Lecture 8: Introduction to Fiscal Policy

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The role of the government

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  ○ Some economists suggest fiscal policy can and should be used to lessen the severity of short-term business cycles.

  ○ Others are concerned with the implications of fiscal policy for long-run economic growth.

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☐ But first, a brief overview of different fiscal instruments.

Government Expenditures and Finance

☐ Major components of government outlays:

- **Government spending G on new final goods and services (consumption and capital investment)**

- **Transfer payments**

- **Interest payments on borrowed funds**

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☐ Major components of government revenue:

- By **collecting taxes** from households and businesses

- **Borrowing** by issuing debt

Budget Deficits and Real Net Debt

☐ **The budget deficit**: the difference between government outlays and tax revenue in a given period.

☐ Budget deficits add to the government's net liabilities (liabilities minus assets), which we call **net government debt**.
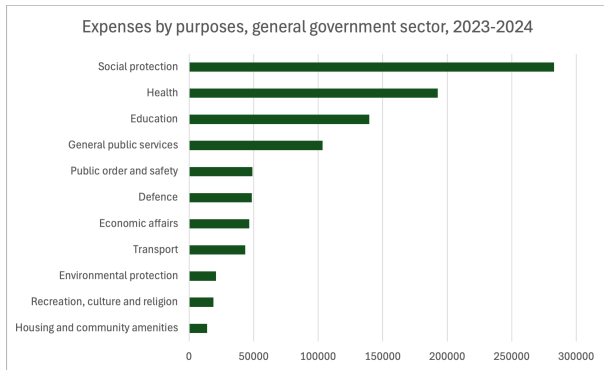
Budget Deficits and Real Net Debt

☐ Real net government debt is given by:

$$B_{t+1} = B_t + D_t$$

- $\circ$ B_t refers to the stock of **real** net government debt at the beginning of period t.

- $\circ$ D_t refers to **real** budget deficit in period t (inflation-adjusted).

Australian Government Expenses by function, 2023-2024

Expenses by purposes, general government sector, 2023-2024

Social protection
Health
Education
General public services
Public order and safety
Defence
Economic affairs
Transport
Environmental protection
Recreation, culture and religion
Housing and community amenities

0   50000   100000   150000   200000   250000   300000

Source: Australian Bureau of Statistics. Unit = $m

Government expenses by function

|	
Housing and community amenities	1.4%
Recreation, culture and religion	2.0%
Environmental protection	2.2%
Transport	4.5%
Economic affairs	4.9%
Defence	5.1%
Public order and safety	5.1%
General public services	10.8%
Education	14.5%
Health	20.1%
Social protection	29.5%

Australian Government Budget Balance

Net operating balance of all levels of general government
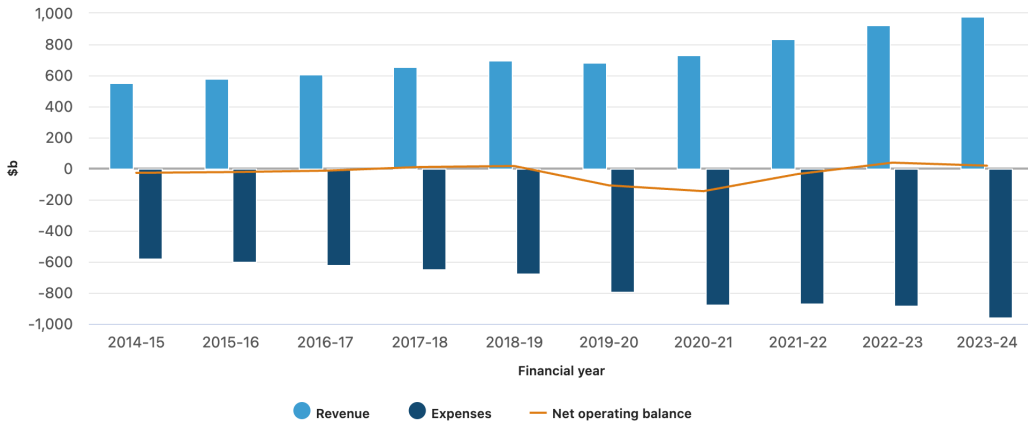
Net Public Sector Debt in Australia

**All Australia general government sector net debt (L2) as a percentage of GDP (a)**
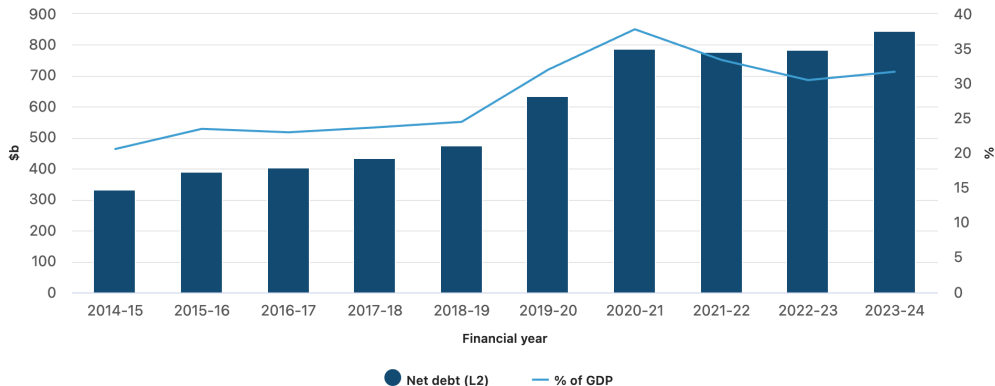
a. Using the GDP annual, current prices series as published in Table 36 in the December quarter 2024 issue of Australian National Accounts: National Income, Expenditure and Product.
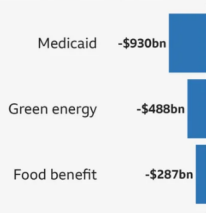
Source: Australian Bureau of Statistics, Government Finance Statistics, Annual 2023-24 financial year

On July 4th this year, the US passed a monumental bill. What was this bill called?

Estimated increases and savings in US federal spending from the bill

Cumulative cost increases over 10 years

- Tax cut extensions: $4.5tn
- Defence: $150bn
- Borders: $129bn
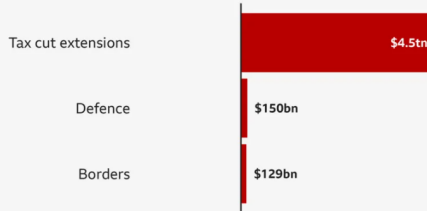
Total savings over 10 years

- Medicaid: -$930bn
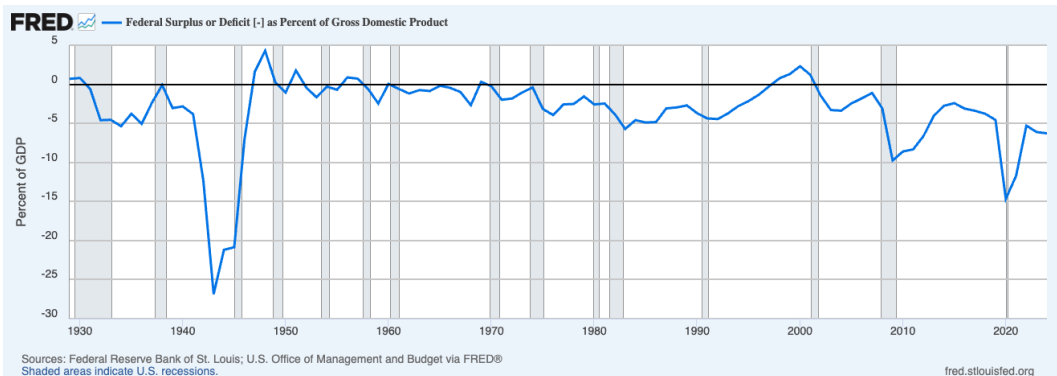- Green energy: -$488bn
- Food benefit: -$287bn

Source: Congressional Budget Office estimates

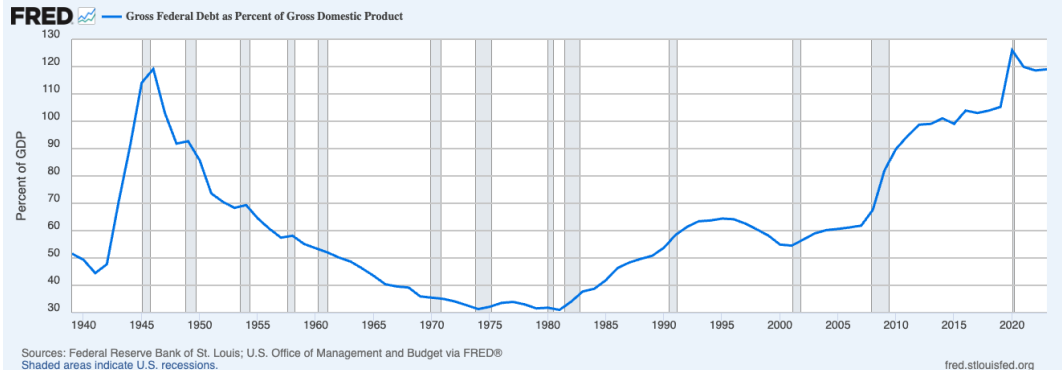- Congressional Budget Office (CBO) estimates the bill could add $3.3tn to federal deficits over the next 10 years

US federal surplus or deficit, % of GDP

US gross federal debt, % of GDP

Sources: Federal Reserve Bank of St. Louis; U.S. Office of Management and Budget via FRED®
Shaded areas indicate U.S. recessions.

fred.stlouisfed.org

Servicing debt

☐ For agents investing in government securities and bonds, what matters is whether a government can repay its debt

☐ Government's ability to repay debt depends on economic growth and interest costs

☐ Typically think that a government can sustain its debt burden if its economic growth is larger than its interest rate

    ○ Idea that if economy is growing faster than interest costs, then debt-to-GDP ratio should fall over time, as denominator is growing faster

The Government Budget Constraint

The Government's Intertemporal Budget Constraint

☐ The **government's budget constraint (GBC)** for a given period t is given by

$$G_t + r_t B_t = T_t + D_t, \quad \text{where}$$

- G_t: government spending on goods and services in period t.

- $r_t B_t$: interest payments on the government debt outstanding in period t.

- $\implies G_t + r_t B_t$: total government expenditures in period t.

- T_t: net tax receipts (tax receipts less transfer payments) in period t.

- D_t: budget deficit (budget surplus if negative) in period t.

Rewriting the Government Budget Constraint

☐ From definition of real net government debt, we have: $D_t = B_{t+1} - B_t$

☐ so the GBC can be rewritten as

$$G_t + r_t B_t = T_t + (B_{t+1} - B_t)$$

or equivalently,

$$\textcolor{red}{G_t + (1 + r_t)B_t = T_t + B_{t+1}}$$

☐ LHS represents outlays by government, RHS represents sources of government financing

☐ Note: $G_t - T_t$ is the **primary deficit** in period t.

Government Solvency

☐ Governments, face a budget constraint that limits the amount that they can spend over time

    ○ Idea that the government must be able to repay its debt at some point

☐ This can be more clearly seen from the **government's intertemporal budget constraint** (GIBC), which can be derived from the periodic GBC in all periods.

Government Solvency

○ Use period-t GBC and re-arrange as:

$$B_t = \frac{T_t - G_t}{1 + r_t} + \frac{B_{t+1}}{1 + r_t}$$

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○ Denote $R_t = (1 + r_t)$ and iterate forward one period:

$$B_{t+1} = \frac{T_{t+1} - G_{t+1}}{R_{t+1}} + \frac{B_{t+2}}{R_{t+1}}$$

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- Plug form of B_{t+1} into B_t:

$$B_t = \frac{T_t - G_t}{R_t} + \frac{1}{R_t} \left\{ \frac{T_{t+1} - G_{t+1}}{R_{t+1}} + \frac{B_{t+2}}{R_{t+1}} \right\}$$

Government Solvency

○ Using same steps as before, further plug form of B_{t+2} into B_t:

$$B_t = \frac{T_t - G_t}{R_t} + \frac{1}{R_t} \left\{ \frac{T_{t+1} - G_{t+1}}{R_{t+1}} + \frac{1}{R_{t+1}} \left(\frac{T_{t+2} - G_{t+2}}{R_{t+2}} + \frac{B_{t+3}}{R_{t+2}} \right) \right\}$$

Government Solvency

○ We can keep plugging in for B_{t+s} as $s \to \infty$ (because government lives forever):

$$B_t = \frac{T_t - G_t}{R_t} + \frac{1}{R_t} \left\{ \frac{T_{t+1} - G_{t+1}}{R_{t+1}} + \frac{1}{R_{t+1}} \left(\frac{T_{t+2} - G_{t+2}}{R_{t+2}} + \dots \right) \right\} + \frac{B_{t+s}}{R_t R_{t+1} \dots R_{t+s}}$$

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$$\lim_{s \to \infty} \frac{B_{t+s}}{R_t R_{t+1} \dots R_{t+s}} = 0$$

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○ The GIBC requires the government to collect over time enough taxes in present value terms, to cover the present value of spending as well as initial debt.

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○ In other words, government debt is backed by future expected cash flows of the government

Implications of the GIBC

- If the govt spends more now without raising current tax payments, it must:

    - either reduce future spending

    - … or increase future tax payments by an amount that has an equal present value.

- Fiscal policy consists of a series of interdependent decisions made over time.

    - Whatever actions the government takes today, it must make compensating actions in the future, so that its *intertemporal* budget is balanced.

- The intertemporal balance can be achieved in a variety of ways, however, different ways may have very different implications for macroeconomic performance.

A look at tax revenue

☐ Tax revenue could be collected lump-sum.

- ○ Denote τ_t^y and τ_t^o as a lump-sum tax on the young and old generations, respectively, in period t

- ○ Tax revenue in period t given by $N\tau_t^y + N\tau_t^o$

A look at tax revenue

☐ Tax revenue could be collected lump-sum.

☐ Government could enact proportional or flat taxes

    ○ Example 1: denote τ_t^w as the proportional tax on wage income in period t

    ○ Tax revenue from flat tax on wage income: $N\tau_t^w w_t$

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☐ Tax revenue could be collected lump-sum.

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- Example 2: denote τ_t^{cy} and τ_t^{co} as the proportional tax on c_t^y and c_t^o in period t, respectively

- Tax revenue from flat tax on consumption spending: $N\tau_t^{cy}c_t^y + N\tau_t^{co}c_t^o$

A look at tax revenue

☐ Tax revenue could be collected lump-sum.

☐ Government could enact proportional or flat taxes

☐ Net tax payments T can include revenue from these difference tax sources

The GBC with proportional taxes on consumption spending

Suppose no transfers. Net tax payments consist only of government tax revenue

☐ In period t, govt spends G_t, repays debt B_t with interest, levies proportional taxes τ_t^{cy}, τ_t^{co} on young and old consumption, and issues new debt B_{t+1} :

$$G_t + (1 + r_t)B_t = N \left(\tau_t^{cy} c_t^y + \tau_t^{co} c_t^o \right) + B_{t+1}$$

☐ In per-capita terms:

$$g_t + (1 + r_t)b_t = \tau_t^{cy} c_t^y + \tau_t^{co} c_t^o + b_{t+1}$$

Exercise: try writing down what the government budget constraint looks like in t with proportional taxes on labour income

The GBC with lump-sum taxes

Suppose no transfers. Net tax payments consist only of government tax revenue

☐ In period t, government spends G_t, repays debt B_t with interest, levies **lump-sum taxes** τ_t^y, τ_t^o, and issues new debt B_{t+1} :

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A balanced budget

☐ A balanced budget is one where government spending is equal to government net tax payments

$$G_t = T_t$$

☐ This means there is no deficit

☐ Running a balanced budget every period need not be optimal even if it ensures no runaway federal debt. Why?

☐ In our OLG model, fiscal policy consists of:

The Scope for Fiscal Policy

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☐ We discuss this more in the next lecture...

Wrapping up

☐ This class: the government budget constraint

☐ Next class: Government in the OLG model