



Monetary Policy Statement

November 2019

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.¹ 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.² 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.

1 For 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.

2 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, because monetary policy actions take time to transmit through the economy immediately. 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 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 each 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 OCR at the current meeting and how it will communicate the policy outlook.

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November 2019

Projections and data finalised on 6 November 2019.

Policy assessment and summary record of meeting finalised on 13 November 2019.



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Chapter 1

Policy assessment



The Monetary Policy Committee has decided to keep the Official Cash Rate (OCR) at 1.0 percent. Employment remains around its maximum sustainable level while inflation remains below the 2 percent target mid-point but within our target range. Economic developments since the August Statement do not warrant a change to the already stimulatory monetary setting at this time.

Economic growth continued to slow in mid-2019 reflecting weak business investment and soft household spending. We expect economic growth to remain subdued over the remainder of the calendar year. We will continue to monitor economic developments and remain prepared to act as required.

Trading-partner growth has also slowed. Growth in global trade and manufacturing is weak and uncertainty remains high, dampening global business investment. However, New Zealand's export commodity prices have been robust, underpinning a positive terms of trade. The lower New Zealand dollar exchange rate this year is also providing a useful additional offset to the weaker global economic environment.

Domestic economic activity is expected to increase during 2020 supported by low interest rates, higher wage growth, and increased government spending and investment. The low level of the OCR has flowed through to lower lending rates more generally, which support spending and investment. Rising capacity pressures are projected to promote a pick-up in business investment.

Interest rates will need to remain at low levels for a prolonged period to ensure inflation reaches the mid-point of our target range and employment remains around its maximum sustainable level. We are committed to achieving our inflation and employment objectives. We will add further monetary stimulus if needed.

A blue ink signature of Adrian Orr, the Governor of the Reserve Bank of New Zealand.

Adrian Orr
Governor

Summary record of meeting

The Monetary Policy Committee agreed that economic developments since the August *Statement* had been offsetting for the monetary policy outlook. The members discussed the projections and agreed that they formed a sound basis for their monetary policy decision, but noted the near-term downside risks to the economy.

The Committee agreed that accommodative monetary policy remains necessary to continue to meet their inflation and employment objectives.

The members noted that employment remains close to its maximum sustainable level while consumer price inflation remains below the 2 percent target mid-point but within the 1 to 3 percent target range.

The Committee noted that global growth had continued to slow. The members noted the weak global trade growth and continued elevated uncertainty.

The Committee discussed the impact of the global slowdown on New Zealand through trade, confidence, and financial channels. While the impact on New Zealand was seen to be negative overall, some members noted that our export commodity prices remained elevated which was boosting our terms of trade and national income.

The Committee noted the slowdown in domestic GDP growth. They also noted that business surveys suggest weak growth has continued over the second half of 2019. The members discussed the slowdown in potential

output growth, which may explain the economy remaining near capacity over this time. Weaker demand was expected to reduce capacity pressure in the near term, and ease some of the recent labour market tightness.

The members anticipated a lift in economic growth during 2020 from the easing of monetary policy that has taken place since early 2019 and from stronger fiscal stimulus.

The Committee noted the signs that recent monetary stimulus was flowing through the economy and supporting the medium-term growth projections. The members noted that the reduction in retail lending rates over the past year would support the outlook for consumption and broad investment. The Committee noted the lower exchange rate this year as another channel supporting the economy.

The Committee discussed the impact of fiscal stimulus on the economy. The members noted that fiscal stimulus could be greater than assumed. The members also discussed the potential delays in implementing approved spending and investment programmes.

The Committee discussed the recent inflation developments and, in particular, the recent increases in wage and non-tradables inflation. The members noted the increase in inflation and wages is an expected outcome of monetary stimulus transmitting through the economy. Some members noted the pick-up in non-tradables inflation in the September 2019 quarter was partly due to administrative prices.

The Committee also noted the slight decline in one- and two-year ahead survey measures of inflation expectations. Nevertheless, long-term inflation expectations remain anchored at close to the 2 percent target mid-point and market measures of inflation expectations have increased from their recent lows.

The Committee members discussed some of the reasons why long-term interest rates were near secular lows. They noted the contributions from global factors, including ongoing low inflation, declining neutral interest rates, and policy uncertainty. Given this, the Committee expected that low global interest rates would persist for some time.

The Committee discussed the effect of low interest rates on financial stability. The members noted the risks to the soundness of the financial system. They discussed the relationship between financial stability and the employment and inflation objectives, noting the current deployment of financial stability policies. The Committee agreed it was appropriate to continue to set interest rates to meet its inflation and employment objectives.

The Committee noted the Bank's work programme assessing alternative monetary policy tools in the New Zealand environment, as part of contingency planning for an unlikely scenario where additional monetary instruments are required.

The Committee agreed that it was necessary for monetary policy to remain stimulatory for some time to meet its employment and inflation objectives. In terms of least regrets, the Committee discussed the relative benefits of inflation ending up in the upper half of the target range relative to being persistently below 2 percent.

The Committee debated the costs and benefits of keeping the OCR at 1.0 percent versus reducing it to 0.75 percent. The Committee agreed that both actions were broadly consistent with the current OCR projection. The Committee agreed that the reduction in the OCR over the past year was transmitting through the economy and that it would take time to have its full effect.

The Committee reached a consensus to keep the OCR at 1.0 percent. The Committee noted that the risks to the economy in the near term were tilted to the downside and agreed it would add further monetary stimulus if economic developments warranted it.

Attendees

Reserve Bank staff: Adrian Orr, Geoff Bascand, Christian Hawkesby, Yuong Ha

External: Bob Buckle, Peter Harris, Caroline Saunders

Observer: Caralee McLiesh

Secretary: Chris McDonald

Chapter 2

Key policy judgements



- Employment remains near its maximum sustainable level and underlying inflation is close to but below 2 percent. We expect the labour market and capacity pressure to ease in the near term.
- GDP growth has continued to slow in 2019. Business investment and household spending have been soft.
- A slowdown in global economic growth has also dampened domestic growth. Higher tariffs, declining global trade flows, and ongoing policy uncertainty have suppressed global demand. Central banks have eased monetary policy to support their economies.
- The reduction in the OCR over the past six months has seen lending and deposit interest rates fall. The recent pick-up in house price inflation and depreciation of the New Zealand dollar exchange rate are expected to contribute to higher growth over the next year. In addition, higher government spending provides support to GDP growth over the same period.
- Accommodative monetary policy remains necessary to achieve our inflation and employment objectives.

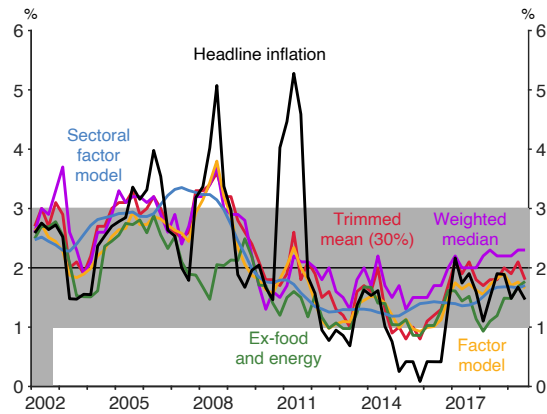
Employment remains near its maximum sustainable level and inflation is below 2 percent

The labour market has remained tight through mid-2019. A range of measures suggests employment has remained near its maximum sustainable level (see table 5.1). Labour market conditions have been stronger than we anticipated given the slowdown in global and domestic growth.

Most core inflation measures remain close to but below 2 percent (figure 2.1). Headline inflation fell to 1.5 percent in the September 2019 quarter due to lower annual fuel price inflation.

Measures of domestic inflation have continued to increase, providing an indication that broader capacity pressure has also held up. Non-tradables inflation and wage inflation have increased to slightly above their post-2000 average levels. These increases were broadly consistent with ongoing stimulatory monetary policy settings, but were larger than we anticipated. For non-tradables inflation, the increase was partly driven by larger-than-expected increases in prices for a few items that are less representative of broader inflationary pressure. A higher minimum wage has contributed to the pick-up in wage inflation.

Figure 2.1
Inflation
(annual)

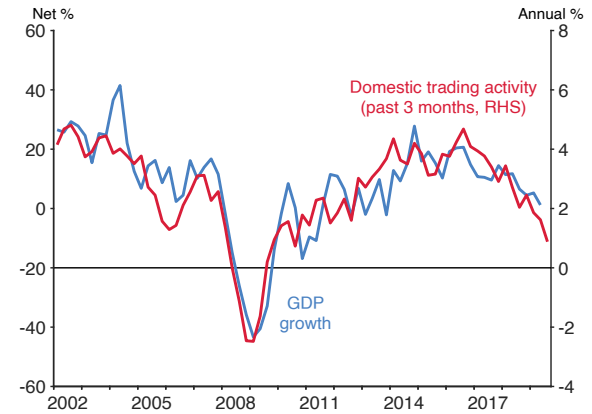


Source: Stats NZ, RBNZ estimates.

Note: Core inflation measures exclude the effect of GST.

Figure 2.2

Annual GDP growth and domestic trading activity
(s.a.)



Source: Stats NZ, NZIER.

Note: Domestic trading activity measures the net percentage of firms that reported an increase in their own activity over the past three months.

GDP growth has continued to slow

The current slowdown in economic growth is expected to reduce capacity pressure and employment growth over the next year. Annual GDP growth fell to 2.1 percent in the June 2019 quarter from 3.2 percent in the same quarter last year. We expect growth to ease slightly further over the second half of 2019 (see chapter 3). This partly reflects that the *Quarterly Survey of Business Opinion (QSBO)* measure of business activity fell in the September 2019 quarter to its lowest level since 2010 (figure 2.2).

The continuing strength in the labour market, despite slower GDP growth, may partly reflect that growth in the potential output of the economy has slowed. This is the rate that the economy can grow without causing inflationary pressure to increase. A key determinant of potential output is the size of the labour force. Lower net immigration and a plateau in the labour force participation rate have seen growth in the labour force ease (see chapter 3).

Business investment and household spending have been soft

Weak business investment has contributed to slowing domestic growth. While capacity pressure and low interest rates provide an incentive to invest, other factors are currently dominating investment decisions. Our recent discussions with firms have highlighted that policy uncertainty has suppressed investment (see box A). In addition, firms across a range of industries continue to report difficulty in passing on costs to prices due to strong competition.

Household spending growth has also declined. Low house price inflation over the past two years has slowed housing wealth accumulation, dampening consumption growth. However, a recent lift in house price inflation is expected to support household spending in coming quarters. Residential investment has been increasing, although capacity constraints in the construction sector have restrained the pace of further expansion.

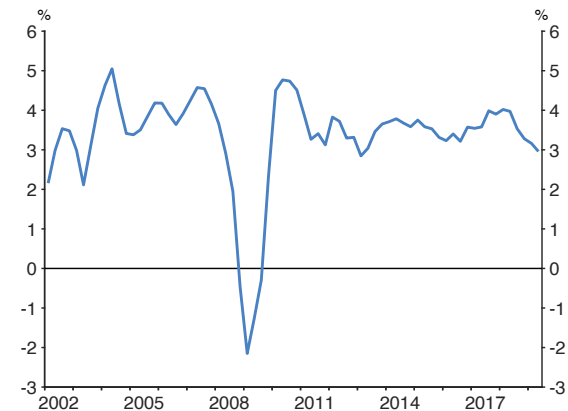
Global economic conditions are suppressing domestic growth

Global economic conditions have weakened slightly further over the past three months. Higher tariffs, declining global trade flows, and ongoing policy uncertainty have suppressed global demand. Growth in New Zealand's trading partners has continued to slow (figure 2.3). Some recent indicators of global economic growth have begun to show signs of stabilisation, but it is too early to tell if growth has bottomed out.

Political developments continue to have an important influence on the global economic outlook and risks around it. US-China trade tensions escalated in early August, but have since improved. The likelihood of the United Kingdom leaving the European Union without an agreement has diminished.

Labour markets in most of our trading partners have been stable or strengthened over 2019. Unemployment is generally low and wage growth has picked up in many economies. Improving labour markets have helped underpin household incomes and spending, supporting economic activity even as growth in trade and manufacturing has slowed.

Figure 2.3
Trading-partner GDP growth
(annual)



Source: Haver Analytics, Stats NZ, RBNZ estimates.

With growth slowing and global inflationary pressure remaining subdued, central banks have eased monetary policy and financial market participants expect further easing. Despite this, the New Zealand dollar exchange rate has depreciated since the *August Statement*, partly due to the lower OCR.

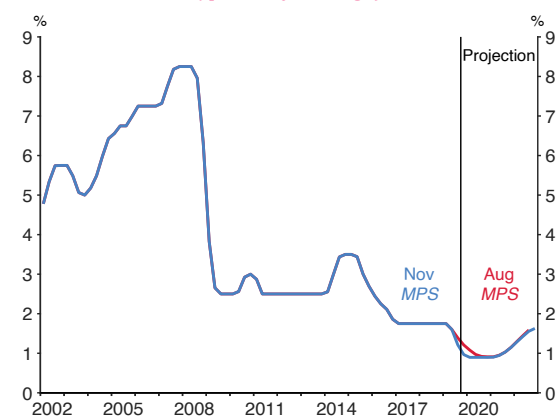
Slower global growth and trade policy uncertainty affect New Zealand through trade, financial, and confidence channels. Low business confidence in New Zealand is likely in part due to global conditions. Demand for some of our exports has eased, particularly in the tourism sector. However, our export commodity prices have been robust despite global weakness. Dairy prices have held up due to solid demand and soft global production, while African swine fever in China has boosted global meat prices.

Low interest rates provide impetus to growth

With growth slowing, we reduced the OCR over the past six months to keep employment close to its maximum sustainable level and to lift inflation to 2 percent (figure 2.4). These reductions have seen lending and deposit interest rates fall. This is expected to support household spending growth, partly through a pick-up in house price inflation. Residential construction is expected to rise, albeit gradually.

In addition, the recent depreciation in the New Zealand dollar exchange rate is expected to boost tradables inflation. The depreciation also supports the outlook for growth, as New Zealand exporters and import-competing firms become more competitive.

Figure 2.4
Official Cash Rate
(quarterly average)



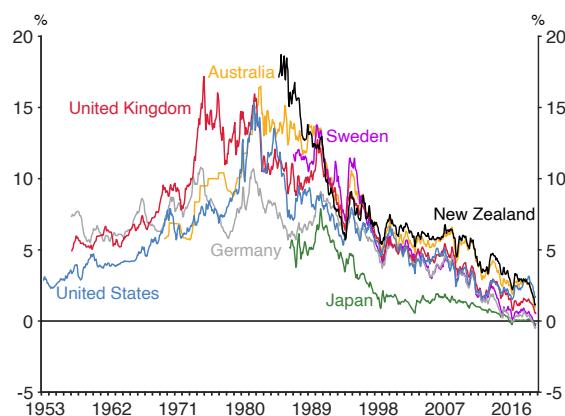
Source: RBNZ estimates.

Fiscal stimulus also supports this anticipated pick-up in growth. *Budget 2019* outlined fiscal projections where government spending increases sharply from the second half of 2019.

Annual GDP growth is projected to increase to 2.8 percent in the December 2020 quarter. Growth in potential output is assumed to average 2.3 percent per annum over the next three years, lower than previously projected. With GDP growth projected to exceed potential growth, pressure on domestic resources increases and inflationary pressure builds.

Interest rates in New Zealand are expected to remain low for some time, largely reflecting global factors. Long-term interest rates are near historically low levels in most developed economies, including New Zealand (figure 2.5). Ongoing low inflation, declining neutral interest rates, and global policy uncertainty have contributed to this decline alongside several other factors (see chapter 3).

Figure 2.5
10-year government bond yields



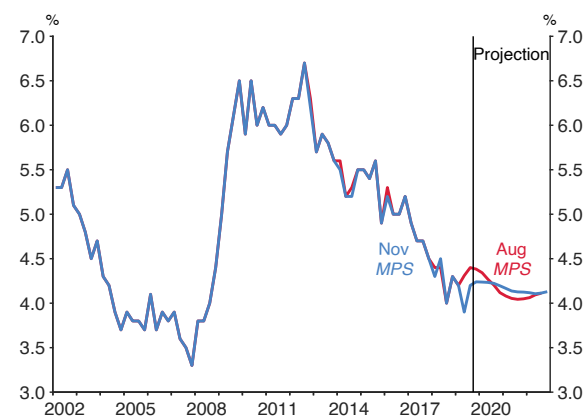
Source: Haver Analytics.

Inflation and employment are expected to remain close to target

Employment is expected to remain near its maximum sustainable level, despite some temporary softness due to the current slowdown in growth. The unemployment rate is expected to remain around or slightly below the current 4.2 percent level over the projection period (figure 2.6).

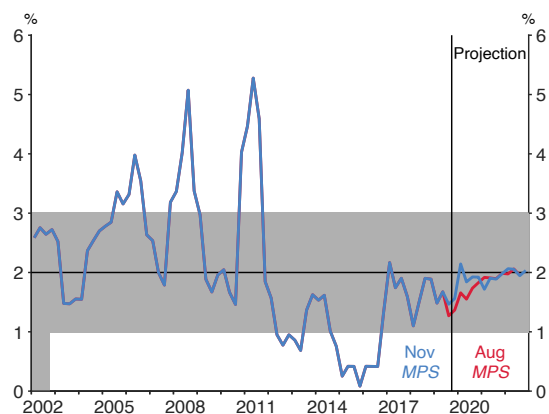
Annual CPI inflation is projected to be slightly below 2 percent on average over the next two years, before converging on 2 percent over the medium term (figure 2.7). The lower New Zealand dollar exchange rate is expected to help lift inflation slightly above 2 percent in the March 2020 quarter. Beyond this, tradables inflation is expected to be below its post-2000 average due to weak global inflationary pressure.

Figure 2.6
Unemployment rate
(s.a.)



Source: Stats NZ, RBNZ estimates.

Figure 2.7
CPI inflation
(annual)



Source: Stats NZ, RBNZ estimates.

Non-tradables inflation is expected to increase gradually as capacity pressure tightens and as higher past inflation begins to feed into price setting. Increases in the minimum wage also contribute to rising inflation, although the pass through to prices is assumed to be small. Recent larger-than-usual price increases for some non-tradables components are expected to drop out of the annual calculation next year.

Surveyed inflation expectations have eased slightly

Surveyed inflation expectations for the next two years have eased in recent quarters, while longer-term expectations remain anchored at 2 percent (see figure 5.7). Lower annual CPI inflation in recent quarters and an easing in capacity pressure seem to have dampened inflation expectations. This highlights the downside risk to the inflation objective, and supports continuing monetary stimulus.

Key assumptions and uncertainties

The outlook for monetary policy is contingent on the key forecast assumptions outlined in table 2.1. There is uncertainty around these assumptions, and they are updated as new information becomes available. The Summary Record of Meeting outlines the key uncertainties discussed by the Monetary Policy Committee (MPC) that could affect the economy and shift the outlook for monetary policy.

TABLE 2.1

Key forecast assumptions

Overarching narrative	Key forecast assumptions
Global growth stabilises around its historical average	<p>Annual GDP growth in our major trading partners averages 3.2% over the projection period.</p> <p>Central banks continue to ease policy settings. The New Zealand dollar Trade Weighted Index (TWI) remains around 71 over the projection period.</p>
Global inflationary pressure edges up only gradually	<p>Inflationary pressure in our major trading partners is weak over 2019, and edges up only gradually over the projection period.</p> <p>Import price inflation in foreign currency terms is low, averaging slightly below zero over the projection period.</p> <p>Dubai oil prices remain around USD 60 per barrel.</p> <p>Whole milk powder prices gradually returns to USD 3,000 per metric tonne.</p>
New Zealand GDP growth picks up to above trend due to fiscal and monetary stimulus	<p>GDP growth remains soft until 2020, and exceeds potential growth from mid-2020 as policy stimulus flows through the economy.</p> <p>Annual net immigration of working-age people falls from 40,000 in 2018 to 28,000 in 2021, contributing to lower growth in potential GDP.</p> <p>Household consumption growth increases slightly over the next year, but slows from late 2020 as house price inflation and net immigration ease.</p> <p>Export growth is subdued in the near term due to the weaker global economy. Import volumes grow at a moderate pace, supported by a pick-up in domestic demand growth from mid-2020.</p> <p>Government spending growth increases significantly from the second half of 2019, but fades over the medium term.</p> <p>Residential investment increases gradually over the projection, as more resources are drawn into the construction sector.</p> <p>Uncertainty suppresses business investment over the next year. However, investment rises as a share of output over the medium term as capacity pressure picks up and the terms of trade rise.</p>
Capacity pressure builds as demand growth outstrips supply	<p>The output gap is currently close to zero. As growth picks up in 2020, the output gap is expect to rise to slightly above zero.</p> <p>Employment is currently near its maximum sustainable level. The labour market softens slightly over the next year. However, the unemployment rate remains close to 4 percent over the projection period.</p> <p>The labour force participation rate remains around its current level.</p>
Inflation trends up to the 2 percent target mid-point	<p>Annual non-tradables inflation dips over 2020, but then increases gradually as capacity pressure increases and higher past inflation feeds into price setting.</p> <p>Annual tradables inflation is negative over 2019, then recovers to just below its post-2000 average.</p> <p>Annual wage inflation rises to around 2.6 percent in early 2022, as the labour market tightens and the minimum wage rises.</p> <p>Minimum wage increases are mostly absorbed in firms' margins and have a small impact on CPI inflation.</p>

Box A

Summary of recent business visits

We regularly meet with a range of organisations to improve our industry knowledge and understanding of current economic conditions. In September, Reserve Bank staff spoke with 63 businesses across Whāngārei, Auckland, Hamilton, Rotorua, Tauranga, Wellington, Christchurch, Queenstown, and Invercargill.

We met with businesses to find out more about demand conditions and investment intentions, and to better understand the Māori economy. We also discussed labour market conditions, prices, and costs. This box summarises the key themes of the discussions.

Most firms reported that activity had been fairly robust and were generally optimistic about demand for their products. However, some firms in the tourism and retail sectors noted softening demand growth. There was a general sense of uncertainty around the future business landscape, particularly in the dairy and retail sectors.

A theme that has come through in both business surveys and our business visits is that firms' margins are being squeezed. Firms are facing increased costs, but most feel unable to pass on these costs to consumer prices. The three main reasons cited for compressed margins were increased online competition, increased price transparency, and fixed-price contracts.

Firms across industries and regions reported difficulty in finding labour across all skill levels. There were widespread reports of labour costs increasing across the entire wage spectrum as a result of minimum wage increases.

A range of businesses said that they were looking to invest but were finding it difficult to do so, and some had delayed projects due to uncertainty. There were many reasons given for why it was difficult to invest in the current environment, including:

- uncertainty about future environmental policy and infrastructure investment plans;
- regulatory requirements;
- construction capacity constraints; and
- access to finance.

Some businesses wanted to expand to meet future demand. Other firms said they intended to or already had started to invest in automation, to make up for labour shortages or become more cost efficient.

An important part of our business engagement is to build strong relationships with Māori businesses and organisations.¹ We met with 11 Māori organisations across the country and discussed a range of key themes to develop our understanding of the Māori economy.² These discussions yielded similar conclusions about general economic conditions as outlined above. Some unique themes also emerged, including:

- Māori businesses are often values-driven and therefore profit is not the only deliverable they are working on. Kaitiakitanga (environmental sustainability), Māoritanga (cultural security), Manaakitanga (social well-being), and broader intergenerational outcomes are other important factors that inform predominantly long-term investment horizons;
- there is a large concentration of Māori businesses in primary and export industries, particularly fishing, forestry, and farming. All these industries face concentrated climate, commodity price, and trade risks; and
- Māori businesses continue to address structural barriers, for example by bolstering governance capability, developing skills, and encouraging rangatahi (youth) into continuing education and training.

These themes provide useful context and insights for monetary policy in New Zealand. In maintaining maximum sustainable employment, monetary policy can consider the unique intergenerational characteristics and long-term perspectives of Māori businesses. A better understanding of the Māori economy supports the Reserve Bank's ultimate objective of promoting the prosperity and well-being of New Zealanders.

1 See the Reserve Bank's [Te Ao Māori strategy](#).

2 See the Reserve Bank's [2019 Annual Report](#), page 38.

Chapter 3

Special topics



Prior to each *Statement*, the MPC is provided with analysis of some topical issues that may influence its policy assessment.

Topics for the November *Statement* included:

1. Why are long-term interest rates so low?
2. What is the outlook for GDP growth?
3. Why has capacity pressure held up as growth has slowed?
4. How do low interest rates affect financial stability?

1. Why are long-term interest rates so low?

An important feature of the current global economic and financial market environment is the low level of nominal interest rates in developed economies, across both short- and long-term horizons.

Long-term interest rates are at low levels, for example the yields on 10-year government bonds (see figure 2.5). This has important implications for financial markets, monetary policy, and financial stability (see special topic 4). As such, understanding why long-term interest rates are low is important.

Low long-term interest rates reflect a range of factors. These can be separated into low expected inflation, low expected real short-term interest rates, and low compensation for risk. Each of these factors has been affected by both structural and cyclical forces.

Expected inflation

Expected inflation in developed economies has declined since the 1980s, broadly in line with actual inflation. One driver of this has been the adoption of inflation-targeting (or similar) frameworks by central banks.

Both survey (not shown) and market-based measures of inflation expectations have declined (figure 3.1). Market-based measures have trended down since the GFC, and have fallen further over the past year. The decline over the past year partly reflects the cyclical downturn in the global economy, but it may also reflect a concern that central banks will not provide enough monetary policy stimulus to hit their inflation targets.

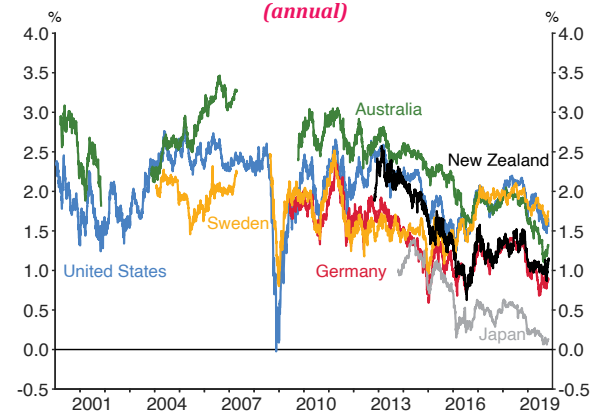
Expected real short-term interest rates

Nominal and real short-term interest rates in developed economies are at low levels. Market participants expect them to remain close to their current levels for the foreseeable future.

Short-term interest rates are closely tied to central bank policy interest rates. Policy rates have declined over the past year or so. This may largely reflect cyclical forces, as central banks have reacted to the slowdown in global growth.

Over a longer time horizon, the persistent decline in short-term real interest rates reflects declines in neutral real interest rates globally. The neutral interest rate is the interest rate setting that would be neither contractionary nor stimulatory. There is uncertainty about the level of neutral interest rates at any given time, but estimates have declined significantly over recent decades (figure 3.2). Given the openness of developed economies, trends in neutral real rates are similar across countries.

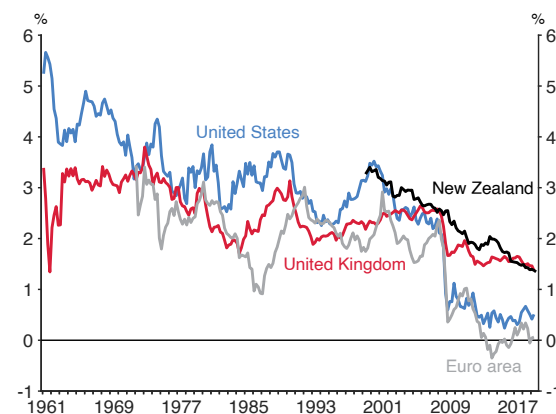
Figure 3.1
10-year break-even inflation rates
(annual)



Source: Bloomberg, RBNZ estimates.

Note: Break-even inflation rates are the difference between the yields on a regular bond and those on an inflation-indexed bond. They give some indication of what financial market participants expect inflation to be over a given period. Break-even inflation rates are influenced by factors such as changes in the appetite for liquidity, so don't give a pure read on market participants' expectations. This is particularly the case for New Zealand given the small size of our market.

Figure 3.2
Estimated neutral real interest rates



Source: Federal Reserve Bank of New York, RBNZ estimates.

Note: The New Zealand estimate is the mean of the RBNZ's neutral OCR indicator suite, minus 10-year inflation expectations from the RBNZ's inflation expectations curve.

Research points to a number of factors that may have boosted desired saving and reduced desired investment, pushing down the ‘normal’ level of interest rates.³ These include lower potential growth rates, changing demographics, falling relative prices for capital goods, lower public investment, rising inequality, and increased spreads between other interest rates (e.g. mortgage rates) and risk-free interest rates. However, no clear consensus has emerged about which of these factors have been the most important.

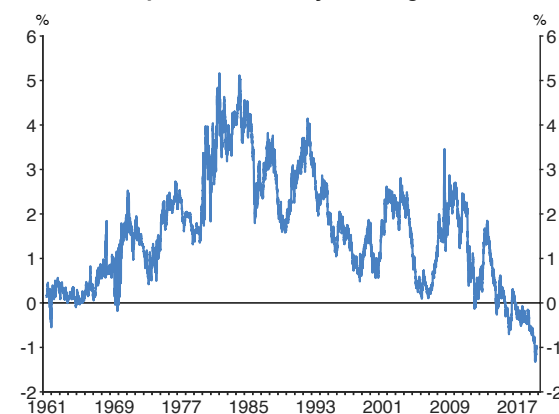
Compensation for risk

Investors in long-term bonds face the risk of changes in interest and inflation rates, which could cause a bond to lose value. The additional return they require to compensate them for this risk is the term premium. The term premium is the difference between the yield on a long-term bond and the expected path of future short-term interest rates over the same horizon. The term premium may be negative if investors are willing to pay to lock in a rate of return that is more certain over a longer horizon.

Estimates of US term premia have declined significantly over recent decades (figure 3.3). Available estimates for other advanced economies (including New Zealand) show a similar trend and tend to move together.⁴

The decline in term premia reflects a range of factors, including reduced uncertainty about future inflation and real interest rates, and the increasing presence of price-insensitive buyers of bonds (including central banks as part of large-scale asset purchase programmes). More recently, an increase in perceived downside risks to the global economy has reduced term premia as long-term bonds are perceived to provide a good hedge against some adverse economic scenarios.

Figure 3.3
Estimated term premium on 10-year US government bonds



Source: Bloomberg.

Note: Estimate is based on the Federal Reserve Bank of New York's 'ACM' model.

³ See L. Rachel and T. Smith (2015), '[Secular drivers of the global real interest rate](#)', *Bank of England Staff Working Paper* No. 571.

⁴ See M. Callaghan (2019), '[Expectations and the term premium in New Zealand long-term interest rates](#)', Reserve Bank of New Zealand, *Bulletin*, Vol. 82, No. 3, April.

2. What is the outlook for GDP growth?

Domestic GDP growth has been slowing since 2016, driven by a wide range of factors. These include a decline in net immigration, the deterioration in the global growth outlook, and a fall in domestic business confidence. The housing market has also cooled over recent years, reducing consumption growth.

The *Quarterly Survey of Business Opinion* (QSBO) measure of firms' reported domestic trading activity has historically been a good indicator of GDP growth. The most recent release indicates that GDP growth has continued to slow in the second half of 2019 (figure 3.4).

Other timely indicators show a mixed picture: the Performance of Manufacturing Index indicates that growth has been soft in the September 2019 quarter. However, the Performance of Services Index suggests that the services sector may have supported growth over late 2019.

Our forecast is for slightly stronger growth than the QSBO alone might suggest over the second half of 2019. This is due to factors that the QSBO does not capture, such as strong agricultural production and higher government spending on services.

The lower OCR is already supporting the economy through a lower New Zealand dollar TWI and stronger house price inflation. A lower TWI

Figure 3.4
Annual GDP growth and domestic trading activity
(s.a.)



Source: NZIER, Stats NZ.

supports exporters and import-competing firms, and stronger house price inflation tends to flow through into higher consumption spending.⁵ We expect both of these factors to provide additional support for GDP growth over the remainder of 2019 and into 2020.

Over the medium term, we expect monetary and fiscal stimulus to support stronger GDP growth. We expect growth to pick up over the projection period, causing capacity pressure to build. As a result business investment also increases, providing additional support to the growth outlook. Strong population growth is also likely to underpin GDP growth, although we expect population growth to slow somewhat. Potential GDP growth appears to be softer than previously thought (see special topic 3), meaning that the pick-up in growth is less pronounced than projected in the August *Statement*.

5 See R. de Roiste, A. Fasianos, R. Kirkby, and F. Yao, (2019), 'Household leverage and asymmetric housing wealth effects – Evidence from New Zealand', Reserve Bank of New Zealand, Discussion Paper, DP2019/01.

We forecast GDP growth to bottom out at 2.0 percent in the December 2019 quarter before picking up over 2020. This pick-up in domestic growth is supported by a gradual rise in trading-partner growth (figure 3.5).

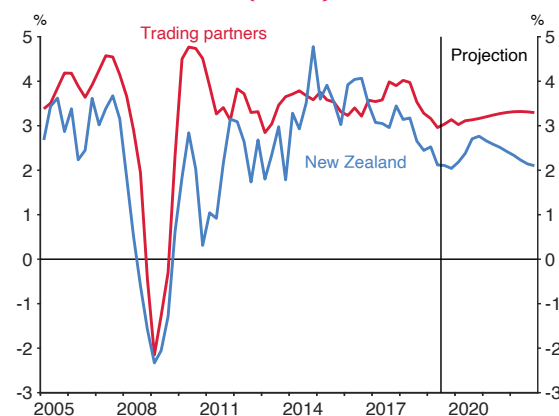
3. Why has capacity pressure held up as growth has slowed?

GDP growth has slowed since 2016 (see special topic 2). Slowing GDP growth tends to be accompanied by rising unemployment as firms' demand for labour grows more slowly. However, the labour market has tightened, despite the growth slowdown.

The unemployment rate has fallen since 2016, and employment is close to its maximum sustainable level. More broadly, our suite of indicators for capacity pressure suggests the economy is operating close to full capacity (see figure 5.2) and core inflation has increased slightly (figure 3.6).

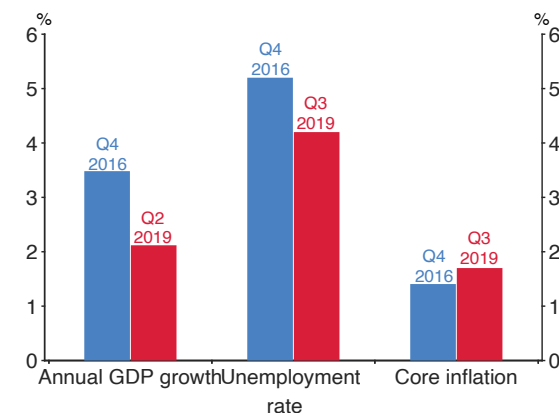
One explanation for this is that growth in potential GDP may have slowed (see figure 4.13). Potential GDP is the level of output that the economy can sustain without causing inflationary pressure. A slowdown in GDP growth, stemming from slower growth in potential GDP, would be consistent with capacity pressure remaining elevated and underlying inflation holding up.

Figure 3.5
GDP growth
(annual)



Source: Haver analytics, Stats NZ, RBNZ estimates.

Figure 3.6
Changes in key economic indicators



Source: Stats NZ, RBNZ estimates.

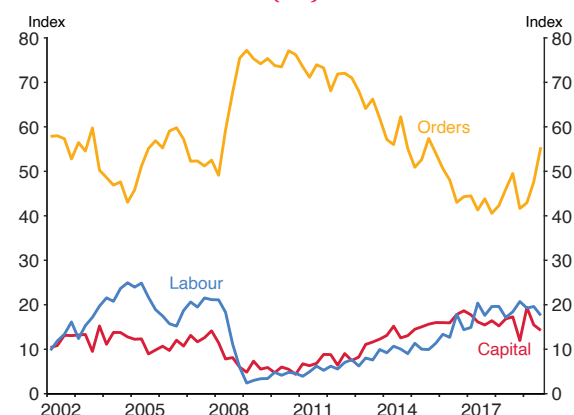
Note: Core inflation is the Reserve Bank's Sectoral Factor Model measure.

Growth in potential GDP reflects three key supply-side factors: labour, capital, and productivity. Labour has been the most significant contributor to variations in potential GDP growth since the GFC (see figure 5.5). Because growth in potential GDP is unobservable, we can only estimate how it is evolving. But, it does appear that growth in labour supply has slowed.

Net immigration has fallen from its record high level in 2016 and the labour force participation rate has plateaued. The latter partly reflects New Zealand’s aging population and declining labour force participation by older people, which had been increasing until recently.⁶ Combined, these factors may have slowed growth in potential output, keeping capacity pressure high despite the reduction in actual GDP growth.

Continued tightening in the labour market could also reflect the fact that changes in the labour market tend to lag changes in demand in the economy. The labour market remains tighter than expected in the August *Statement*. However, we have seen an increase in the unemployment rate (but not the underutilisation rate) in the September quarter, and other timely indicators point to an easing in capacity pressure over the second half of 2019. For example, the latest QSBO data indicates that supply-side constraints on GDP growth have eased slightly (labour and capital) while orders (demand) have increased as a constraint (figure 3.7).

Figure 3.7
QSBO firm limiting factors
(s.a.)



Source: NZIER, RBNZ estimates.

4. How do low interest rates affect financial stability?

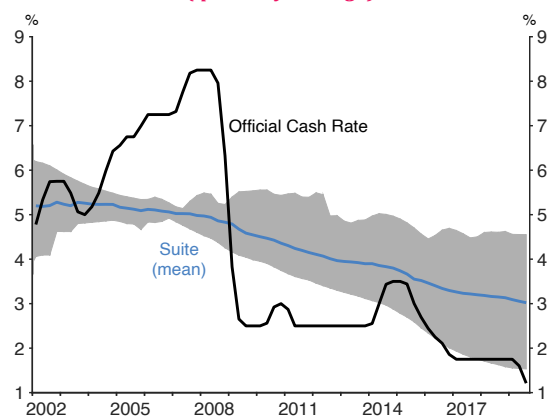
Interest rates have a considerable influence on the risks that New Zealand’s financial system faces. The *Remit* requires the MPC to have regard to the soundness of the financial system when setting monetary policy. But how much of a trade-off really exists between financial stability (soundness) and our primary objectives for inflation and employment?

⁶ See J. Culling and H. Skilling, ‘How does New Zealand stack up? A comparison of labour supply across the OECD’, Reserve Bank of New Zealand Bulletin, Vol. 81, No. 2, April.

Long-term interest rates have been declining for some time, and this fall has largely reflected factors outside the Reserve Bank's control (see special topic 1). Estimates of the 'neutral' OCR (the level of the OCR that is neither stimulatory nor contractionary) have declined (figure 3.8).

Not lowering the OCR alongside the decline in the neutral OCR would likely have had detrimental consequences for the real economy, causing the Reserve Bank to miss both its inflation and employment targets, and threatening financial stability. More generally, this reflects that sustaining economic growth is broadly supportive of financial stability and that financial instability could threaten our primary objectives by reducing employment and inflation. However, sustained low interest rates have contributed to vulnerabilities in the financial system building up over time.

Figure 3.8
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.

The Reserve Bank does have some flexibility in achieving its objectives. The right level of the OCR depends on a number of factors, including how we expect OCR changes to transmit to the economy and how hard we push to return inflation back to its target. It is in this fine-tuning of the OCR where there may be important trade-offs between our primary objectives and the soundness of the financial system.

Lower interest rates can affect financial stability through a range of channels, including:

- encouraging investors to seek higher returns by taking on greater risk;
- increasing the value of long-term assets (and liabilities) and increasing the volatility of asset values; and
- increasing debt and leverage, in part because assets become more expensive to purchase.

These channels mean low interest rates can have a range of financial stability consequences. Several particularly pertinent consequences for New Zealand include:

- exacerbating existing financial system vulnerabilities due to high levels of household debt;
- encouraging households to shift to riskier, higher-yielding investments without understanding the risks;
- increasing banks' deposit funding costs relative to benchmark interest rates (if banks need to compete more with alternative, higher-yielding investments); and
- causing losses for insurers that have long duration claims liabilities (e.g. some life insurers), by increasing the value of these liabilities.

These risks will be discussed in more detail in the November 2019 *Financial Stability Report*.

More broadly, the degree of financial stability risks from lower interest rates will depend on a range of factors. These include the level of existing vulnerabilities and the strength of financial system regulation and supervision. It will also depend on what other policy tools are used to mitigate any risks, such as macroprudential policies. For example, the Reserve Bank has used loan-to-value ratio restrictions to reduce financial system risks associated with high household debt.

Lower interest rates may also have financial stability benefits by bringing about better growth and employment outcomes. But the financial stability benefits from marginal changes in the OCR would be small, as they are unlikely to be the difference between a downturn and a boom.

The *Remit* requires the Reserve Bank to take account of financial system soundness when setting monetary policy. We interpret this to mean that we can adjust how much we pursue our primary objectives if there would be material consequences for financial stability. But smaller financial stability consequences would not necessarily cause us to adjust our monetary policy settings.

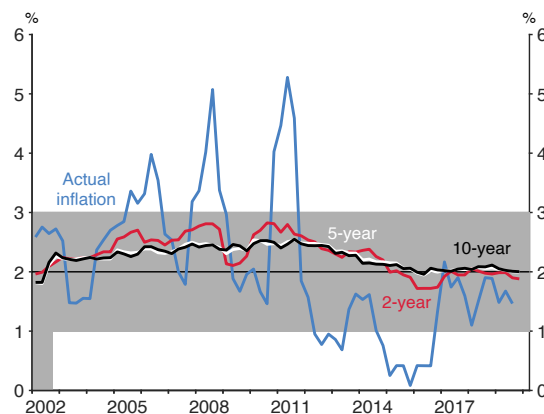
At times, setting a higher OCR to lean against financial stability risks could make us more likely to undershoot our inflation and employment targets. The implications of such an undershoot would be particularly important if it caused inflation expectations to fall.⁷ This would make it even harder to achieve our primary objectives, and at a greater cost to financial stability.

⁷ See [Swedish monetary policy experiences after the global financial crisis: What lessons are there for other countries?](#) for an account of Sweden's central bank's experience using monetary policy to lean against financial stability risks.

More generally, the trade-off between our primary objectives and financial system soundness will depend on the economic environment at the time. For example, the risk of undershooting our primary objectives would depend on how closely inflation and employment were tracking relative to our targets.

Currently, inflation expectations remain anchored at around 2 percent for longer terms (figure 3.9). However, they have declined slightly and may be vulnerable to a further period of inflation below our target mid-point. As such, setting marginally tighter monetary policy to reduce financial stability vulnerabilities may have particularly significant implications for our primary objectives at this time. Nevertheless, we continue to be careful in our OCR settings to avoid unnecessarily exacerbating risks to financial stability.

Figure 3.9
CPI inflation and inflation expectations
(annual)



Source: Stats NZ, RBNZ estimates.

Note: Inflation expectations are estimates from the RBNZ inflation expectations curve, based on surveys of businesses and professional forecasters.

Chapter 4

Economic projections



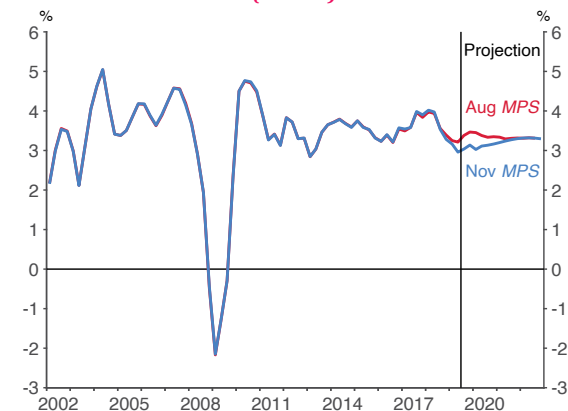
Global conditions have continued to weaken since the August *Statement*, reducing the outlook for domestic growth and capacity pressure. Fiscal stimulus and low interest rates are expected to support stronger growth over 2020. Continued monetary stimulus is required to achieve our inflation and employment objectives (see chapter 2).

This chapter summarises the economic projections that the MPC uses to make its policy assessment.

Global conditions have continued to weaken

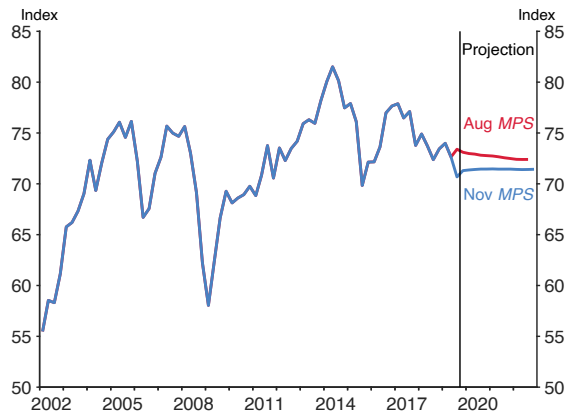
- Economic growth in our trading partners continued to decline in the first half of 2019 (figure 4.1).
- Trading-partner growth appears to have reached a trough, and is forecast to increase gradually over the projection. Global growth in manufacturing output has declined as trade tensions have remained elevated. However, tight labour markets appear to be supporting domestic spending in our trading partners.
- Central banks around the world have eased monetary policy in response to weaker growth and subdued inflation. Market expectations for world policy interest rates have declined further since the August *Statement*.

Figure 4.1
Trading-partner GDP growth
(annual)



Source: Haver Analytics, Stats NZ, RBNZ estimates.

Figure 4.2
New Zealand dollar TWI
(quarterly average)



Source: RBNZ estimates.

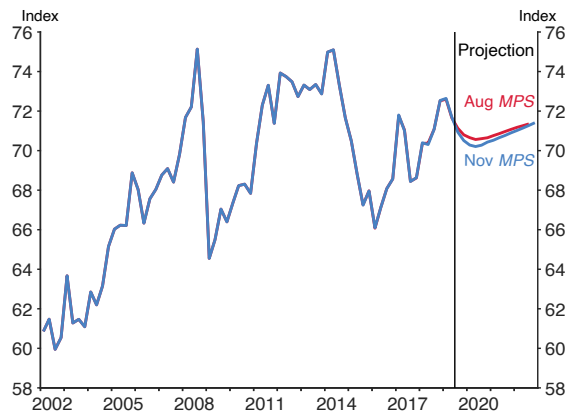
The New Zealand dollar has depreciated

- The New Zealand dollar TWI is around 4 percent lower than forecast in the August *Statement* (figure 4.2). This decline in the TWI is larger than the change in relative interest rates between New Zealand and other countries alone would suggest.
- The depreciation of the New Zealand dollar is expected to insulate the domestic economy from the weaker world outlook by supporting exporters, and encouraging substitution towards domestically produced goods and services.

The terms of trade are expected to increase

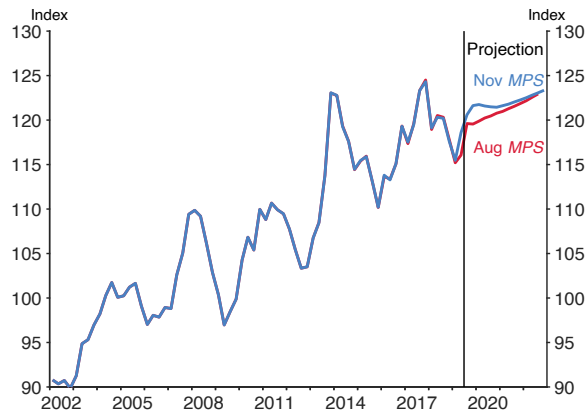
- New Zealand's export prices are being supported by strength in our key export commodity markets. Global supply shortages and robust demand are holding dairy and meat prices at high levels.
- Import prices are expected to decline over the near term (figure 4.3). Oil prices have fallen to around USD 60/barrel since the August *Statement*, and are assumed to remain around this level. Weakness in other import prices reflects the subdued outlook for global growth and inflation.

Figure 4.3
Import prices
(foreign currency terms, s.a.)



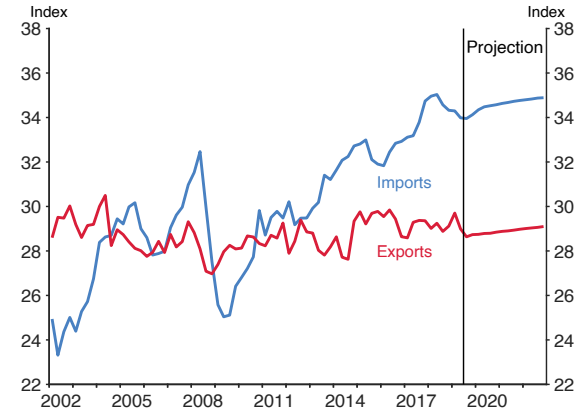
Source: Stats NZ, RBNZ estimates.

Figure 4.4
Terms of trade
(s.a.)



Source: Stats NZ, RBNZ estimates.

Figure 4.5
Export and import volumes
(share of potential, s.a.)



Source: Stats NZ, RBNZ estimates.

- The terms of trade are expected to increase, particularly as import prices decline over the first half of the projection (figure 4.4). The higher terms of trade increases domestic incomes, providing some support to domestic demand.

Net exports are supported by a lower exchange rate

- Net export volumes are expected to be slightly higher than projected in the August *Statement*. The weaker New Zealand dollar encourages substitution towards domestic spending and weaker domestic growth weighs on imports.

- Growth in import volumes has been low due to the lower New Zealand dollar TWI and weaker domestic spending (figure 4.5). As monetary and fiscal stimulus supports an increase in domestic demand, growth in imports is expected to rise over the projection period.
- Growth in export volumes is expected to remain soft over the second half of 2019. This reflects weaker agricultural production, and a slow services sector as weaker world demand weighs on tourism exports. Export volumes are projected to increase gradually over the rest of the projection, as world growth recovers and the TWI remains at low levels, supporting a rise in exports of services.

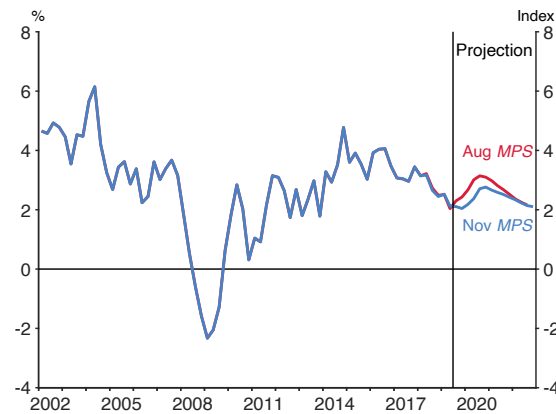
Domestic GDP growth is expected to be subdued in the near term

- We have revised down our forecast for GDP growth. We now expect growth to take longer to increase, and to peak lower than previously projected (figure 4.6). This revision reflects that timely indicators suggest growth will remain soft over the second half of 2019.

Elevated uncertainty weighs on business investment

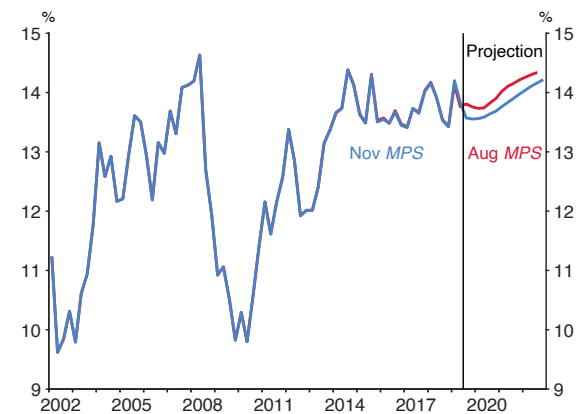
- Business confidence continued to decline over 2019, with investment intentions also falling sharply.
- Global and domestic uncertainty, subdued global demand, and weak domestic GDP growth are expected to weigh on business investment over the second half of 2019 (figure 4.7).
- Business investment is expected to increase slightly as a share of GDP as fiscal and monetary policy stimulus supports a rise in capacity pressure over the projection.

Figure 4.6
GDP growth
(annual)



Source: Stats NZ, RBNZ estimates.

Figure 4.7
Business investment
(share of potential, s.a.)

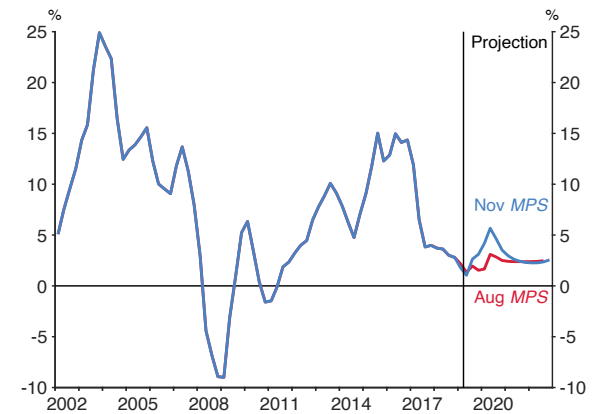


Source: Stats NZ, RBNZ estimates.

Stronger house price inflation temporarily supports household consumption

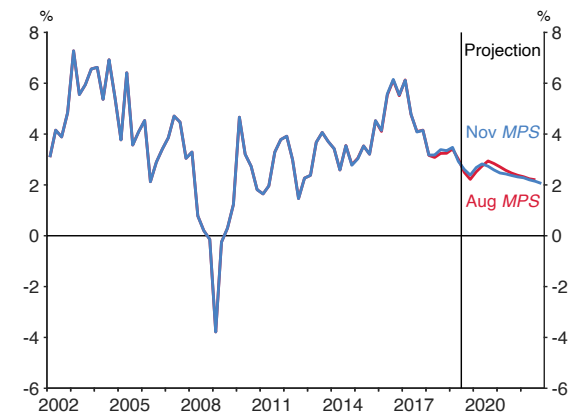
- House price inflation has rebounded from its weak start to 2019, partly reflecting declines in mortgage rates since mid-2018.
- Over the medium term, annual house price inflation is expected to settle around 2.5 percent as net immigration slows, residential construction activity remains high, and the effect of lower mortgage rates fades (figure 4.8).
- Stronger house price inflation is expected to support household consumption over the next year (figure 4.9).
- From late 2020, household consumption growth is expected to moderate as population growth slows and house price inflation declines. Low interest rates and rising wage growth are expected to support annual household consumption growth of around 2 percent.

Figure 4.8
House price inflation
(annual)



Source: CoreLogic, RBNZ estimates.

Figure 4.9
Household consumption growth
(annual)

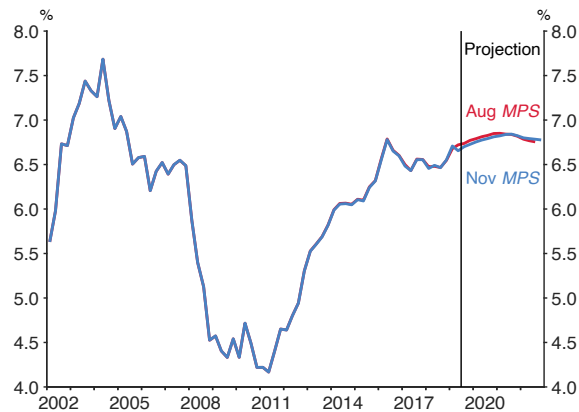


Source: Stats NZ, RBNZ estimates.

Residential investment increases gradually

- Residential investment has increased as a share of potential GDP over the first half of 2019 (figure 4.10). Strong residential consent issuance suggests further growth to come over the second half of 2019.
- Residential investment is forecast to increase gradually as a share of potential GDP over the projection. This increase reflects low interest rates, high house prices, and more resources being drawn into the construction sector, alleviating capacity constraints.

Figure 4.10
Residential investment
(share of potential)

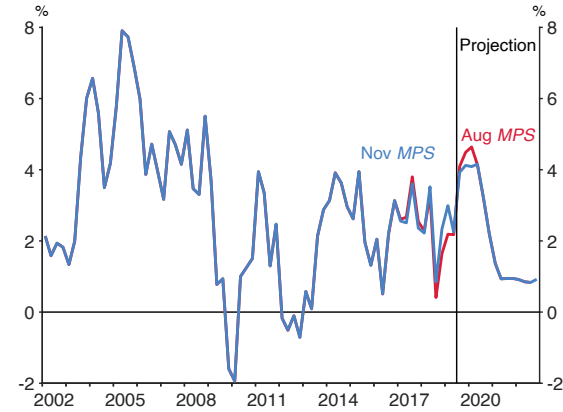


Source: Stats NZ, RBNZ estimates.

Fiscal stimulus supports lift in growth over the next year

- Based on spending plans in *Budget 2019*, government consumption growth is expected to increase sharply over the second half of 2019 (figure 4.11).
- Growth in spending slows in 2020 and continues at a low level over the rest of the projection period.

Figure 4.11
Government consumption growth
(annual)



Source: Stats NZ, RBNZ estimates.

Note: Revisions to the profile of the annual growth forecast result from a lower-than-expected outcome for the June 2019 quarter entering into the annual calculation.

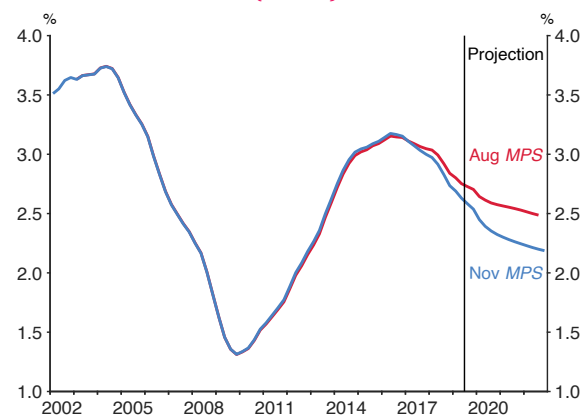
Capacity pressure is expected to ease

- Despite slower growth, we estimate that the output gap has remained close to zero over the past year, consistent with our output gap indicator suite (figure 4.12, see chapter 3).
- Capacity pressure is expected to ease slightly in the near term. However, pressure is expected to build from 2020 as stimulatory monetary and fiscal policy supports a rise in GDP growth.

Potential GDP growth appears to be slowing

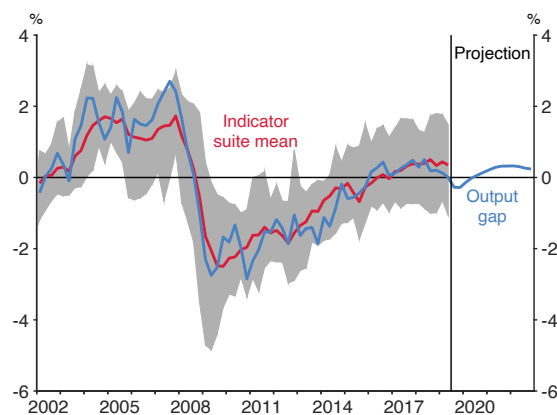
- We estimate that potential GDP growth has declined since mid-2016 (figure 4.13). This is consistent with capacity pressures remaining elevated, despite actual GDP growth falling over this period.
- Net immigration is expected to continue declining over the projection, further reducing potential GDP growth (figure 4.14).

Figure 4.13
Potential GDP growth
(annual)



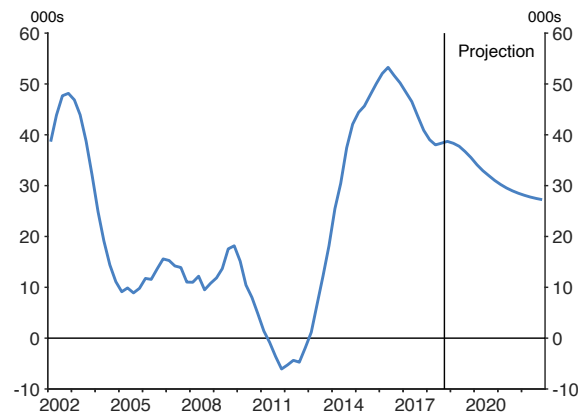
Source: RBNZ estimates.

Figure 4.12
Output gap and indicator suite
(share of potential)



Source: RBNZ estimates.

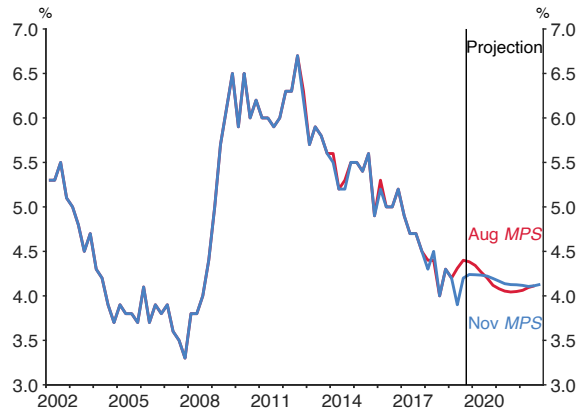
Figure 4.14
Net immigration
(annual, working age)



Source: Stats NZ, RBNZ estimates.

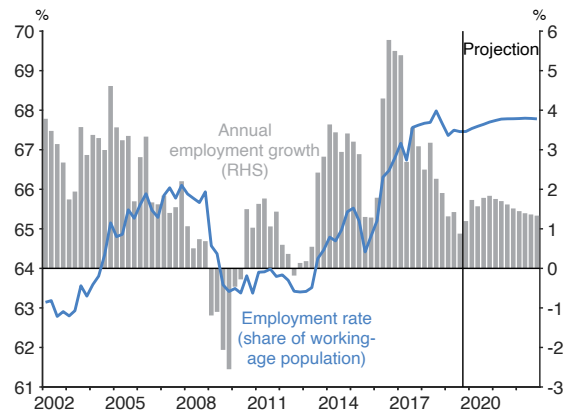
Note: This figure does not include the recent revisions to migration data.

Figure 4.15
Unemployment rate
(s.a.)



Source: Stats NZ, RBNZ estimates.

Figure 4.16
Employment
(s.a.)

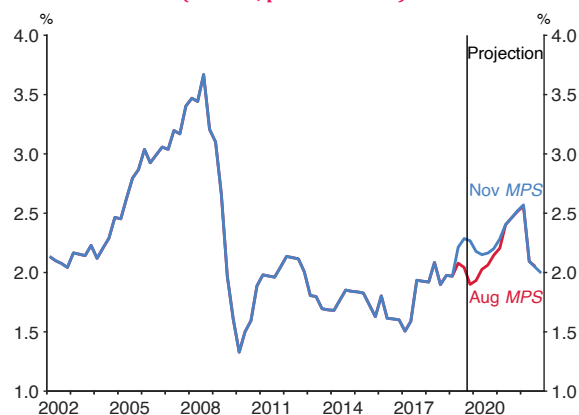


Source: Stats NZ, RBNZ estimates.

Labour market softens temporarily

- Our suite of labour market indicators suggests that employment is currently near its maximum sustainable level (table 5.1).
- We expect that soft GDP growth will feed through into increased labour market slack over late 2019, as labour demand falls (figure 4.15).
- Over the second half of the projection, we expect that stronger GDP growth will support labour demand.
- Employment growth is expected to remain subdued over the second half of 2019, before recovering in 2020 as capacity pressure builds (figure 4.16). With employment growth holding up and net immigration declining, the employment rate is expected to increase slightly over the forecast.
- Overall, employment is expected to remain near its maximum sustainable level over the forecast.

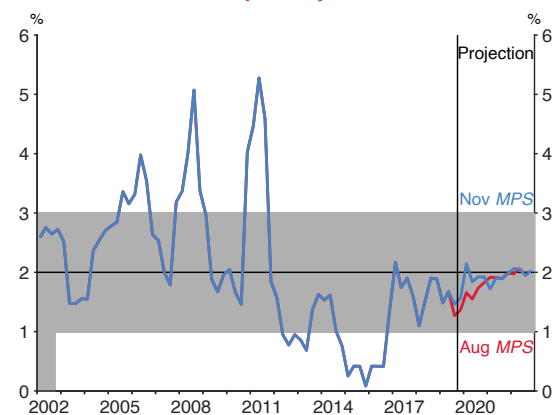
Figure 4.17
Wage inflation
(annual, private sector)



Source: Stats NZ, RBNZ estimates.

Note: Wage inflation is measured using the adjusted Labour Cost Index for the private sector. Annual growth in the Labour Cost Index falls in the June 2022 quarter when the contribution of the last announced increase in the minimum wage drops out.

Figure 4.18
CPI inflation
(annual)



Source: Stats NZ, RBNZ estimates.

Wage inflation strengthens over the forecast

- Nominal wage growth in the September 2019 quarter was the highest it's been since 2009 (figure 4.17).
- We expect annual wage inflation to decline slightly over the next year, reflecting the soft outlook for the domestic economy over this time.
- Over the medium term, rising wage inflation is driven by the tightening labour market, and further announced minimum wage increases.

CPI inflation returns sustainably to 2 percent in 2021

- Temporary factors are expected to boost CPI inflation to 2.1 percent in the March 2020 quarter (figure 4.18). However, it is not until late 2021 that we project CPI inflation to sustainably settle at the 2 percent target mid-point, around the same time as expected in the August *Statement*.

Capacity pressure lifts non-tradables inflation in the medium term

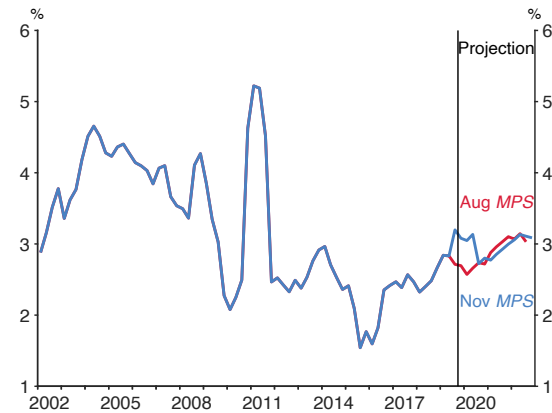
- Annual non-tradables inflation was stronger than expected in the September 2019 quarter, at 3.2 percent – the highest annual rate since 2009, excluding the impact of the increase in the GST rate in 2010 (figure 4.19).

- We think that some of the increase in non-tradables inflation was due to factors that are not representative of underlying inflationary pressures, including council rates, road user charges, and domestic air travel prices. This assessment is consistent with measures of core inflation remaining broadly stable (see figure 5.6).
- Looking through the temporary spike in annual non-tradables, domestic inflationary pressure is expected to remain subdued over the next year.
- Starting in late 2020, annual non-tradables inflation is expected to rise to just above 3 percent as capacity pressures build, the effect of low past inflation on price-setting behaviour fades, and wage inflation increases.

Tradables inflation to increase but remain below average

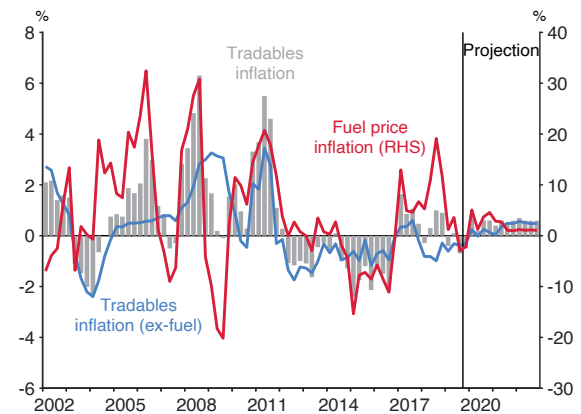
- Annual tradables inflation is expected to increase to around 0.6 percent over the projection, slightly below its post-2000 average (figure 4.20).
- Tradables inflation excluding fuel is projected to increase slowly over the projection. This rise reflects the lower New Zealand dollar TWI generating higher import costs in New Zealand dollar terms, as well as higher domestic retailer costs gradually being passed through to consumer prices.
- Fuel price inflation is expected to rise in the March 2020 quarter, reflecting temporary strength in New Zealand dollar oil prices. High fuel prices help to push CPI inflation to 2.1 percent in the first quarter of 2020.
- Fuel price inflation is projected to remain low but positive over the projection, consistent with our oil price and New Zealand dollar TWI assumptions.

Figure 4.19
Non-tradables inflation
(annual)



Source: Stats NZ, RBNZ estimates.

Figure 4.20
Tradables inflation
(annual)



Source: Stats NZ, RBNZ estimates.

Chapter 5

Appendices



Appendix 1: Our recent research

This appendix summarises various streams of monetary policy-related research produced by Reserve Bank staff over the past six months.

Research shapes our understanding of the New Zealand economy, and ultimately influences policy decisions. Our monetary policy framework is informed by new developments in economic thought and best-practice modelling techniques. To this end, we maintain robust ties with academia, other central banks, and supra-national organisations.

In August 2019 we co-hosted, along with the International Monetary Fund, a conference on [Inflation targeting – prospects and challenges](#), that attracted participants from many central banks, universities, and the media. Dr Mary C. Daly, President of the Federal Reserve Bank of San Francisco, and Professor Jinill Kim of Korea University, delivered the keynote addresses. Dr Daly's [speech](#) focused on monetary policy challenges in a world of low potential output growth, declining neutral rates of interest, and persistently weak inflation. Professor Kim presented his recent [paper](#)

that establishes an important theoretical result in the context of the Reserve Bank's dual mandate; social welfare improves when a central bank places a high weight on the stabilisation of economic activity, and the optimal weight on activity can sometimes even be larger than the weight attached to inflation stabilisation.

Economic analysis by our staff is disseminated through *Bulletin* articles, *Analytical Notes*, Discussion Papers and academic journals as well as speeches made by the Bank's senior leaders at various forums.

Analytical Notes

Labour market and capacity pressure

The *Remit* requires us to contribute to supporting maximum sustainable employment (MSE). Understanding various aspects of the New Zealand labour market and measuring the impacts of labour market variables on capacity pressure and inflation are important dimensions of our research programme.

The effectiveness of the monetary policy transmission mechanism depends crucially on how capacity pressure in the labour and goods markets generates inflation. In the *Note*, [Evaluating indicators of labour market capacity in New Zealand](#), Finn Robinson, Jamie Culling, and Gael Price find that disaggregated measures of unemployment, underutilisation, and labour market flows are particularly good measures of labour market pressure. This finding reflects the ability of these measures to forecast and explain employment growth, wage growth, and non-tradables inflation.

While the assessment of overall capacity pressure is an important determinant of monetary policy settings, capacity pressure is essentially unobservable. Moreover, the estimate of the output gap, a key measure of capacity pressure, tends to get revised substantially as new data points are incorporated. Hence, in the *Note*, [Suite as! Augmenting the Reserve Bank's output gap indicator suite](#), Punnoose Jacob and Finn Robinson reiterate that it is appropriate to use a suite of indicators, rather than any single measure, to inform the Bank's assessment of capacity pressures. They also augment our existing output gap indicator suite with new labour market measures that lend more stability to the Bank's estimate of the output gap.

Monetary policy transmission

Another strand of our research aims to deepen our understanding of the effects of monetary policy on the real economy, as well as features of the economy that may support or constrain the transmission mechanism.

The OCR is currently at historically low levels and has been declining since 2015. Is the transmission of changes in the OCR to prices and economic activity as effective now as it has been in the past? Jamie Culling, Punnoose

Jacob, Adam Richardson, Evelyn Truong, and Tuğrul Vehbi examine this question in the *Note* [Have the effects of monetary policy on inflation and economic activity in New Zealand changed over time?](#) Estimating a suite of structural econometric models, they find that the macroeconomic effects of a 25 basis point cut in the OCR have remained quite stable over the inflation targeting era. This implies that the recent OCR cuts by the Reserve Bank – all else equal – will lead to an increase in inflation and GDP growth, and help support employment relative to its maximum sustainable level.

Publications in academic journals

Our staff regularly publish their work in peer-reviewed journals and conference volumes. The quality control by expert reviewers ensures that the analytical frameworks that underpin our policy formulation remain rigorous, and are updated with the latest advances in economic theory and statistical methodologies.

[A note of caution on shadow rate estimates](#)

Journal of Money, Credit and Banking

Leo Krippner

[Macprudential policies in a low interest-rate environment](#)

Journal of Money, Credit and Banking

Margarita Rubio; Fang Yao

[Loss aversion in New Zealand housing: Empirical evidence from the global financial crisis](#)

New Zealand Economic Papers

Ryan Greenaway-McGrevy; Cameron Haworth

Measuring uncertainty for New Zealand using a data-rich approach

The Australian Economic Review

Trung Duc Tran; Tuğrul Vehbi; Benjamin Wong

Deep habits and exchange rate pass-through

Journal of Economic Dynamics and Control

Punnoose Jacob; Lenno Uusküla

Loan-to-value ratio restrictions and house prices: Micro evidence from New Zealand

Journal of Housing Economics

Jed Armstrong; Hayden Skilling; Fang Yao

Skilled migration and business cycle dynamics

Journal of Economic Dynamics and Control

Christie Smith and Christoph Thoenissen

Estimating and accounting for the output gap with large Bayesian vector autoregressions

Journal of Applied Econometrics

James Morley and Benjamin Wong

Speeches

Insights from our staff's research also inform the speeches made by the Bank's senior leaders at domestic and international forums. This section lists recent Reserve Bank speeches that have been made available on the [Reserve Bank website](#).

Speaking, listening and understanding: The art of monetary policy communications

Speech – 29 Oct 2019

Assistant Governor Christian Hawkesby explains the different facets of the Bank's communication approach; how we strive to improve the quality of information that we share with the financial markets, and how we interpret the information that we receive.

Supporting sustainable economic growth through financial stability policy

Speech – 16 Oct 2019

Deputy Governor Geoff Bascand describes the financial stability concerns that arise in a world of low interest rates, and explains how the Bank's prudential and macroprudential policies make the New Zealand economy more resilient to economic shocks.

Emerging challenges and lessons from the Māori economic renaissance

Speech – 27 Sep 2019

Governor Adrian Orr highlights the important role that Māori businesses play in the New Zealand economy, and explains how Māori values have influenced the Bank's longer-term strategy on climate change, an important risk to financial stability. He also emphasises that the proposed increase in minimum bank capital requirements will benefit all New Zealanders by creating a safer banking system that encourages longer-term lending considerations.

Opportunity or risk? Our choice

Speech – 26 Sep 2019

Governor Adrian Orr explains that slowing global economic growth and persistently low inflation motivated the Bank's decision to lower the OCR by 50 basis points in August 2019. A more tentative easing of monetary policy risked inflation expectations remaining stubbornly below the inflation target, making it more difficult to meet the Bank's monetary policy objectives in the future.

Inflation dynamics: Upside down Down Under?

Speech – 21 Aug 2019

Assistant Governor Christian Hawkesby describes New Zealand's experience of low inflation and how much that has changed the Bank's approach to setting monetary policy, and what it implies for the monetary policy outlook.

The evolving Reserve Bank – the view from Tāne Māhuta

Speech – 11 July 2019

Governor Adrian Orr outlines the Bank's vision to be 'a great team and the best central bank', and also reflects on the Government's review of the *Reserve Bank Act*.

Macroprudential policy: past, present and future

Speech – 01 July 2019

Deputy Governor Geoff Bascand explains the Bank's refreshed strategy for using macroprudential policy tools such as the loan-to-value ratio, and discusses how these tools may be set in the future.

Renewing the RBNZ's approach to financial stability

Speech – 26 June 2019

Deputy Governor Geoff Bascand sets out the Reserve Bank's approach to financial stability, and how its regulatory and supervisory regimes fit together. He also discusses the Government's 'in-principle' decisions on the review of the *Reserve Bank Act*.

Appendix 2: Maximum sustainable employment indicators

TABLE 5.1

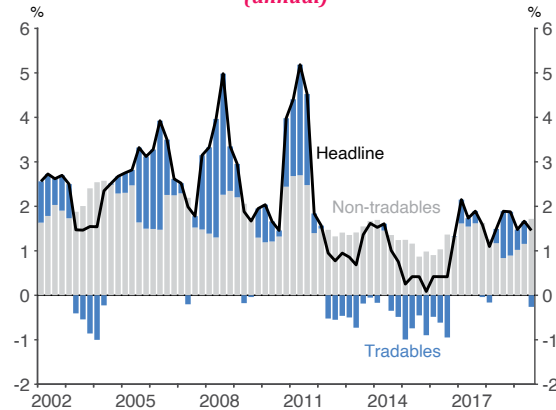
Summary of indicators of employment and maximum sustainable employment (MSE)

Indicator type	Employment below MSE	Employment at MSE	Employment above MSE
Indicator suite	<ul style="list-style-type: none"> • Employment rate gap (filled jobs) 	<ul style="list-style-type: none"> • LUCIL • Unemployment rate gap (structural model) • Unemployment rate gap (reduced-form model) • Employment rate gap 	<ul style="list-style-type: none"> • Hours worked gap
Unemployment		<ul style="list-style-type: none"> • Medium-term unemployment • Youth unemployment rate (15-19 years) 	<ul style="list-style-type: none"> • Youth unemployment (20-24 years) • Māori and Pacific unemployment • Underutilisation rate • Underemployment rate
Business surveys	<ul style="list-style-type: none"> • Overtime worked (QSBO) 		<ul style="list-style-type: none"> • Difficulty finding labour (QSBO) • Labour as limiting factor (QSBO)
Flows data	<ul style="list-style-type: none"> • Job-finding rate 		<ul style="list-style-type: none"> • Job-separation rate

- LUCIL is the Labour Utilisation Composite Index in Levels – a principal component of a range of labour market variables.
- The job-finding rate is the probability of an unemployed person finding a job in a given quarter. The job-separation rate is the probability of an employed person losing their job in a given quarter. These rates have been adjusted to account for flows in and out of the labour force.
- QSBO stands for Quarterly Survey of Business Opinion.
- The Analytical Note [Evaluating indicators of labour market capacity in New Zealand](#)¹ outlines a range of labour market indicators that the Reserve Bank monitors.

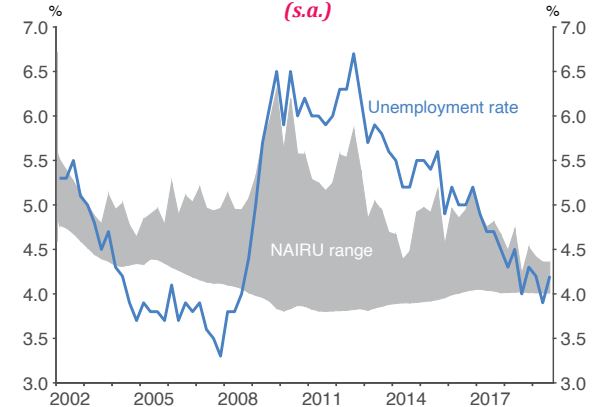
Appendix 3: Chart pack

Figure 5.1
Composition of CPI inflation
(annual)



Source: Stats NZ, RBNZ estimates.

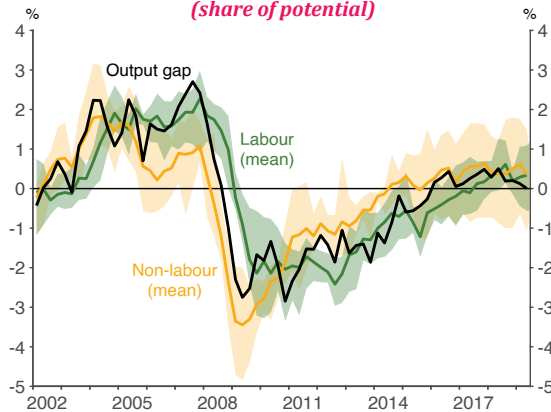
Figure 5.3
Unemployment rate and NAIURs
(s.a.)



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.

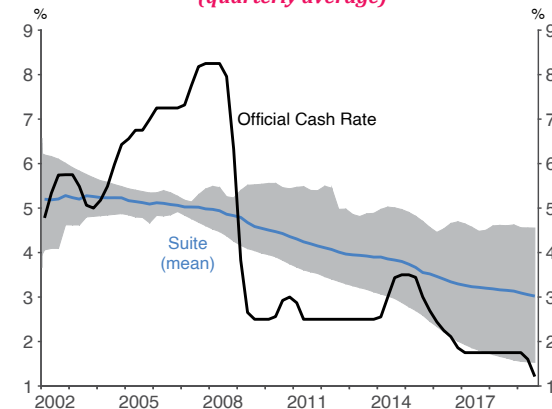
Figure 5.2
Output gap and labour/non-labour output gap indicator suite
(share of potential)



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.

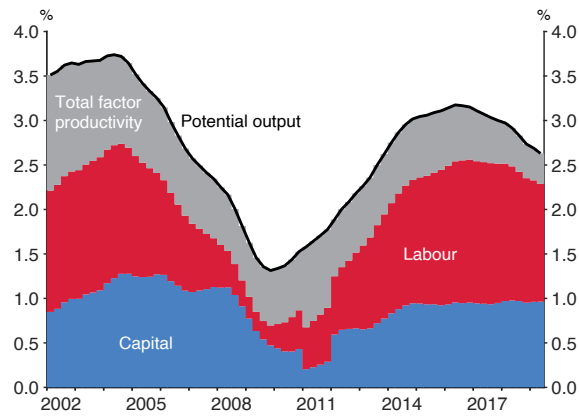
Figure 5.4
OCR and neutral OCR indicator suite
(quarterly average)



Source: RBNZ estimates.

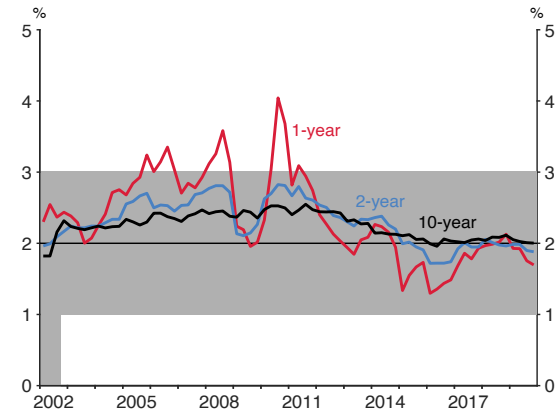
Note: Shaded area indicates the range between the maximum and minimum values from a suite of neutral OCR indicators.

Figure 5.5
Composition of potential output growth
(annual)



Source: RBNZ estimates.

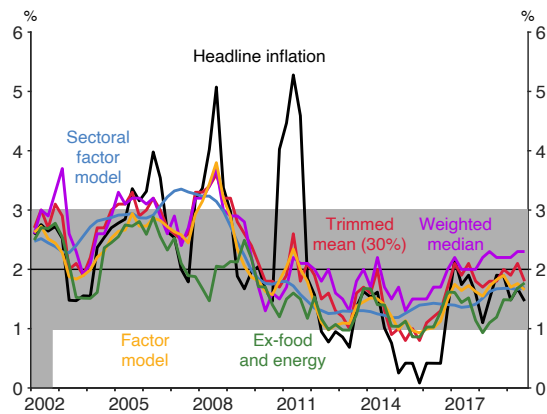
Figure 5.7
Inflation expectations
(annual)



Source: RBNZ estimates.

Note: Inflation expectations are estimates from the RBNZ inflation expectations curve, based on surveys of businesses and professional forecasters.

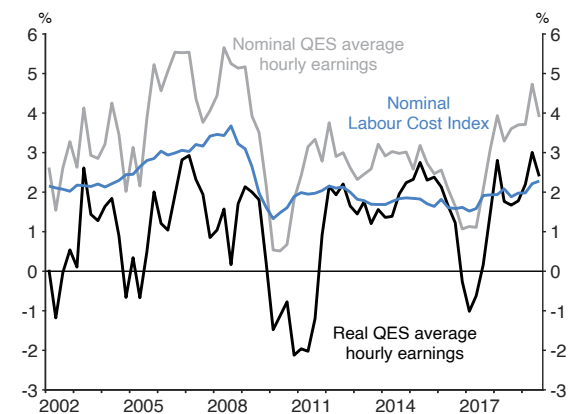
Figure 5.6
Headline inflation and core inflation
(annual)



Source: Stats NZ, RBNZ estimates.

Note: Core inflation measures exclude the GST increase in 2010.

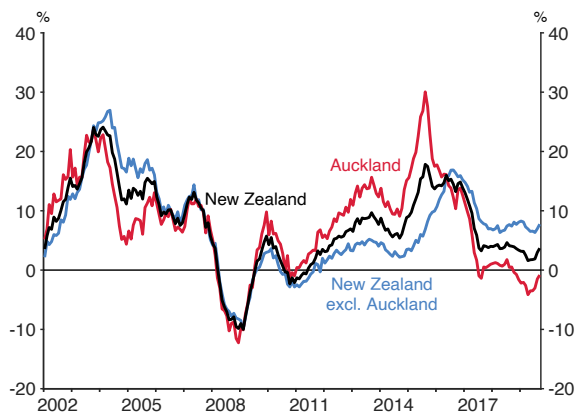
Figure 5.8
Private sector wage growth
(annual)



Source: Stats NZ, RBNZ estimates.

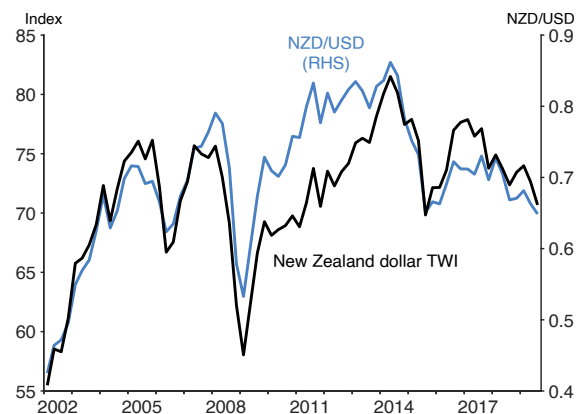
Note: Real QES average hourly earnings is deflated with headline CPI inflation.

Figure 5.9
House price inflation
(annual)



Source: REINZ.

Figure 5.11
New Zealand dollar exchange rates



Source: Reuters, RBNZ estimates.

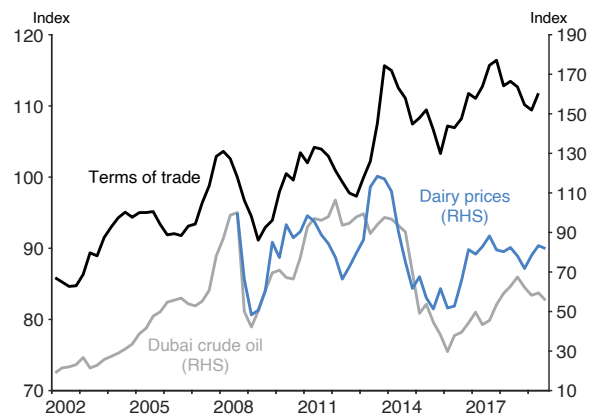
Figure 5.10
Mortgage rates



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 5.12
Terms of trade, dairy and oil price indices



Source: Stats NZ, Global Dairy Trade, Reuters, RBNZ estimates.

Appendix 4: Statistical tables

TABLE 5.2

Key forecast variables

		GDP growth Quarterly	CPI inflation Quarterly	CPI inflation Annual	TWI	OCR
2017	Mar	0.8	1.0	2.2	77.9	1.8
	Jun	0.9	0.0	1.7	76.5	1.8
	Sep	0.8	0.5	1.9	77.1	1.8
	Dec	0.9	0.1	1.6	73.8	1.8
2018	Mar	0.5	0.5	1.1	74.9	1.8
	Jun	0.9	0.4	1.5	73.7	1.8
	Sep	0.3	0.9	1.9	72.4	1.8
	Dec	0.7	0.1	1.9	73.4	1.8
2019	Mar	0.6	0.1	1.5	74.0	1.8
	Jun	0.5	0.6	1.7	72.6	1.6
	Sep	0.3	0.7	1.5	70.7	1.2
	Dec	0.6	0.2	1.6	71.3	1.0
2020	Mar	0.7	0.7	2.1	71.4	0.9
	Jun	0.7	0.3	1.8	71.4	0.9
	Sep	0.7	0.8	1.9	71.4	0.9
	Dec	0.6	0.2	1.9	71.5	0.9
2021	Mar	0.6	0.5	1.7	71.5	0.9
	Jun	0.6	0.5	1.9	71.4	0.9
	Sep	0.6	0.7	1.9	71.4	1.0
	Dec	0.6	0.3	2.0	71.4	1.1
2022	Mar	0.6	0.6	2.1	71.4	1.3
	Jun	0.5	0.5	2.1	71.4	1.4
	Sep	0.5	0.6	1.9	71.4	1.6
	Dec	0.5	0.4	2.0	71.4	1.6

TABLE 5.3

Measures of inflation, inflation expectations, and asset prices

	2018				2019			
	Mar	Jun	Sep	Dec	Mar	Jun	Sep	Dec
Inflation (annual rates)								
CPI	1.1	1.5	1.9	1.9	1.5	1.7	1.5	
CPI non-tradables	2.3	2.4	2.5	2.7	2.8	2.8	3.2	
CPI tradables	-0.3	0.3	1.0	0.9	-0.4	0.1	-0.7	
Sectoral factor model estimate of core inflation	1.5	1.6	1.7	1.7	1.7	1.7	1.7	
CPI trimmed mean (30 percent)	1.7	1.8	1.8	2.0	1.9	2.1	1.8	
CPI weighted median	2.2	2.3	2.2	2.2	2.2	2.3	2.3	
GDP deflator (expenditure)	1.3	2.2	1.0	-0.2	1.3	1.9		
Inflation expectations								
ANZ Business Outlook - inflation one year ahead (quarterly average to date)	2.1	2.2	2.2	2.2	2.1	1.9	1.7	1.6
RBNZ Survey of Expectations - inflation two years ahead	2.1	2.0	2.0	2.0	2.0	2.0	1.9	1.8
RBNZ Survey of Expectations - inflation five years ahead	2.1	2.1	2.2	2.1	2.1	2.0	1.9	2.0
RBNZ Survey of Expectations - inflation 10 years ahead	2.1	2.2	2.1	2.2	2.1	2.0	2.1	2.0
Long-run inflation expectations ¹	2.0	2.1	2.1	2.1	2.1	2.0	2.0	2.0
Asset prices (annual percent changes)								
Quarterly house price index (CoreLogic NZ)	3.7	3.7	3.0	2.8	1.8			
REINZ Farm Price Index (quarterly average to date)	2.6	3.8	5.6	3.4	10.3	4.4	1.1	
NZX 50 (quarterly average to date)	17.5	16.8	17.3	8.3	10.7	16.9	18.6	23.7

1 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 5.4

*Measures of labour market conditions**(seasonally adjusted, changes expressed in annual percent terms)*

	2018				2019		
	Mar	Jun	Sep	Dec	Mar	Jun	Sep
Household Labour Force Survey							
Unemployment rate	4.3	4.5	4.0	4.3	4.2	3.9	4.2
Underutilisation rate	11.9	12.0	11.4	12.1	11.3	11.0	10.4
Labour force participation rate	70.7	70.8	70.8	70.7	70.3	70.3	70.4
Employment rate (percentage of working-age population)	67.7	67.7	68.0	67.7	67.4	67.5	67.5
Employment growth	2.5	3.2	2.3	1.9	1.3	1.4	0.9
Average weekly hours worked	33.8	34.1	33.6	32.9	34.5	33.9	34.0
Number unemployed (thousand people)	117	122	109	118	114	108	115
Number employed (million people)	2.59	2.60	2.62	2.62	2.62	2.64	2.64
Labour force (million people)	2.70	2.72	2.73	2.74	2.73	2.74	2.76
Extended labour force (million people)	2.81	2.82	2.83	2.85	2.84	2.84	2.84
Working-age population (million people)	3.82	3.84	3.85	3.87	3.89	3.90	3.92
Quarterly Employment Survey							
Filled jobs growth	1.2	1.2	1.2	1.3	1.1	1.0	1.1
Average hourly earnings growth (private sector, ordinary time)	3.9	3.3	3.6	3.7	3.7	4.7	3.9
Other data sources							
Labour cost index growth, private sector	1.9	2.1	1.9	2.0	2.0	2.2	2.3
Labour cost index growth, private sector, unadjusted	3.5	3.5	3.5	3.6	3.6	3.8	3.8
Estimated net migration (published, thousands, quarterly)	9.9	9.6	9.6				
Change in All Vacancies Index	4.9	5.6	5.5	4.6	2.1	-3.3	-2.1

Note: The All Vacancies Index is produced by the Ministry of Business, Innovation and Employment as part of the Jobs Online report, which shows changes in job vacancies advertised by businesses on several internet job boards. The unadjusted Labour Cost Index (LCI) is an analytical index that reflects quality changes in addition to price changes (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 and recent outturns are subject to large revisions.

TABLE 5.5

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

March year	Actuals								Projections		
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Final consumption expenditure											
Private	3.2	2.3	3.7	3.0	3.9	5.8	4.0	3.3	2.6	2.7	2.3
Public authority	1.7	-0.2	2.1	3.3	2.3	2.1	2.7	2.4	3.6	2.7	0.9
Total	2.9	1.7	3.3	3.1	3.5	5.0	3.7	3.1	2.9	2.7	2.0
Gross fixed capital formation											
Residential	3.0	17.6	15.1	8.2	7.1	8.5	1.0	3.7	5.0	3.7	2.6
Other	6.8	1.6	8.0	7.8	2.9	1.8	6.0	2.3	1.3	3.5	4.1
Total	6.0	5.0	9.7	7.9	4.0	3.5	4.7	2.6	2.3	3.6	3.7
Final domestic expenditure	3.5	2.4	4.7	4.2	3.6	4.6	3.9	3.0	2.7	2.9	2.4
Stockbuilding ¹	0.3	-0.3	-0.2	0.5	-0.3	0.1	-0.2	0.1	-0.1	0.1	0.0
Gross national expenditure	4.0	2.0	4.4	4.4	3.1	4.8	4.0	3.2	2.5	3.0	2.5
Exports of goods and services	2.3	3.1	0.1	4.6	6.5	1.6	3.5	2.7	0.9	2.5	2.7
Imports of goods and services	6.7	1.3	8.1	7.4	2.3	5.2	7.2	3.9	1.2	3.7	2.8
Expenditure on GDP	2.7	2.5	2.0	3.5	4.3	3.8	2.8	2.8	2.5	2.6	2.5
GDP (production)	2.3	2.2	2.6	3.7	3.6	3.7	3.1	2.7	2.1	2.6	2.5
GDP (production, March qtr to March qtr)	3.1	1.8	3.3	3.6	3.9	3.1	3.1	2.5	2.2	2.7	2.3

1 Percentage point contribution to the growth rate of GDP.

TABLE 5.6

Summary of economic projections
(annual percent change, unless specified otherwise)

March year	Actuals								Projections		
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Price measures											
CPI	1.6	0.9	1.5	0.3	0.4	2.2	1.1	1.5	2.1	1.7	2.1
Labour costs	2.1	1.8	1.7	1.8	1.8	1.5	1.9	2.0	2.2	2.3	2.6
Export prices (in New Zealand dollars)	-2.6	-4.8	11.5	-9.1	-0.2	3.9	3.3	1.3	5.8	0.1	1.5
Import prices (in New Zealand dollars)	-1.7	-3.9	-3.0	-3.4	1.2	0.7	1.9	4.5	0.3	0.2	0.8
Monetary conditions											
OCR (year average)	2.5	2.5	2.5	3.4	2.9	2.0	1.8	1.8	1.2	0.9	1.1
TWI (year average)	72.2	74.0	77.6	79.3	72.6	76.5	75.6	73.4	71.5	71.4	71.4
Output											
GDP (production, annual average % change)	2.3	2.2	2.6	3.7	3.6	3.7	3.1	2.7	2.1	2.6	2.5
Potential output (annual average % change)	1.8	2.1	2.6	3.0	3.1	3.2	3.0	2.8	2.5	2.3	2.3
Output gap (% of potential GDP, year average)	-1.6	-1.5	-1.5	-0.8	-0.3	0.2	0.3	0.3	-0.2	0.1	0.3
Labour market											
Total employment (seasonally adjusted)	0.6	0.2	3.6	3.2	1.8	5.4	2.5	1.3	1.7	1.8	1.4
Unemployment rate (March qtr, seasonally adjusted)	6.3	5.7	5.5	5.5	5.2	4.9	4.3	4.2	4.2	4.2	4.1
Trend labour productivity	1.1	1.0	1.0	1.0	0.9	0.8	0.7	0.7	0.7	0.8	0.8
Key balances											
Government operating balance (% of GDP, year to June)	-4.3	-2.0	-1.2	0.2	0.7	1.5	1.9	1.1	0.2	0.2	0.8
Current account balance (% of GDP)	-3.2	-3.7	-2.5	-3.5	-2.4	-2.5	-2.9	-3.6	-2.7	-2.7	-2.6
Terms of trade (SNA measure, annual average % change)	1.6	-4.3	11.7	-0.3	-2.9	2.7	4.5	-2.6	1.9	0.7	0.5
Household saving rate (% of disposable income)	2.3	0.4	0.3	-1.0	-0.6	0.1	-1.4	-1.8	-1.3	-0.9	0.3
World economy											
Trading-partner GDP (annual average % change)	3.4	3.3	3.5	3.7	3.4	3.4	3.9	3.5	3.0	3.2	3.3
Trading-partner CPI (TWI weighted)	2.7	2.3	2.3	1.0	1.2	1.9	1.9	1.4	2.1	1.9	2.1