

F. ECONOMIC SCENARIO ANALYSIS

The 2022-23 Budget presents economic forecasts, based on available data and assumptions at the time of preparation. These forecasts are subject to significant uncertainty, particularly in the current economic environment. The sources of uncertainty include unexpected shocks, structural shifts and behavioural changes.

This appendix explores the impact of variations in key economic parameters on other areas of the economy, the macroeconomic outlook and general government tax revenues. Scenario analysis provides insight into the complex interdependencies within our economy that a partial sensitivity analysis is unable to capture.

The scenarios selected cover plausible economic events impacting the state over the forecast horizon. The modelling establishes relationships between key international, Australian and New South Wales economic aggregates, but does not allow for any endogenous policy responses within a scenario.

The analysis should be interpreted with care, given the uncertainty associated with the timing and evolution of unexpected economic events. The scenarios are unlikely to fully represent the impact of future shocks. Any departures from the specified scenario would vary the impact on the economic and revenue outlook.

F.1 Impact of variations in key forecast assumptions

This scenario analysis complements the central economic outlook presented in Chapter 2 – The Economy by quantifying some of the key risks to the outlook. The economic and revenue impact of these scenarios was modelled using the Centre of Policy Studies (CoPS) Victoria University Regional Model Tax (VURMTAX)¹ and is presented as deviations from baseline forecasts.

Scenario 1: More aggressive monetary policy tightening

In response to the recent surge in inflation, the Reserve Bank of Australia (RBA) lifted the cash rate to 0.35 per cent in May 2022 (the first increase in over 11 years). In June 2022, the RBA increased interest rates by a higher than expected 50 basis points to 0.85 per cent. The market and most economists were surprised by the size of the move, which has raised the risk of an accelerated and more aggressive tightening cycle than envisaged in our baseline forecasts. The RBA's forecasts in May assumed that interest rates will continue to lift, reaching around 1¾ per cent by the end of 2022 and 2½ per cent by the end of 2023. NSW Treasury forecasts are broadly consistent with RBA assumptions.

However, markets have priced in a more aggressive interest rate profile. At the time of modelling this scenario, markets expected interest rates to lift to 2¾ per cent by the end of this year and 3½ per cent by the end of 2023.

¹ VURMTAX is a dynamic computable general equilibrium model of Australia's six states and two territories, with each region modelled as an economy in its own right. See Adams, Philip, Dixon, Janine and Horridge, Mark (2015), 'The Victoria University Regional Model (VURM): Technical Documentation, Version 1.0', CoPS/IMPACT Working Paper Number G-254 for more detail on the model.

In this scenario, central banks, including the RBA, modify their reaction function in a manner that reflects futures market pricing. There are several factors that could lead to this scenario eventuating:

- Central banks may feel the need to accelerate monetary policy tightening to ground stubbornly high inflationary expectations and break any nascent wage-price spirals from becoming entrenched. In this scenario, central banks work to bring inflation back down to its target quicker than is expected under our baseline forecasts.
- Central banks become increasingly concerned that the (current) high inflationary pulse will be sustained for a longer period and move to aggressively tighten monetary policy.

In either case, more restrictive monetary policy will constrain economic activity, asset prices and government revenues. In this scenario, both domestic and foreign interest rates (proxied by their required rates of return) will be shocked higher. The domestic neutral interest rate² in both the baseline and scenario is unchanged at 2¾ per cent.

Macroeconomic impact on the Budget and over the forward estimates

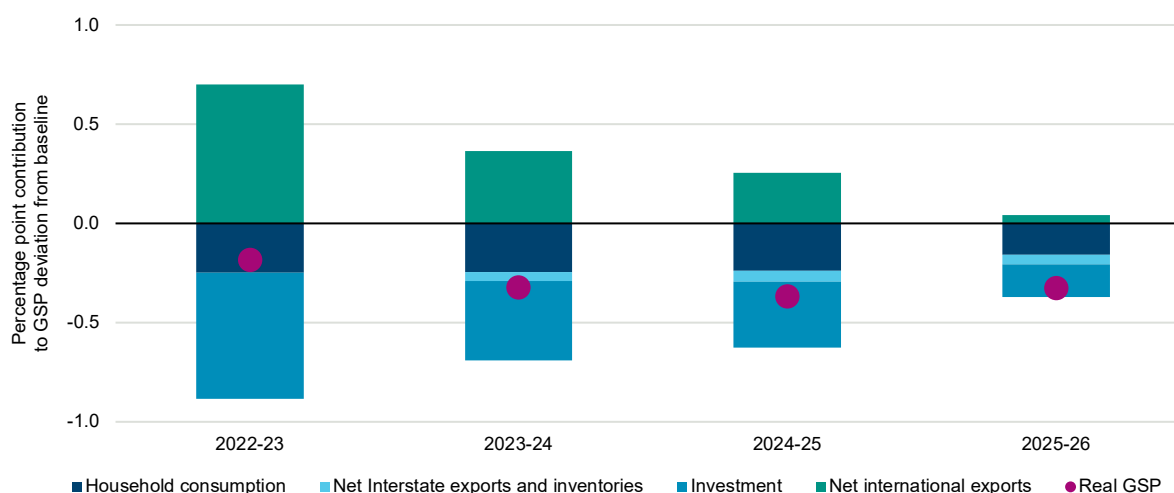
In this scenario, interest rates average one percentage point higher than baseline forecasts for a three-year period from September 2022. From 2026 onwards, the interest rate level under this scenario is consistent with baseline forecasts.

The higher interest rate profile will significantly constrain both household consumption and private investment, leaving State Final Demand (SFD) 0.9 per cent (or \$6.0 billion) lower than baseline forecasts in 2022-23 (see Table F.1).

Dwelling investment is particularly sensitive to higher interest rates, falling 7.8 per cent in 2022-23 relative to baseline. Higher interest rates directly increase the cost of borrowing, making it more difficult to finance the building or purchase of new dwellings. This reduces the demand for dwelling construction. Lower demand for new dwellings will lead to lower dwelling prices and investment.

For households and businesses, higher interest rates increase the cost of loans and reduce borrowing capacity. Additionally, higher interest rates weigh on asset prices (such as housing and equities). A reduction in the wealth of households and businesses decreases consumption through the wealth effect. Overall, this means consumers will spend less and businesses will invest less, leading to a reduction in domestic economic activity and consequently lower employment. Falling aggregate incomes will further reduce demand growth and decrease inflationary pressures.

Chart F.1: *The external sector helps moderate the impact of higher interest rates*



Source: CoPS, Victoria University and NSW Treasury

² The neutral interest rate is the cash rate at which monetary policy is neither expansionary nor contractionary.

A significant offsetting impact comes through the external sector. Weaker domestic investment leads to relative falls in employment, an increase in the unemployment rate, a decrease in capital utilisation and consequently weaker wage and price pressures. Lower domestic price levels improve international competitiveness and drive an increase in export volumes, supported by the deployment of underutilised capital and labour into export-focused industries. Import volumes, on the other hand, contract in line with weaker domestic economic activity. Given the offset from international trade, the impact on GSP is significantly muted, compared to SFD (see Table F.1).

However, even as the cash rate returns to baseline, the amount of productive capital in the economy (the capital stock) remains below baseline due to the short-term downturn in real investment. This lowers the demand for labour, leaving the unemployment rate 0.3 percentage points above baseline by 2025-26. Household consumption also remains below baseline reflecting spare capacity in the labour market, while investment activity remains depressed due to a weaker level of domestic demand.

Table F.1: *The effect of more aggressive monetary policy tightening on major economic parameters^(a)*

Financial year estimate ^(a)	2022-23	2023-24	2024-25	2025-26
State final demand	(0.9)	(0.6)	(0.5)	(0.3)
Gross state product	(0.2)	(0.3)	(0.4)	(0.3)
Employment	(0.3)	(0.4)	(0.4)	(0.3)
Unemployment rate	0.3	0.4	0.4	0.3
Consumer price index	(0.5)	(0.5)	(0.6)	(0.7)
Nominal wages	(0.1)	(0.2)	(0.3)	(0.4)
Terms of trade	(0.4)	(0.2)	(0.1)	0.0

(a) Figures reported are the per cent change in the level of each parameter relative to the baseline.

Source: CoPS, Victoria University and NSW Treasury

Revenue impact on the Budget and over the forward estimates

Weaker domestic economic activity flows through to lower tax collections across most categories of government revenue, particularly in 2022-23 (see Table F.2). Transfer duty, both residential and non-residential, falls significantly as dwelling prices and transactions decline in-line with depressed dwelling investment activity. Weaker consumer spending and dwelling investment also leads to a decline in the state's GST revenue. Offsetting these lower revenues is a slight increase in royalties, in response to higher export volumes.

Table F.2: *The effect of more aggressive monetary policy tightening on major revenue parameters^(a)*

Financial year estimate ^(a) (\$, million)	2022-23	2023-24	2024-25	2025-26
	\$m	\$m	\$m	\$m
Payroll tax	(29)	(62)	(86)	(99)
Transfer duty	(2,447)	(1,120)	(825)	(178)
Land tax	(35)	(74)	(92)	(88)
Royalties	71	12	(2)	(21)
GST revenue	(237)	(276)	(315)	(281)
Other revenue	(24)	(45)	(60)	(65)
Total revenue	(2,701)	(1,564)	(1,380)	(732)

(a) Figures reported are the change in the level of each parameter relative to the baseline.

Source: CoPS, Victoria University and NSW Treasury

Scenario 2: Oil prices fall quicker than expected and remain at lower levels

Oil prices fell sharply in the first year of the pandemic, with Brent crude oil prices falling below US\$20 per barrel in April 2020 before lifting to US\$50 per barrel in December 2020.

Recovering global demand helped lift prices to around US\$80 per barrel by the end of 2021. In 2022, the threat of a Russian invasion of Ukraine, which subsequently commenced in February 2022, saw Brent crude oil prices spike above US\$120 per barrel. Since then, oil prices have remained elevated, averaging over US\$110 in May 2022.

Rising global oil prices over this period have driven a significant increase in domestic petrol prices. While Australia has limited direct exposure to Russian oil or petrol, global oil markets operate collectively and quickly reflect regional shocks in pricing. Surging oil prices contribute to higher inflationary pressures directly through higher fuel costs and indirectly through higher transportation and manufacturing costs. The IMF estimates that a 10 per cent increase in global oil prices leads to a 0.4 percentage point increase in headline inflation but notes that negative oil price shocks have a smaller effect.

The current consensus is for oil prices to gradually decline from their current levels and therefore ease pressure on headline and (indirectly) core inflation. However, there is significant uncertainty surrounding the resolution of the conflict in Ukraine, as well as possible supply responses, and therefore the length of time oil markets will remain disrupted.

Scenario 2 allows the shock to oil markets to dissipate quicker than baseline expectations. Oil prices, in this scenario, are assumed to:

- track the baseline forecast until the end of 2022
- then rapidly decline towards their pre-COVID average over the next 12 months
- then follow the same price dynamics as the baseline forecast but remain at a lower level.

With the exception of LNG prices, which are weakly correlated with crude oil prices, all other commodities follow global prices in the scenario. The overall impact of lower oil prices will be contingent on monetary and fiscal policy responses, both of which are held unchanged in this scenario.

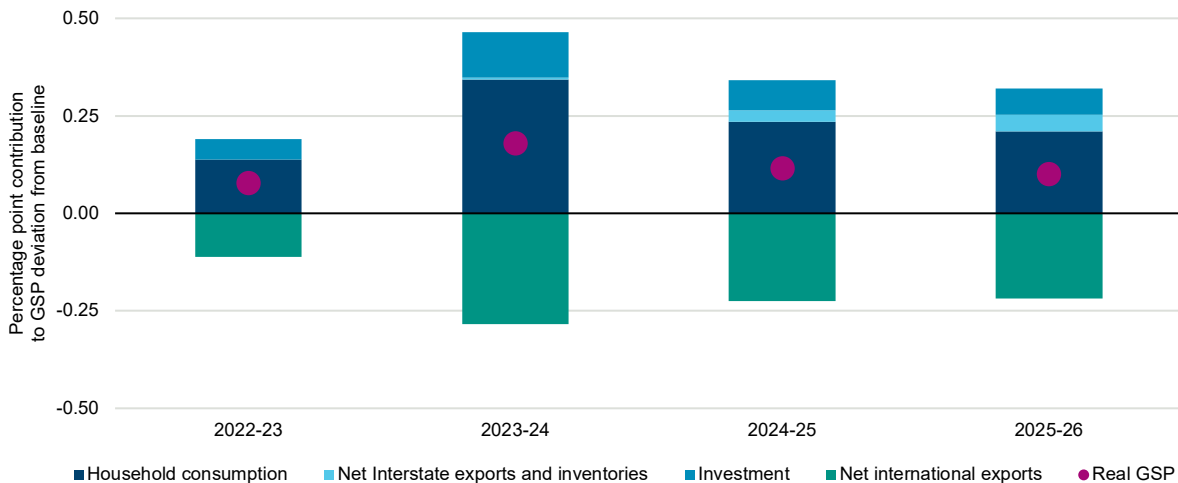
Macroeconomic impact on the Budget and over the forward estimates

A sharp decline in the global price of oil will shift real income from oil exporters to oil importers, like Australia. All else equal this will increase domestic economic activity, lower inflation, and lift employment (see Table F.3).

Lower oil prices will reduce energy and transport costs and bring down production costs across industries. The lower cost of goods will lower inflation (and consequently the cost of living) and support increased investment activity. Lowering the cost of living increases real incomes and drives higher household spending.

A lower oil price will leave NSW SFD 0.3 per cent above baseline after 4 years. The lift in domestic economic activity is driven by increased household spending (0.4 per cent above baseline) and increased private investment (0.3 per cent above baseline).

Chart F.2: The drag from the external sector is offset by domestic economic activity



Source: CoPS, Victoria University and NSW Treasury

Lower global oil prices will reduce production costs domestically and globally, leading to a fall in price levels. However, research shows that foreign prices are more sensitive to oil prices than domestic prices. A sharper decline in foreign prices leads to a global substitution away from Australian exports and towards foreign exports (which are relatively cheaper). This substitution effect more than offsets any increased export demand from our major trading partners.

The drag from the external sector moderates the improvement in economic activity (see Chart F.2), but GSP and employment are both 0.1 per cent higher after four years relative to baseline.

Falling oil prices, which help pull down inflation, could result in more accommodative monetary policy. In this scenario, the sharp fall in near-term price levels leaves underlying inflation near the bottom of the RBA's target range in 2023-24. Under a negative oil price shock, the RBA could ease its tightening cycle while still keeping underlying inflation within its target range of 2-3 per cent. A less aggressive tightening cycle would provide additional support to real economic activity and employment than is captured in this scenario.

Table F.3: The effect of an oil price decline on major economic parameters with unchanged monetary policy^(a)

Financial year estimate ^(a)	2022-23	2023-24	2024-25	2025-26
State final demand	0.2	0.5	0.3	0.3
Gross state product	0.1	0.2	0.1	0.1
Employment	0.1	0.2	0.1	0.1
Unemployment rate	(0.1)	(0.2)	(0.1)	(0.0)
Consumer price index	(0.6)	(1.4)	(0.9)	(0.8)
Nominal wages	(0.5)	(1.2)	(0.6)	(0.6)
Terms of trade	0.9	2.2	1.6	1.5

(a) Figures reported are the per cent change in the level of each parameter relative to the baseline.

Source: CoPS, Victoria University and NSW Treasury

Revenue impact on the Budget and over the forward estimates

The weaker inflation outlook, as a result of lower oil prices, has a modest negative impact on all categories of government taxation (see Table F.4). Payroll tax collections fall, despite an increase in employment, due to a significant fall in nominal wages. Similarly, GST revenue falls, despite an increase in real consumption, due to a significant fall in consumer price levels.

Table F.4: The effect of an oil price decline on major revenue parameters with unchanged monetary policy^(a)

Financial year estimate ^(a) (\$, million)	2022-23	2023-24	2024-25	2025-26
	\$m	\$m	\$m	\$m
Payroll tax	(38)	(111)	(67)	(64)
Transfer duty	(28)	(64)	(37)	(39)
Land tax	(9)	(31)	(18)	(18)
Royalties	(8)	(14)	(7)	(6)
GST revenue	(124)	(319)	(198)	(181)
Other revenue	(13)	(39)	(26)	(27)
Total revenue	(220)	(579)	(353)	(335)

(a) Figures reported are the change in the level of each parameter relative to the baseline.

Source: CoPS, Victoria University and NSW Treasury