

Government Borrowing and Debt

Be not made a beggar by banqueting upon borrowing.

Ecclesiasticus 18:33

Budget Deficits and Public Debt: Meaning and Measures ♦ Funding a Budget Deficit ♦ Economic Effects of Budget Deficits ♦ The Burden of Deficits and the Public Debt ♦ Borrowing and Debt Policies

The use of debt to finance capital investment is a long-standing practice in the public sector as in the private. Clearly it is fair that taxpayers who receive the benefits of public investment should pay for much, if not all, of the investment over the life of the asset. Also, since the 1930s, following Keynes, there has been widespread support for running deficits on the government's current account in times of economic recession as a means of increasing aggregate demand, economic activity and employment without creating inflation.

On the other hand, there is widespread belief that budget deficits and public debt are bad. Budget deficits are perceived to indicate poor economic management and to encourage inflation, international trading deficits and declining exchange rates. And when public debt rises to very high levels, lenders fear that government may default on its financial obligations and are reluctant to lend. Under this scenario, interest rates rise, governments lose capacity to employ deficit-based growth strategies and growth rates decline (Reinhart and Rogoff, 2010).

These are lively concerns in the debate about economic management in the United States and European Union as well as in Australia. However, there is much confusion about what budget deficits and debt mean. There is a widespread failure to distinguish between operating deficits and total budget deficits that include capital expenditure. Accordingly, in this chapter we start by defining these concepts and providing relevant Australian data. The second section discusses the various ways in which budget deficits can be funded. Sections three and four discuss the macroeconomic impacts and incidence of debt respectively. Finally, we discuss public policies for budget deficits and the public debt inclusive of international data.

Budget Deficits and Public Debt: Meaning and Measures

As we saw in Chapter 2, there are two principal measures of budget balance: the net operating balance and the net lending balance. The latter is also known as the fiscal balance and is the most common measure of budget surplus or deficit.

The actual and projected budgets of the Australian and NSW governments for 2016–17 and 2017–18 as reported in the respective 2016–17 budget papers are shown in Table 29.1.

Table 29.1 Operating statements of Australian and NSW governments (\$ billions)

	Australian government		NSW government	
	2016-17	2017-18	2016-17	2017-18
Revenues				
Taxation revenue	386.2	415.4	30.4	31.6
Commonwealth grants	Na	na	30.8	31.1
Other grants and subsidies	Na	na	1.0	0.7
Sales of goods and services	8.9	11.5	8.5	9.0
Interest income	3.8	4.4	0.8	0.4
Dividend income	3.7	3.5	2.2	2.6
Fines, regulatory fees and other			4.4	4.4
Other	9.6	9.6		
Total current revenues	412.1	444.4	78.0	79.9
Gross operating expenses				
Wages and salaries	19.9	19.9	30.6	31.5
Superannuation	9.7	4.6	3.1	3.0
Depreciation	9.5	9.2	4.6	4.9
Payments for goods and services	91.3	102.5		
Other operating expenses	5.7	5.8	18.5	19.6
Total gross operating expenses	136.2	141.9	56.9	59.1
Superannuation interest expense	8.4	10.4	1.3	1.5
Interest expenses	17.6	18.5	2.1	2.1
Current transfers				
Current grants ^a	134.1	138.2	13.2	14.6
Subsidy expenses	12.7	12.1		
Direct personal benefits payments	129.9	130.5		
Total current transfers	276.7	280.8	13.2	14.6
Capital transfers (grants and write-downs)	11.9	12.6		
Total expenses	450.8	464.3	73.5	77.2
Net operating balance	-38.7	-19.8	4.5	2.7
Other economic flows^b	5.9	-6.6	38.6	10.2
Full result: total change in net worth	-32.8	-26.4	43.1	12.9
Net acquisition of non-financial assets				
Purchases of non-financial assets	12.2	13.6	10.7	14.3
Plus change in inventories	0.2	0.2	0.0	0.0
Plus movements in non-financial assets	0.0	0.0	0.3	0.3
Less depreciation	9.5	9.2	-4.6	-4.9
Less sales of non-financial assets	0.8	4.0	-3.7	-5.3
Total net acquisition of non-financial assets	2.0	0.5	2.7	9.1
Net lending balance (budget surplus)	-40.7	-20.3	1.8	-6.4

(a) These are mainly grants to state and territory governments.

(b) Mainly changes in asset values included in 'Full result: total change in net worth' but not included in either net operating balance above or in net lending balance.

Sources: Australian Treasury, *Budget Strategy and Outlook 2016-17* Budget Paper No. 1, Statement 10, Table 1; NSW Government, *Budget 2016-17*, Table A1.1.

The table is structured in accordance with *Government Financial Statistics* (GFS) prepared by the Australian Bureau of Statistics, which all Australian governments are required to follow. The amounts reflect accruals rather than cash transactions. The Australian government figures include GST revenue, which it collects and passes on to the states.

The GFS **net operating balance** equals current revenue less current expenses. It is similar to a private sector profit and loss account. Revenue includes taxes, income from sales of goods and services, interest and dividend income, fees and fines. Current expenses are composed of operating expenses and transfers. Operating expenses include depreciation allowances but not expenditure on new capital assets. In an accrual budget, superannuation expenses are workers' entitlements, not what government may lay aside for superannuation. Capital transfers are grants to other bodies that are used for capital projects.

The GFS **net lending balance** measures the excess of government revenue over total spending during a period (usually a year). The lending balance allows for capital as well as current transactions. The net lending balance equals the net operating balance minus net capital investment (NCI). NCI equals capital acquisitions¹ less capital depreciation and asset sales. The resulting surplus (or deficit) figure indicates the government's net lending (or borrowing) requirement in accrual terms.

As shown in Table 29.1, the Australian government ran a substantial deficit of \$39 billion in the net operating budget in 2016-17 and planned for another large operating deficit in 2017-18. Net capital expenditure (the net acquisition of non-financial assets) added a small amount to create the higher overall budget deficit.

On the other hand, the NSW government ran an operating surplus in 2016-17 and planned another surplus in 2017-18. These results are supported by large grants from the Australian government that accounted for about 40 per cent of current revenues. Because state governments spend proportionately more on capital formation than does the Australian government, the overall budget balance is usually negative, indicating a borrowing requirement. In the case of NSW, the borrowing requirement was reduced by asset sales. This reduces the cash deficit. But sales do not increase public net worth.

The Australian government budgets are prepared to high professional and international standards and the bases for the budget are well explained in the annual *Budget Paper No. 1*. Nevertheless, budget figures should be viewed carefully, particularly with respect to off-budget liabilities and treatment of publicly owned enterprises. For example, the Australian Government has spent some \$30 billion on the National Broadband Network (NBN) and total expenditure is expected to be around \$50 billion. But the Government does not include these expenses in the annual budget because it regards them as investments in financial assets (akin to investments by public trading enterprises) that will be repaid along with a commercial return on the capital in due course. This is a very optimistic view of the financial prospects for the NBN Corporation.

Expenditure and financing including borrowing by public trading enterprises (PTEs) are not included in general government budgets. The total public sector borrowing requirement includes the net borrowing requirements of PTEs as well as all net borrowing by central, state and local governments.

Net operating balance

Current revenue less current expenses

Net lending (borrowing) balance

Surplus (shortfall) in government revenue less total current and capital spending

Net public debt

The value of government's stock of financial liabilities less financial assets

Net public debt and net public worth

As we saw in Chapter 2 (see Box 2.3), there are three main measures of a government's overall financial position: net public debt, net financial liability and net public worth.

The **net public debt** (NPD) is the difference between the government's stock of financial liabilities and financial assets. In any year, the change in the NPD equals the net lending

¹ This excludes military equipment, which is recorded as a current expense in the budget financial statements.

balance. At any given time, NPD equals the sum of past budget deficits less any surpluses used to redeem the debt.

Because government may borrow at home or abroad, the financial liabilities may be owed to local or foreign citizens or firms. Also, government assets may be held in Australia or overseas. However, NPD is not the same as the foreign debt. The foreign debt is the sum of all public and private financial liabilities to foreigners less foreign financial assets held by Australians.

NPD is important because, together with interest rates, it indicates the call on future revenue flows to service that debt. However, it is a partial measure of a government's overall financial position. For example, NPD does not include accrued employee liabilities or any intangible liabilities associated with government guarantees. In some countries, unfunded pension guarantees exceed the net debt. In the United States, where the Social Security fund is run off-budget with contributions that are supposed to fund benefits, the actuarial shortfall allegedly runs into US\$ trillions, although views vary on the exact amount. This shortfall is a political obligation of the US government, although future governments could reduce pension payments.

Net public worth (NPW) equals total publicly owned assets less total liabilities. It is the most comprehensive measure of a government's overall asset position.² NPW includes a government's non-financial assets, such as equity held in PTEs, as well as all its liabilities. The NPW measure recognises the difference between debt incurred to finance capital formation and debt incurred to fund consumption. When debt finances capital formation, NPD increases but NPW does not change. When debt is used to finance consumption, NPD increases and NPW falls.

Net public worth
Total publicly owned
assets less total
liabilities

The balance sheets of the Australian and NSW governments at 30 June 2017 are shown in Table 29.2 overleaf. At this date, the Commonwealth had an estimated negative NPW of –\$292 billion, with gross liabilities of \$809 billion exceeding assets of \$507 billion. Employee entitlements, notably superannuation, accounted about one-third of the Commonwealth's liabilities. Between 2001 and 2008, Australian government budget surpluses transformed the NPD from \$42 billion into –\$22.0 billion (i.e. a net surplus). Since then, large budget deficits have increased the net public debt to \$325 billion.

The position of the NSW state government is very different. It has a high and rising net public worth. NPW rose from \$91 billion at 30 June 2001 to \$225 billion at 30 June 2017. Over this same period the NPD of the NSW government was virtually unchanged at around \$8 billion.

Official Australian statistics quoted in Box 2.3 (Chapter 2) indicate that as at 30 June 2017 the NPD of all Australian and state governments together amounted to only 22 per cent of GDP. The IMF figures quoted in Table 29.3 (page 523), which appear to be based on gross public debt rather than on net public debt, indicate that the Australian debt to GDP ratio is well below comparable ratios in most OECD countries.

Issues in interpretation

Several issues of interpretation arise with significant policy implications. We discuss below accruals versus cash accounting, the role of inflation, current versus capital accounting, off-budget items and the concept of the standardised deficit.

² Net public worth should be distinguished from net national worth. The latter includes private wealth. A few years ago, a World Bank report estimated that Australia is the richest country in the world in per capita terms with a wealth of \$835 000 per capita due to its natural resource assets.

Table 29.2 Estimated balance sheets of Australian and NSW governments at 30 June 2017 (\$billions)

	<i>Commonwealth</i>	<i>NSW</i>
Assets		
<i>Financial assets</i>		
Cash and deposits	3.4	5.6
Advances paid	54.1	1.0
Investments, loans and placements	181.9	
Other receivables	49.7	42.8
Equity investments ^a	92.2	116.9
<i>Total financial assets</i>	381.0	166.3
Total non-financial assets ^b	136.5	182.5
<i>Total assets</i>	517.5	348.9
Liabilities		
<i>Interest bearing liabilities</i>		
Deposits held	0.2	0.1
Advances received	0	0.8
Government securities	546.9	
Loans and other borrowing	17.3	33.0
<i>Total interest-bearing liabilities</i>	564.4	34.0
<i>Provisions and payables</i>		
Superannuation liability	175.0	53.7
Other employee entitlements and provisions	18.2	16.7
Other liabilities	50.1	19.6
<i>Total provisions and payables</i>	244.8	90.0
<i>Total liabilities</i>	809.2	123.9
Net public worth ^c	-291.7	224.9
Net public debt ^d	325.1	7.8

(a) Virtually all equity in public trading enterprises and public financial enterprises.

(b) Nearly all held in land and fixed assets.

(c) Net public worth equals total assets less total liabilities.

(d) Net public debt equals the sum of deposits held, advances received and borrowing less the sum of cash and deposits, advances paid and investments, loans and placements.

Sources: Australian Treasury, *Budget Strategy and Outlook 2016-17*, Budget Paper No. 1, Statement 10; NSW Government, *Budget Statement 2016-17*, Table A1.2.

Accrual and cash accounting. As noted, the figures in Table 29.1 are accrual numbers. These show revenue due and expenditure incurred but not actual cash payments. Australian governments are also required to provide cash flow statements.

In any period, the cash balance can be quite different from the accrual fiscal balance. This is important for the practical business of running government. Depending on the timing of cash revenues and payments, government may have to borrow for temporary working purposes over and above what it requires to fund the fiscal deficit measured in accrual terms.

Inflation. This also affects the real size of the budget deficit and government debt. The real deficit is the change in the real value of government debt over the year after adjusting for the effects of inflation and changes in real interest rates. Suppose that government has a net debt of \$20 billion at the start of the year and the annual rate of inflation is 5 per cent. If there is no net borrowing and the nominal value of the debt stays constant, the real value of the debt falls by \$1.0 billion in the year. This is equivalent to a budget surplus of \$1.0 billion over the year.

Current and capital expenses. Traditionally government accounting did not recognise the difference between current and capital expenditures. Indeed, some governments (and many politicians) still do not recognise this distinction. For example, in the United States the central government and most state governments treat all expenditures as current expenditures.

Under the GFS system used by Australia, capital and current expenditures are distinguished. Capital formation is a capital expense. Use of capital is treated as a current expense (depreciation). If capital formation is financed by debt or by asset sales, there is little or no change in net public worth. When government borrows, it takes on a financial liability that broadly offsets the new capital asset. When government sells an asset, it exchanges one asset for another.³

Distinguishing between current and capital expenses allows us to focus on the net operating balance, which for many purposes is the best measure of the real economic deficit. In any period, the net operating balance plus revaluations of assets and liabilities equals the change in net public worth. On the other hand, the overall fiscal balance shows a government's funding requirement and indicates potential pressure on credit markets. In so far as government uses debt to finance capital expenditure, net public debt increases. This may matter if government has difficulty paying interest on the debt. But, providing the projects are economically efficient, there is no decline in net public worth. NPW is generally a better indicator of the economic strength of government than is NPD, which is a partial measure of government's overall financial position.

The main argument against separate capital budgeting is that current and capital expenses are not easily distinguished (Gruber, 2016). For example, the Australian budget counts expenditure on defence weapons platforms (DWP) as current expenses although the Australian Bureau of Statistics records DWP as expenditure on a non-financial (capital) asset on a fair market value basis. Likewise, expenditure on education and health services is often an investment in future output or wellbeing, but it is also treated as a current expense. On the other hand, expenditure on buildings, plant and equipment are treated as capital expenses. Clearly there are practical difficulties in distinguishing between capital and current expenses and this can lead to abuse. In 1993 the Clinton administration proposed that the major US food stamp program was an investment because it improved diets for the poor and therefore their productivity.

Off-budget items. Governments often incur (and indeed legislate) obligations and liabilities that are not recognised in the budget. For example, government may underestimate the liabilities accruing in retirement pensions for its employees or the costs of its guarantees or legal responsibilities. When the major Queensland floods occurred in January 2011 the Australian government introduced a special levy during the financial year to fund the unexpected compensation obligations. In the United States, the government has effectively guaranteed the debts of quasi-government mortgage giants Fannie Mae and Freddie Mac. More generally, budgets often do not allow for the performance of separate off-budget security funds like the Social Security Fund in the United States or the National Insurance Fund in the UK. Underfunding of the US Social Security Fund has meant that the real US budget deficit has been significantly underestimated in accrual terms. Also, as we have noted, PTEs are off-budget. In the UK, policy makers pay considerable attention to the total public sector borrowing requirement (PSBR).⁴

³ Net public worth may rise if the capital formation is efficient or fall if it is inefficient.

⁴ For discussion of the PSBR in the United Kingdom, see Bailey (2002, Chapter 11). In the United States the difference between all federal government expenditures and revenues is called the 'unified budget deficit' (Hyman, 1999, Chapter 12).

**Cyclically
adjusted
budget outcome**

The budget outcome that would occur with current tax arrangements at a specified normal level of activity

The cyclically adjusted budget deficit. In any year, the size of the deficit reflects both the structural (long-term) imbalance between revenues and expenditures and temporary factors. The most important temporary factors are fluctuations in economic activity associated with the business cycle. When economic activity is low, tax revenues are low and social security payments are high. Accordingly, the deficit is higher than it would be with more buoyant conditions. Other temporary factors may include one-off payments or timing factors, though timing is less important in accrual budgeting. For macroeconomic management, it is sometimes considered useful to estimate a cyclically adjusted budget outcome. This is the budget outcome that would occur with the current tax arrangements if the economy were at some specified normal level of activity. This may be a full employment economy but may also be a mean point in the business cycle that allows for an unemployment rate of perhaps 5 per cent. Any deficit at this mean point is deemed to be a structural deficit. The aim is to isolate any structural imbalance in the budget from cyclical effects. A temporary budget deficit is of less concern than a structural deficit. It follows that, when economic activity is low, the actual budget may be in deficit, but the cyclically adjusted budget may be in surplus.

Funding a Budget Deficit

As shown in Table 29.2, Commonwealth interest bearing liabilities totalled \$564 billion at June 2017 and the 2016-17 budget papers forecast a further borrowing requirement of over \$40 billion in the year. These liabilities are managed by the Australian Office of Financial Management (AOFM) which sits in the Australian Treasury. The AOFM issues Treasury Notes, Treasury Bonds and Treasury Indexed Bonds, manages the government's cash balances and invests in high quality financial assets. Treasury Notes are short-term borrowings typically over 90 days designed to deal with the government's within-year financial task. These notes may be required to meet cash requirements even when the government has a budget surplus. Treasury bonds are the main instrument used to meet the government's financing requirements.

The government can also fund its deficit by drawing down on its savings in the form of deposits held with the Reserve Bank or other state-owned funds such as the Building Australia Fund or the Education Investment Fund. Alternatively, it can borrow directly from the Reserve Bank of Australia (RBA) at the RBA-determined interest rate.

However, in the Australian system the RBA plays a central role in determining how the budget will be financed and the economic outcome. This reflects the independent role of the central bank in Australia. The RBA decides whether to finance and purchase Treasury Notes and Bonds on its own account or whether to sell these to the public. In effect, the RBA decides whether to allow the money supply in the economy to change (to monetise the deficit) or not to do so. If the RBA decides to allow the money supply to increase, it holds the Commonwealth securities on its own account or buys them back from the public. This allows the government to borrow without any impact on interest rates. On the other hand, if the RBA sells the notes or bonds to the public, domestic or foreign, the sale reduces the money supply generally available and increases interest rates. In this way the central bank has the capacity, via control over the money supply, to counteract partly at least any short-run fiscal policy that the Treasury may wish to put in place.

When the central bank is not independent of the government, the government can also fund a budget deficit by borrowing from the central banking system at any interest rate (including no interest) that the government determines. In effect, the central bank provides an overdraft facility at little or no charge out of which the government pays for goods and services and provides transfer payments. These cheques are paid into accounts at commercial banks, which in turn present them to the central bank for payment. The central bank then credits the commercial banks' accounts held with the value of these cheques. Although government does

not actually print the extra money, this is sometimes described as government printing of money.

In exceptional circumstances, this method of government funding has no economic cost. This occurs when an increase in the money supply induces an increase in output, which in turn increases the demand for money to match the supply, and there is no increase in prices. However, when an economy is close to full employment, an increase in the supply of money increases prices rather than output. The cost is the inflation tax (see Chapter 25). The tax is the fall in the real value of money balances, including bank deposits. This is a capital loss sustained by holders of money. Thus, governments in developed economies rarely finance deficits by borrowing from the banking system without paying appropriate interest because the potential to raise revenue without inflation is limited. Even moderate money financing of the order of 1–2 per cent of GDP has been associated with inflation over 50 per cent in many developing countries (Burgess and Stern, 1993).

Since the global financial crisis erupted in 2007–08, several governments, notably the United States and the UK, have adopted monetary policies called ‘quantitative easing’ that some commentators have described as ‘printing money’. Quantitative easing involves the purchase of financial assets from banks and other private sector institutions, sometimes at above market prices, with new electronically created money. The scale of these operations was much greater than conventional open market operations designed to increase the money supply by relatively small amounts. However, the objective was similar, namely to inject money into the private sector when interest rates were very low rather than to fund government activities themselves.

Government can also fund a deficit by selling financial or productive assets. In a cash budget, asset sales reduce the nominal budget deficit and thus may reduce NPD. But the sale generally has no substantive economic impact. The sale of assets to the public has a similar economic effect to borrowing. In both cases the public provides revenue to government. In one case, it receives a financial asset in return. In the other case, it receives equity in a physical asset. But critically, NPW is the same whichever method of funding of capital formation is adopted.

Although asset sales may be shown in the budget as capital revenue, they are essentially a form of deficit finance. Suppose that government can finance additional expenditure by debt or by asset sales. Government would issue debt or equities respectively and the public acquires bonds or shares. However, the effects on net public worth and on markets are similar in both cases.⁵ Similar interest rate rises and crowding out effects occur, with a similar reduction in total capital formation. The two financing methods also have similar impacts on future taxpayers. Borrowing increases the future taxes required to pay interest and debt. Asset sales increase future taxes by a similar amount because they reduce future government dividend income, the present value of which equals the asset sale value.⁶

Economic Effects of Budget Deficits

We consider below how borrowing to finance investment and consumption respectively may affect key macroeconomic variables, notably economic output.

⁵ If the public has a preference for debt or equity, there may be very minor second-order wealth effects on spending.

⁶ Unless productivity is higher in private ownership, in which case asset sales are justified because the present value of the assets is higher in private ownership than in public ownership (see Chapter 18).

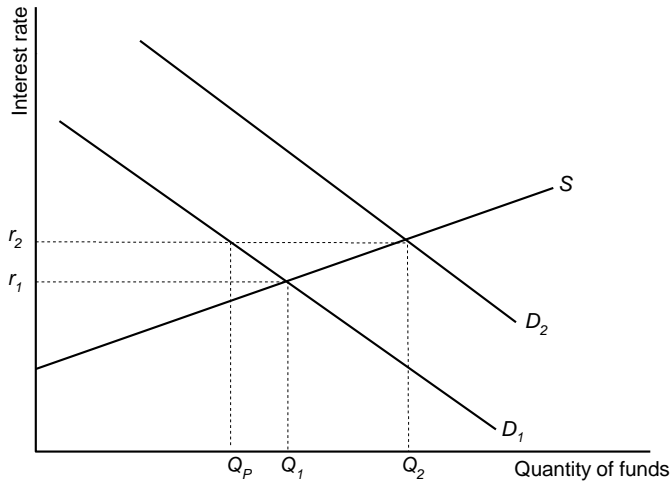


Figure 29.1 Demand and supply of capital

Borrowing to finance public investment. We examine first how borrowing to finance public investment may affect interest rates, private investment and output, assuming no change in the money base. Figure 29.1 shows the demand and supply for capital funds. The D_1 schedule shows private demand for capital and D_2 shows total demand inclusive of government demand. Given the supply of capital, government demand raises the rate of interest from r_1 to r_2 and the quantity of capital employed increases from Q_1 to Q_2 . However, with the rise in interest rates, private investment falls from Q_1 to Q_p . Overall, total investment increases but there is some crowding out of private investment.

In this scenario, the extent to which private investment is crowded out depends on the demand and supply elasticities for capital. Crowding out is low if the private demand for capital is inelastic or if the supply of capital is elastic so that public borrowing has only a small impact on interest rates. The latter occurs in an open economy with an elastic international supply of capital. Also, the central bank may keep interest rates stable by holding more Treasury bonds and thus increasing the money supply. In effect, this increase in the money supply would shift the supply of capital curve to the right. Thus, there are a number of ways, mainly through the inflow of international capital or increases in the money supply, whereby public investment can increase total investment.

However, this is a simple partial equilibrium model. We need to consider both how increased public investment could affect household consumption and hence aggregate demand and how employment levels may affect the outcome.

Government borrowing implies paying less tax now but more in the future. If individuals wish to retain their preferred inter-temporal consumption pattern, they must therefore save more today. Indeed, individuals may change their behaviour precisely to offset any actions of government! This view is also known as the **Ricardian equivalence**. Ricardo, a 19th century economist, argued that individuals consider the effects of the public debt on their own and their children’s living standards and increase their bequests to their children when government deficits increase future indebtedness. With Ricardian equivalence, taxation and borrowing are equivalent ways of financing expenditures and have the same effect on private consumption over time. However, the Ricardian equivalence assumptions, which also include perfect capital markets and non-distortionary taxes, are not very realistic. In a study of households’ saving responses to government deficits and a review of other such studies, Brittle (2010) concluded that household savings increase significantly with budget deficits,

Ricardian equivalence
 Government actions do not change private equilibria

offsetting perhaps 50 per cent of the deficit, but that responses are not fully Ricardian and that there remains a significant fiscal stimulus.

When households lend to government they may indeed reduce their consumption. But they can reduce consumption by less when lending than when taxed an equivalent amount because they can maintain consumption by borrowing against the security of government assets. Also, foreign capital may directly finance government borrowing or may finance individuals who want to maintain their consumption levels while lending to government. Providing that individuals do not save more now in anticipation of higher tax rates in future years, aggregate spending is likely to be higher if government finances investment by debt than by taxation. Accordingly, unless monetary policy is restrictive, financing capital expenditure by borrowing is likely to increase aggregate demand and be expansionary.

The amount of expansion depends on the level of employment (the resources available) in the economy and the openness of the economy. The greater are the resources available, the larger is the economic stimulus and the lower is inflation from any increase in aggregate demand. With full levels of employment, budget deficits increase the pressure on factor prices and the private demand for capital curve in Figure 29.1 shifts to the left. However, even with full employment, with an open economy additional resources may be imported without any immediate impact on local prices. Thus, if exchange rates do not change, budget deficits tend to be expansionary.

International transactions also affect exchange rates. The capital required to finance imported goods increases the claims of foreigners on future output. In so far as government borrowing increases the inflow of foreign capital, demand for the local currency increases and the exchange rate rises in the short run. However, when the principal and interest are repaid, foreign lenders may wish to repatriate their money and sell the local currency, thus lowering the exchange rate. A low exchange rate is expansionary for the local economy, but it also lowers real income by increasing the price of imported goods.

Finally, two further caveats should be noted about these observations on the effects of borrowing on key economic variables such as output, prices, savings and exchange rates. First, the effects are based on a series of partial equilibrium observations. For example, the conclusion that a budget deficit tends to reduce private investment assumes that the deficit does not change the level of aggregate expenditure and hence national output. If a budget deficit increases total output, this may in turn increase national saving and so offset any tendency for the deficit to reduce saving. Reliable macroeconomic predictions require (reliable) general equilibrium economic models.

Second, the observations assume broadly rational market responses. Sometimes financial markets react negatively to a budget deficit regardless of the reason for it because they think it indicates either government inefficiency or excessive expenditure that will produce inflation and a depreciating exchange rate. This may cause the price of equities to fall, interest premiums to rise, and private investment to fall. These effects of a budget deficit may have real economic consequences.

Borrowing to finance public consumption. From an accounting perspective, borrowing increases NPD by the amount of the loan regardless of whether the loan is financing public consumption or capital formation. But the impact on net public worth is quite different. Borrowing to finance consumption reduces NPW. Borrowing for investment maintains NPW (assuming the asset created provides equivalent services) and may even increase net public worth.

Turning to economic impacts, short-run macroeconomic outcomes are likely to be independent of whether borrowing finances consumption or capital formation. Although the composition of government expenditure would be different, total government expenditure would (or can) be the same. Because a budget deficit is likely to increase aggregate demand,

it is likely to stimulate economic output and employment at low levels of employment, but it may be inflationary at high levels of employment.

However, the use to which borrowing is put does affect longer term outcomes. When government borrows to finance public investment, total capital formation increases even if there is some crowding out of private investment. When government borrows to finance consumption, there is no net increase in capital formation and total capital investment may fall if there is any crowding out of private investment with higher interest rates. Thus borrowing to finance consumption reduces the capital to labour ratio, which in turn reduces labour productivity and future output and real wages. Present consumption is enhanced at the expense of future consumption.

The Burden of Deficits and the Public Debt

Who pays for budget deficits or, equivalently, for the net public debt? In a simple generational accounting model, future generations of taxpayers would appear to bear the burden of the NPD. However, actual tax incidence often differs from nominal incidence, and this applies also to the burden of the debt. We consider below the incidence of domestic borrowing to finance consumption and investment respectively and then consider briefly the implications of foreign borrowing.

Domestic debt funding of consumption. A traditional view popularised by Lerner (1948) is that financing consumption by internal debt rather than by taxation creates no burden for future generations! Future generations bear no net burden because, at any point in time, debt repayment simply transfers funds from taxpayers to bondholders. Therefore, the debt, whatever its size, does not affect the aggregate consumption of future generations. This is true in a closed economy.

If future generations as a whole are no worse off as a result of the debt, can government fund present consumption simply by raising debt at no cost to anyone? If they could, economists might even become popular! Alas, there is no free lunch. In a closed economy, three main groups of people are affected by deficit funding of public consumption:

- current taxpayers who gain increased consumption;
- bondholders who forgo current consumption but obtain compensation via increased consumption in the next period;
- future taxpayers who experience reduced consumption.

In this scheme, borrowing does not increase current consumption. Bondholders have rearranged their consumption over time and are compensated for forgoing current consumption. The beneficiaries of debt-funded consumption are current taxpayers and the burden for paying for this consumption lies with future taxpayers.

An overlapping generations model clarifies the beneficiaries and losers from debt-funded consumption. In simple versions of the model, current and future taxpayers are called current and future generations. But some individuals are members of overlapping generations. Old members of the current generation are beneficiaries of debt-funded public consumption because they receive the consumption goods but do not survive to pay for it. However, young members of the current generation are also members of the next generation—they both benefit from debt-funded consumption and pay for it. On the other hand, young members of the next generation are taxpayers and obtain no benefits. Thus, based on the present values of lifetime consequences of government policies, older individuals benefit from debt funding at the expense of younger and yet-to-be-born individuals (see Rosen and Gayer, 2014).

Generational accounting

Measuring the effects of government fiscal policy on the members of each generation

Overlapping generations model

A model in which individuals live in more than one period

There are two further reasons why debt-funded consumption may disadvantage future generations even in a closed economy. First, borrowing to finance public consumption may raise interest rates and reduce private investment, which could reduce future output and wages. Second, if NPD rises too high, government may have to pay a higher price for capital in the future.

Domestic debt funding of investment. On the other hand, the use of domestic debt to fund efficient investment creates no net cost to present or future generations. The present generation loses consumption because resources are diverted to capital formation. However, lenders who forgo current consumption by buying government bonds are compensated by increased consumption over the life of the bonds and when the bonds are redeemed. On the other hand, although future generations pay for the capital formation through increased taxes or user charges, they gain from increased goods and services. Given efficient financial markets and efficient investment, the gains should exceed the costs although some individuals in the next generation may be worse off from increased taxes. Of course, if investment is inefficient, borrowing can create significant costs for the next generation(s).

External debt. In many countries, including notably the United States and Australia, foreign investors hold a large part of the public debt. If, instead of taxation, foreign bondholders finance public consumption, there is less sacrifice of present consumption because fewer local bondholders are forgoing consumption. But there is increased cost, possibly a much-increased cost, to future generations because future taxpayers are paying foreign rather than local bondholders. There is also vulnerability to exchange risk if foreign bondholders wish to withdraw their funds.

On the other hand, if foreign loans finance capital formation, the impact depends on the productivity of the capital. If the return on the public investment is greater than the cost of the foreign funds, the combination of the investment with the foreign funds makes future generations better off.

Borrowing and Debt Policies

When, then, should governments use debt to finance their expenditure? And should governments have NPD or possibly NPW targets? These are key and topical public finance and political questions. In this section, we discuss short and medium-term deficit policies and then discuss further net debt and public worth policies.

Short-run macroeconomic management. Much of the debate about budget deficits over the last 50 years or so has revolved around the short-term macroeconomic effects of running deficits or surpluses. As discussed above, budget deficits (including operating deficits) tend to increase aggregate demand and are an important instrument of short-term employment and price-level objectives. Thus, operating deficits are generally desirable, and may be essential, when economic activity is depressed, while surpluses are desirable in boom times.

To some extent economies adjust via automatic stabilisers. Government budgets tend to be in surplus in boom times and in deficit in slumps. However discretionary fiscal (or monetary policy) is generally needed as well as automatic stabilisers impact slowly. Following the global financial crisis starting in late 2007 many governments temporarily adopted large budget deficits to counteract the extreme crisis of confidence and lack of lending in the private sector. This is generally thought to have avoided a very serious worldwide recession that would otherwise have occurred.

However, there are various constraints on the effectiveness of such fiscal policies. First, government cannot always act with the foresight and speed required to fine-tune the economy

with greater or smaller budget deficits (or surpluses). There are also lags between government spending and taxing decisions and their impacts. The Australian government's \$40 billion stimulus package, the national jobs and building program for schools and public housing, introduced in February 2009 was planned to be substantially completed by the middle of 2010 but was not completed until 18 months later.

Second, stimulus programs may be both inefficient uses of resources and fail to deal with the root causes of the economic downturn. For example, they may not deal with excessive lending for consumption or low-quality assets. The real problems may be systemic, not temporary. Unless spending programs create useful assets, they may increase government's net debt while reducing NPW. This occurred in the global financial crisis in 2008. What started as a private market credit crisis has now morphed into a government credit crisis.

These difficulties with fiscal policy led to more reliance on monetary policy from around 2010 onwards as governments became concerned with running deficits. A key feature of monetary policy is the setting of interest rates. Another key feature in many countries is the independence of the central bank in determining interest rates. This reliance on low interest reduces, but does not eliminate, the role of fiscal policy in short-run macroeconomic management. Indeed, many authorities (OECD, 2016, and IMF 2017) believe, that in recent years, excessive reliance on monetary policy at the expense of fiscal policy has been a mistake (see also Abelson and Dalton, 2017).

Golden rule of public finance

Over the business cycle government borrowing should equal net capital investment

The golden rule of public finance. Turning to the medium term, the golden rule of public finance is that, over the business cycle, government borrowing should equal net capital investment. The rule is based on the distinction between current and capital expenditure. To ensure meaningful operation, revenue and expenses should be accounted for in accrual rather than in cash terms. The practical implication of the golden rule is that government should achieve a *zero net operating balance on average over the course of the business cycle*. The rule allows operating deficits in recession years, but requires surpluses in boom years. It disallows borrowing to fund consumption in the medium term.

The golden rule is based on equity (fairness) and efficiency considerations. The major equity issue is intergenerational equity. The beneficiary principle of equity requires that those who receive the benefits of services should pay for them. Borrowing to finance current consumption transfers the burden of payment for present benefits to future taxpayers (other than bondholders). On the other hand, borrowing to finance capital expenditures spreads the costs of capital expenditure over time in accordance with the benefits that are generated. In addition, in so far as future generations are likely to have a higher income than the present generation, they are better able to pay for the services.

From an efficiency perspective, avoiding a deficit on the current operating budget is an important financial and management discipline. As Shakespeare's King Henry IV laments:

I can get no remedy against this consumption of the purse. Borrowing only lingers it out, but the disease is incurable (Shakespeare, *Henry IV*, Pt. 2).

Failure to achieve an operating balance reduces NPW and can raise the cost of finance for all government borrowing even in the short run if potential bondholders fear that government expenditure will cause inflation.

Of course, borrowing to finance capital expenditure presumes that projects are efficient, the social return on investment exceeds the cost of capital and that the projects are not simply displacing private projects. Consequently, NPW will increase and there is no net burden for future generations. The golden rule does not justify borrowing to finance white elephant projects that create a burden for future generations.

Thus, the golden rule is a medium-term policy that is consistent with short-run variations in the size of the budget deficit according to macroeconomic requirements and monetary policy. But this assumes that government starts from an acceptable financial position. The golden

rule may not be appropriate if government has too little NPW or too much NPD. Questions may also arise if the amount of debt held by foreign interests is viewed as excessive.

Public Debt and Net Public Worth Policies: Further Discussion

In practice, many financial institutions (including credit agencies) and governments are more stressed about debt than NPW. This is not entirely rational. Countries with high NPW can nearly always convert some non-financial assets into financial assets or use income from non-financial assets such as land, property and public trading enterprises to supplement their income from financial assets and so pay for any obligations arising from their debt position. However, discussions about government defaults are nearly always based on debt figures or, more specifically, the debt to GDP ratio. Accordingly, we first discuss the notion of a sustainable debt to GDP ratio.

To put the discussion into perspective, Table 29.3 shows reported *indicative gross* public debt to annual GDP ratios for selected countries. These figures must be treated cautiously because they are provided by national sources that are not always consistent in definition, for example with respect to government, or public sector, debt or to gross or net debt. The countries are divided in the table into high and low public debt to GDP ratios. For several high public debt countries, the debt/GDP ratios increased greatly due to government reactions to the onset of the global financial crisis.

Fiscal sustainability requires that the debt be readily serviceable. The product of debt and interest rates determines the interest payable to service the debt. In addition, it is usually necessary to pay down debt as assets mature. If debt is not repaid, the debt to GDP ratio rises as new capital is debt financed. Thus, suppose that a country has a debt to GDP ratio of 100 per cent with an average interest rate of 4 per cent and with the debt to be repaid on average over 20 years. The interest and debt payments would sum to 9.0 per cent of GDP (assuming no new borrowing). This is a high proportion of GDP to pay to bondholders, especially if they are external bondholders. As loans to external bondholders are redeemed the exchange rate may fall with a consequent impost on future generations. In any case, regardless of the source of the finance, such a high level of debt may necessitate increases in tax rates that would be inefficient and burdensome. Moreover, financial institutions and credit agencies question whether a government will have the fortitude to raise taxes or cut expenditure sufficiently, countries get down-rated and the rate at which government can borrow soars. Reinhart and Rogoff (2010b) estimated that debt/GDP ratios of less than 90 per cent have little effect on economic growth but that GDP growth rates typically fall by at least 1 per cent when the debt/GDP ratio rises above 90 per cent. However, this predated the major falls in interest rates and much larger debt/GDP ratios are now considered manageable (Abelson and Dalton, 2017).

Table 29.3 Gross public debt to GDP percentages for selected countries in 2017

<i>High debt countries</i>		<i>Low debt countries</i>	
Japan	233.9	Ireland	56.4
Greece	161.2	South Korea	40.0
Italy	120.1	Switzerland	37.2
Portugal	114.0	Australia	36.0
United States	109.6	Indonesia	30.0
United Kingdom	85.6	Russia	17.9
China	62.2	Russia	15.7

Source: IMF.

However, debt should not be considered separately from NPW. When NPW is significantly positive, government can finance future interest and debt payments in many ways other than by taxation, including by more borrowing to repay debts. On the other hand, although NPW is an important factor in a country's economic sustainability there does not seem to be any formula for setting a ratio of NPW to GDP. There is no strong reason why the state should own a prescribed percentage of the wealth of the nation.

In practice, national policies on budget deficits and debt to GDP ratios vary and, more importantly, are not always adhered to. In the United States, there is no set statutory set policy on deficits at the federal level, but every state in the union, except Vermont, is required by law to balance its budget each year. However, these are ex-ante expressions of will. There are few effective constraints on budgets ex-post running into deficits. As Rowley *et al.* (2002) observe, despite these legislative constraints, in 2001 state and local debt in the United States amounted to about 25 per cent of the national debt. Initially to protect the euro, the European Economic and Monetary Union required member countries to keep budget deficits below 3 per cent of GDP and public debt below 60 per cent of GDP. But these targets are well and truly history. In Australia, there are no legislated policies on budget deficits or debt at federal level.

On the other hand, few if any governments have a NPW target. Indeed, only in recent years have Australian governments made estimates of NPW. As we have seen, the Australian government (unlike the states) has a negative net worth. A negative NPW implies that past generations have consumed more than they paid for and are bequeathing liabilities to future generations. From 1996 to 2007 the Australian government aimed to achieve budget surpluses to rectify this and, in particular, to reduce its superannuation liabilities to its employees and prepare for its growing long-term obligations to public pensioners. However, from 2008 to 2011 this objective was subordinated to the aim of sustaining employment during the global financial crisis. Subsequently, the national government has continued to run annual operating and total budget deficits.

In conclusion, the golden rule of public finance is a good basis for fiscal policy. The rule requires that governments balance the **operating budget** over the business cycle. This allows an operating deficit for short-term macroeconomic considerations when economies are significantly underemployed. Importantly, it also allows debt funding of capital investment.

However, the golden rule requires the discipline of operating surpluses in strong economic conditions. Operating surpluses may also be required if the debt to GDP ratio is so high that servicing the debt is not sustainable or if external debt is excessive and repayment could lead to a major fall in the exchange rate. Operating surpluses may also be required to ensure that large liabilities do not impose major tax burdens on future generations.

Summary

- The budget deficit measures the excess of government spending over revenues during a given period. The two main measures of the deficit are the net operating balance and the overall fiscal balance, usually measured in accrual terms.
- The net operating balance is current revenue less current expenses. The fiscal balance equals the net operating balance minus net capital investment. A negative fiscal balance indicates a financing requirement.
- Net public debt equals the financial liabilities of government less financial assets. Net public worth is total public assets less total liabilities. A change in net public worth reflects the net operating balance (along with any asset revaluations).
- To understand government's real financial position, allowances need to be made for the effects of inflation, current and capital expenses, off-budget items and the cyclically-adjusted budget deficit.
- The Australian government generally funds a deficit by issuing Treasury bonds or notes or by borrowing from the Reserve Bank at the bank-determined interest rate. The Reserve Bank decides whether to hold the Treasury bonds, which allows the money base to increase, or to sell the bonds to the public, which raises interest rates.
- Funding an operating deficit by borrowing instead of taxation generally increases current aggregate demand. This increases output when there is less than full employment. However, borrowing to finance consumption may reduce private investment and future output.
- The golden rule of public finance states that government should achieve a zero-operating balance on average over the course of the business cycle. Operating deficits may be warranted in recessions, but surpluses are required in boom periods.
- Operating surpluses may also be required if the level of government net debt is not sustainable, debts to foreigners are excessive or national savings are too low.
- When government borrows to finance capital formation, future generations gain improved services to offset the taxation required to service the debt. If projects are efficient, net public worth increases.
- Arguably in recent years, there has been excess reliance on monetary policy and not enough on fiscal policy.

Questions

1. If government could pay for services by borrowing from the central bank without paying interest and so avoid levying taxes, why should government not fund public services in this way?
2. There is a widespread view that reducing the budget deficit improves economic performance. What arguments might support this view? Do they have substance?
3. How would the sale of a public trading enterprise to the public affect the net operating balance, the net lending balance, net public debt and net public worth?
4. Suppose that, at the start of a year, the net public debt in Australia is A\$500 billion, with three-quarters denominated in Australian dollars and a quarter in foreign currency. Suppose also that the rate of inflation in Australia in that year is 2 per cent and that the value of the Australian dollar rises by 3 per cent in the year. What are the implications for the real value of the debt at the end of the year and for government revenues?
5. Suppose that the Australian government agrees to underwrite a bid for the 2022 World Cup football tournament. Would this have any effect on the government's financial position?
6. What is generational accounting?
7. When, if ever, should government (i) finance consumption expenditures with debt or (ii) capital expenditures from taxes?
8. If the central bank has the power to decide whether to hold or sell government bonds and hence to increase or maintain the money base, does the budget deficit have any independent fiscal effect on the economy?
9. Does the generational incidence of debt depend on whether it is domestic or external debt? Should budget funding decisions depend on whether funding is provided from domestic or from external sources?
10. Nobel Laureate Paul Samuelson asked: 'Can it be truthfully said that internal borrowing shifts the war burden to future generations while taxing places it on the present generation?' and answered 'A thousand times no!'. Explain Samuelson's answer.

11. Reinhart and Rogoff (2010) found that GDP growth rates fell significantly when debt/GDP ratios exceed 90 per cent. Does this mean that high debt rates reduce economic growth?
12. What practical problems may arise with applying the golden rule of public finance?
13. Should governments have a net public debt target? If so, what target would you suggest?

Further Reading

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