Statement of the MPC’s monetary policy strategy

The Monetary Policy Committee’s (MPC) monetary policy strategy is its overarching plan for how it will formulate monetary policy under different circumstances to achieve its objectives. It outlines a consistent approach to how the MPC intends to achieve its objectives across time, accounting for trade-offs and uncertainty. Agreeing on and publishing a strategy promotes transparency, public understanding, and accountability.

Monetary policy framework and objectives

Under the Reserve Bank of New Zealand Act 1989 (the Act), the MPC is responsible for formulating monetary policy to maintain a stable general level of prices over the medium term and to support maximum sustainable employment. Operational objectives for monetary policy are set out in the Remit. The current Remit sets out a flexible inflation targeting regime, under which the MPC must set policy to:

- keep future annual inflation between 1 and 3 percent over the medium term, with a focus on keeping future inflation near the 2 percent mid-point; and
- support maximum sustainable employment, considering a broad range of labour market indicators and taking into account that maximum sustainable employment is largely determined by non-monetary factors.

In pursuing these objectives, the Remit requires the MPC to have regard to the efficiency and soundness of the financial system, seek to avoid unnecessary instability in the economy and financial markets, and discount events that have only transitory effects on inflation.

The Reserve Bank’s flexible inflation targeting framework and the MPC’s monetary policy strategy reflect the fact that:

- low and stable inflation is monetary policy’s best long-run contribution to the well-being of New Zealanders;
- in the short to medium term, monetary policy can influence real variables such as employment, and hence policy trade-offs can arise; and
- monetary policy is more effective if the Bank’s policy targets are credible, so policy should be formulated in a way that ensures credibility is maintained.

For a more in-depth discussion of monetary policy strategy in New Zealand, see J. Ratcliffe and R. Kendall (2019), Monetary policy strategy in New Zealand, Reserve Bank of New Zealand, Bulletin, Vol. 82, No. 3, April.

These economic objectives contribute to the overall purpose of the Act, which is to promote the prosperity and well-being of New Zealanders, and contribute to a sustainable and productive economy. See monetary policy framework for more information on New Zealand’s monetary policy framework, including the full text of the Remit.
**Key aspects of monetary policy strategy**

The MPC practises *forecast targeting*, which means that it sets monetary policy such that it expects to achieve its inflation and employment goals in the medium term. In most instances the MPC aims to return inflation to the target mid-point within a one to three year horizon. The appropriate horizon at each policy decision will vary based on how different policy paths will contribute to maximum sustainable employment, whether price-setters’ expectations are consistent with the inflation target, and other considerations such as the balance of risks to the MPC’s central economic outlook.

The MPC does not attempt to return inflation and employment to target immediately, because monetary policy actions take time to transmit through the economy. Attempting to return inflation to target too quickly would result in unnecessary instability in the economy and financial markets. The 1 to 3 percent target range for inflation provides the MPC with flexibility to ensure that managing inflation variability does not come at the cost of excessive variability in the real economy. For similar reasons, the MPC does not attempt to offset events that are expected to have only transitory effects on inflation.

The MPC takes into account both its inflation and employment objectives when setting policy. In the long run, no trade-off exists between the MPC’s objectives. In the short to medium term, there may be situations where monetary policy can move one objective closer to target only at the cost of the other, resulting in a trade-off. When a trade-off does arise, the MPC will consider outcomes for both objectives in setting policy. In general, if employment is projected to be below its long-run sustainable level, the MPC would let inflation overshoot the target mid-point for a time, and vice versa.

The MPC responds to both deviations above target and deviations below target. The MPC sets policy to stabilise employment near its maximum sustainable level, and to return inflation to the 2 percent target mid-point, regardless of whether inflation is currently below or above target. This approach helps to anchor inflation expectations at the target mid-point and promotes sustainable growth and employment by dampening fluctuations in the business cycle.

The MPC considers the balance of risks to its objectives that arise from uncertainty about the economic outlook and the transmission of its policy decisions. In general, the MPC will incorporate likely future developments into its central economic projections and set monetary policy in response. However, the MPC will also take into account risks to its central projections when setting policy.

The MPC has regard to the efficiency and soundness of the financial system, while recognising that in most instances prudential policy is better suited to leaning against risks to financial stability. Monetary policy and prudential policy are coordinated to ensure that changes in one policy are taken into account when setting the other.

**Implementation of strategy**

The MPC applies the following process when formulating a policy decision:

1. Firstly, it considers the outlook for the economy and its policy objectives. It then discusses risks to achieving its policy objectives.
2. Next, it deliberates about which stance of monetary policy is most consistent with its monetary policy strategy given the current economic outlook, risks, and trade-offs.
3. Finally, the MPC decides how it will achieve the desired stance of monetary policy, including whether or not to change the Official Cash Rate (OCR) at the current meeting and how it will communicate the policy outlook.
Chapter 1
Policy assessment

Tēnā koutou katoa, welcome all.

The Monetary Policy Committee has agreed to significantly expand the Large Scale Asset Purchase (LSAP) programme potential to $60 billion, up from the previous $33 billion limit. The LSAP programme includes NZ Government Bonds, Local Government Funding Agency Bonds and, now, NZ Government Inflation-Indexed Bonds.

The global economic disruption caused by the COVID-19 pandemic is expected to persist and lead to lower economic growth, employment, and inflation both in New Zealand and abroad. Even if New Zealand successfully contains the spread of disease locally, reduced world activity will mean lower demand for many of New Zealand’s exports.

The Monetary Policy Committee is committed to achieving its employment and inflation objectives. The main support for the economy in this environment is appropriately being provided through increased fiscal spending. However, monetary policy will continue to provide significant support through keeping interest rates low for the foreseeable future.

The balance of economic risks remains to the downside. The expansion to the LSAP programme aims to continue to reduce the cost of borrowing quickly and sharply. This is preferable to delivering a smaller amount of stimulus now, only to risk later realising more should have been done.

We expect to see retail interest rates decline further as lower wholesale borrowing costs are passed through to retail customers. It remains in the best long-term interests of the banking sector to promptly maximise the effectiveness of our LSAP programme.

The Official Cash Rate (OCR) is being held at 0.25 percent in accordance with the guidance issued on 16 March. The Monetary Policy Committee is prepared to use additional monetary policy tools if and when needed, including reducing the OCR further, adding other types of assets to the LSAP programme, and providing fixed term loans to banks. The Committee’s decisions are guided by the Reserve Bank’s mandate and our decision making principles on the use of alternative monetary policy instruments.

Meitaki, thanks.

Adrian Orr
Governor
Summary record of meeting

The Monetary Policy Committee noted that the economic situation has deteriorated since the previous policy meeting. The COVID-19 pandemic is affecting economic activity throughout the world. The unprecedented health crisis has led many countries to introduce measures to contain the spread of disease. In New Zealand, activity has fallen sharply as a result of the pandemic and containment measures. The sharp contraction in activity is expected to reduce inflation and employment below the Bank’s objectives for several years.

Members discussed the significant uncertainties surrounding the economic outlook. The pandemic and restrictions on the movement of people are uncharted territory for modern economic policy. Here, and overseas, there is uncertainty about the impact of containment measures on economic activity. Monetary policy is using tools which have not been deployed before in New Zealand, and their degree of success is something that will become evident over time.

To help understand the uncertainties, the Committee discussed several different scenarios for the economic outlook. Members agreed that the situation is too uncertain to allow any one scenario to be treated as a central projection. Three scenarios were discussed, including what could happen if extended containment measures are required. Members noted that the baseline scenario was the most optimistic of the three. All three scenarios involved a significant and unprecedented decline in economic activity and employment.

The Committee noted that more stimulus is needed to support a medium-term recovery in economic activity, employment, and inflation. Members noted that the main thing needed to support the economy is fiscal stimulus, given that fiscal policy is best placed to directly support households and businesses. The role of monetary policy is to support the economy by ensuring that interest rates remain low, which will complement the effects of fiscal measures.

Members discussed the fiscal assumptions in the economic scenarios. It was noted that the government has publicly announced that $52 billion has been made available for pandemic recovery packages. This figure is used as the core fiscal spending assumption in each scenario.

Members agreed that a ‘least regrets’ monetary policy approach is needed, delivering stimulus sooner rather than later, and thus minimising the risk that the stimulus delivered turns out not to be enough.

The Committee discussed the world economic situation. Members noted the global environment is volatile and uncertain. Some commodity prices are strong, but many of New Zealand’s trading partners are experiencing economic disruption and declining activity. Despite pockets of relative strength, conditions in trading partners will be a drag on domestic activity.

The Committee discussed the balance of risks around the baseline scenario and agreed that the risks are to the downside. Activity could be lower than expected as a result of containment measures having more severe economic effects than assumed. Another risk is that the pandemic itself lasts longer or has more severe effects on trading-partner economies than assumed. There is also uncertainty about the impact of monetary policy actions on the economy.

Members noted some chance that activity could be higher than expected. There is some possibility that trans-Tasman travel could restart earlier than assumed, or that a return to alert level 1 could happen sooner than expected. Either of these events would result in spending and employment recovering faster. Another possibility is that supply-chain disruption leads to relative price shifts for specific consumer products, keeping average inflation higher than expected. Members agreed that these possibilities were not material enough to shift the overall balance of risks around the baseline scenario.
The Committee noted evidence on the effects of the Large Scale Asset Purchase (LSAP) programme so far. Members were pleased to note that both wholesale and retail interest rates have fallen. The functioning of markets has also improved – a secondary goal of the LSAP programme. Further declines in retail interest rates would be needed to fully deliver the stimulus. The Committee noted that long-term interest rates in the government bond market are also sensitive to a number of factors outside the LSAP programme, including bond issuance and foreign bond yields.

The Committee discussed the secondary objectives of monetary policy. Some members expressed concern about financial stability due to the economic disruption of the pandemic. The Committee noted that the banking system is sound and markets are functioning satisfactorily. Members agreed that all policy areas – monetary, financial stability, and fiscal – are mutually reinforcing in this environment, all working to achieve complementary goals.

The Committee discussed the range of monetary policy options. Members noted that there are policy tools available that have not yet been used. The Committee agreed that it will stand ready to deploy further tools as needed, should the need for stimulus continue to increase. Tools available include further reductions in the OCR; a term lending facility; and adding other asset classes, such as foreign assets, to the LSAP programme.

The Committee noted that a negative Official Cash Rate (OCR) will become an option in future, although at present financial institutions are not yet operationally ready. The current goal of monetary policy tools is to reduce borrowing rates for New Zealanders, and further OCR reductions at this stage would not be effective in achieving that. Consequently, the Committee reaffirmed its forward guidance that the OCR will remain at 0.25 percent until early 2021. It was noted that discussions with financial institutions about preparing for a negative OCR are ongoing.

Members agreed that an expansion to the LSAP programme is the most effective way to deliver further stimulus at this time. The Committee noted advice that adding inflation-indexed government bonds (IIBs) to the LSAP would improve both market function and policy effectiveness. The Committee agreed to add IIBs to the LSAP.

The Committee discussed ways to measure how much stimulus is delivered by a given volume of LSAP. It was noted that while more purchases will deliver more stimulus, it is not easy to translate this directly to an OCR-equivalent measure. The Committee noted that the size of the LSAP programme needed to be sufficiently large to keep interest rates lower across the yield curve. Members agreed that the LSAP programme can be scaled as needed in future.

Members noted that additional LSAP purchases are covered by an updated Crown indemnity, which represented a ceiling, not a target, for the total volume of LSAP.

The Committee reached a consensus to:
• expand the LSAP programme to purchase up to a maximum of $60b over the next 12 months;
• delegate to staff the composition and pace of purchases within the LSAP programme, across the eligible asset classes of NZ Government Bonds, NZ Government Inflation-Indexed Bonds, and Local Government Funding Agency bonds; and
• hold the OCR at 25 basis points.

**Attendees**

*Reserve Bank staff:* Adrian Orr, Geoff Bascand, Christian Hawkesby, Yuong Ha  
*External:* Bob Buckle, Peter Harris, Caroline Saunders  
*Observer:* Caralee McLiesh  
*Secretary:* Gael Price
Chapter 2
Key policy judgements

• The COVID-19 pandemic and the measures introduced to contain it have had an unprecedented impact on economic activity in New Zealand and abroad. Economic activity has fallen substantially in the June 2020 quarter.

• The extent and persistence of this decline are very uncertain. Many firms are facing declines in revenue, reducing investment and demand for labour. Job losses and lower wage growth will reduce household spending.

• The outbreak is having a substantial economic impact globally. Slower trading-partner growth will suppress demand for our exports. International commodity prices have fallen, including the prices of our exports and imports. Volatility in financial markets and heightened risk aversion have led to a tightening in financial conditions globally.

• Fiscal policy is providing significant support to the economy. In particular, a large portion of firms and workers are being supported by the wage subsidy. We expect further announcements of fiscal initiatives to come.

• Our scenario analysis suggests considerable monetary stimulus is necessary to complement the fiscal stimulus and meet our objectives. We have reduced the OCR and implemented a Large Scale Asset Purchase programme, and will adjust the programme further as needed.

Measures to contain the spread of COVID-19 are reducing economic activity

The COVID-19 outbreak has spread rapidly around the world since February. Containment measures have limited the spread in New Zealand and the number of new cases has declined since early April. While containing the spread of the virus, the measures have affected both supply and demand in the New Zealand economy (see chapter 5).

On the supply side, production in many industries has been adversely affected by the serious disruption to global supply chains and the availability of intermediate materials and services. Similarly, measures introduced by the New Zealand Government to contain the spread of the virus have resulted in temporary business closures. The impacts are particularly severe in the hospitality, tourism, manufacturing, and construction sectors. Productivity is also lower due to distancing requirements and limitations on what can be achieved working from home.
Disruptions caused by the virus have reduced both global and domestic demand via reductions in household and firm incomes, increased uncertainty, and reduced business investment. Restrictions on people’s mobility and closure of many businesses severely curtailed consumption during alert levels 4 and 3. Border restrictions have resulted in international arrivals falling to nearly zero since February, also suppressing domestic demand. International tourism and study directly contributed around 5 percent of GDP in 2019 and had additional spill-over effects into the broader economy. Firms in the tourism sector have already started laying off staff.

Economic activity has fallen substantially in the June 2020 quarter because of the restrictions. The extent and persistence of this decline depend on several possible developments. If restrictions need to remain tight to contain the virus, this would continue to reduce economic activity and impede the recovery.

**The economic downturn is reducing demand for labour**

With lower economic activity, many firms face significantly reduced revenue. The 1.7 million jobs supported to date by the wage subsidy demonstrates this. To be eligible for the wage subsidy, a firm’s actual or predicted revenue must be 30 percent lower as a result of COVID-19.

Firms are looking to cut costs, especially where the declines in revenue are expected to persist. They are looking to negotiate lower wages and reduced hours. In general, firms have been holding on to workers where possible, as many expect the severe economic conditions of alert levels 3 and 4 to be temporary. Worker retention has been supported by the wage subsidy, which is designed to encourage firms to retain their employees despite revenue disruptions caused by the lockdown. Despite the incentive to retain workers, the number of recipients of job-seeker support is rising (figure 2.1).

Persistently lower economic activity will cause some firms to lay off staff over the coming year. The unemployment rate could rise significantly and employment fall well below its maximum sustainable level. However, lower labour force participation and fewer new migrants due to the border restrictions could affect labour supply and mitigate part of the rise in unemployment (see box C).

**Soft domestic demand may persist into 2021**

Several factors could suppress domestic demand after the direct impacts of containment measures subside. Household spending will be lower for several reasons. Job losses, lower wage growth, and fewer hours are likely to reduce household income. Elevated uncertainty about future economic conditions may also encourage some degree of precautionary saving. Lower house prices and reduced net immigration could also reduce consumption.

![Figure 2.1](image-url)
Business investment is also likely to fall given the economic downturn and high uncertainty as to the strength of any rebound. Business confidence is at very low levels, as are investment intentions. Lower export prices also tend to dampen investment. We expect many firms will look to delay investment plans.

*A weak global economy reduces demand for our exports*

Our key trading partners have also experienced COVID-19 outbreaks (see chapter 4). Each economy has employed containment measures to limit the spread, although the intensity of the containment measures has varied. These measures are significantly affecting economic activity. There remains considerable uncertainty regarding how successful these measures will be in containing the spread of the virus and whether severe second waves of infection will occur, disrupting the economic recovery.

Given this uncertainty, and other ongoing impacts from the current downturn, economic activity in our trading partners could be lower for some time.

China’s experience indicates how the economic outlook may unfold for our other trading partners. China’s economy contracted by 7 percent in the year to March, due to lockdown measures imposed over much of the March quarter of 2020. Over the past month China has begun to relax some lockdown measures and economic activity is increasing. The speed of the recovery in China will be an important driver of demand for our exports.

Unemployment in our key trading partners is rising, especially in the United States and the euro area. Fiscal support measures will play an important role in limiting the impacts of the crisis on employment.

International commodity prices have declined in line with weaker global demand. Oil prices have fallen particularly sharply as demand for oil has plummeted. Dairy prices have also fallen, but not to the same extent. Demand for food products has been more robust than that for many other commodities. Drought conditions in some parts of the country continue to add to challenges and uncertainty in the agriculture sector.

Volatility in financial markets and heightened risk aversion have led to a tightening of financial conditions globally. Heightened concerns about the viability of firms have also contributed to a rise in risk premiums. To date, New Zealand banks have not needed to go to international long-term funding markets, but they would likely face elevated spreads relative to benchmark interest rates.

The New Zealand dollar has depreciated by around 4 percent since February. At this lower level our exports are more competitive, partially offsetting the domestic impacts of lower global demand. However, the recent depreciation in the exchange rate has been less than that during the global financial crisis. New Zealand remains in a relatively positive position given its relatively low number of COVID-19 cases, the relatively moderate declines in its export prices so far, and its strong fiscal position.

**Fiscal stimulus is a key support to economic activity**

Fiscal policy is providing considerable support to households and businesses. Since early March, the Government has announced more than $20 billion in additional fiscal support for households, businesses, public health, and education over the next four years (figure 2.2). More than half of this support is in the first half of 2020. These measures cushion the economic impacts of COVID-19 and will support a faster recovery.
The Government has indicated that details of further COVID-19 relief and recovery measures can be expected. Our working assumption is for an additional $30 billion of unallocated spending spread equally across government consumption, investment, and transfers over the next three years. This would bring the total fiscal package to around $50 billion.

Inflationary pressure to ease over the medium term

Inflation increased to 2.5 percent in the March 2020 quarter. This stronger-than-expected outturn was a reflection of economic conditions before the COVID-19 outbreak, including a tight labour market and rising wage inflation.

However, the economic impacts of the COVID-19 outbreak will reduce inflation significantly. Wage and non-tradables inflation will ease as labour demand falls and spare capacity rises. Many workers have already taken substantial pay cuts.

A weaker global economy could also dampen tradables inflation, although tradables inflation is likely to be volatile over coming years because of variability in commodity prices and the exchange rate. Lower oil prices have already caused a fall in petrol prices. However, the recent depreciation of the New Zealand dollar exchange rate is providing some offset. Overall, CPI inflation is likely to be much lower by the end of this year, possibly below the 1 to 3 percent target range.

Supply disruptions due to domestic and foreign containment measures could partly offset the impacts of lower demand on inflation.

In the short term, measured CPI inflation could be volatile because of changes in spending patterns and some products not being traded. However, we target inflation over the medium term, and hence will look through any volatility and respond to underlying trends in inflation.

Figure 2.2 COVID-19 fiscal package  
(as at 6 May)

Wage subsidy $12.0b

Tax relief $5.9b

Income support $2.8b

Health $0.6b

Other $1.6b

Source: RBNZ estimates.

Note: These indicative estimates are derived from information outlined in Government press releases.
Survey measures of inflation expectations have declined significantly. Averaging across several measures, one- and two-year-ahead expectations fell to 0.8 and 1.5 percent in the June quarter 2020. Longer-horizon expectations also fell, with five-year-ahead expectations falling to 1.8 percent.

**Monetary policy is driving interest rates lower**

To support its inflation and employment mandates, the Monetary Policy Committee reduced the OCR to 0.25 percent in March and signalled its intention to keep the OCR at this level for at least a year. However, it quickly became clear that more stimulus was needed. Accordingly, the Committee decided to implement a Large Scale Asset Purchase (LSAP) programme. The Committee instructed the Reserve Bank to purchase up to $30 billion of New Zealand government bonds and $3 billion of Local Government Funding Agency (LGFA) debt over 12 months (see chapter 3).

The main purpose of the LSAP programme is to reduce interest rates, in a similar fashion to lowering the OCR. LSAPs work by reducing risk-free interest rates across a variety of terms, which many other interest rates are based on. Lower interest rates reduce the costs of debt servicing for firms and households and provide stability to the financial system.

In the current environment, an additional benefit of the programme is that it provides the Government with lower borrowing costs. It has also helped to support financial market functioning. Each of these channels is expected to support a recovery in domestic demand and underpin inflation expectations. They also support the soundness and efficiency of the financial system.

The LSAP programme has successfully lowered interest rates on government bonds (figure 2.3). Conditions in the LGFA and wider credit markets have eased. In addition, the programme has helped to keep the New Zealand dollar exchange rate lower than it would have been otherwise, although the impact is hard to identify given the many factors that determine the level of the exchange rate and the recent significant easing in global monetary policies.

![Figure 2.3: Interest rates on New Zealand government bonds](source: Bloomberg)
However, since the LSAP programme was implemented we have not yet seen the reduction in wholesale interest rates fully pass through the banking sector to the borrowing rates of households and businesses (figure 2.4). The current uncertain environment and bank funding costs holding up relative to risk-free interest rates have dampened the pass-through. As the economic environment stabilises and funding costs ease, we expect further reductions in retail interest rates (see box B).

**Considerable monetary stimulus remains necessary to achieve our objectives**

Given the unparalleled developments over the past three months, the economic outlook is very uncertain. Current estimates of the appropriate monetary policy stance are difficult to assess. We outline three scenarios to demonstrate some possible paths of the economy (see figures 2.5-2.7). In addition to a baseline scenario, we show two possible downside scenarios. The assumptions underpinning each of these scenarios are outlined in chapter 6. We will update our assumptions as we get more information.
High-level description of scenarios

- **Baseline scenario**: In addition to the time spent at alert level 4, New Zealand is assumed to be at alert level 3 for four weeks, and then alert level 2 for 10 months. The initial downturn caused by these restrictions has ongoing effects on domestic demand. The domestic economy gradually recovers from 2021, similar to our trading partners.

- **Longer lockdown scenario**: New Zealand cycles between alert levels 3 and 4 for six months and level 2 is in place for the following six months. The initial impacts of the restrictions and the ongoing consequences are larger than in the baseline scenario.

- **Slower recovery scenario**: same as baseline for the alert level assumptions but we assume a slower global recovery, delaying the recovery of tourism and softening investment and consumption.

In the past, the Reserve Bank used a projection of the OCR to highlight the level of monetary stimulus needed to achieve our inflation and employment objectives. A fall in the OCR projection relative to the previous Statement meant that more policy stimulus was needed. We have had to modify this practice given the Monetary Policy Committee’s forward guidance on the OCR out to early next year and the use of alternative monetary policy instruments. We have opted to publish an unconstrained OCR (figure 2.8). This demonstrates the broad level stimulus needed to achieve the Reserve Bank’s monetary policy objectives, much like the OCR projection demonstrated in the past.

The Monetary Policy Committee intends to use the unconstrained OCR outlook as a basis on which to form its monetary policy decisions. A range of monetary policy instruments, including Large Scale Asset Purchases, can be used to generate this level of stimulus and it does not necessarily represent a negative OCR. Fiscal policy could also provide further stimulus if needed to underpin domestic demand.
Chapter 3
Alternative monetary policy instruments

- The Monetary Policy Committee began using alternative monetary policy tools when it became clear that achieving its dual mandate would require more stimulus than could be provided by the OCR alone.
- The main purpose of the alternative monetary policy tools used to date is to provide additional monetary stimulus, in particular through lowering interest rates. The Large Scale Asset Purchase (LSAP) programme works primarily by reducing government bond yields, which are key benchmark interest rates that influence many other interest rates.
- Our analysis suggests that the LSAP programme has significantly reduced government bond yields, improved market functioning and put downward pressure on the New Zealand dollar exchange rate. However, we are yet to see this fully pass through the banking sector to the interest rates faced by households and businesses.

Recent monetary policy decisions
Since the February Statement, the Monetary Policy Committee has reduced the OCR by 75 basis points to 0.25 percent, committed to keeping the OCR at that level until March 2021, and announced an LSAP programme. The LSAP programme enables the Reserve Bank to purchase up to $30 billion of New Zealand government bonds and $3 billion of Local Government Funding Agency (LGFA) bonds in the secondary market over 12 months.

The primary purpose of these actions is to provide economic stimulus by lowering interest rates. The LSAP programme announcements were also successful in restoring confidence and liquidity in financial markets. These decisions were made in accordance with the Monetary Policy Committee’s Principles for Alternative Monetary Policy Instruments (table 3.1).
### TABLE 3.1

**Assessment of LSAPs against the Principles for Alternative Monetary Policy Instruments**

<table>
<thead>
<tr>
<th>Principle</th>
<th>LSAP characteristic</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Effectiveness</strong></td>
<td>Provides monetary stimulus by lowering interest rates across the economy and supporting a fiscal expansion.</td>
</tr>
<tr>
<td><strong>Efficiency</strong></td>
<td>By purchasing across the entire yield curve the Reserve Bank can avoid biased treatment of investor groups. If financial markets are dysfunctional, LSAPs can restore efficiency by improving market functioning for government bonds in particular, but also other markets indirectly.</td>
</tr>
<tr>
<td><strong>Financial system soundness</strong></td>
<td>In the medium term, LSAPs improve financial system soundness by providing liquidity and lowering borrowing costs to mitigate the risks of debt defaults. A stronger economy as a result of more monetary stimulus also supports the financial system. There is a risk that, due to LSAPs, asset prices are higher than otherwise in the long term.</td>
</tr>
<tr>
<td><strong>Operational readiness</strong></td>
<td>LSAPs can be established at short notice (within one week).</td>
</tr>
<tr>
<td><strong>Effect on the combined Crown balance sheet</strong></td>
<td>When the economy eventually recovers and the OCR is raised, the holdings of long-term bonds in the LSAP programme may result in losses to the consolidated Crown balance sheet. This is because the bonds are funded with central bank reserves that pay an interest rate of the OCR. If the OCR rises above the bond yield, it could result in losses. From a broader perspective, the monetary stimulus provided by LSAPs should support the Crown balance sheet via a stronger economy.</td>
</tr>
</tbody>
</table>

(Nota, there is no risk to the Reserve Bank balance sheet as losses are to be indemnified by the Government.)

### How LSAPs work as a monetary policy tool

LSAPs support the Monetary Policy Committee’s employment and inflation objectives through three main channels (figure 3.1):

- Lowering interest rates throughout the economy
- Lowering the New Zealand dollar exchange rate
- Increasing inflation expectations

Interest rates are an important determinant of economic activity and affect the economy through many channels. There are many different interest rates in financial markets.

A yield curve is made up of interest rates at different terms – from overnight to more than ten years. One of the most important yield curves in financial markets is called the benchmark risk-free yield curve. This yield curve is made up of the interest rates on government debt, which is assumed to have the lowest credit risk. Market participants can then price other riskier assets relative to this curve.
Benchmark interest rates at different terms can be decomposed into an expected short-term monetary policy rate and a term premium. The short-term monetary policy rate is assumed to be risk-free. The term premium reflects the compensation that investors require to invest in long-term assets rather than short-term assets.

The term premium captures multiple dimensions of risk. These include uncertainty about future inflation, the risk an investor is not repaid (credit risk), and whether an asset can be sold and purchased at the same price (liquidity risk). The size of the term premium is determined by the degree of investor appetite to take on particular risks.

The Reserve Bank has conventionally implemented monetary policy by adjusting the OCR – an overnight monetary policy rate. Changes to the OCR, and any guidance about the path of the OCR in the future, are effective at changing the expected monetary policy component of interest rates. The effect is strongest for short-term interest rates, but extends to interest rates of all durations.

Longer-term interest rates can be further lowered by either reducing expectations for the future level of the OCR or reducing the term premium component. LSAPs work through both channels. They help to provide a signal that the OCR will remain low for an extended period. And LSAPs reduce the term premium by increasing the demand for bonds that form the key benchmark yield curves. Higher demand for these bonds increases their price, thereby lowering their yields across the curve by compressing the term premium. LSAPs also signal to the market that the central bank is prepared to provide liquidity to the benchmark interest rate markets, further supporting market functioning and reducing the term premium. Overall, LSAPs complement conventional monetary policy by effectively lowering the entire benchmark yield curve.
The lowering of benchmark interest rates is transmitted through the economy in much the same way as the OCR. Some interest rates are directly affected (as they are linked to benchmark rates), while others are indirectly affected. One important effect is lower government borrowing costs, which also supports fiscal policy.

As the return on lower-risk assets is reduced, the relative return on riskier assets becomes more attractive to investors. Investors are incentivised to rebalance their investments into riskier assets, thereby reducing the risk premiums of these assets as well. Overall, the level of all interest rates in the economy will fall.

Lower interest rates in New Zealand also reduce demand for the New Zealand dollar. All else equal, lower interest rates reduce the returns earned on New Zealand dollar assets, and investors will search for higher yields elsewhere.

Just under one half of New Zealand government bonds are held by offshore investors, as New Zealand has historically had relatively high interest rates compared to other countries. When the Reserve Bank undertakes LSAPs, it purchases some of these bonds from offshore investors. As these investors sell their New Zealand dollar assets in search of higher yields elsewhere, this will put downward pressure on the exchange rate.

The broad drop in interest rates in financial markets then transmits through the banking sector, reducing deposit and lending rates. This reduces debt-servicing costs and incentivises consumption and investment, supporting economic activity, employment, and inflation.

Given that LSAPs have not been used before in New Zealand, the Reserve Bank will monitor the relative effectiveness of each channel over time.

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**Measuring the success of the LSAP programme**

The success of the LSAP programme can be split into achieving two objectives:

- To create the *preconditions* for monetary stimulus by correcting the dysfunction in financial markets and lowering benchmark interest rates.
- The reduction in benchmark interest rates needs to *transmit* through the financial system to households and firms.

**Preconditions: correcting financial market dysfunction**

The implementation of LSAPs (as well as other initiatives outlined in box A) has played an important part in improving conditions in domestic financial markets.

The stability of interest rates along the benchmark yield curve is a necessary condition for financial markets to function efficiently. Other yield curves and assets are priced relative to the benchmark yield curve.

In March, increased risk aversion and fears of liquidity shortages caused short-term interbank interest rates to increase. These concerns were not unique to New Zealand. The Reserve Bank acted to inject liquidity via financial market operations and LSAPs. These actions increased the amount of settlement cash to around $30 billion (from around $8 billion).

The reduction in the OCR and abundance of cash in the system, along with the Term Auction Facility backstop, have stabilised and reduced short-term interest rates. Confidence in financial markets has also improved, as participants know that the Reserve Bank stands ready to inject further liquidity if required.
Liquidity in the New Zealand government bond market, and broader fixed-income markets, also deteriorated in March. Bid-ask spreads increased significantly, indicating that the market was unable to price bonds effectively. However, these spreads began to normalise following the Reserve Bank’s Bond Market Liquidity Support and LSAP programme announcements (figure 3.2).

Overall, the actions by the Reserve Bank have provided the government bond yield curve with some stability. Actions to support broader liquidity in the financial system have also transmitted across the interest rate swap curve (figure 3.3).

**Figure 3.2**
Bid-ask spread on nominal New Zealand government bonds  
*(end-of-day average)*

Source: Bloomberg.

Note: Average end-of-day bid-ask spread on nominal New Zealand government bonds. The bid-ask spread is a common measure of market liquidity. A bid is the yield at which a bond dealer is willing to buy a bond, whereas the ask or offer is the yield at which the dealer is willing to sell the bond. Wider bid-ask spreads make it more expensive to buy or sell bonds. LSAPs were announced on 23 March 2020.

**Figure 3.3**
Stabilisation of New Zealand benchmark yield curves

*Dysfunctional markets (26 March)*

*Functional markets (6 May)*

Source: Bloomberg.

Note: The interest rate swap curve plots the fixed interest rate of interest rate swaps for different maturities. The ‘swap rate’ is the fixed interest rate used in an agreement between two parties to exchange a series of fixed interest rate payments for a series of variable (floating) interest rate payments. The reference rate used for the floating interest rate payments is the New Zealand 90-day bank bill rate.
Domestic fixed-income markets (including local government, bank and corporate bonds) were also illiquid in March. The addition of LGFA bonds to the LSAP programme helped to improve liquidity in broader fixed income markets (figure 3.4).

LGFA bonds play an important part in the pricing of debt in New Zealand’s credit markets, as their risk profile lies between low-risk government bonds and the higher-risk corporate bond market. When these markets are dysfunctional, monetary policy transmission through the economy is hampered: the costs of debt servicing for local government and corporate bond-issuers remain high and issuing new bonds becomes difficult.

By including LGFA bonds in the LSAP programme, the Reserve Bank has been able to improve market liquidity, restore confidence, and have flow-on effects on liquidity in the corporate bond market by freeing up funds for investors and dealers to invest. Overall, this has improved the effectiveness of monetary policy transmission.

To address other market-functioning issues, the Reserve Bank has deployed and is continuing to expand a number of programmes aimed at restoring and maintaining the functioning of financial markets. These are outlined in box A.

**Transmission: lowering government bond yields and the exchange rate**

The implementation of the LSAP programme has been successful in lowering government bond yields. The international evidence regarding LSAP programmes suggests that we should expect a significant drop in yields when the programme is announced (or becomes anticipated by the market), followed by an ongoing reduction in yields as the purchases are carried out.
Government bond yields have fallen significantly since the LSAP programme was implemented (figure 3.5). Compared to the experience of other economies that have used LSAP programmes, we have seen a smaller effect from the policy announcement and a larger ongoing reduction in yields as purchases have been made.

Unlike the OCR, the Reserve Bank cannot precisely control the level of the government yield curve at a given point in time. As noted above, a key component of longer-term bond yields is the term premium. Term premiums are driven by many factors and in New Zealand’s case international markets are a key driver.1 LSAPs help to compress the term premiums on bonds or offset factors that increase them. Overall, LSAPs result in a lower benchmark yield curve than otherwise.

The amount of monetary stimulus can be summarised by a number of useful metrics based on the yield curve. These include measures such as the Shadow Short Rate2 and Effective Monetary Stimulus3. The Reserve Bank will be publishing a suite of these analytical tools in the near future.

In addition to lowering interest rates, LSAPs put downward pressure on the New Zealand dollar exchange rate. The New Zealand dollar has depreciated in response to the COVID-19 outbreak (see chapter 4). It is difficult to disentangle the precise impacts of the Reserve Bank’s actions from a range of other factors that influence the exchange rate, in particular the volatile swings in risk sentiment over recent months and the actions of overseas central banks.

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1 See Expectations and the term premium in New Zealand long-term interest rates, by Callaghan (2019).
3 See Effective Monetary Stimulus: Measuring the stance of monetary policy in New Zealand, by Callaghan, Culling, and Richardson (2019).
Transmission: lowering interest rates for households and firms

The main objective of the monetary policy actions to date has been to lower the level of interest rates in the economy. Monetary policy actions have transmitted through benchmark wholesale interest rates relatively quickly. Swap rates have declined by around 1 percent since March. Holding all else constant, the level of mortgage and deposit interest rates will fall as the level of wholesale interest rates fall. However, retail interest rates are also affected by banks’ cost of funding, the demand for new lending, and competition between banks. So far, we have not observed the pass through of wholesale interest rate reductions to retail interest rates to the extent we might expect in normal times.

This likely reflects a number of factors, including strong competition for deposits as market funding conditions deteriorated. As the economy comes out of lockdown, we expect a lift in lending market activity and increased competition from banks to put downward pressure on lending rates (see box B for a full discussion on bank funding costs and mortgage rates).

Beyond the LSAP programme: other alternative monetary policy options

In order to continue to provide stimulus and achieve its dual mandate of price stability and maximum sustainable employment, the Monetary Policy Committee is continuing to assess its use of alternative monetary policy instruments. If further stimulus is deemed necessary, additional options include:

- further expanding the LSAP programme by increasing its scale or including foreign asset purchases;
- setting a negative OCR;
- implementing a term lending programme (separate from existing facilities, see box A); and
- providing additional forward guidance, potentially with the support of interest rate swaps if appropriate.

The Monetary Policy Committee will continue to assess each of these instruments against the principles for alternative monetary policy instruments, in light of the economic environment at the time.
Box A

**Initiatives for the functioning of financial markets**

The Reserve Bank has a number of new facilities to support the functioning of financial markets. The Reserve Bank has also worked with banks and the Government on programmes to support access to credit for households and firms. While these are not monetary policy decisions, their implementation has been important for the effective transmission of monetary policy.

**Term Auction Facility (TAF)**

The purpose of the TAF is to inject cash and provide term funding of up to one year against collateral. This means the Reserve Bank will lend banks cash in exchange for collateral, such as government bonds, for a fixed period of time (3-12 months). At maturity the bank will repay the cash in exchange for the return of the collateral. The Reserve Bank has so far lent just over $1 billion through the TAF.

**Corporate Open Market Operations (COMO)**

The COMO is similar to the TAF in that banks post collateral in exchange for short-term funding, which is repaid at the end of the term. The key difference is that the COMO is designed for tier 3 collateral (corporate debt and asset-backed securities) and the duration is shorter at one day to three months. The Reserve Bank offers $500 million per auction and has so far had no bids. However, feedback indicates the presence of this facility has enabled financial market participants to be more confident in holding tier 3 assets.

**Bond Market Liquidity Support (BMLS)**

BMLS is small scale purchases of nominal New Zealand government and LGFA bonds to support market functioning. It differs from the LSAP programme in that the focus is not on adding monetary stimulus, but to promote and support the functioning of the New Zealand government and LGFA bond markets during periods of market instability.

**Mortgage deferral and Business Finance Guarantee Scheme package**

In a joint effort with the Government and New Zealand banks, the package includes a six-month principal and interest payment deferral for mortgage holders and SME customers. The Government and the banks will implement a $6.25 billion Business Finance Guarantee Scheme for SMEs. The Reserve Bank has decided to reduce banks’ ‘core funding ratio’ requirement from 75 percent to 50 percent, to help banks make more credit available.

**Term Lending Facility (TLF)**

The purpose of the TLF is to support the Government’s Business Finance Guarantee Scheme by ensuring access to term funding for banks during a time when wholesale funding markets are disrupted. It provides access to funding for banks at low interest rates for up to three years’ duration, against eligible collateral.
Monetary policy affects the economy through various channels. One important channel is through bank lending to households and businesses. Lower policy rates and benchmark interest rates reduce funding costs for banks, which should then be passed through to lower lending rates for households and businesses.

Since the February Statement, the Monetary Policy Committee has reduced the OCR by 75 basis points to 0.25 percent and announced an LSAP programme to reduce longer-term interest rates. The Reserve Bank has also introduced various facilities to provide banks with liquidity, reduce pressure on bank funding costs, and support market functioning (see box A).

Monetary policy easing has contributed to falls in domestic bank funding costs (wholesale swap interest rates and deposit rates) and mortgage interest rates, although to varying degrees (figure B1).

The reduction in the OCR helps to anchor short-term interest rates, but the pass-through from a reduction in the OCR to a reduction in banks’ funding costs is not always one for one, as there are numerous sources through which banks obtain funding.

Bank funding is mostly sourced from domestic deposits, accounting for about 70 percent of total non-equity funding. The wholesale market accounts for around 30 percent of non-equity funding, with issuance in both domestic and offshore wholesale markets.

The Reserve Bank cut the OCR by 75 basis points in March, but an increase in wholesale funding spreads at the time partly offset the fall in bank funding costs.
**Wholesale funding**

With the increase in financial market volatility in March, the cost of offshore wholesale funding spiked (figure B2). New Zealand banks have refrained from significant issuance into offshore markets over this period, as their robust liquidity and funding positions have allowed them to avoid issuing into disrupted markets. Significant monetary and fiscal stimulus both here and abroad has seen offshore funding markets settle in recent weeks, easing wholesale funding costs.

**Deposit funding**

Deposits are an important part of banks’ funding structures. Conditions in wholesale funding markets have meant that banks have had a greater preference for deposit funding over the past couple of months. This partly explains why some deposit rates have not fallen as much as might otherwise have been expected.

At a lower level of the OCR, we have tended to see less pass-through from OCR cuts to falls in deposit rates. Banks have not fully passed on the monetary policy easing to deposit rates, partly because many transactional deposits are non-interest-bearing or have interest rates that are close to zero percent (figure B3). These on-call and non-interest-bearing deposits account for about 25 percent of total deposits. Banks have lowered interest rates on bonus saving accounts by about 75 basis points, whereas the decline in term deposit interest rates has been more muted. Term deposits account for around half of total deposits, and rates on these products have declined by around 30 basis points to 2-2.5 percent.
Outlook for funding costs and mortgage rates

With wholesale funding markets settling and emerging signs of an easing in financial market conditions, we expect to see more downward pressure on wholesale funding costs and deposit rates from the monetary policy easing to date, and this should flow through to lower fixed mortgage rates in the near future. As the economy comes out of lockdown, activity in lending markets will increase and competition for credit will also put downward pressure on lending rates.

Going forward, banks may respond to the low interest rate environment by sourcing more of their funding in wholesale funding markets, as this can represent a relatively cheap source of funding and add downward pressure to deposit and mortgage rates. The easing of our Core Funding Ratio (CFR) requirements gives banks additional flexibility over their funding sources, by reducing their need to fund as much through more ‘sticky’ core funding (e.g. long-term wholesale debt or retail deposits).

We expect our recent monetary policy easing to pass through more fully to bank funding costs and lending rates in the near future, and will be closely monitoring movements in retail interest rates and bank margins.

4 The regulatory minimum for the Core Funding Ratio was cut from 75 percent to 50 percent on 24 March 2020. See www.rbnz.govt.nz/news/2020/03/mortgage-holiday-and-business-finance-support-schemes-to-cushion-covid-impacts
Chapter 4
International economy and financial markets

- COVID-19 has produced an unprecedented global economic shock. The pandemic and measures to contain its spread have seen global economic conditions deteriorate, with both supply and demand reduced significantly.
- Governments and central banks have undertaken a range of actions to support economic activity and market functioning. Many governments have implemented large fiscal stimulus programmes, and central banks have taken a number of steps to add monetary stimulus and maintain liquidity in financial markets.
- Market conditions have deteriorated globally due to the large and uncertain economic impacts of COVID-19, with some parts of global financial markets ceasing to function for a time. Financial market conditions have improved since March, reflecting central bank actions and the slowing spread of the virus in some regions.

Global economic conditions have deteriorated

Global economic conditions have deteriorated sharply as a result of the international spread of COVID-19. As a small open economy with open capital markets, global conditions are a major driver of economic conditions in New Zealand, through a range of trade, financial, and confidence channels. The global economic shock has major implications for New Zealand’s economy, in addition to the domestic effects of COVID-19 and the measures taken to control its spread (see chapter 5). Both the pandemic itself and government responses to contain its spread have contributed to a substantial reduction in both global demand and supply capacity.

In order to contain the spread of the virus, many countries have implemented significant isolation and social distancing measures, and increased border controls. There are signs that the virus has been contained in some countries and its spread has slowed in others (figure 4.1). However, it is continuing to hamper economic activity through both constraining producers’ ability to supply and reducing households’ and firms’ ability and desire to consume and invest.
A major influence on the short-term level of economic activity in each country is the stringency of the controls on people movement (figure 4.2). New Zealand has implemented relatively more stringent controls, with some in place before the first case of infection was recorded, and has seen a sharp decline in the number of COVID-19 cases. Some countries that are seeing a flattening in their infection rate curves are now beginning to ease restrictions, which should result in some recovery in economic activity.

**Global growth will decline significantly**

The outlook for global growth has worsened significantly as COVID-19 has spread around the world (figure 4.3). The shock to global GDP is likely to be greater than during the global financial crisis, with the International Monetary Fund (IMF) forecasting global output to contract by around 3 percent in 2020. Uncertainty around this forecast is high, and risks are to the downside. The outlook depends on a number of factors, such as the ongoing spread of the pandemic, the nature and duration of containment measures, and how households and firms respond.
The IMF forecasts global growth to rebound to around 6 percent in 2021, reflecting a partial normalisation of economic activity from very low levels. However, this is conditional on the pandemic fading in the second half of 2020, allowing containment measures to be gradually removed.

The growth slowdown is broad based

The growth slowdown is broad based across New Zealand’s main trading partners (figure 4.4). Disruption to trading-partner economic activity is expected to be at its worst in the June quarter of 2020, except in China, where the impact was large in the March quarter.

China’s experience may act as an indication of how the economic outlook may unfold for the rest of New Zealand’s trading partners.

Economic output in China contracted by 7 percent on an annual basis in the March quarter of 2020. Over the past month China has begun to selectively relax lockdown measures, with timely measures of economic activity signalling a gradual return to normality. Most firms have re-opened, although many are operating at reduced capacity, as authorities are maintaining public health controls to reduce the risk of a renewed virus outbreak.

Output in the euro area, the United States, and Australia is expected to fall by between 6 and 8 percent in 2020 compared to 2019. The extent to which output is expected to decline depends partly on the stringency and duration of lockdown measures in each country. Unemployment in New Zealand’s key trading partners is forecast to rise (figure 4.5).
Globally, fiscal policy has been quick to respond

In response to COVID-19, many governments have announced large fiscal stimulus packages. These packages are broad and varied, with major economies focusing on support for households, smaller firms, and specific sectors hardest hit by the economic fallout from the virus – as well as increasing spending on directly combating the virus.

Support for households mostly focuses on wage subsidies or other income support. Support to firms is commonly delivered through tax relief and schemes to support access to cash flow and credit. Some countries are offering relief to businesses more broadly or offering specific relief packages to those industries most affected, such as airlines and tourism. Healthcare spending has been another common theme across the packages, with many countries looking to increase spending to support increased testing, vaccine development, medical supplies, and improvements in health emergency management systems.

Announced increases in fiscal spending in major economies ranged from 2 to 21 percent of GDP as at 30 April 2020, according to IMF estimates. These measures are expected to provide near-term economic stimulus, reducing the initial impacts of COVID-19 on output and employment, and to support supply capacity and employment, enabling a faster recovery.
Central banks have provided substantial monetary stimulus

Globally, central banks are engaging in substantial monetary policy easing (table 4.1). Many central banks have reduced policy rates (figure 4.6). However, as many economies reach their effective lower bounds on policy rates, central banks have implemented alternative monetary policy easing strategies to add additional stimulus, including large-scale asset purchases and bank lending facilities. Large-scale asset purchase (or quantitative easing) programmes vary in size and structure in different economies. While all such programmes include government bonds, some central banks are also purchasing ‘quasi-government’ (e.g. state or local government) bonds and corporate debt. Some central banks have set clear targets in terms of volumes or yields while others have said they are willing to purchase unlimited amounts to support the market.

Financial markets have been volatile

As the virus spread globally from early February 2020, markets became increasingly risk averse and uncertainty increased, as shown by an increase in measures of financial market volatility (figure 4.7). Over time it became increasingly clear that the spread of COVID-19 would have significant global economic implications, resulting in lower firm profitability and higher rates of corporate default. Global equity markets fell significantly, with major equity indices falling by over 30 percent from 21 February to 23 March 2020 (figure 4.8). The spread between yields on corporate bonds and government bonds widened significantly.

Figure 4.7
Volatility indices

Figure 4.8
Global equity indices
(relative to 21 February 2020)

Note: The VIX shows implied US equity market volatility while the MOVE shows implied US Treasury bond volatility.
### TABLE 4.1

**Central bank policy actions**

<table>
<thead>
<tr>
<th>Central bank</th>
<th>Policy tool</th>
<th>Purpose</th>
<th>Size (local currency)</th>
<th>Facility/GDP (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>US Federal Reserve (Fed)</strong></td>
<td>Large-scale asset purchases</td>
<td>The Fed has agreed to increase the amount of purchases of Treasury and agency securities as needed.</td>
<td>Unlimited</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Access to liquidity</strong></td>
<td></td>
<td>The Fed has increased access and lowered the cost for commercial banks seeking short-term funding. It also plays an important role in providing US dollar funding to other countries. To better facilitate this, the Fed reduced the cost of exchanging foreign currencies for US dollars and broadened access to more central banks.</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Increased access to credit</strong></td>
<td></td>
<td>The Fed has introduced a range of credit facilities aimed at increasing access to funding in different sectors of the financial market. A unique feature of the Fed’s programme is that it is lending directly to small and medium-sized businesses through the ‘Main Street Lending Programme’.</td>
<td>The facilities range in size from 100b to unlimited</td>
<td>13.7% excluding unlimited facilities</td>
</tr>
<tr>
<td><strong>European Central Bank (ECB)</strong></td>
<td>Large-scale asset purchases</td>
<td>The ECB increased its existing LSAP programme by €120 billion. The ECB agreed to purchase an additional €750 billion through a new Pandemic Emergency Purchase Programme. It also eased some of the restrictions to include a wider range of public and private debt.</td>
<td>870b</td>
<td>0.6%</td>
</tr>
<tr>
<td><strong>Lower-rate lending facilities</strong></td>
<td></td>
<td>The ECB introduced a new longer-term liquidity facility (PELTRO), which offers lending at lower interest rates, and eased collateral rules for banks accessing these funds.</td>
<td>Not available</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Bank of England (BoE)</strong></td>
<td>Large-scale asset purchases</td>
<td>The BoE agreed to purchase £200 billion of UK government bonds and non-financial corporate bonds.</td>
<td>200b</td>
<td>9.3%</td>
</tr>
<tr>
<td><strong>Access to liquidity</strong></td>
<td></td>
<td>To support liquidity, the BoE has increased the range of operations that provide longer-term liquidity to banks in exchange for collateral.</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Lower-rate lending facilities</strong></td>
<td></td>
<td>The BoE introduced a new Term Funding Scheme, which provides loans at close to the Bank Rate, and has additional incentives for lending to households and SMEs. The BoE agreed to extend temporarily the use of the government’s overdraft account to provide short-term additional liquidity to the government, if needed. The COVID Corporate Financing Facility allows the BoE to purchase corporate debt of up to one year maturity.</td>
<td>Unlimited</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Reserve Bank of Australia (RBA)</strong></td>
<td>Large-scale asset purchases</td>
<td>The RBA agreed to purchase Australian government securities and securities issued by the state and territory central borrowing authorities, with a yield target of around 0.25 percent on three-year government bonds, rather than a targeted quantity of purchases.</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Lower-rate lending facilities</strong></td>
<td></td>
<td>To support lending to businesses the RBA established the Term Funding Facility offering access to three-year funding at 0.25 percent, against eligible collateral.</td>
<td>≥90b</td>
<td>≥6.3%</td>
</tr>
</tbody>
</table>

Source: IMF, Fed, ECB, BoE, RBA.
Market participants moved to purchasing assets and currencies perceived to be safe. The move to safer assets, along with actual and expected central bank actions, saw government bond yields fall in all major economies (figure 4.9).

The New Zealand dollar has depreciated against most major currencies. One driver of this was market participants moving to holding currencies that are perceived as safer, such as the US dollar (figure 4.10). The fall in the New Zealand dollar was also influenced by uncertainty around commodity prices, differences in actions between governments and central banks here and overseas, and investor risk appetite.

Risk aversion and volatility peaked in mid-March, necessitating more policy responses from central banks and governments. Many financial markets became dysfunctional and there was a broad lack of liquidity across markets.

Central banks’ actions to support financial markets led to a marked improvement in the functioning of financial markets. The additional liquidity and asset purchases in key markets enabled funding to be allocated through market forces and allowed participants to have confidence in buying assets, as there would be sufficient liquidity to sell them in future. The slowing spread of COVID-19 in many countries over recent weeks has also improved market sentiment.

Global equity markets have recovered around 15-25 percent from their lows in March, and some stability has returned to currency markets. Spreads between the yields on corporate bonds and government bonds have narrowed, but remain elevated compared to pre-virus levels. Overall, market conditions have improved significantly since March, but the negative effects of the COVID-19 pandemic remain substantial.
Chapter 5
Impacts of COVID-19 on the New Zealand economy

- The COVID-19 outbreak and the measures taken to contain it have significantly reduced economic activity in New Zealand. Households and businesses face lower incomes and considerable uncertainty about the future. We estimate the level of real GDP to be about 22 percent lower in the June quarter of 2020.
- A weaker global economy will lower demand for our exports. New Zealand will also be affected by the disruption to international supply chains.
- A broad suite of fiscal and monetary policy activities are helping to cushion the impacts on people and businesses.
- The impact on New Zealand’s economy is likely to persist for some time as job losses and ongoing uncertainty suppress household spending and investment.

Domestic containment measures have reduced economic activity

In March, the Government announced an alert level system that specifies measures to contain the spread of COVID-19. These restrictions vary under the different alert levels, and include border restrictions, closure of schools, closure of non-essential businesses, and social distancing requirements for businesses that remain open. While these measures have helped to limit the spread of the virus, they have had substantial impacts on economic activity. We estimate that GDP will decline by around 22 percent in the June quarter 2020.

We estimate that during alert level 4, domestic economic activity was directly reduced by about 37 percent relative to pre-COVID-19 levels.\(^1\) By comparison, we estimate a direct 19 percent reduction in activity at alert level 3, and a 9 percent reduction at alert level 2. Using these estimates, the total loss of production arising from 4.5 weeks at alert level 4 and 2 weeks at alert level 3 to date is around $12 billion, or 4.0 percent of annual GDP.

Production in all industries has been affected in some way under alert levels 3 and 4 (figure 5.1). However, the impacts vary significantly across different sectors. For example, firms whose staff are unable to work from home and firms that rely more on social interaction have been disproportionately affected.

\(^1\) The impacts refer to businesses that are forced to close and not produce through the alert levels; this does not incorporate transitional impacts into and out of the alert levels or secondary impacts on demand. See C. McDonald, T. Stannard and G. Steven (2020) Economic impacts of COVID-19 containment measures, Reserve Bank of New Zealand Analytical Note, AN2020/04.
The food service and construction industries were substantially affected under alert level 4 while the primary sector and utilities were less affected.

The impacts on the Māori economy under alert levels 3 and 4 are roughly similar to the impacts on overall GDP. Māori business is more concentrated in the primary and manufacturing sectors. We estimate that the Māori economy’s GDP is 38 percent lower under alert level 4 and 21 percent lower under alert level 3.

**Border restrictions mean fewer visitor and migrant arrivals**

Another key part of the COVID-19 response has been border restrictions to prevent international transmission. These measures began with restrictions on visitors from China in early February and culminated in the complete closure of New Zealand’s border to international visitors on 20 March. Given the spread of COVID-19 globally, border restrictions are likely to remain in place for some time, even if domestic containment measures are largely successful. However, these restrictions could be eased somewhat by opening the border to visitors from Australia.

Border restrictions have been felt particularly hard in the tourism and education sectors. Tourism is New Zealand’s largest export sector, accounting for around 20 percent of New Zealand’s exports in 2019. However, tourist arrivals have fallen to zero after dropping sharply in March (figure 5.2). Tourists who have remained in New Zealand have spent less because of domestic containment measures. As a result, many tourism operators have closed and businesses in regions that rely heavily on tourism have faced significant declines in activity.

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Border restrictions have also reduced our education exports. Travel restrictions on non-residents from China were imposed in February. Before that, many students from China were able to arrive for the first semester of study. However, the restrictions have disrupted the pipeline of international students progressing through multi-year education in New Zealand. The number of international students in New Zealand on study visas was down 8,000 in late March 2020, from 66,000 in late March 2019. However, the impact on the education sector is likely to be larger than implied by these numbers.

Net immigration has also fallen. High net immigration has been a key driver of economic growth in New Zealand over the past decade. However, while tight border restrictions are in place few immigrants will arrive in New Zealand. Net immigration may remain lower after border restrictions are eased as a result of continued economic uncertainty and a more challenging job market.

**The global growth slowdown will suppress demand for our exports**

Weaker economic conditions abroad will reduce export income through lower export volumes and lower prices. While prices for many of New Zealand’s commodity exports have fallen, they have held up well relative to the experience during the GFC (figure 5.3). This may reflect the fact that there has been an international effort to keep global food supply chains operating smoothly. One exception to this is in the food service industry, with closures of restaurants and bars abroad reducing demand for some of our food and beverage exports. We anticipate further falls in our export prices, as slower global growth weighs on demand.

New Zealand’s import prices are also likely to fall. COVID-19 has disrupted global supply chains, increasing the costs of production of some products. However, we expect global inflationary pressure to fall as these factors are outweighed by much weaker global demand. The impacts of lower global demand have already contributed to sharp falls in oil prices. Dubai oil prices fell from USD 68 per barrel in January 2020 to USD 18 per barrel in late April, with domestic petrol prices also falling significantly.
The economic impacts of lower import and export prices will be partially offset by the lower New Zealand dollar exchange rate. As is typical during times of global uncertainty, the New Zealand dollar exchange rate has depreciated. The TWI has fallen from 73.8 in early January 2020 to 68.7 at the time of writing (figure 5.4). A lower New Zealand dollar exchange rate makes our exports more price competitive on international markets than they would be otherwise. It provides a partial offset to the declines in exporters’ incomes, but also offsets some of the reduction in import prices.

Uncertainty abroad also affects New Zealand through global financial conditions, in part because New Zealand banks receive a portion of their funding from global financial markets and the cost of this funding can affect interest rates for bank loans and deposits (see chapter 3).

*Businesses are reducing investment*...

Faced with lower incomes, weaker global demand, and higher uncertainty, firms have cancelled or delayed planned investments. This is reflected in the April ANZ Business Outlook, which shows a drop-off in firms’ investment intentions (figure 5.5). Investment is likely to remain low for a prolonged period of time, given the subdued economic outlook and heightened uncertainty.

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**Figure 5.4**

*New Zealand dollar TWI*

Source: RBNZ estimates.

**Figure 5.5**

*Investment intentions*

Source: ANZ.

*Note: ANZ Business Outlook investment intentions measures the net percentage of firms that report an increase or decrease in intended investment.*
...and their demand for workers has fallen

Demand for labour has dropped as businesses seek to reduce costs where they can. Unemployment is increasing.

In past recessions, New Zealand businesses have tended to reduce work hours before laying off staff. Businesses have been supported by the Government’s wage subsidy, which has paid for 1.7 million of New Zealand’s 2.7 million employees. The subsidy has enabled many firms to keep more workers on the payroll than would otherwise have been the case.

Despite firms’ attempts to retain employees, unemployment is likely to increase. The large decline in economic activity is consistent with unemployment increasing above the GFC peak of 6.5 percent. However, employment outcomes will depend on how long business activity remains low in each sector, and the extent of ongoing government wage subsidies.

The impacts of lower labour demand on unemployment and wage growth will be dampened slightly by lower labour supply. Box C discusses what these demand and supply factors in the labour market may mean for the Reserve Bank’s maximum sustainable employment objective.

Households will spend less

With households facing lower wage growth, reduced hours, or unemployment, household spending is likely to decline. High-frequency indicators for consumption spending show that household spending fell dramatically during the alert level 4 restrictions (figure 5.6). Consumption is likely to remain subdued as the COVID-19 containment measures continue to restrict the economy. Over time, falling incomes associated with weak export receipts, slow wage growth, and reduced employment will continue to weigh on household spending, as will weak population growth due to low net immigration. Uncertainty around future employment and incomes will lead some households to reduce their spending in order to save money as a precaution.

Figure 5.6
Consumption and electronic card spending growth (annual)

Source: Stats NZ, RBNZ estimates.

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3 See J. Culling and F. Robinson (2020) Employment and hours worked adjustment in New Zealand’s labour market, Reserve Bank of New Zealand Analytical Note, AN2020/03.
Lower house prices will also suppress consumption. We expect lower population and household income growth to cause house prices to fall, despite lower construction activity, lower interest rates, and the easing of loan-to-value ratio restrictions. Our baseline scenario assumes house prices will fall by around 9 percent over the remainder of 2020.

_Fiscal policy is helping to cushion the economic impacts_

The Government has announced packages amounting to more than $20 billion in additional fiscal support for households and businesses to dampen the impacts on New Zealand’s economy.

A key package is the Wage Subsidy Scheme, under which the Government has paid wage subsidies for over half of the labour force, totalling more than $12 billion (as of 6 May 2020, see figure 2.2). The Government has also provided relief to households through strengthened income and housing support, as well as a scheme facilitating mortgage repayment holidays.

Support for businesses has come in a number of forms. The Business Finance Guarantee Scheme and the Small Business Cash Flow Loan Scheme will support businesses’ access to credit, helping to sustain them during the impacts of COVID-19 restrictions and weak demand, preventing unnecessary failures, and supporting a faster recovery. Tax relief and flexibility in repayments will also support businesses’ cash flow.

Other packages include funding for public health and the education sector, as well as targeted assistance for large enterprises.

The Minister of Finance has also indicated further COVID-19 relief and recovery measures to come. We expect these further measures will provide significant additional fiscal stimulus (see chapter 2). The Government also intends to fast-track previously announced spending, including parts of the $12 billion of infrastructure spending that was announced in December 2019.

...supported by monetary policy

Since the February _Statement_, the Monetary Policy Committee has lowered the OCR to 0.25 percent and signalled its intention to keep the OCR at this level for a year. The Committee has also initiated further stimulus through a Large Scale Asset Purchase programme (see chapter 3).

The Reserve Bank has also taken measures to support the provision of credit to the economy and reduce uncertainty. The Reserve Bank has delayed its proposals to increase banks’ capital requirements, and has removed loan-to-value ratio restrictions on banks’ mortgage lending. The Reserve Bank has also taken measures to support liquidity in domestic financial markets (see box A).
**Inflationary pressures to decline**

We expect the economic impacts of COVID-19 to reduce consumer price inflation, through lower global and domestic inflationary pressures. We have already seen falls in prices across a range of commodities, with significantly lower oil prices translating to lower petrol prices in New Zealand (figure 5.7). We expect slow global growth and inflationary pressures to hold down tradables inflation over the next few years, although the recent depreciation in the New Zealand dollar exchange rate will provide some offset to this.

Domestic inflationary pressure is also likely to be lower. Although a smaller labour force, reduced investment, and disruption to business will reduce supply in the economy, we expect these factors to be more than offset by lower demand. As a result, significant spare capacity is likely to emerge in the economy, suppressing domestic inflation.

Consistent with this outlook, inflation expectations have declined (figure 5.8). Lower inflation expectations are likely to further suppress inflation outcomes through their effects on firms’ price-setting decisions.
Box C

Effects of COVID-19 on the labour market

One of the objectives of the Monetary Policy Committee is to support maximum sustainable employment (MSE). Understanding how COVID-19 will affect employment and MSE is therefore crucial for setting monetary policy.

Demand factors
The economic impacts of the global COVID-19 outbreak have resulted in reduced business for many firms, and some have had to close or operate at lower capacity for a period. As a result, businesses do not need as many workers right now and are less likely to hire new staff. Some firms will let employees go or work with them to reduce their hours and pay. Although government support is reducing these impacts, wages and employment will be lower than otherwise, and unemployment will rise.

Households facing lower incomes and uncertain employment prospects will likely spend less. This in turn may feed back into lower incomes for firms, further reducing labour demand (figure C1).

Supply factors
Labour supply may also fall. New Zealand has experienced strong net immigration in recent years. However, border restrictions mean fewer people can migrate to New Zealand, limiting New Zealand’s access to global labour markets. As a result, the labour force and the level of MSE are likely to be lower, and some firms may find it difficult to find workers with niche skills within New Zealand.4 A lower level of MSE would constrain economic growth, but would also put upwards pressure on wages, and lower unemployment.

The size of New Zealand’s labour force will also be influenced by labour demand. Wages and employment prospects will factor into people’s decisions to search for work, and will influence how many people decide to migrate to and from New Zealand when restrictions are eventually eased. For some people, the impacts of prolonged unemployment may discourage them from looking for work, particularly if their skills have not been maintained.

Labour market mismatch
Certain industries and regions have been hit harder than others. In some cases, people who lose their jobs will need to retrain or move to different regions to find new jobs. This process will take time, so even if there are jobs available in other industries or regions, unemployment will likely remain elevated for some time as people and businesses adjust. Mismatching of skills to jobs may also lead to underemployment, where a worker’s job does not make the best use of their skills.

4 A scenario where border restrictions increase MSE by limiting net emigration is also possible, but we consider it less likely.
Maximum sustainable employment

The consequences for the level of employment relative to MSE will depend on the interactions of these demand and supply factors. To understand this, the Reserve Bank monitors a range of labour market measures. The labour market tightness index, for example, suggests labour demand fell relative to labour supply in the March 2020 quarter (figure C2).\(^5\)

Considerable labour market slack is emerging. We expect employment has continued to fall relative to MSE over the June quarter and will remain below MSE for some time.

---

5 This measure of labour market tightness is the number of job vacancies posted by firms (labour demand), relative to the number of unemployed job-seekers (labour supply). When this measure increases, this means that the labour market is tightening, because labour demand is increasing faster than supply.
Chapter 6
Economic scenario assumptions

Given the unparalleled current environment, the economic outlook is very uncertain. Accordingly, we outline three scenarios to demonstrate some of the possible paths the economy could take. These scenarios are illustrative only and do not necessarily cover the full range of plausible outcomes. The baseline assumptions are summarised in table 6.1. Assumptions specific to each scenario are outlined in table 6.2.

**TABLE 6.1**

<table>
<thead>
<tr>
<th>Baseline narrative</th>
<th>Key judgements</th>
</tr>
</thead>
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<tr>
<td>New Zealand GDP falls in 2020 and remains lower for some time</td>
<td>In addition to the time spent at alert level 4, New Zealand is assumed to be at alert level 3 for four weeks, and then alert level 2 for 10 months. Alert levels 2-4 reduce GDP levels by 9%, 19% and 37% respectively. The international border restrictions remain until the end of the March quarter 2021. Household consumption contracts as income growth is soft, house prices fall around 9% over the remainder of 2020, and net immigration declines. Lower wholesale interest rates gradually pass through to retail rates as banks’ offshore financing costs ease. Exports of services contract significantly because of the border restrictions severely affecting tourism and education. Export volumes of goods decline slightly in the near term. We assume $50 billion of additional fiscal spending over the next three years. Around $20 billion of this spending has already been allocated. The rest is assumed to be spread evenly over this period and across government consumption, investment, and transfers to households. The impact of government lending schemes is excluded. Potential output temporarily falls in the June quarter 2020 as containment measures constrain capacity. Annual potential GDP growth slows to just above 1% thereafter. Lower net migration and labour participation restrain labour supply. Slower investment limits capital growth.</td>
</tr>
<tr>
<td>Baseline narrative</td>
<td>Key judgements</td>
</tr>
<tr>
<td>--------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Global growth also declines in 2020, suppressing global inflation | Annual GDP growth in our key trading partners is -4% in 2020. Growth rises gradually from 2021 as economies emerge from COVID-19 lockdowns and monetary and fiscal stimulus takes effect.  
Inflation in our major trading partners eases, averaging just over 1.8% across the scenario period due to spare capacity in many economies.  
Dubai oil prices gradually recover to around USD 35 per barrel over the next two years.  
Whole milk powder prices average around USD 2,600 per metric tonne.  
The New Zealand dollar Trade Weighted Index (TWI) falls to around 66.5 by late 2020 and recovers to slightly above this level. |
| Labour market softens considerably                      | Employment falls well below its maximum sustainable level in 2020 as labour demand falls sharply. Unemployment peaks at 9% in 2020 as spare capacity emerges across a variety of sectors and industries. Unemployment gradually declines from 2021 as spending and economic activity recovers.  
Net immigration of working-age people falls to around zero while international border restrictions remain, then rises to around 24,000 annually. This is lower than recent years due to lower domestic labour demand.  
Labour force participation falls to around 69.5% until the second half of 2022 and then recovers. |
| Inflation falls relative to target                      | With significant spare capacity, inflation remains below the 1-3% medium-term target range until mid 2022.  
Annual non-tradables inflation falls to less than 0.5% in 2021 as spare capacity emerges, and averages less than 2% over the scenario period.  
Annual tradables inflation averages just above -1% in the year to March 2021 due to lower oil prices, and stays below 1% over the scenario period. |
**TABLE 6.2**

*Scenario descriptions*

<table>
<thead>
<tr>
<th></th>
<th>Baseline scenario</th>
<th>Longer lockdown scenario</th>
<th>Slower recovery scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Alert levels</strong></td>
<td>Alert levels 3-4: four weeks each in June quarter 2020.</td>
<td>December quarter 2020 and beyond: as per baseline scenario.</td>
<td>As per baseline scenario.</td>
</tr>
<tr>
<td></td>
<td>Alert level 2: remainder of period to March quarter 2021. All restrictions lifted thereafter, including border restrictions.</td>
<td>Alert levels 3-4: 50% each over June and September quarters 2020.</td>
<td></td>
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<tr>
<td><strong>Domestic demand</strong></td>
<td>Some recovery as alert restrictions relax, enabling firms to re-open.</td>
<td>Household and business spending falls further and longer as firms' operations are suspended or reduced for longer.</td>
<td>Persistently high unemployment and low wage growth drive a slow recovery in household spending and high precautionary saving.</td>
</tr>
<tr>
<td></td>
<td>Lower household incomes, wealth, and net migration restrain the recovery in household spending.</td>
<td>Longer lockdown does not affect firm viability. All previously available firm capacity returns after shift to alert level 2 restrictions.</td>
<td>Ongoing COVID-19-related disruptions to supply chains and production processes, elevated uncertainty as to the strength of the recovery, and slow export price growth limit business investment.</td>
</tr>
<tr>
<td></td>
<td>High uncertainty weighs on investment.</td>
<td>Fiscal policy settings as per baseline scenario.</td>
<td>Fiscal policy settings as per baseline scenario.</td>
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<tr>
<td><strong>External demand</strong></td>
<td>Exports fall sharply as international border restrictions limit tourism and trading-partner incomes fall.</td>
<td>As per baseline scenario.</td>
<td>Trading-partner GDP holds below pre-COVID-19 levels on a weak global recovery. Export prices stay below pre-COVID-19 levels over the scenario horizon.</td>
</tr>
<tr>
<td></td>
<td>Gradual recovery in trading-partner growth, export demand, and global export prices.</td>
<td></td>
<td>More gradual recovery in service exports as trading-partner incomes and consumer confidence are slower to recover. Service exports remain almost 8% below pre-COVID-19 levels by the end of the scenario period.</td>
</tr>
<tr>
<td></td>
<td>Baseline scenario</td>
<td>Longer lockdown scenario</td>
<td>Slower recovery scenario</td>
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<tr>
<td>------------------------------</td>
<td>-----------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>GDP</strong></td>
<td>Domestic COVID-19 alert restrictions drive a sharp slowdown over the first half of 2020.</td>
<td>Deeper slowdown over 2020 as high alert levels remain until end of September 2020.</td>
<td>As per baseline scenario in 2020.</td>
</tr>
<tr>
<td></td>
<td>Gradual recovery after initial post-restriction bounce-back from loosening of alert restrictions.</td>
<td>Initial post-restriction bounce-back delayed relative to baseline.</td>
<td>Prolonged weak recovery after initial post-restriction bounce-back. It takes one year longer for GDP to return to pre-COVID-19 levels than under baseline.</td>
</tr>
<tr>
<td><strong>Employment</strong></td>
<td>Unemployment rate peak of 9% in 2020 as labour demand falls.</td>
<td>Unemployment rises to 12% as labour demand drops more than baseline.</td>
<td>Unemployment rate peak of 9% in 2020 as labour demand falls.</td>
</tr>
<tr>
<td></td>
<td>Unemployment drops to around 5.5% towards the end of the scenario horizon as domestic and external spending recovers.</td>
<td>Unemployment drops to around 6% towards the end of the scenario horizon as spending recovery lifts labour demand.</td>
<td>Unemployment holds at 6.5% towards the end of the scenario horizon as weak spending recovery only slowly boosts labour demand.</td>
</tr>
<tr>
<td><strong>Inflation</strong></td>
<td>Sharp rise in domestic spare capacity in 2020. Low imported inflation due to weak oil price; lower New Zealand dollar provides limited offset.</td>
<td>More gradual unwind of domestic overcapacity relative to baseline.</td>
<td>Slow unwind in domestic overcapacity. Weak price growth is reinforced by low imported inflation as global slack persists.</td>
</tr>
<tr>
<td></td>
<td>Gradual CPI inflation recovery as domestic capacity overhang is worked off.</td>
<td>Inflation troughs at -0.7% p.a. in the first half of 2021. Inflation remains below 1% until the end of 2022.</td>
<td>Inflation troughs at -0.6% p.a. in the first half of 2021. Inflation remains below 1% until the end of 2022.</td>
</tr>
<tr>
<td></td>
<td>Annual inflation troughs at -0.4% in the first half of 2021. Inflation remains below 1% until second half of 2022.</td>
<td></td>
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</tbody>
</table>
Chapter 7
Appendices

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# Appendix 1: Statistical tables

## TABLE 7.1

**Key variables under the baseline scenario**

<table>
<thead>
<tr>
<th></th>
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<th>CPI inflation Annual</th>
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TABLE 7.2

*Measures of inflation, inflation expectations, and asset prices*

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<td>(quarterly average to date)</td>
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<td><strong>Asset prices (annual percent changes)</strong></td>
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<td>Quarterly house price index (CoreLogic NZ)</td>
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*Long-run expectations are extracted from a range of surveys using a Nelson-Siegel model. Source: ANZ Bank, Aon Consulting, Consensus Economics, RBNZ estimates.*
### TABLE 7.3

*Measures of labour market conditions*

*(seasonally adjusted, changes expressed in annual percent terms)*

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<th>Measures</th>
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<th>2019</th>
<th>2020</th>
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<td>Number employed (million people)</td>
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<td>Labour force (million people)</td>
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<td>Extended labour force (million people)</td>
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<td>Working-age population (million people)</td>
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Note: The All Vacancies Index is produced by MBIE as part of the Jobs Online report, which shows changes in job vacancies advertised by businesses on three internet job boards. The unadjusted labour cost index (LCI) is an analytical index which reflects quality change in addition to price change (whereas the official LCI measures price changes only). For definitions of underutilisation, the extended labour force, and related concepts, see Statistics New Zealand (2016), Introducing underutilisation in the labour market. Estimated net migration (published) is the Stats NZ outcomes-based measure.
TABLE 7.4

Composition of real GDP growth
(annual average percent change, seasonally adjusted, March years, unless specified otherwise)

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<td>Total</td>
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<td>3.5</td>
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<td>Exports of goods and services</td>
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<td>6.5</td>
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<td>3.5</td>
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<td>7.2</td>
<td>3.9</td>
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<td>4.0</td>
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<td>GDP (production)</td>
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<td>3.6</td>
<td>3.6</td>
<td>3.7</td>
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<td>GDP (production, March qtr to March qtr)</td>
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<td>3.3</td>
<td>3.5</td>
<td>4.0</td>
<td>3.0</td>
<td>3.3</td>
<td>3.0</td>
<td>-1.1</td>
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*Percentage point contribution to the growth rate of GDP.
## TABLE 7.5

### Summary of baseline scenario

*(annual percent change for March years unless specified otherwise)*

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<td>2.4</td>
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<td>Export prices (in New Zealand dollars)</td>
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<td>4.1</td>
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<td>Import prices (in New Zealand dollars)</td>
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<td>-3.0</td>
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<td>OCR (year average)</td>
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<td>GDP (production, annual average % change)</td>
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<td>3.6</td>
<td>3.7</td>
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<td>Total employment (seasonally adjusted)</td>
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### Key balances

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### World economy

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<td>Trading-partner GDP (annual average % change)</td>
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<td>2.0</td>
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*Government operating balance is a model-based estimate of OBEGAL divided by nominal GDP in the scenario. The estimate is partial because it relies on projections for some components from the Half Year Economic and Fiscal Update 2019.
Appendix 2: Chart pack

Figure 7.1
Composition of CPI inflation
(annual)

Source: Stats NZ, RBNZ estimates.

Figure 7.2
Output gap and labour/non-labour output gap indicator suite
(share of potential)

Source: RBNZ estimates.
Note: Shaded areas indicate the range between the maximum and minimum values of labour and non-labour indicators in the output gap indicator suite.

Figure 7.3
Unemployment rate and NAIRUs
(s.a.)

Source: Stats NZ, RBNZ estimates.
Note: NAIRU stands for Non-Accelerating Inflation Rate of Unemployment. Shaded area indicates the range between the maximum and minimum values from different NAIRU estimates.

Figure 7.4
OCR and neutral OCR indicator suite
(quarterly average)

Source: RBNZ estimates.
Note: Shaded area indicates the range between the maximum and minimum values from a suite of neutral OCR indicators.
Figure 7.9
House price inflation
(annual)

Source: REINZ.

Figure 7.10
Mortgage rates

Source: interest.co.nz, RBNZ estimates.

Note: The rates shown for each term are the average of the latest rates on offer from ANZ, ASB, BNZ, and Westpac.

Figure 7.11
New Zealand dollar exchange rates

Source: Reuters, RBNZ estimates.

Figure 7.12
Terms of trade, dairy and oil price indices

Source: Stats NZ, GlobalDairyTrade, Reuters, RBNZ estimates.