4

Government spending and fiscal policy

4.1 GOVERNMENT SPENDING

The scale of government spending

Government spending is divided into the five categories shown in figure 4.1, where the different items are shown both in £billion and as percentages of GDP at market prices (£509 billion in 1989). At first sight the figure of £195.8 billion for total government spending, amounting to just over 38.5 per cent of GDP seems enormous. However, most of this comprises transfer payments which do not form a part of GDP. The only items that enter GDP are government consumption and investment, the sum of these being government spending on goods and services, amounting to only 21 per cent of GDP. Current grants and subsidies comprise primarily social security payments and unemployment benefits. Capital transfers are grants made to businesses, whilst debt interest is received as income by individuals or institutions.

When assessing the quantity of resources that the government 'uses up' we usually focus on the ratio of government consumption to GDP. It is important to be careful here because, perhaps surprisingly, the results are very different depending on whether we use current or constant prices. These two measures are shown in figure 4.2, where the series labelled 'real' is the ratio of real government consumption to real GDP and the series labelled 'nominal' is the ratio of nominal government consumption to nominal GDP. When measured using

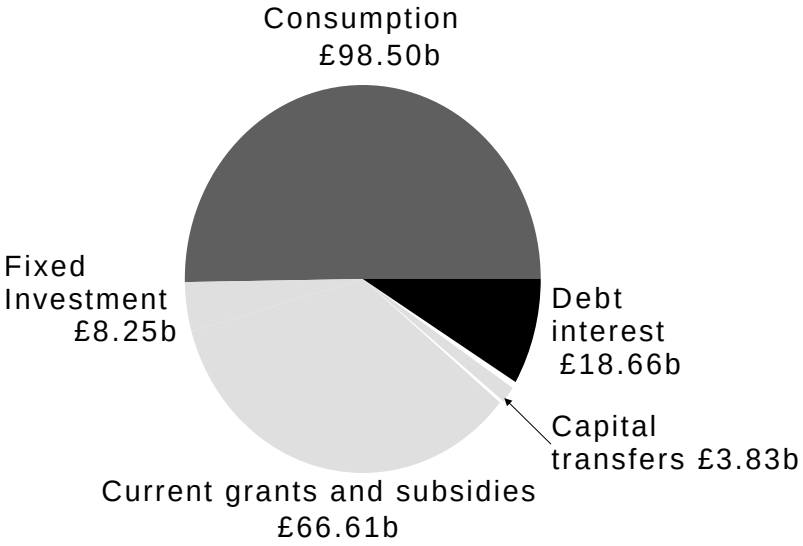

Figure 4.1 Government spending, 1989

Source: Economic Trends.

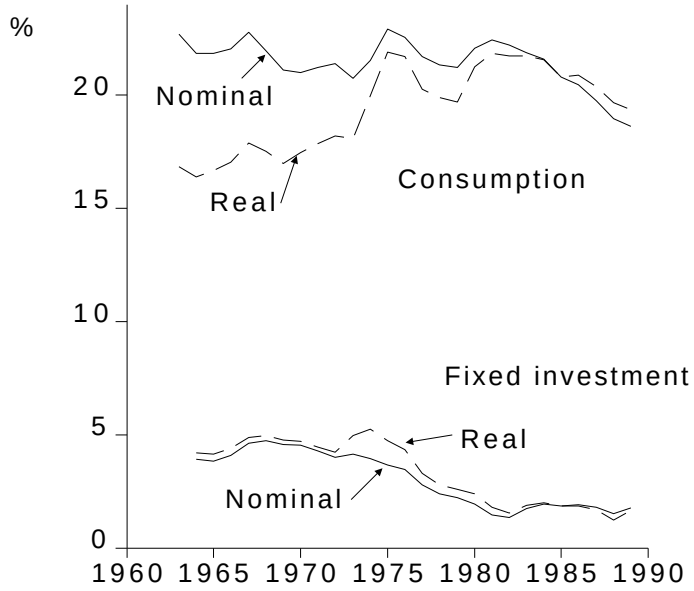

Figure 4.2 Government spending as a percentage of GDP

Source: Economic Trends.

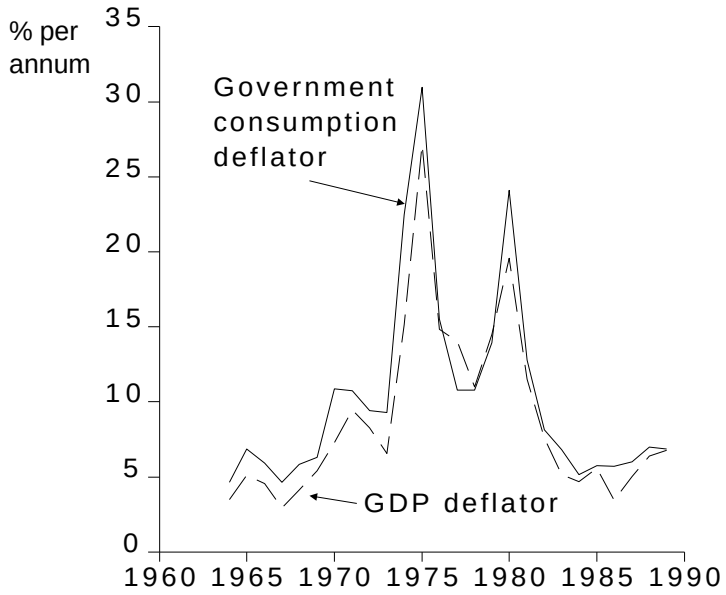

Figure 4.3 The price of government consumption

Source: Calculated from data in *Economic Trends*.

current price data, the ratio rose from around 17 per cent in 1965 to nearly 22 per cent in 1975, since when it has fluctuated between 20 and 22 per cent. When measured using constant price data, on the other hand, the ratio fluctuated between 21 and 23 per cent throughout the 1960s and 1970s, falling steadily during the 1980s to around 19 per cent.

The explanation for this contrast is that the price of government consumption has risen faster than the GDP deflator. The two inflation rates are shown in figure 4.3. With the exception of 1977-8, the price of government consumption was rising faster than the GDP deflator. One reason is that because most government services are not marketed, it is either difficult or impossible to measure improvements in the quality of government services. Much government spending is measured by the adding up the resources used, which means that the figures fail to reflect productivity growth.

Also shown in figure 4.2 is government fixed investment. The main feature here is that government fixed investment roughly halved during the 1970s, remaining very low since then. Compared with government current expenditure (consumption) government investment is very small.

Factors determining government spending

In many macroeconomic models the level of government spending is taken as exogenous, often constant. In so far as spending reflects policy decisions this may be appropriate. It is important to note, however, that spending also changes for reasons other than changes in economic policy. Education and health service spending, for example, depend on the age structure of the population; unemployment and social security payments depend on the level of unemployment, the level of income and the distribution of income. Whilst we are not directly concerned with such issues here, they are important because it is a mistake to see government policy as underlying every observed change in government spending. The fall in government investment happened because the government was faced with having to reduce spending, and investment was easier to cut than current expenditure.

4.2 THE GOVERNMENT DEFICIT

Measuring the deficit

In macroeconomic theory the meaning of the term government deficit is simple: it means total government spending (including transfer payments) minus taxation. In practice, however, the problem is slightly more complicated. We have to decide whether to include just central government, all government or the whole public sector. In addition there is the problem of what items to include as income and expenditure. If we focus on the public sector as a whole the nearest to

Table 4.1 The public sector deficit, 1989

	£billion
Government expenditure	
Total (see figure 4.1)	195.9
Government income	
Taxes and social security contributions	188.0
Trading income, rent etc.	14.5
Total	202.5
Government financial deficit (expenditure - income)	-6.6
Public corporations financial deficit	-1.0
Public sector financial deficit	-7.6

Source: Economic Trends.

this measure of the deficit is probably the *public sector financial deficit*. The term *public sector financial balance* is often used instead, the only difference being that the sign is reversed. The origins of the PSFD for 1989 are shown in table 4.1. It is made up of government spending minus income, plus the deficit of public corporations (such as the Post Office, British Coal and so on) which are part of the public sector but are not included within the government. In 1989 revenues exceeded current and capital expenditure, so that there was a negative deficit (a surplus).

The most widely cited measure of the government deficit, however, is the *public sector borrowing requirement* (PSBR) or, when this is negative, the *public sector debt repayment* (PSDR). PSDR is just the negative of PSBR. The relationship of this to the PSFD is shown in table 4.2. The difference between the two is the item labelled 'net lending to the private sector and overseas.' This included net purchases of company securities, which explains why it is so large and negative, for it includes the proceeds of privatizing public corporations. When the government privatizes a public corporation it is selling securities in the new company to the public. The revenue raised enters here. If the

Table 4.2 PSFD and PSBR in 1989

	£billion
Public sector financial deficit	-7.6
Net lending to private sector and overseas	-3.1
Public sector borrowing requirement	-9.1

Source: Economic Trends. Note that the item 'Net lending etc.' also includes 'Other financial transactions.'

government raises finance through selling shares in newly-privatized companies it reduces the amount it has to borrow, and hence the PSBR.

The behaviour of PSFD and PSBR, both in £billion and as a percentage of GDP, are shown in figure 4.4. Several features of this graph are worth picking out: the low level of the deficit in the 1960s; the sharp rise in the deficit in the early 1970s; and the fall during the 1980s.

- For most of the 1960s the deficit, by either measure, was fairly small. A surplus was achieved in 1969-70 because of the Labour government's restrictive policies.

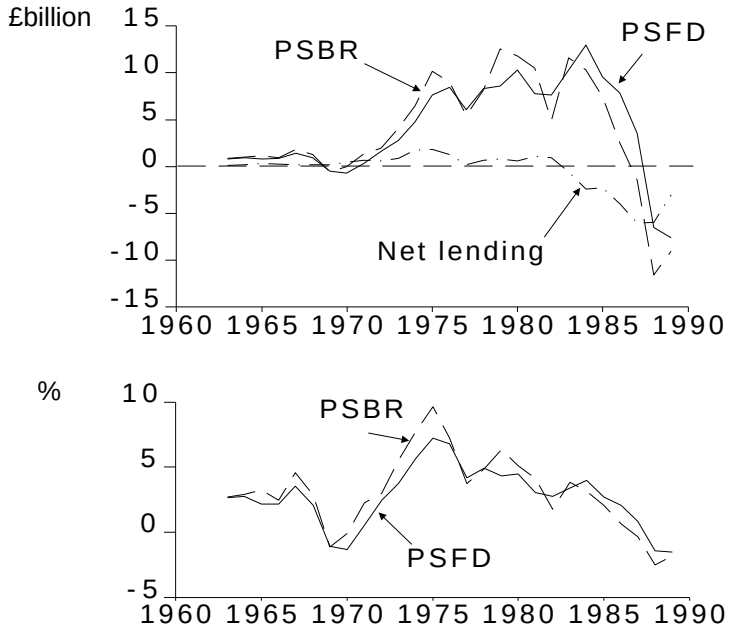

Figure 4.4 PSFD and PSBR, 1963-88

Source: Economic Trends. GDP is at market prices.

- ❑ The deficit rose enormously between 1970 and 1974, and from then until the mid-1980s it fluctuated about a much higher level. This rise in the deficit is something to which we will return later on.

- ❑ Since about 1983 both PSBR and PSFD have fallen greatly. The increasing gap between them was caused by the massive rise in privatization proceeds, causing net lending to become large and negative.

Faced with these two measures of the government deficit, which should we choose? To answer this we need to think about why the deficit matters. The usual answer is that, assuming the government is not going to finance it by increasing the money supply (this question will be considered later, in chapter 10), it must be financed by borrowing. Large scale borrowing, is is argued, will push up interest rates: the increased supply of government bonds will lower their price. Keeping government borrowing low enables the government to keep interest

rates lower, encouraging private sector activity. If we accept this argument (some other factors influencing interest rates are discussed in chapter 12) the question of how we should measure the deficit becomes one of how far the public considers shares in newly privatized companies to be a substitute for government bonds. The easiest way to see this is to consider two extreme cases.

Case (a): Suppose that people regard equities as more risky than government bonds and as a result require a given risk premium if they are to hold shares rather than bonds. Given this risk premium people do not care whether they hold bonds or equities. In this situation increasing the supply of equities will have exactly the same effect as increasing the supply of government bonds, for the public is concerned only with the overall quantity of bonds-plus-equities that it has. A government deficit financed by selling equities in public corporations will raise interest rates just as much as will one financed by selling bonds: the interest rate on bonds and the yield on equities will rise and fall together so as to keep the risk premium constant. In this case the PSFD is clearly the best measure of the government deficit.

Case (b): The other extreme is the one where the public considers equities to be so different from other financial assets that there is no relationship between its holdings of equities and its demand for bonds. In this case issuing equity will have no effect at all on the price of bonds and hence on interest rates. It may thus be appropriate to focus on the PSBR, not the PSFD. The problem with this is that although, in this case, the sale of privatized companies will not affect interest rates, it should affect the price of equities and hence Tobin's q. The government should, therefore, be just as concerned about raising money through privatization as through bond issues. On the other hand, if privatization creates new investors who before either did not save or held simply cash, then it may be a way of raising finance without any adverse effects on interest rates or the price of equities, and so all the government needs to be concerned about is the PSBR.

Adjusting for inflation and the cycle

If we are to use the government deficit as a measure of the stance of fiscal policy, there are two factors which need to be taken into account: the 'inflation tax' and the tendency of the budget deficit to change automatically over the business cycle. The same arguments apply whichever measure of the deficit (PSBR or PSFD) we use.

The case for adjusting the deficit to allow for the inflation tax can be expressed in two ways.

- ❑ The inflation tax transfers resources from the private sector to the government and should, therefore, be included alongside other forms of taxation.

- ❑ When calculating the cost of interest payments we should include only the real cost of interest payments: interest should be calculated using the real rate of interest. Given that the PSFB includes nominal interest payments we need to deduct the inflation tax to get the real interest payments.

These are discussed in more detail in box 4.1.

The business cycle is relevant to the problem of assessing the government deficit because even without any change in government policy the deficit would vary over the cycle. When unemployment is high and incomes are low the government will be faced with a large bill for unemployment and social security benefits and its tax revenues will be comparatively low. In a time of prosperity, on the other hand, benefits will be lower and tax revenues higher. These effects mean that, even if the government does not change its policy (by which we mean that its spending programmes, rates of unemployment benefit, income tax schedules and so on are unchanged) the deficit will change over the cycle: there will be a larger deficit in recessions than in booms. To allow for these effects it is possible to calculate a *cyclical adjustment*, the resulting deficit being the *cyclically corrected deficit*. This is sometimes called the *structural balance* or *full-employment deficit* (this is the term commonly used in the US). This is the deficit which would occur, given current policies, if there were full employment together with the lower benefit payments and higher tax revenues that go with this.

Figures 4.5 and 4.6 show the effects of adjusting the PSFD for the cycle and inflation. Everything is expressed as a percentage of GDP. Note that although we have used the PSFD, the adjustments could equally well have been applied to the PSBR. The cyclical correction shown in figure 4.5 is one derived by economists at the OECD using methods we will not go into here. It is easy to see that it follows the same pattern as GDP or unemployment, with 1973 and 1979 being taken as years of full employment (1973 is in fact taken as having over-full employment). The cyclical adjustment increased dramatically in 1980. The inflation tax, on the other hand, peaked in the mid-1970s. Since 1975 it has fallen, with the fall in inflation, to only about 2 per cent of GDP.

Applying these two adjustments to the PSFD makes an enormous difference to the trends we observe over the 1970s and 1980s. There

was a surplus (a negative PSFD) in 1969-70, after which the deficit rose to nearly 8 per cent of GDP by 1974. This deficit remained substantial right through to the mid-1980s. The inflation-adjusted deficit, on the other hand, shows a different story. Far from there being a deficit during the 1970s, there was a surplus. It was only during the 1980s that a deficit emerged, the reason being the sharp fall in inflation, which reduced the inflation tax to a small fraction of what it had been during the 1970s. Much of this deficit, however, was caused by the large rise in unemployment and the associated fall in output. This is shown by

BOX 4.1 THE INFLATION TAX

Inflation reduces the real value of all debts denominated in money. If there is 5 per cent inflation a debt of £100 will be worth approximately £95 at the end of a year. Inflation, therefore, makes debtors better off and creditors worse off: it redistributes wealth from those who have lent money to those who have borrowed it.

In most countries the government is the largest net debtor, its debts being far larger than its holdings of financial assets. This means that the government benefits from inflation. Another sector to benefit in this way is the corporate sector. The sector to lose most is the personal sector which is a large net creditor.

The inflation tax is closely linked to interest rates. If the inflation rate is π the inflation tax will be π.NML, where NML is the government's net monetary liabilities (the value of debts denominated in money less any assets). Define r as the average nominal interest rate on government debt, so that nominal interest payments are r.NML. Real interest payments are found by multiplying NML by the real interest rate, r-π. It follows that,

$$(r-\pi).NML = r.NML - \pi.NML,$$

or,

real interest payments =

nominal interest payments - inflation tax.

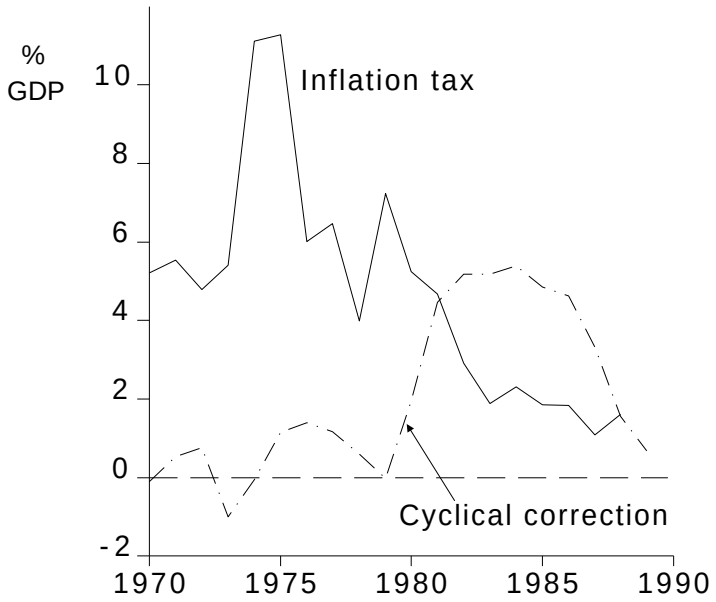

Figure 4.5 Inflation and cyclical adjustments

Source: Inflation tax from *Bank of England Quarterly Bulletin*, May 1990 and earlier issues.

comparing the inflation-adjusted deficit with the deficit corrected for the cycle as well as for inflation (the 'inflation-adjusted structural PSFD'). This suggests that despite the rise in the inflation-adjusted deficit, policy was very contractionary in 1980. Had it not been for the rise in unemployment, there would have been a large increase in the surplus. If we discount 1974-5 (for reasons that are explained below), the full- employment surplus was much larger in 1980 than at any time since 1970.

The inflation tax is calculated by multiplying the market value of the government's net monetary liabilities by an appropriate inflation rate. In the figures used above the inflation rate used was the consumers' expenditure deflator. This is the usual inflation rate to use, the argument being that the inflation tax is important because it affects consumers' spending decisions (see chapter 2). The issue is, however, more complicated than this. Here we have a problem. The reason is that over the past 20 years the inflation rate has fluctuated enormously from year to year. This means that when we calculate the inflation tax using the actual inflation rate we find that it varies greatly from year to year. In particular we have the inflation tax rising to around 11 per cent

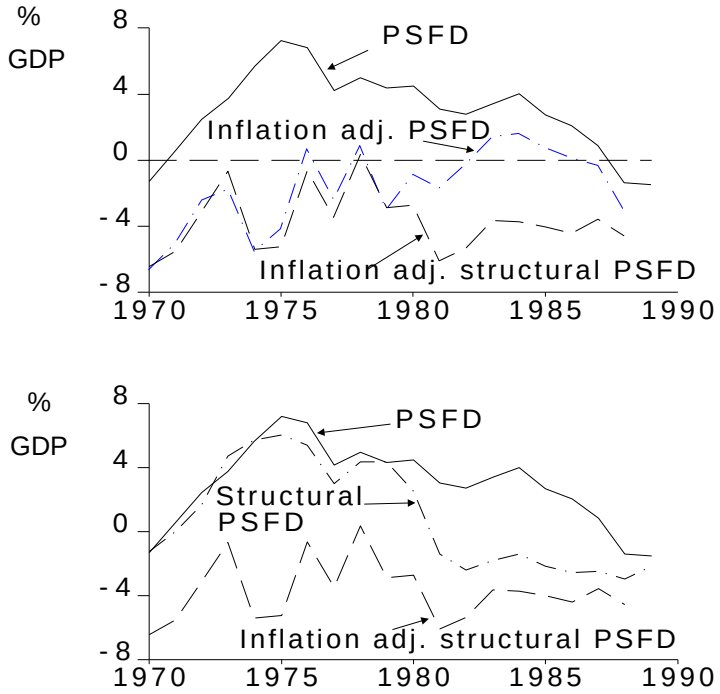

Figure 4.6 PSFD adjusted for inflation and the cycle

Source: Calculated from data used in figures 4.4 and 4.5.

of GDP in 1974-5. If private sector decisions depend on income flows over a longer period this measure of the inflation tax will not measure the impact that inflation is having on the behaviour of the private sector. We should instead use an inflation tax based on a longer term, expected inflation rate.

Further evidence that this is appropriate is found in interest rates. For several years (notably 1974-5) real interest rates were negative. If investors had not regarded such negative rates of interest as temporary, the price of index-linked debt would have risen without limit! It did not. This suggests that the private sector was to a certain extent disregarding negative real interest rates and a high inflation tax as transitory phenomena. It can thus be argued that in addition to the inflation tax based on actual *ex post* interest rates, it may be appropriate to calculate an *ex ante* inflation tax, based on expected interest rates. The way such an expected interest rate can be calculated is through the yield on index-linked bonds. The yield on index-linked bonds gives us

a measure of the real interest rate and the yield on ordinary bonds gives us a nominal interest rate. The difference between the two measures the inflation rate expected by the market. There are a number of problems with this (such as those resulting from the fact that different investors pay different rates of tax on income and capital gains) but the principle remains sound.

The difference between *ex ante* and *ex post* inflation adjustments is shown in figure 4.7. Expected inflation, as implied by the yields on index-linked and non-index-linked debt, has fluctuated much less than the actual inflation rate (the retail price index is used because it is to this that the value of index-linked debt is linked). In particular the large rise in actual inflation in 1980 hardly shows up in the series for expected inflation: presumably it was expected to be short-lived and did not have a significant impact on long term expectations. The result is that the *ex ante* inflation tax was much lower than the *ex post* figure around 1980, though since around 1983 there has been little difference between the two.

4.3 THE GOVERNMENT DEFICIT AND THE NATIONAL DEBT

Interest payments

It is argued that government deficits impose a burden on the economy through raising interest payments. Figure 4.8 shows interest payments as a percentage of GDP. They were roughly constant during the 1960s, and increased during the 1970s. Overall interest payments amounted to about 4 per cent of GDP. Here again, however, the inflation tax is important. The reason is that it is the *real* interest rate that measures the cost of debt. To obtain the cost of debt when the real interest rate rather than the nominal rate is used we have simply to deduct the inflation tax from total interest payments. Figure 4.8 shows that real interest payments were negative throughout the 1970s, but that after 1980 they became positive. The real burden of interest payments on the national debt has increased much more sharply since 1980 than figures for nominal interest payments suggest.

Government debt

Instead of focusing on interest payments we may also be interested in the effect of the government deficit on the level of government debt. Here there are three issues to take account of: the inflation tax; growth in GDP; and the dynamic behaviour of government debt.

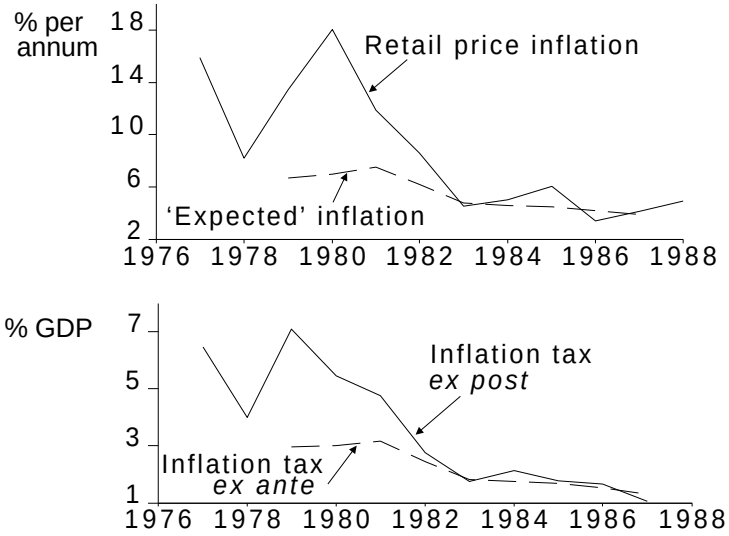

Figure 4.7 Alternative inflation adjustments

Source: Bank of England Quarterly Bulletin.

- The first is the inflation tax. If inflation is reducing the real value of the government debt, it is possible to run a deficit without the real value of the debt increasing: real debt will increase only if the inflation-adjusted balance is negative. Here it is the *ex post* inflation rate that matters.

- If GDP is growing at g per cent per annum the government can run a deficit equal to g per cent of the national debt each year without the ratio of debt to GDP rising. Given a constant real interest rate this means that the ratio of real interest payments to GDP, arguably the best measure of the burden of debt, will not rise.

- The third issue is more complicated and involves the dynamic behaviour of government debt. The argument is that provided the growth rate of GDP exceeds the real interest rate, a condition that is likely to be satisfied on average over a reasonably long period of time, the ratio of government debt to GDP will converge to a stable long run equilibrium value. A high government deficit does not lead to an ever-increasing debt/GDP ratio. This is discussed in more detail in box 4.2.

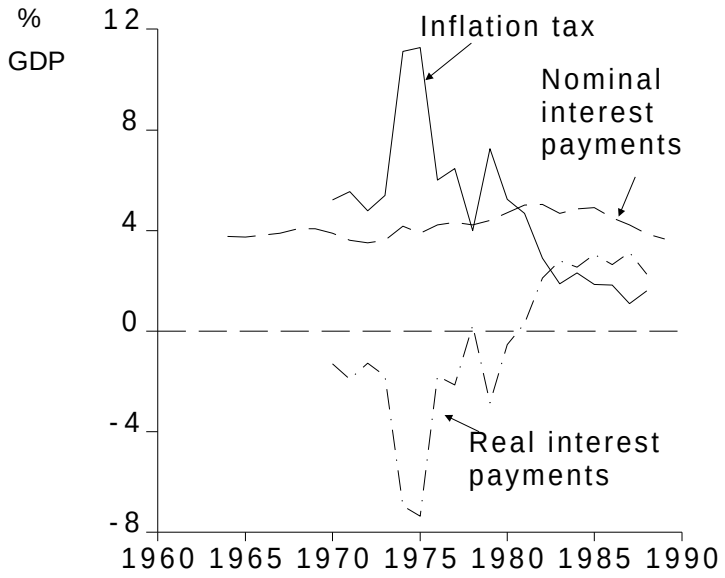

Figure 4.8 Real and nominal interest payments, 1963-88

Source: Economic Trends and figure 4.5.

These arguments are consistent with the behaviour of the national debt in relation to GDP, shown in figure 4.9. During the 1960s the national debt fell from about 100 per cent of GDP to about 50 per cent, since when it has been approximately constant. Note that figure 4.9 gives the nominal value (i.e. face value) of the national debt, not its market value. This means that the fall in the ratio of debt to GDP cannot be attributed to rising interest rates pushing bond prices down.

4.4 CONCLUSIONS: THE STANCE OF FISCAL POLICY

It would be very useful if it were possible to have a simple measure of the stance of fiscal policy: if this measure rose policy would be more expansionary (inflationary); if it went down policy would be more deflationary. The government deficit is a tempting choice for such a measure, for it reflects taxation as well as government expenditure. The larger the deficit, the more money is being injected into the economy. The distorting effects of inflation tax and cyclical factors can be eliminated by using the inflation-adjusted structural deficit as our measure of fiscal stance. The inflation-adjusted structural deficit would thus seem to be a suitable measure of the stance of the fiscal policy.

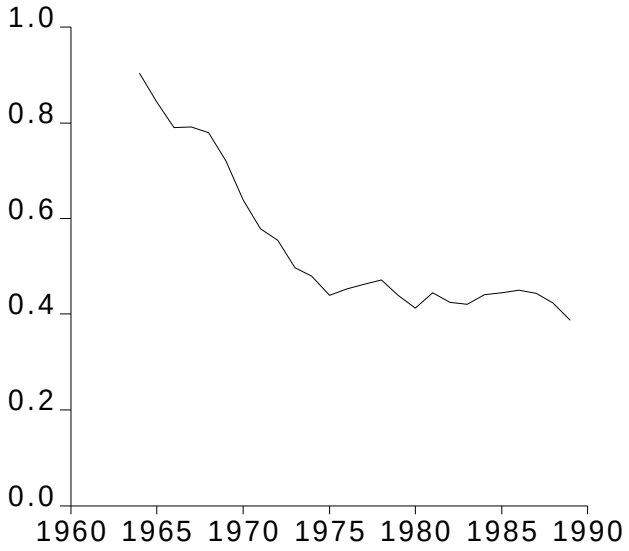

Figure 4.9 National debt as a proportion of GDP

Source: Economic Trends and *Financial Statistics*.

The situation is, however, more complicated than this, for several reasons.

- The level of government spending and taxation affects the level of aggregate demand independently of the size of the deficit, as is shown by the balanced budget multiplier theorem.

- Different types of spending or taxation may have different effects on aggregate demand. The marginal propensity to consume, and hence the multiplier, is not the same for all types of income. This means that different types of spending will have different multiplier effects.

- The way in which a deficit is financed may affect the level of aggregate demand. This is not simply a question of whether a deficit is financed by increasing the money supply or by increasing the quantity of government debt (which we might regard as an aspect of monetary policy, not fiscal policy): it also involves the type of debt the government issues, and how the private sector regards this debt in relation to other assets it holds. This is illustrated by the choice (discussed earlier in this chapter) between financing a deficit by selling equity in privatized companies or by selling government bonds.

BOX 4.2 THE DYNAMICS OF DEBT AND DEFICITS

Our aim here is to show that the ratio of government debt to GDP is, given certain assumptions, self-limiting. It will not go on rising for ever. To show this we divide the real (inflation-adjusted) deficit into two parts: the 'primary' deficit (government spending on goods and services less taxation) and real interest payments. We assume that the primary deficit is a given fraction, γ, of GDP. The change in the real value of the debt is equal to the inflation-adjusted deficit, which is

$$\gamma \, \text{GDP} + (r\text{-}\pi)\text{Debt}.$$

If we divide through by the debt we obtain the growth rate of the government debt.

$$\begin{aligned} \text{Growth rate of debt} &= \text{Increase in debt/Debt} \\ &= [\gamma \, \text{GDP} + (r\text{-}\pi)\text{Debt}]/\text{Debt} \\ &= \gamma \, (\text{GDP/Debt}) + (r\text{-}\pi). \end{aligned}$$

From this it follows that as the ratio of debt to GDP rises the growth rate of the debt falls. This is shown in figure 4.B2.1. Also shown is the growth rate of GDP, which we assume is greater than the real interest rate.

The ratio of debt to GDP will be constant if debt and GDP grow at the same rate. Where the growth rate of GDP equals the growth rate of government debt the ratio of debt to GDP will be constant. This is the equilibrium marked on figure 4.B2.1. It is easy to check that if the ratio of debt to GDP is higher than this equilibrium level GDP will be growing faster than debt and the ratio of debt to GDP will fall. Similarly if it is lower debt will be growing faster than GDP and the ratio of debt to GDP will rise. The debt/GDP ratio will thus always move towards the equilibrium shown in figure 4.B2.1.

In this equilibrium, the growth rate of government debt equals the growth rate of output, g.

$$\gamma \, (\text{GDP/Debt}) + (r\text{-}\pi) = g$$

From this it follows that

$$\text{Debt/GDP} = \gamma/[g-(r-\pi)]$$

A rise in the ratio of the primary deficit to GDP will lead to a rise in the debt/GDP ratio, but the debt/GDP ratio will not rise indefinitely.

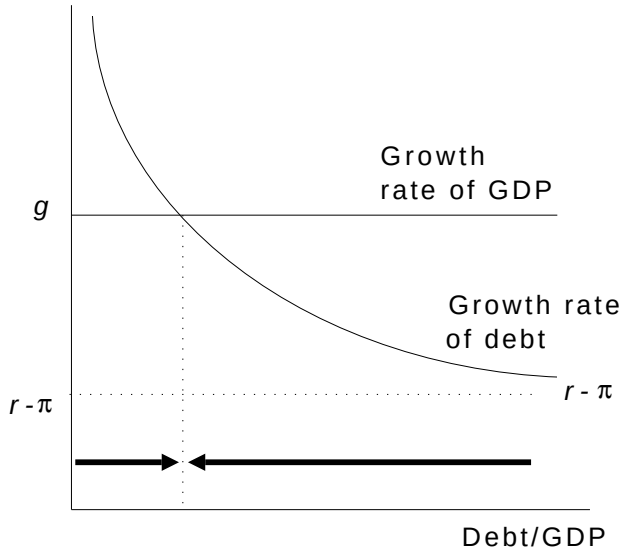

Figure 4.B2.1 Debt and GDP

It is for reasons such as these that there is, in general, no simple measure of fiscal stance. Any measure of fiscal stance has to be specific to a specific model of the economy. The inflation-adjusted structural deficit, for example, can serve as a measure of the stance of policy only if an extra £1 million spent on road-building has the same effects on aggregate demand as an additional £1 million in supplementary benefits, or a £1 million reduction in income tax. For a specific economy it may be possible to find a measure of fiscal stance which balances the effects of different fiscal actions against each other, but we should not expect such a measure to be simple, nor should we expect it to work in other situations. This is not to say that measures such as the inflation-adjusted structural deficit are useless; *ceteris paribus*, they do tell us about fiscal stance. It is important, however, not to neglect the other factors, which may be different.

It is important to note that in this chapter we have completely ignored the link between the government deficit and the money supply. The reason for this is simply a desire to tackle issues one-at-a-time. Money is considered in chapter 10.

FURTHER READING

A clear account of the main issues in fiscal policy can be found in D. Begg 'Fiscal policy,' in R. Dornbusch and R. Layard (eds.) *The Performance of the British Economy* (Oxford: Oxford University Press, 1987). Although it is now a little old, the concept of an inflation-adjusted PSBR and some of the other issues discussed here are clearly explained in House of Commons Select Committee *Monetary Policy, volume I: Report* (HC163-I, 1980-1), chapter 6 and annex to chapter 6 (pp. xcix-c). For a very thorough exploration of the problems involved in measuring the stance of fiscal policy, see W. Buiter 'A guide to public sector debt and deficits,' *Economic Policy* 1, 1985, pp. 14-79. M. Miller 'Measuring the stance of fiscal policy,' *Oxford Review of Economic Policy* 1(1), 1985, pp. 44-57, provides explanations and estimates of different inflation and cyclical adjustments, building on the earlier empirical work of P. Mueller and R. Price 'Structural budget indicators and the interpretation of fiscal policy stance in OECD economies,' *OECD Economic Studies*, 1984. Links between fiscal policy and the balance of payments are explored in José Vinals 'Fiscal policy and the current account', *Economic Policy* 3, 1986, pp. 711-44. An international perspective on the rise in government deficits in the 1970s, and the fall during the 1980s, is provided by Nouriel Roubini and Jeffrey Sachs 'Government spending and government deficits in the industrial countries', *Economic Policy* 8, 1989, pp. 99-132.