Part 5: Sensitivity Analysis

Economic and fiscal forecasts and projections are underpinned by a range of assumptions and judgements based on the best available information at the time of preparation. In practice, economic and fiscal circumstances can evolve in ways that differ from expectations.[4]

Sensitivity analysis assesses the degree of uncertainty surrounding current forecasts by illustrating the impact of small changes in assumptions for key variables on forecasts of economic and fiscal aggregates.

The following sensitivity analyses were done based on their variability and importance for economic and fiscal aggregates presented in budget updates:

- Higher and lower iron ore prices in 2023–24 and 2024–25.
- Higher and lower yields over the medium term.

Movements in the iron ore price

The forecasts for nominal GDP and tax receipts are sensitive to commodity price assumptions, particularly iron ore prices. See *Part 2: Economic Outlook* for information on recent developments in commodity prices.

This analysis considers the impact of a permanent US$10 per tonne increase and decrease in the iron ore price on nominal GDP and tax receipts, relative to the baseline forecast. Results are presented in Table 5.1.

Table 5.1 Sensitivity analysis of a US$10 per tonne movement in iron ore prices

	US$10/tonne FOB[(a)] increase		US$10/tonne FOB decrease	
	2023-24	2024-25	2023-24	2024-25
Nominal GDP ($billion)	5.3	2.7	-5.3	-2.7
Tax receipts ($billion)	0.5	0.5	-0.5	-0.5

a) Prices are presented in free-on-board (FOB) terms which exclude the cost of freight.
Source: Treasury

The effects of a US$10 per tonne increase and decrease in the iron ore price are broadly symmetrical. A US$10 per tonne increase in the iron ore price increases nominal GDP by around $5.3 billion in 2023–24 and around $2.7 billion in 2024–25.

4 Assessments of past forecasting performance and confidence interval analysis of forecasts are included in the 2023–24 Budget, *Budget Paper No 1: Statement 8: Forecasting Performance and Sensitivity Analysis*.

The economic response to a permanent change in the price of iron ore is derived from a generic terms of trade shock in Treasury's Macroeconometric Model of Australia (EMMA). The model incorporates forward-looking financial markets, which anticipate the permanent increase (or decrease) in commodity prices. Higher iron ore export prices lead to a higher terms of trade, which leads directly to higher output prices and nominal GDP. The volume of output and exports in the mining sector increase in response to higher iron ore prices. However, an appreciation in the exchange rate leads to a substitution to imports which partially offsets the increase in exports and GDP, and acts to reduce domestic inflation through lower import prices.

A US$10 per tonne increase in the iron ore price increases tax receipts by $0.5 billion in 2023–24 and $0.5 billion in 2024–25. Company tax receipts increase as higher iron ore prices result in larger mining company profits. However, the increase in company tax receipts is partially offset by lower individuals and other withholding taxes and indirect tax receipts due to lower domestic prices.

Alternative pathways for yields

The cost of Government borrowing reflects yields on Australian Government Securities and the level of debt.

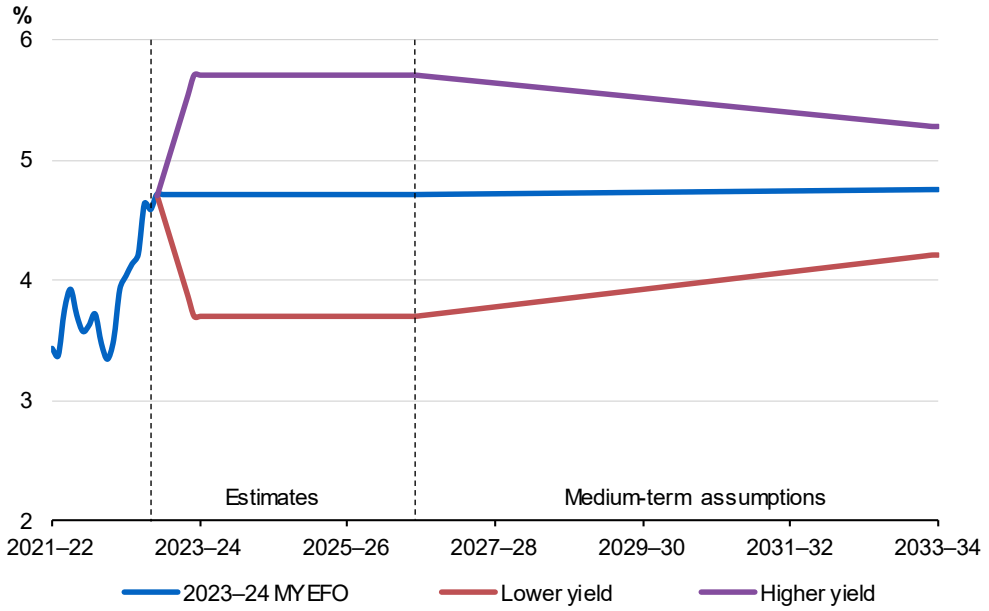
Given the uncertainty surrounding the global and domestic outlook for yields, Treasury makes the following technical assumptions:

- Over the forward estimates, government bond yields are fixed at rates observed prior to the Budget update. In the 2023–24 MYEFO, the ten-year yield, which approximates the average yield on new issuance, is assumed to be 4.7 per cent over the forward estimates.

- After the forward estimates, the ten-year bond yield converges linearly towards the long-run nominal GDP growth rate over 15 years. This is broadly consistent with the long-run approaches of comparable advanced economies. Other tenor yields are assumed to maintain their historical relativity to the ten-year bond yield.

The higher yield sensitivity assumes bond yields transition to 100 basis points higher than baseline by 30 June 2024. Yields are then held constant over the remainder of the forward estimates to 2026–27, before linearly converging to the long-run yield assumption of the nominal GDP growth rate over 15 years (Chart 5.1). The lower yield sensitivity is symmetric.

Chart 5.1 Baseline and alternative pathways for the ten-year bond yield

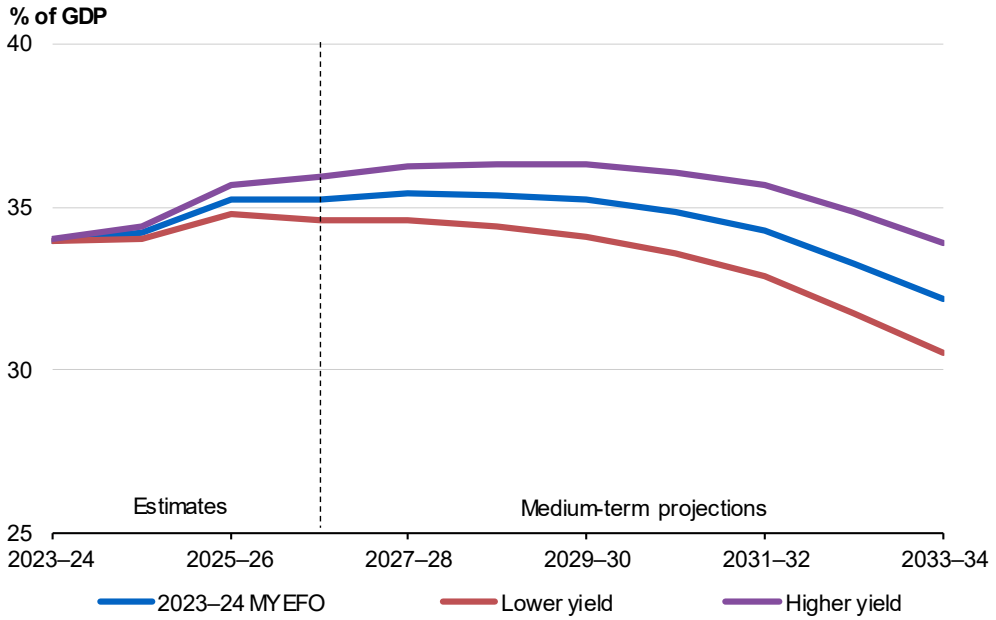


Source: Reserve Bank of Australia and Treasury
Note: Actual yields as at the end of each calendar month up to 30 November 2023.

Yields affect government receipts and payments. Higher yields increase government receipts through higher expected returns on government assets and investments. Higher yields also increase government payments through higher interest costs on borrowings. As government interest bearing liabilities exceed interest bearing assets, higher yields lead to a deterioration in the underlying cash balance. Conversely, lower yields improve the underlying cash balance.

The higher yield assumption reduces the underlying cash balance by 0.2 percentage points of GDP by 2033–34 and increases gross debt by 1.7 percentage points of GDP at 30 June 2034 compared to the baseline. The lower yield assumption increases the underlying cash balance by 0.2 percentage points of GDP by 2033–34 compared to the baseline. Under the lower yield assumption, cumulative improvements to the underlying cash balance reduce gross debt by 1.7 percentage points of GDP at 30 June 2034 compared to the baseline (Chart 5.2).

Chart 5.2 Gross debt, impact of alternative yield assumptions



Source: Australian Office of Financial Management and Treasury