

## F. ECONOMIC SCENARIO ANALYSIS

The 2021-22 Budget relies on forecasts and judgements about the future of the economy, based on information available at the time of preparation. These forecasts are subject to inherent uncertainties, such as changes in behaviours, evolving relationships between variables and unexpected events or shocks.

This appendix explores the impact of variations in key economic parameters on other areas of the economy, the overall macroeconomic outlook and general government tax revenues. This is intended to provide greater insight into the interdependencies within our complex economy, that a partial sensitivity analysis does not capture.

This scenario analysis was selected to cover a plausible economic event that could affect New South Wales over the forecast horizon. The modelling takes account of linkages between key international, Australian and New South Wales economic aggregates, but does not account for any monetary policy or fiscal policy response.

The summary of the results should be interpreted with care because economic events tend to be unique in nature – the scenario presented in this appendix is unlikely to completely reflect any future shock to the State economy. Any departures from the specified scenario would result in different impacts on the economic and revenue outlook.

### F.1 Impact of variations in key forecast assumptions

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This scenario analysis is intended to complement the central economic outlook as presented in Chapter 2 The Economy by quantifying some of the key risks to the overall narrative. The scenario considers the ongoing impacts of technology and remote work that occurred due to the pandemic within businesses and households.

The economic and revenue impact of this scenario was modelled using the Centre of Policy Studies (CoPS) Victoria University Regional Model Tax (VURMTAX)<sup>1</sup> and presented as a deviation from baseline.

#### **Scenario 1: Technology enabled remote working**

The COVID-19 pandemic has accelerated the digital shift in the economy. To prevent physical transmission of the virus, households and businesses adapted to conducting many operations remotely. Post the initial outbreak, these changes are assumed to have long lasting effects. Many businesses have invested in the technology platform required for remote work and cultural attitudes have changed. An increase in the availability of remote and flexible work is expected to increase participation in the labour force, particularly for women and older workers. Investment in technology is also expected to lift productivity over time.

The scenario assumes that some of the behavioural changes that have been adopted during the pandemic will continue at a greater rate than assumed in the current baseline forecast. Assumptions in the scenario include:

- more remote workers, which slightly increases the number of hours worked in a day, based on NSW Government surveys conducted during the pandemic
- increased use of technology and computer services

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<sup>1</sup> 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.

- lower office space requirements and less business travel due to more remote work
- higher share of household purchases conducted online, which delivers cost savings and a reallocation of household consumption to categories such as communication services to enable remote activities.

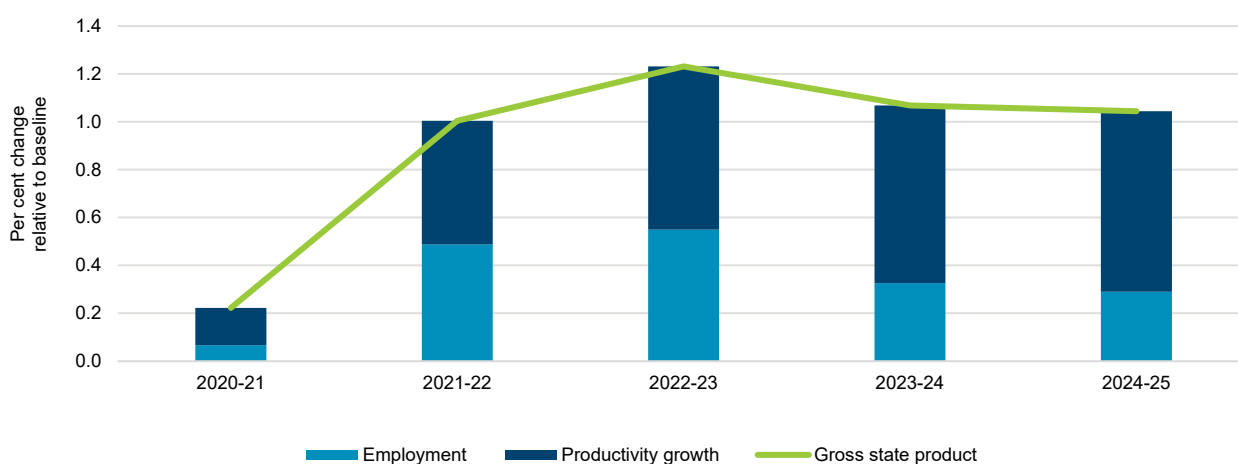
The economy has undergone a significant transition as consumers and businesses have adapted to conducting activities remotely. This scenario explores the ongoing impacts of technology and remote work from the beginning of 2021 onwards.

## Macroeconomic impact on the Budget and over the forward estimates

The expansion of remote and flexible work arrangements would increase participation in the labour force, particularly for women and older workers. It also slightly increases hours worked, resulting in additional labour inputs that expand the economy.

Remote work has spillover effects to many areas of the economy. To enable employees to work remotely, business investment increases to provide the technology required. It is estimated that productivity improvements outweigh the additional cost of the technology investments. The increase in business investment and subsequent gains in productivity have a positive impact on the economy.

Chart F.1: *Economic activity expands alongside gains in employment and productivity*



A variety of industries are impacted by the rise of remote working. The need for technology to enable remote work generates significant demand in the computer services industry. On the other hand, reduced demand for office space lowers non-residential building investment over the forecast horizon. There is also less need for services related to business travel, including accommodation, restaurants and air transport.

Accelerated digitisation also impacts household behaviours, shifting a portion of ongoing retail expenditure from in-store to online. Shopping online increases access to wholesale prices and lower household costs, leading to a re-allocation of household spending across commodities. One area of increased expenditure for households is communication services and utilities due to more activities being conducted in the home by remote workers.

The overall impact of technology and remote work across the economy is estimated as around a 1 per cent increase in Gross State Product (GSP) in each of the forecast years (relative to the baseline), due to the increases in labour inputs and labour productivity. Improved labour productivity increases demand for labour, improving employment and the unemployment rate. This demand places upward pressure on wages, albeit with a lag, due to the stickiness of wages. In the long run, the economy adjusts to the change and growth in employment and GSP slows. The overall size of the economy remains higher than the baseline scenario. There are more people in employment due to flexible working arrangements and, due to technology improvement, workers produce more and earn more.

Table F.1: The effect of technology and remote work on major economic parameters<sup>(a)</sup>

Financial year estimate <sup>(a)</sup>	2020-21	2021-22	2022-23	2023-24	2024-25
State final demand	0.3	1.1	1.2	1.0	1.0
Gross state product	0.2	1.0	1.2	1.1	1.0
Employment	0.1	0.5	0.5	0.3	0.3
Unemployment rate	0.1	(0.2)	(0.2)	0.0	0.0
Consumer price index	0.0	0.0	(0.1)	0.0	0.0
Nominal wages	0.0	0.1	0.3	0.5	0.6
Working age population	0.0	0.0	0.0	0.0	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

Under this scenario, total revenues are \$4.2 billion higher over five years (see Table F.2). Higher overall household consumption in New South Wales and nationally raises the national GST pool, increasing NSW GST revenue. Payroll tax collections are higher due to a higher level of employment and an increase in wages. Property transfer duty is also higher, reflecting stronger house prices as increased remote and flexible working arrangements generates demand for larger dwellings. With a larger economy, the level of revenue derived from sales of goods and services is expected to increase.

Table F.2: The effect of technology and remote work on major revenue parameters<sup>(a)</sup>

Financial year estimate <sup>(a)</sup> (\$, million)	2020-21	2021-22	2022-23	2023-24	2024-25
	\$m	\$m	\$m	\$m	\$m
Payroll tax	19	97	128	128	133
Transfer duty	27	111	123	113	116
Land tax	0	1	2	1	1
Royalties	2	10	18	17	18
GST revenue	49	227	283	270	280
Sales of goods and services	68	295	372	365	375
Other revenue	28	133	166	121	110
Total revenue	193	874	1,092	1,016	1,034

(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: Lower New South Wales and national house prices

Sydney house prices have risen sharply during COVID-19, rising more than 20 per cent since the outset of the pandemic. Price pressures have been buoyed by expansionary monetary policy which has supported historically low interest rates, with both variable and fixed mortgage rates declining since the start of the pandemic. The Commonwealth and NSW Governments have also implemented policies targeted at housing, including *HomeBuilder* and allowances for first home buyers. In conjunction, the economy has been recovering from the pandemic faster than widely anticipated and consumer sentiment is at record highs. This combination of factors has led to significant heat in the housing market, which in turn has generated speculation around events that could arrest price momentum.

There are a number of events that could put downward pressure on house prices. An increase in housing supply supported by higher prices and government incentives such as *HomeBuilder* could put downward pressure on prices in the future. To some extent, this adjustment is captured in the baseline forecast, but an unexpectedly large increase in housing supply could have a negative impact on housing prices relative to the baseline forecast.

Another possibility is intervention by regulatory agencies to restrain credit growth. Past instances of macroprudential tightening have coincided with negative shocks to house prices of around 10 per cent, such as the intervention to regulate lending to investors in 2017. The baseline forecast assumes that there will be no macroprudential tightening in response to higher house prices and growth in housing credit. Macroprudential interventions are not considered likely in the current circumstances of accelerating house prices with predominantly owner-occupier housing loans, unless credit exposure risks were to escalate.

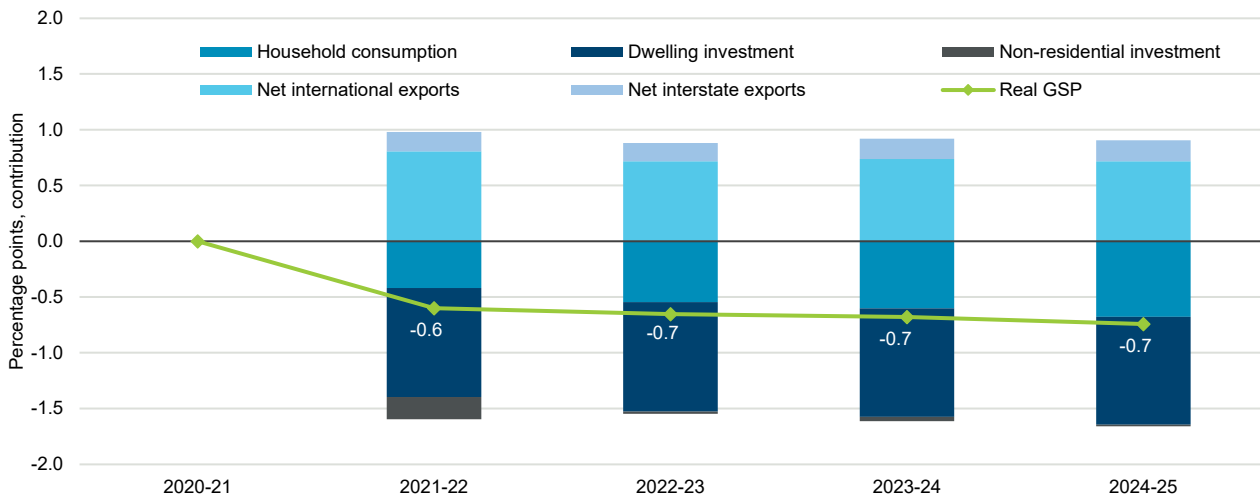
This scenario considers the impact of a fall in house prices, relative to the baseline forecast, on the broader economy. The adjustment is general in nature and is not modelled on any of the specific possibilities considered above. Under this scenario, New South Wales house prices are reduced by 10 per cent, while the rest of Australia experiences a fall of 7 per cent, roughly matching relativities seen in past downturns.

CoPS modelled this scenario for NSW Treasury in 2019. The results from this modelling inform the results below as an illustrative guide to the possible impact on the NSW economy and tax revenues from a fall in house prices relative to the baseline forecast. Tax revenue impacts have been recalibrated to reflect current economic conditions.

### Macroeconomic impact over the Budget and forward estimates

A fall in house prices has a negative impact on the NSW economy (see Table F.3). GSP is about three-quarters of a percentage point lower after four years (see Chart F.2). This is the result of falls in dwelling investment and household consumption, slightly offset by improved international and interstate trade.

Chart F.2: Lower dwelling investment drives much of the decline in gross state product



Source: CoPS, Victoria University and NSW Treasury

Residential construction activity is most negatively affected by a reduction in house prices. This fall in housing investment occurs because some new residential construction projects are not profitable at lower levels of price growth. Developers no longer receive a return on investment that compensates them for the risk, with the cost of construction not falling by the same degree.

Lower house prices improves housing affordability. For existing home owners it also generates a negative wealth effect, lowering household consumption. Lower economic activity reduces demand for employment, causing the unemployment rate to trend higher and wages to slow. Increased interstate migration outflows somewhat mute the decline in wages relative to the rest of Australia.

Partially offsetting these declines is an increased contribution from international and interstate trade. An increased contribution from international trade is the result of a lower Australian dollar, increasing international demand for exports and reduced domestic demand for more expensive imports. Interstate trade contributes more because the State's imports from the rest of the country decline, consistent with weaker local consumption.

Table F.3: The effect of lower house prices on major economic parameters

Financial year estimate <sup>(a)</sup>	2020-21	2021-22	2022-23	2023-24	2024-25
State final demand		(1.6)	(1.6)	(1.7)	(1.7)
Gross state product		(0.6)	(0.7)	(0.7)	(0.7)
Employment		(0.7)	(0.6)	(0.6)	(0.5)
Unemployment rate		0.7	0.3	0.2	0.1
Consumer price index		(0.5)	(0.3)	(0.4)	(0.3)
Nominal wages		(0.6)	(0.7)	(1.0)	(1.1)
Working age population		(0.0)	(0.2)	(0.3)	(0.4)

(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 over the Budget and forward estimates

The softer economic outlook flows through to substantially lower tax collections (see Table F.4). Residential transfer duty collections fall significantly because transacted prices and property transactions decline at a faster rate. Payroll tax collections fall because employment and wages decline. GST receipts fall because national household consumption and dwelling investment is weaker. Offsetting lower revenues slightly is higher mining royalties in response to an improvement in international competitiveness, via a lower currency and wages.

Table F.4: The effect of lower house prices on major revenue parameters

Financial year estimate <sup>(a)</sup> (\$, million)	2020-21	2021-22	2022-23	2023-24	2024-25
	\$m	\$m	\$m	\$m	\$m
Payroll tax		(127)	(144)	(179)	(196)
Land tax		...	(95)	(144)	(181)
Transfer duty		(793)	(735)	(644)	(573)
Mining royalties		33	26	26	25
Other tax revenue		(86)	(78)	(98)	(103)
GST revenue		(402)	(410)	(406)	(411)
Total revenue		(1,375)	(1,435)	(1,446)	(1,439)

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

Source: CoPS, Victoria University and NSW Treasury