying a house, and many people therefore take out a mortgage to cover this shortfall. Later in life, as income rises, people tend to pay off this debt – repay their mortgages – and perhaps save some money for retirement. Thus, you would expect that over the course of a lifetime the individual's budget would broadly balance. However, economies as a whole differ from individuals in that they essentially have infinite lives, so there is no reason why they should ever have to pay off their debts entirely. Nevertheless, there are very important economic principles that a government should follow in managing the public debt. For example, many economists argue that governments should aim to balance their budget over the economic cycle. That is, during good times governments should seek to run a surplus and pay off some debt, so that in bad times they can afford to run a deficit – spend more (say, on unemployment benefits) than they collect in tax revenue (which tends to fall during a recession). Another difference between government debt and an individual's debt is the effect it has on other people. If you spend more than your income and run up debt, this has very little impact on anyone except you. When a government's spending exceeds its tax revenue, this can have major effects on the macroeconomy and affect the lives of a great many people.

The debate over government debt has been particularly fervent in recent years. In the aftermath of the financial crisis of 2008–2009, the governments of many European countries ran very large budget deficits. These deficits were in

part attributable to automatic stabilizers: tax revenue falls and government spending on programmes such as unemployment benefit rise when the economy goes into recession. In addition, various discretionary changes in fiscal policy aimed at stimulating their economies further increased budget deficits. Government deficits in the Euro Area (Eurozone) countries had risen from around 2 per cent of GDP before the crisis to over 6 per cent of GDP in 2009. While this fell back by 2012 to a little less than 4 per cent, some countries in the Euro Area with particular problems, such as Greece and Spain, still had government deficits over 10 per cent of GDP.

In this chapter we consider various aspects of the debate over the economic effects of government debt and rules by which such debt should be managed. We begin by looking at the numbers. Section 16-1 examines the size of the government debt in a number of European countries, and also looks at the history of the UK national debt. Section 16-2 discusses why measuring changes in government indebtedness is not as straightforward as it might seem. Indeed, some economists argue that traditional measures are so misleading that they should be ignored completely.

We then look at how government debt affects the economy. Section 16-3 describes the traditional view of government debt, according to which government borrowing reduces national saving and crowds out capital accumulation. This view is held by most economists and has been implicit in the discussion of fiscal policy throughout this book. Section 16-4 discusses an alternative view, called *Ricardian equivalence*, which is held by a small but influential minority of economists. According to the Ricardian view, government debt does not influence national saving and capital accumulation. As we will see, the debate between the traditional and Ricardian views of government debt arises from disagreements over how consumers respond to the government's debt policy.

Section 16-5 then looks at other facets of the debate over government debt. It begins by discussing whether the government should always try to balance its budget (i.e. exactly match government spending and tax revenue) and, if not, when a budget deficit or surplus is desirable. It also examines the effects of government debt on monetary policy and its possible effects on a nation's role in the world economy. Finally, in Section 16-6, we look at the issue of fiscal sustainability – the ability of an economy to service its public debt in terms of meeting the interest payments on it and any capital repayments that fall due. As we shall see, this implies a close relationship between the level of public debt as a percentage of GDP, the inflation rate, the rate of growth of real GDP and the budget deficit.

In Chapter 17 we shall examine the economics of adopting a single currency among a group of countries – a monetary union – and, in particular, the European Economic and Monetary Union (EMU), which has adopted the euro as the single currency among 17 European countries. Monetary union has a number of implications for the management of public debt and for fiscal policy more generally, and we shall discuss them in the next chapter, using some of the tools and insights that we will develop in this chapter. Then, in Chapter 20, we will examine the financial system more broadly, including the causes of financial crises. As we will see, excessive government debt can be at the centre of such crises – a lesson that several European nations have recently been learning, all too painfully.

## 16-1 The Size of the Government Debt

Table 16-1 shows the amount of general government debt for the EU-27 countries, expressed as a percentage of each country's GDP.<sup>1</sup> At the top of the list are the four heavily indebted countries of Greece, Italy, Portugal and Ireland, each of which has accumulated a government debt that exceeds annual GDP. Belgium,

**TABLE 16-1**

How Indebted Are the EU-27 Governments?

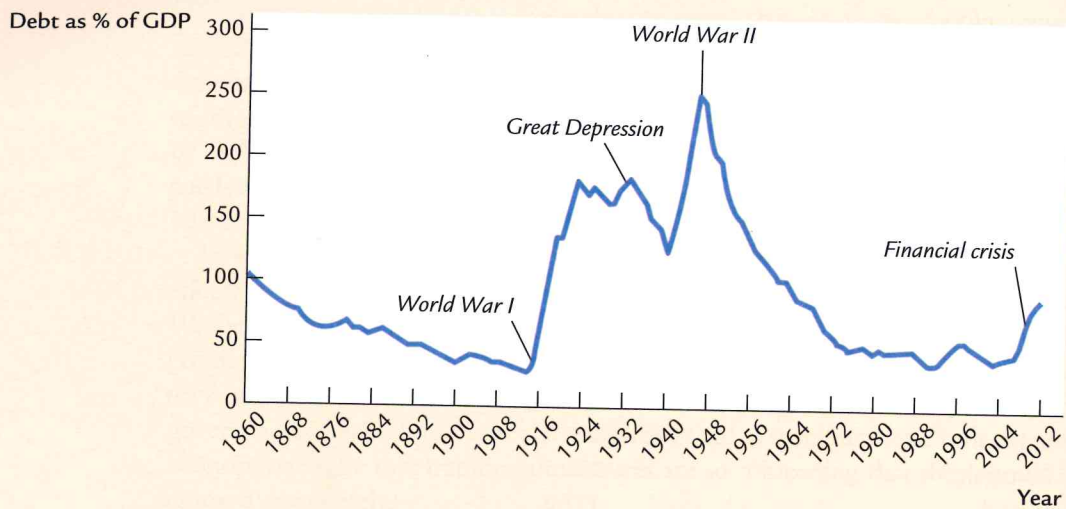
Country	Government Debt as a Percentage of GDP (2012)
Greece	156.9
Italy	127.0
Portugal	123.6
Ireland	117.6
Belgium	99.6
France	90.2
United Kingdom	90.0
Cyprus	85.8
<i>EU (27 countries)</i>	85.3
Spain	84.2
Germany	81.9
Hungary	79.2
Austria	73.4
Malta	72.1
Netherlands	71.2
Poland	55.6
Slovenia	54.1
Finland	53.0
Slovakia	52.1
Denmark	45.8
Czech Republic	45.8
Lithuania	40.7
Latvia	40.7
Sweden	38.2
Romania	37.8
Luxembourg	20.8
Bulgaria	18.5
Estonia	10.1

Source: Eurostat.

Note: Data are based on estimates of general government gross debt and nominal GDP for 2012.

<sup>1</sup> By 'general government' we mean local and central government together. The figures in Table 16-1 are for general government gross debt.

FIGURE 16-1



**UK National Debt as a Percentage of GDP, 1860–2012** The UK national debt, relative to the size of the UK economy, rises sharply during wars and declines slowly during peacetime.

Source: UK Debt Management Office.

Note: This series is based on the gross liabilities of the UK National Loans Fund and nominal GDP.

France and the United Kingdom, are next, with public debt over 90 per cent of GDP. Cyprus, Spain and Germany also have relatively high debt levels (between 80 and 85 per cent of GDP). At the bottom of the table is Estonia, with a debt level of just over 10 per cent of GDP.

Over the course of history, government indebtedness has varied substantially for most countries. Figure 16-1 shows the ratio of the UK national debt to GDP since 1860. The UK national debt, relative to the size of the economy, varies from around 100 per cent of GDP in 1860, to a minimum of a quarter of GDP in 1914, to a maximum of two and a half times GDP in 1946.<sup>2</sup> In the period since the 2008 financial crisis, debt has increased from an average level of around 40 per cent in the previous decade to 90 per cent in 2012. These trends led to a significant event in February 2013 when ratings agency Moody's reduced its credit rating on UK government debt to one notch below the top AAA grade. Moody's was concerned about the UK government's fiscal policy, but their stance has not been followed by other ratings agencies. Standard and Poors, which had downgraded US debt in 2011, reaffirmed the UK's AAA rating in April 2013, although it did place the

<sup>2</sup> The historical series shown in Figure 16-1 is based on the gross liabilities of the UK National Loans Fund, and is defined very slightly differently from the figures presented in Table 16-1, which is based on general government gross debt. (The figures in Table 16-1, however, are consistent across countries, and the historical figures in Figure 16-1 are consistent through time.) These accounting differences are small and unimportant for our purposes, however, especially when we are looking at historical movements in national debt.

UK under ‘negative watch’ in a warning about possible downgrading if economic growth faltered or there was any weakening of the UK government’s deficit reduction policies.

Historically, the primary cause of increases in the government debt is war. The debt-to-GDP ratio rises sharply during major wars and falls slowly during peacetime. The effects of World War I (1914–1918) and World War II (1939–1945) on UK public debt can be seen clearly in Figure 16-1. Many economists think that this historical pattern is the appropriate way to run fiscal policy. As we will discuss more fully later in this chapter, deficit financing of wars appears optimal for reasons of both tax smoothing and generational equity.

Even in peacetime, however, similar issues may arise. For example, if the government builds a new motorway system that will benefit future generations, is it fair to make the current generation of taxpayers foot the entire bill, or should some of it be met by issuing debt that future generations can pay off? We will return to this question below.

## 16-2 Problems in Measurement

The government budget deficit equals government spending minus government revenue, which in turn equals the amount of new debt the government needs to issue to finance its operations. This definition may sound simple enough, but in fact debates over fiscal policy sometimes arise over how the budget deficit should be measured. Some economists believe that the standard measure of the deficit is not a good indicator of the stance of fiscal policy. That is, they believe that the budget deficit does not accurately gauge either the impact of fiscal policy on today’s economy or the burden being placed on future generations of taxpayers. In this section we discuss four problems with the usual measure of the budget deficit.

### Measurement Problem 1: Inflation

The least controversial of the measurement issues is the correction for inflation. Almost all economists agree that the government’s indebtedness should be measured in real terms, not in nominal terms. The measured deficit should equal the change in the government’s real debt, not the change in its nominal debt.

The budget deficit as commonly measured, however, does not correct for inflation. To see how large an error this induces, consider the following example. Suppose that the real government debt is not changing; in other words, in real terms, the budget is balanced. In this case, the nominal debt must be rising at the rate of inflation. That is,

$$\Delta D/D = \pi,$$

where  $\pi$  is the inflation rate and  $D$  is the stock of government debt. This implies

$$\Delta D = \pi D.$$

The government would look at the change in the nominal debt  $\Delta D$  and would report a budget deficit of  $\pi D$ . Hence, most economists believe that the reported budget deficit is overstated by the amount  $\pi D$ .

We can make the same argument in another way. The deficit is government expenditure minus government revenue. Part of expenditure is the interest paid on the government debt. Recall from Chapter 3, however, that in the presence of inflation, we need to distinguish between the nominal interest rate (the rate of interest paid to borrow money) and the real interest rate (the nominal interest rate corrected for the effects of inflation). Expenditure should include only the real interest paid on the debt  $rD$ , not the nominal interest paid  $iD$ . Because the difference between the nominal interest rate  $i$  and the real interest rate  $r$  is the inflation rate  $\pi$ , we can see that  $iD - rD = (i - r)D = [i - (i - \pi)]D = \pi D$ . Hence, the budget deficit is overstated by  $\pi D$ .

### Measurement Problem 2: Capital Assets

Many economists believe that an accurate assessment of the government's budget deficit requires taking into account the government's assets as well as its liabilities. In particular, when measuring the government's overall indebtedness, we should subtract government assets from government debt. Therefore, the budget deficit should be measured as the change in debt minus the change in assets.

Certainly, individuals and firms treat assets and liabilities symmetrically. When a person borrows to buy a house, we do not say that he is running a budget deficit. Instead, we offset the increase in assets (the house) against the increase in debt (the mortgage) and record no change in net wealth. Perhaps we should treat the government's finances in the same way.

A budget procedure that accounts for assets as well as liabilities is called **capital budgeting**, because it takes into account changes in capital. For example, suppose that the government sells one of its office buildings or some of its land, and uses the proceeds to reduce the government debt. Under standard budget procedures, the reported deficit would be lower. Under capital budgeting, the revenue received from the sale would not lower the deficit, because the reduction in debt would be offset by a reduction in assets. Similarly, under capital budgeting, government borrowing to finance the purchase of a capital good would not raise the deficit.

A clear advantage of capital budgeting is that it prevents a government from financing a deficit by selling off government-owned capital assets. This would not be sustainable behaviour because, sooner or later, the stock of assets to sell off will have been exhausted. Conversely, if a government spends on a capital asset like a new school building, there ought to be some allowance for the fact that this will yield benefits to the economy in the future (better educated and more economically productive citizens) that may largely repay the cost of the asset.

The major difficulty with capital budgeting is that it is hard to decide which government expenditures should count as capital expenditures. For example, should the motorway system be counted as an asset of the government? If so, what is its value? What about the stockpile of military hardware, such as missiles? Should spending on education services (e.g. teachers' salaries) be treated as

expenditure on human capital? These difficult questions must be answered if the government is to adopt a capital budget.

Economists and policy makers disagree about whether governments should use capital budgeting. Opponents of capital budgeting argue that, although the system is superior in principle to the standard system, it is too difficult to implement in practice. Proponents of capital budgeting argue that even an imperfect treatment of capital assets would be better than ignoring them altogether.

### Measurement Problem 3: Uncounted Liabilities

Some economists argue that the measured budget deficit is misleading because it excludes some important government liabilities. For example, consider the pensions of government workers. These workers provide labour services to the government today, but part of their compensation is deferred to the future. In essence, these workers are providing a loan to the government. Their future pension benefits represent a government liability not very different from government debt. Yet this liability is not included as part of the government debt, and the accumulation of this liability is not included as part of the budget deficit. According to some estimates, this implicit liability is almost as large as the official government debt.

Similarly, consider the social security system. In some ways, the system is like a personal pension plan. People pay some of their income into the system when young and expect to receive benefits when old. Perhaps accumulated future social security benefits should be included in the government's liabilities.

One might argue that social security liabilities are different from government debt because the government can change the laws determining social security benefits. Yet in principle, the government could always choose not to repay all of its debt: the government honours its debt only because it chooses to do so. Promises to pay the holders of government debt may not be fundamentally different from promises to pay the future recipients of social security.

### Measurement Problem 4: The Business Cycle

Many changes in the government's budget deficit occur automatically in response to a fluctuating economy. For example, when the economy goes into a recession, incomes fall, so people pay less in personal income taxes. Profits fall, so corporations pay less in corporate income taxes. More people become eligible for government assistance, such as social security and unemployment benefits, so government spending rises. Even without any change in the laws governing taxation and spending, the budget deficit increases.

These automatic changes in the deficit are not errors in measurement, because the government truly borrows more when a recession depresses tax revenue and boosts government spending. But these changes do make it more difficult to use the deficit to monitor changes in fiscal policy. That is, the deficit can rise or fall either because the government has changed policy or because the economy has changed direction. For some purposes, it would be good to know which is occurring.

## FYI

## Measuring National Indebtedness: General Government Gross Debt or Public Sector Net Debt?

The figures on the government debt of the EU-27 countries that we discussed earlier, in Table 16-1, relate to the total indebtedness of local and central government taken together, for each of the countries concerned, and are termed 'general government gross debt'. This is a standard measure of national indebtedness that is used, for example, by the European Commission in assessing a country's public debt. However, in some countries – notably the UK – policy makers often refer to an alternative measure of government indebtedness, namely 'public sector net debt'. Public sector net debt includes, in addition to general government debt, the debt of public sector corporations (i.e. publicly owned corporations, such as the Post Office or the British Broadcasting Corporation (BBC) in the UK). It also nets out (i.e. offsets) any public sector liquid financial assets against gross indebtedness. Liquid financial assets are assets that are held by the public sector and are either already in cash or could be quickly turned in cash, and include holdings of cash, bank and building society deposits, short-term commercial bonds and the official reserves, which include gold, foreign currencies and foreign government bonds.

It is not immediately clear which of the two measures of indebtedness is better. Certainly, public sector net debt includes the debt of all organizations that are nationally owned, so it may be said to be a better measure of *national* indebtedness than general government gross debt. On the other hand, spending by some public corporations (e.g. the BBC) may not be directly under the control of the government. Hence, general government gross indebtedness is probably closer to our theoretical discussions of the debt that arises when government spends more than it receives in tax revenue and has to sell bonds.

What about offsetting liquid financial assets against gross debt? Imagine that you take out

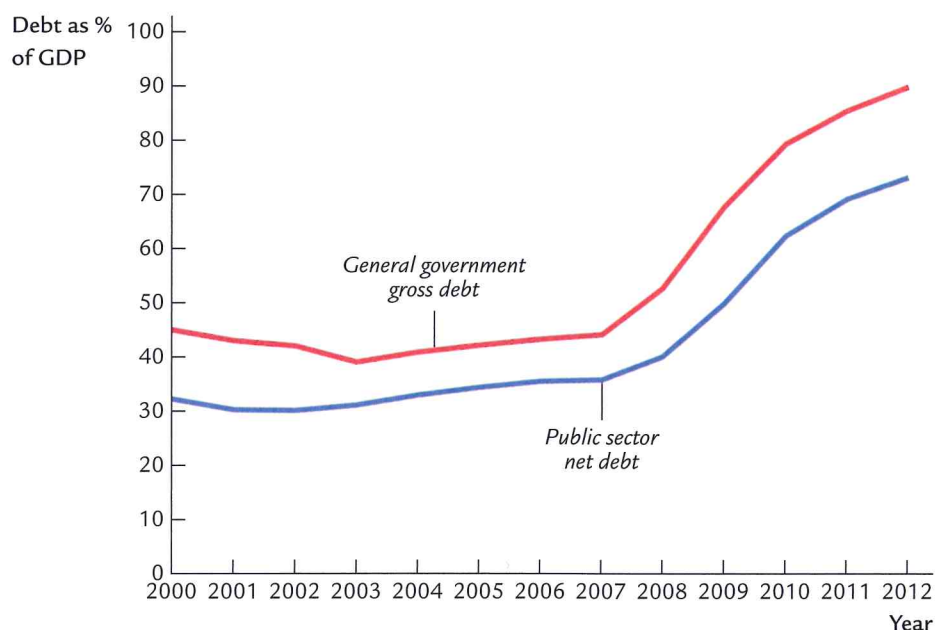
a mortgage with a bank for £100,000 to buy a flat, but you still have savings of, say, £20,000 in your bank account, which you keep for emergencies (incidentally, you probably worry too much). Which is a better measure of how much you are in debt – £100,000 or £80,000? Most people would probably say that your *gross debt* (i.e. the £100,000 mortgage) is the true measure, since it is, after all, how much you owe the bank. On the other hand, you are in much better financial shape than someone with a £100,000 and nothing in the bank, and this is only reflected in your *net indebtedness* (i.e. the £100,000 you owe the bank, less the £20,000 you have in your account). Similarly, public sector *net* debt may be a better indicator of the health of the public sector finances than general government *gross* debt.

Overall, general government gross debt is probably closer to the concept of public debt that we have been analysing in our theoretical discussions in this chapter. On the other hand, public sector net debt may give a better picture of national indebtedness (because it refers to the whole public sector, not just government) and may better reflect national financial health (because it refers to net rather than gross indebtedness).

Figure 16-2 graphs the two measures of public debt for the UK, as a percentage of GDP, over the period 2000–2012. As the figure makes clear, the two measures tend to move together over time, although general government gross debt has been persistently higher than public sector net debt. The difference narrowed during the middle part of this period, but has since widened again.

The important point to remember is that, as a macroeconomist, when you read or listen to policy debates about public debt, you need to avoid confusion between these two measures.





**Figure 16-2 Alternative Measures of UK National Debt, 2000–2012** General government gross debt and public sector net debt tend to move together, but general government gross debt is persistently greater.

Source: UK Debt Management Office.

To solve this problem, some countries calculate a **cyclically adjusted budget deficit** (sometimes called the *full-employment budget deficit*). The cyclically adjusted deficit is based on estimates of what government spending and tax revenue would be if the economy were operating at its natural level of output and employment. The cyclically adjusted deficit is a useful measure because it reflects policy changes but not the current stage of the business cycle. Alternatively viewed, given that the economy must on average be at the natural rates of output and unemployment over the economic cycle, the cyclically adjusted deficit can be thought of as an average over the cycle.

## Summing Up

Economists differ in the importance they place on these measurement problems. Some believe that the problems are so severe that the budget deficit as normally measured is almost meaningless. Most take these measurement problems seriously, but still view the measured budget deficit as a useful indicator of fiscal policy.

The undisputed lesson is that to evaluate fully what fiscal policy is doing, economists and policy makers must look at more than just the measured budget deficit. No economic statistic is perfect. Whenever we see a number reported in the media, we need to know what it is measuring and what it is leaving out. This is especially true for data on government debt and budget deficits.

### 16-3 The Traditional View of Government Debt

Imagine that you are the Chief Economist at the Finance Ministry of your country.<sup>3</sup> You receive a letter from the Finance Minister:

Dear Chief Economist:

I am considering cutting all taxes by 20 per cent. Before doing so, I would like your analysis. I see little hope of reducing government spending, so the tax cut would mean an increase in the budget deficit. How would the tax cut and budget deficit affect the economy and the economic well-being of the country?

Sincerely,

Finance Minister

Before writing your reply, you open your favourite economics textbook – this one, of course – to see what the models predict for such a change in fiscal policy.

To analyse the long-run effects of this policy change, you turn to the models in Chapters 3 to 9. The model in Chapter 3 shows that a tax cut stimulates consumer spending and reduces national saving. The reduction in saving raises the interest rate, which crowds out investment. The Solow growth model introduced in Chapter 8 shows that lower investment eventually leads to a lower steady-state capital stock and a lower level of output. Because we concluded in Chapter 9 that most advanced economies have less capital than in the Golden Rule steady state (the steady state with maximum consumption), the fall in steady-state capital means lower consumption and reduced economic well-being.

To analyse the short-run effects of the policy change, you turn to the *IS-LM* model in Chapters 11 and 12. This model shows that a tax cut stimulates consumer spending, which implies an expansionary shift in the *IS* curve. If there is no change in monetary policy, the shift in the *IS* curve leads to an expansionary shift in the aggregate demand curve. In the short run, when prices are sticky, the expansion in aggregate demand leads to higher output and lower unemployment. Over time, as prices adjust, the economy returns to the natural rate of output, and the higher aggregate demand results in a higher price level.

To see how international trade affects your analysis, you turn to the open-economy models in Chapters 6 and 13. The model in Chapter 6 shows that when national saving falls, people start financing investment by borrowing from abroad, causing a trade deficit. Although the inflow of capital from abroad lessens the effect of the fiscal policy change on the economy's capital accumulation, the economy becomes indebted to foreign countries. The fiscal policy change also causes the external value of the currency to appreciate in the foreign exchange market, which makes foreign goods cheaper in the domestic economy and domestic goods more expensive abroad. The Mundell–Fleming model in Chapter 13 shows that the appreciation of the exchange rate and the resulting fall in net exports reduce the short-run expansionary impact of the fiscal change on output and employment.

<sup>3</sup> In the UK and the US, the Finance Ministry is known as the Treasury and the Finance Minister is known as the Chancellor of the Exchequer (in the UK) or the Treasury Secretary (in the US).

With all these models in mind, you sit down to write your report:

Dear Finance Minister:

A tax cut financed by government borrowing would have many effects on the economy. The immediate impact of the tax cut would be to stimulate consumer spending. Higher consumer spending affects the economy in both the short run and the long run.

In the short run, higher consumer spending would raise the demand for goods and services and thus raise output and employment. Interest rates would also rise, however, as investors competed for a smaller flow of saving. Higher interest rates would discourage investment and would encourage capital to flow in from abroad. The value of the currency would rise in value against foreign currencies, and domestic firms would become less competitive in world markets.

In the long run, the smaller national saving caused by the tax cut would mean a smaller capital stock and a greater foreign debt. Therefore, the output of the nation would be smaller, and a greater share of that output would be owed to foreigners. The overall effect of the tax cut on economic well-being is hard to judge. Current generations would benefit from higher consumption and higher employment, although inflation would likely be higher as well. Future generations would bear much of the burden of today's budget deficits: they would be born into a nation with a smaller capital stock and a larger foreign debt.

Your faithful servant,

Chief Economist

The Finance Minister replies:

Dear Chief Economist:

Thank you for your letter. It made sense to me. But yesterday I spoke to a prominent economist who called herself a 'Ricardian' and who reached quite a different conclusion. She said that a tax cut by itself would not stimulate consumer spending. She concluded that the budget deficit would therefore not have all the effects you listed. What's going on here?

Sincerely,

Finance Minister

After studying the next section, you write back to the Finance Minister, explaining in detail the debate over Ricardian equivalence.

### CASE STUDY

## The Laffer Curve and Supply-Side Economics

Figure 16-3 depicts the so-called Laffer curve, and shows the relationship between income tax rates and the total amount of tax revenue. On the horizontal axis is the average rate of income tax payable in the economy – that is, what percentage of a person's total income, on average, the government would require to be paid in tax. On the vertical axis is total government income tax revenue. The Laffer curve suggests that, while increasing income tax rates may

## FYI

## Taxes and Incentives

Throughout this book we have summarized the tax system with a single variable  $T$ . In our models, the policy instrument is the level of taxation that the government chooses; we have ignored the issue of how the government raises this tax revenue. In practice, however, taxes are not lump-sum payments, but are levied on some type of economic activity. Governments raise tax revenue in various ways, including taxing personal income, payrolls and corporate profits.

Courses in public finance spend much time studying the pros and cons of alternative types of taxes. One lesson emphasized in such courses is that taxes affect incentives. When people are taxed on their labour earnings, they have less incentive to work hard. When people are taxed on the income from owning capital, they have less incen-

tive to save and invest in capital. As a result, when taxes change, incentives change, and this can have macroeconomic effects. If lower tax rates encourage increased work and investment, the aggregate supply of goods and services increases.

Some economists, called *supply-siders*, believe that the incentive effects of taxes are large. Some supply-siders go so far as to suggest that tax cuts can be self-financing: a cut in tax rates induces such a large increase in aggregate supply that tax revenue increases, despite the fall in tax rates. Although all economists agree that taxes affect incentives and that incentives affect aggregate supply to some degree, most believe that the incentive effects are not large enough to make tax cuts self-financing in most circumstances.

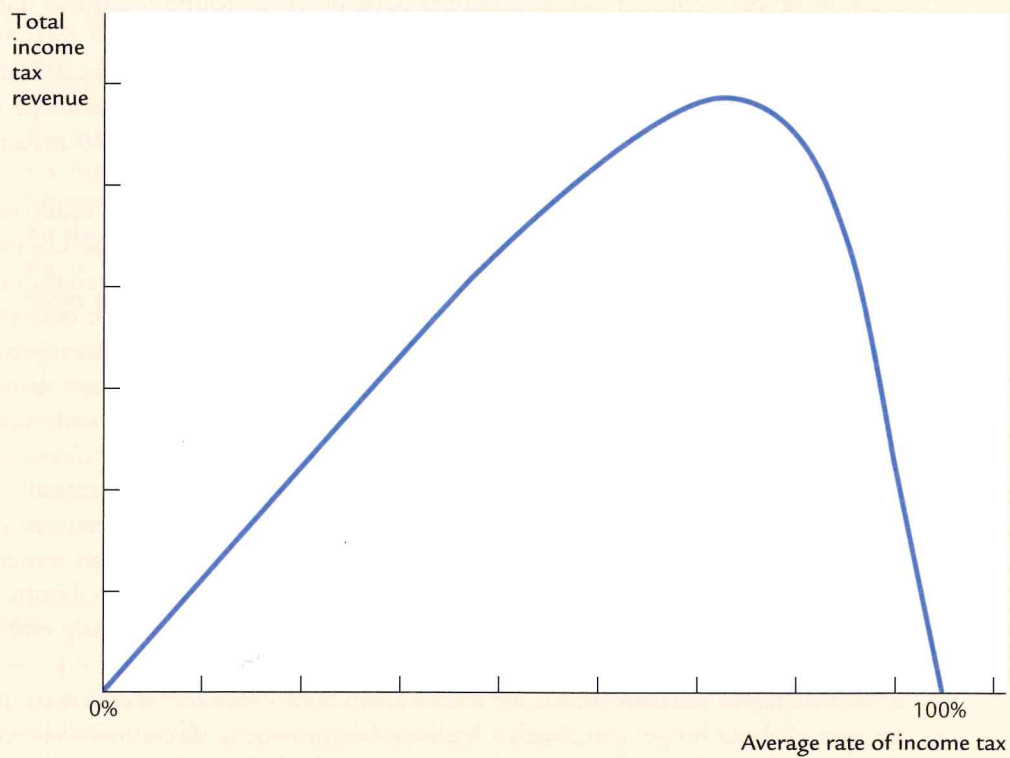
increase tax revenue at first, there comes a point where tax rates are so high that people's incentive to work is severely diminished and tax revenue falls as tax rates are raised further.

The existence of a Laffer curve is uncontroversial – no one would disagree that average income tax rates of zero and 100 per cent would each raise no revenue. The issue, therefore, is whether the Laffer curve is relevant. More specifically, at what income tax rate would the Laffer curve change its slope from positive to negative? On the other hand, as economists, we know that people make decisions at the margin, so that it is the marginal rate of income tax – the tax paid on an extra final unit of income – that may be more relevant for determining behaviour. However, since all developed countries have progressive tax systems in which the marginal tax rate increases as income rises, not everyone in the economy faces the same marginal rate of income tax. Nevertheless, the same supply-side principles apply: would raising the marginal rate of income tax for people within a certain income band actually reduce tax revenue because it gives them an incentive to work less?

The Laffer curve is named after the American supply-side economist Arthur Laffer, who famously drew the curve on the back of a napkin in a Washington restaurant in 1974. Laffer suggested to journalists lunching with him that the United States was on the downward-sloping side of this curve. Tax rates were so high, he argued, that reducing them would actually raise tax revenue by increasing the incentives for people to work.

Most economists were sceptical of Laffer's suggestion. The idea that a cut in tax rates could raise tax revenue was correct as a matter of economic theory, but

FIGURE 16-3



**The Laffer Curve** The Laffer curve traces out the relationship between the average rate of income tax in the economy and the amount of income tax revenue raised by the government. At an income tax rate of either zero or 100 per cent, income tax revenue must be zero (at zero per cent there is no tax at all, and at 100 per cent there is no incentive whatsoever to work). Also, raising the tax rate slightly above zero per cent clearly raises tax revenue from zero to a positive amount, so that the slope of the Laffer curve must initially be positive. At some point between zero and 100 per cent, therefore, total tax revenue must achieve a maximum and the slope becomes negative: the disincentive to work as a result of higher income tax rates means that people work a lot less and so the total amount of income tax paid begins to fall.

there was more doubt about whether it would do so in practice. There was little evidence for Laffer's view that tax rates – in the US or elsewhere – had in fact reached such extreme levels.

Nevertheless, the thinking underlying the Laffer curve (as it became known) became very influential in policy circles during the 1980s, particularly in the US during the years of President Ronald Reagan's administration, and in the UK during Prime Minister Margaret Thatcher's government during the 1980s. Tax rates – particularly income tax rates – were cut aggressively in both the US and the UK during the 1980s.

In the UK, for example, under Prime Minister Thatcher, the top marginal rate of income tax was cut from 83 per cent to 60 per cent in 1980, and then again to 40 per cent in 1988. Economists have, however, found it hard to trace any strong incentive effects of these tax cuts leading to increases in total tax revenue, as the Laffer curve would suggest. The UK Institute for Fiscal Studies, for example, concluded that, at most, about 3 per cent of the increase in tax revenue between 1980 and 1986 could be attributed to the 1980 income tax cut.

In the US, President Reagan also cut taxes aggressively, but the result was less tax revenue, not more. Revenue from personal income taxes in the US (per person, adjusted for inflation) fell by 9 per cent from 1980 to 1984, even though average income (per person, adjusted for inflation) grew by 4 per cent over this period. The tax cut, together with policy makers' unwillingness to restrain spending, began a long period during which the US government spent more than it collected in taxes. Throughout Reagan's two terms in office, and for many years thereafter, the US government ran large budget deficits.

Yet Laffer's argument is not completely without merit. Although an overall cut in tax rates normally reduces revenue, some taxpayers at some times may be on the wrong side of the Laffer curve. The idea that cutting taxes can raise revenue may be correct if applied to those taxpayers facing the highest tax rates, but most people face lower marginal rates. Where the typical worker is on the top end of the Laffer curve, it may be more appropriate.

In Sweden in the early 1980s, for instance, the typical worker faced a marginal tax rate of about 80 per cent. Such a high tax rate provides a substantial disincentive to work. Studies have suggested that Sweden would indeed have raised more tax revenue if it had lowered its tax rates.

Policy makers and economists still debate these issues. There is no debate, however, about the general lesson that how much revenue the government gains or loses from a tax change cannot be computed just by looking at tax rates. It also depends on how the tax change affects people's behaviour. ■

## 16-4 The Ricardian View of Government Debt

The traditional view of government debt presumes that when the government cuts taxes and runs a budget deficit, consumers respond to their higher after-tax income by spending more. An alternative view, called **Ricardian equivalence**, questions this presumption. According to the Ricardian view, consumers are forward-looking and, therefore, base their spending decisions not only on their current income, but also on their expected future income. As we explore more fully in Chapter 18, the forward-looking consumer is at the heart of many modern theories of consumption. The Ricardian view of government debt applies the logic of the forward-looking consumer to analyse the effects of fiscal policy.

## The Basic Logic of Ricardian Equivalence

Consider the response of a forward-looking consumer to the tax cut that the Finance Minister is considering. The consumer might reason as follows:

The government is cutting taxes without any plans to reduce government spending. Does this policy alter my set of opportunities? Am I richer because of this tax cut? Should I consume more? Perhaps not. The government is financing the tax cut by running a budget deficit. At some point in the future, the government will have to raise taxes to pay off the debt and accumulated interest. So the policy really represents a tax cut today coupled with a tax hike in the future. The tax cut merely gives me transitory income that eventually will be taken back. I am not any better off, so I will leave my consumption unchanged.

The forward-looking consumer understands that government borrowing today means higher taxes in the future. A tax cut financed by government debt does not reduce the tax burden; it merely reschedules it. Thus it should not encourage the consumer to spend more.

One can view this argument another way. Suppose that the government borrows €1000 from the typical citizen to give that citizen a €1000 tax cut. In essence, this policy is the same as giving the citizen a €1000 government bond as a gift. One side of the bond says, 'The government owes you, the bondholder, €1000 plus interest.' The other side says, 'You, the taxpayer, owe the government €1000 plus interest.' Overall, the gift of a bond from the government to the typical citizen does not make the citizen richer or poorer, because the value of the bond is offset by the value of the future tax liability.

The general principle is that government debt is equivalent to future taxes, and if consumers are sufficiently forward-looking, future taxes are equivalent to current taxes. Hence, financing the government by debt is equivalent to financing it by taxes. This view is called *Ricardian equivalence*, after the famous 19th-century British economist David Ricardo, because he first noted the theoretical argument.

The implication of Ricardian equivalence is that a debt-financed tax cut leaves consumption unaffected. Households save the extra disposable income to pay the future tax liability that the tax cut implies. This increase in private saving exactly offsets the decrease in public saving. National saving – the sum of private and public saving – remains the same. The tax cut therefore has none of the effects that the traditional analysis predicts.

The logic of Ricardian equivalence does not mean that all changes in fiscal policy are irrelevant. Changes in fiscal policy do influence consumer spending if they influence present or future government purchases. For example, suppose that the government cuts taxes today because it plans to reduce government purchases in the future. If the consumer understands that this tax cut does not require an increase in future taxes, he feels richer and raises his consumption. But note that it is the reduction in government purchases, rather than the reduction in taxes, that stimulates consumption: the announcement of a future reduction in government purchases would raise consumption today even if current taxes were unchanged, because it would imply lower taxes at some time in the future.

## Consumers and Future Taxes

The essence of the Ricardian view is that when people choose their consumption, they rationally look ahead to the future taxes implied by government debt. But how forward-looking are consumers? Defenders of the traditional view of government debt believe that the prospect of future taxes does not have as large an influence on current consumption as the Ricardian view assumes. Here are some of their arguments.<sup>4</sup>

**Myopia** Proponents of the Ricardian view of fiscal policy assume that people are rational when making decisions such as choosing how much of their income to consume and how much to save. When the government borrows to pay for current spending, rational consumers look ahead to the future taxes required to support this debt. Thus, the Ricardian view presumes that people have substantial knowledge and foresight.

One possible argument for the traditional view of tax cuts is that people are short-sighted, perhaps because they do not fully comprehend the implications of government budget deficits. It is possible that some people follow simple and not fully rational rules of thumb when choosing how much to save. Suppose, for example, that a person acts on the assumption that future taxes will be the same as current taxes. This person will fail to take account of future changes in taxes required by current government policies. A debt-financed tax cut will lead this person to believe that his lifetime income has increased, even if it has not done so. The tax cut will therefore lead to higher consumption and lower national saving.

**Borrowing Constraints** The Ricardian view of government debt assumes that consumers base their spending not on their current income but on their lifetime income, which includes both current and expected future income. According to the Ricardian view, a debt-financed tax cut increases current income, but it does not alter lifetime income or consumption. Advocates of the traditional view of government debt argue that current income is more important than lifetime income for those consumers who face binding borrowing constraints. A *borrowing constraint* is a limit on how much an individual can borrow from banks or other financial institutions.

A person who would like to consume more than his current income – perhaps because he expects higher income in the future – has to do so by borrowing. If he cannot borrow to finance current consumption, or can borrow only a limited amount, his current income determines his spending, regardless of what his lifetime income might be. In this case, a debt-financed tax cut raises current income and thus consumption, even though future income is lower. In essence, when the government cuts current taxes and raises future taxes, it is giving taxpayers a loan. For a person who wanted to obtain a loan but was unable to, the tax cut expands his opportunities and stimulates consumption.

**Future Generations** Besides myopia and borrowing constraints, a third argument for the traditional view of government debt is that consumers expect the implied

<sup>4</sup> For a survey of the debate over Ricardian equivalence, see Douglas Bernheim, 'Ricardian Equivalence: An Evaluation of Theory and Evidence', *NBER Macroeconomics Annual*, 1987, pp. 263–303. See also the symposium on budget deficits in the *Journal of Economic Perspectives*, spring 1989.



future taxes to fall not on them but on future generations. Suppose, for example, that the government cuts taxes today, issues 30-year bonds to finance the budget deficit, and then raises taxes in 30 years to repay the loan. In this case, the government debt represents a transfer of wealth from the next generation of taxpayers (which faces the tax hike) to the current generation of taxpayers (which gets the tax cut). This transfer raises the lifetime resources of the current generation, so it raises their consumption. In essence, a debt-financed tax cut stimulates consumption because it gives the current generation the opportunity to consume at the expense of the next generation.

Economist Robert Barro has provided a clever rejoinder to this argument to support the Ricardian view. Barro argues that because future generations are the children and grandchildren of the current generation, we should not view them as independent economic actors. Instead, he argues, the appropriate assumption is that current generations care about future generations. This altruism between generations is evidenced by the gifts that many people give their children, often in the form of bequests at the time of their deaths. The existence of bequests suggests that many people are not eager to take advantage of the opportunity to consume at their children's expense.

According to Barro's analysis, the relevant decision-making unit is not the individual, whose life is finite, but the family, which continues forever. In other words, an individual decides how much to consume based not only on his own income but also on the income of future members of his family. A debt-financed tax cut may raise the income an individual receives in his lifetime, but it does not raise his family's overall resources. Instead of consuming the extra income from the tax cut, the individual saves it and leaves it as a bequest to his children, who will bear the future tax liability.

We can see now that the debate over government debt is really a debate over consumer behaviour. The Ricardian view assumes that consumers have a long time horizon. Barro's analysis of the family implies that the consumer's time horizon, like the government's, is effectively infinite. Yet it is possible that consumers do not look ahead to the tax liabilities of future generations. Perhaps they expect their children to be richer than they are and therefore welcome the opportunity to consume at their children's expense. The fact that many people leave zero or minimal bequests to their children is consistent with this hypothesis. For these zero-bequest families, a debt-financed tax cut alters consumption by redistributing wealth among generations.<sup>5</sup>

<sup>5</sup> Robert J. Barro, 'Are Government Bonds Net Wealth?', *Journal of Political Economy*, 1974, vol. 81, pp. 1095-1117.



**'What's this I hear about you adults mortgaging my future?'**