

02/2023

# Monetary Policy **STATEMENT**





# STATEMENT

## of the MPC's monetary policy strategy

The Monetary Policy Committee's (MPC's) monetary policy strategy is its overarching plan for how it will formulate monetary policy under different circumstances to achieve its objectives.<sup>1</sup> 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 2021* (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.<sup>2</sup> 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 MPC must also assess the effects of its monetary policy decisions on the Government's policy to support more sustainable house prices.

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.

### 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.

<sup>1</sup> 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.

<sup>2</sup> 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*.

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 (while staying within the 1 to 3 percent target range).

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 near to the target mid-point, regardless of whether inflation is currently below or above 2 percent. 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. Under extreme uncertainty, the MPC may choose to publish scenarios instead of central projections to illustrate the range of possible situations and economic outcomes that could occur when circumstances are highly unpredictable.

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. The Reserve Bank takes prudential policy settings into account when setting monetary policy, and vice versa.

### Implementation of strategy

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

1. Firstly, it assesses the outlook for the economy and the implications for its policy objectives. It then discusses risks to achieving its policy objectives.
2. Next, it considers 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 adjust its policy settings at the current meeting and how it will communicate the policy outlook. The MPC has a **suite of monetary tools** to achieve its goals, and uses its **Principles for Monetary Tools** to make decisions on which tools to deploy.



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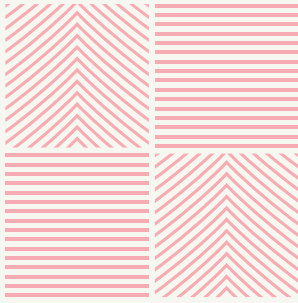
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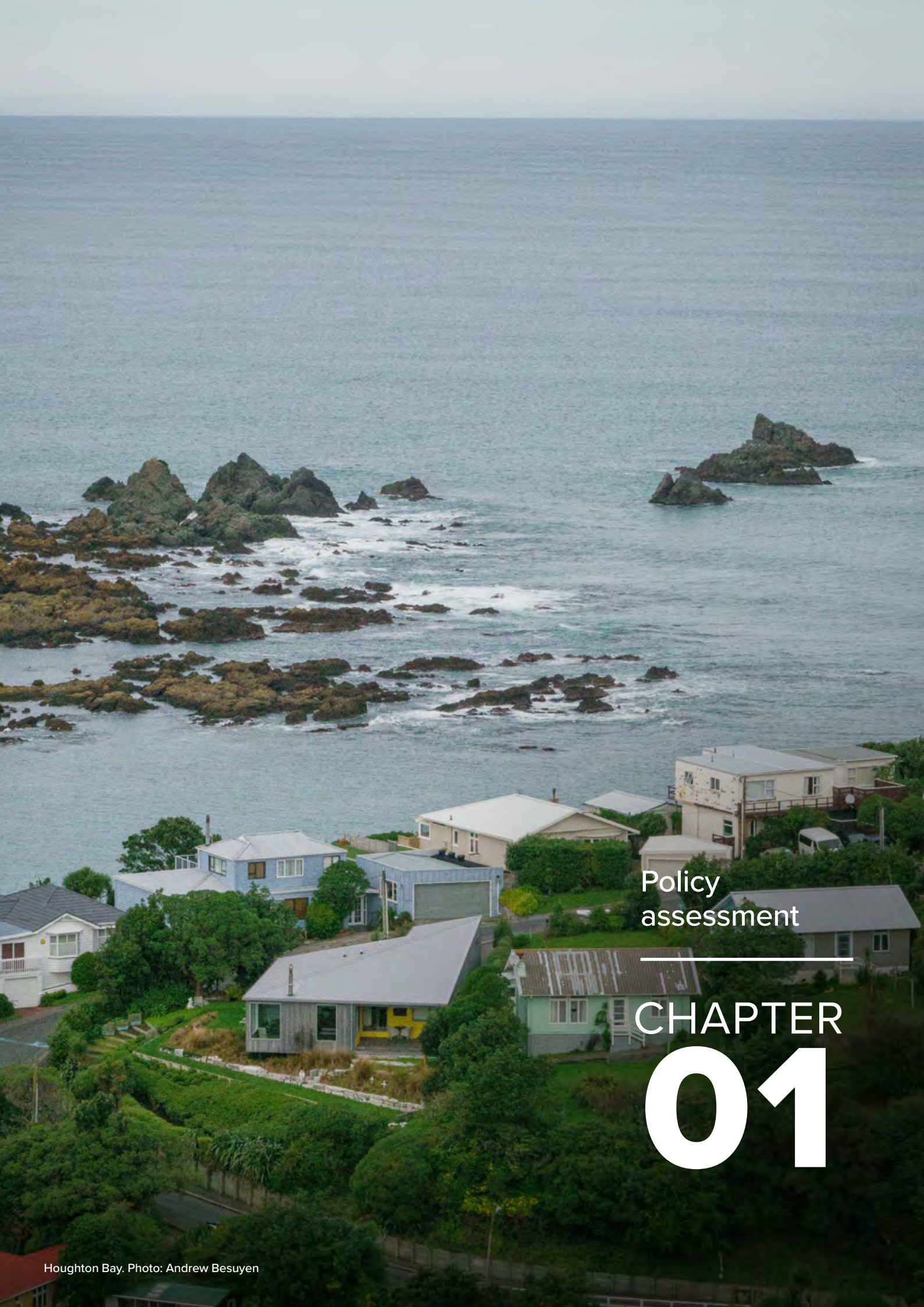
02/2023

# Monetary Policy STATEMENT

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The projections were finalised on 16 February 2023. The Official Cash Rate (OCR) projection incorporates an outlook for monetary policy that is consistent with the MPC's monetary policy assessment, which was finalised on 22 February 2023.



Policy  
assessment

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CHAPTER  
**01**

# CHAPTER 1

## Policy assessment

### Tēnā koutou katoa, welcome all.

The Monetary Policy Committee today increased the Official Cash Rate (OCR) from 4.25 percent to 4.75 percent.

The Committee agreed that the OCR still needs to increase, as indicated in the November *Statement*, to ensure inflation returns to within its target range over the medium term. While there are early signs of price pressure easing, core consumer price inflation remains too high, employment is still beyond its maximum sustainable level, and near-term inflation expectations remain elevated.

Cyclone Gabrielle and other recent severe weather events have had a devastating effect on the lives of many New Zealanders. It is too early to accurately assess the monetary policy implications of these weather events, given that the scale of destruction and economic disruption are only now becoming evident. The timing, size, and the nature of funding the Government's fiscal response are also yet to be determined.

The Committee's current assessment is that over coming weeks, prices for some goods are likely to spike and activity will be weaker than previously expected. Export revenues will be negatively impacted. Monetary policy is set with a medium-term focus, and the Committee will look through these short-term output variations and direct price effects. In time, the infrastructure and community rebuild will add to activity and inflationary pressures, especially given existing capacity constraints in the economy.

Internationally, core inflation remains high and inflationary pressures remain broad based. However, the outlook for global economic activity in 2023 remains subdued, which is acting to lower global consumer pricing pressures, as well as demand for New Zealand's key commodity exports. Continued growth in services exports will provide some export revenue offset.

Domestically, demand remained robust through 2022 underpinned by resilient household spending, construction activity, government spending, and a swift recovery in international tourism as the border reopened. Labour shortages remain a significant constraint on economic activity, contributing to heightened wage inflation. People are moving jobs at an elevated pace, consistent with labour shortages and strong demand.

While there are early signs of demand easing it continues to outpace supply, as reflected in strong domestic inflation. The Committee agreed that monetary conditions need to tighten further, as indicated in the November *Statement*, so as to be confident there is sufficient restraint on spending to bring inflation back within its 1-3 percent per annum target range. The Committee remains determined to achieve its Monetary Policy *Remit*.

Meitaki, thanks.



Adrian Orr  
Governor



# SUMMARY

## Record of meeting

**The Monetary Policy Committee discussed developments affecting the outlook for inflation and employment in New Zealand. Overall, the economy has developed broadly in line with expectations at the time of the November *Statement*. Inflation is currently too high and employment is beyond its maximum sustainable level. The Committee agreed it must continue to increase the Official Cash Rate (OCR) to return inflation to target and to fulfil its *Remit*.**

The Committee discussed recent international economic developments and their implications for New Zealand. In many countries, core inflation remains high, reflecting significant broad-based inflationary pressures. The outlook for global economic activity in 2023 remains relatively subdued. A weakening global economy is contributing to weaker demand for New Zealand's key commodity exports, such as dairy and meat, leading to a lower outlook for New Zealand's terms of trade. Continued growth in New Zealand's service exports, in particular tourism, is assumed to provide some offset to this drop in export revenue in the near term, as is an easing of travel and activity restrictions in China over the medium term.

Committee members discussed the effects of Cyclone Gabrielle and other recent severe weather events. These events have had a devastating effect on the lives of many New Zealanders. Economically, they represent a disruption to employment, trade and production, and damage to property. The economic impacts discussed by the Committee included the immediate upward pressure on some prices, the effect that higher CPI inflation could have on longer-term inflation expectations, the ability to resource and supply any increase in demand and investment in affected regions, and the longer-term impact these severe weather events will have on the productive capacity of New Zealand.

While it is too early to estimate the full economic impacts, near-term rebuilding and restocking are likely to lift the level of economic activity, and consumer prices for some goods and services will come under upward pressure given supply-chain disruption and product scarcity. Weaker export volumes will impact negatively on export earnings as a result of these extreme weather events. It remains unclear how significant the impact of these events will be on New Zealand's longer-term productive capacity.

Monetary policy is set with a medium-term focus. Given this, the Committee decided to look through the short-term direct price pressures stemming from these extreme weather events, and focus on the medium-term impacts on inflation and maximum sustainable employment.



At this stage, the Committee agreed that the medium-term impacts of the severe weather events do not materially alter the outlook for monetary policy. However, significant uncertainty remains, and more accurate information on the scale of the events is becoming available by the day. Inflation remains high, employment is above its maximum sustainable level, and ongoing restrictive monetary policy settings are necessary. However, the Committee acknowledged the significant regional impacts that the severe weather events will have across New Zealand, and agreed that the Government's fiscal policy response would be more effective at addressing these, rather than any monetary policy activity.

The Committee noted that demand in the New Zealand economy remained robust through 2022, despite significant global and domestic challenges. Economic growth has been underpinned by resilient household spending, construction activity, government spending, and a swift recovery in international tourism as the border reopened. High frequency surveys of economic activity suggest domestic demand may be starting to ease. This moderation is in line with expectations outlined at the November *Statement*. However, demand continues to outpace supply, and this continues to be reflected in high domestic inflation.

The Committee observed that consumer price inflation in New Zealand in the December quarter remained high. Encouragingly, there was a slightly larger-than-forecast slowing in non-tradable inflation. However, CPI inflation, at 7.2 percent in the year to the December 2022 quarter, remains well above the 1 to 3 percent target range set out in the *Remit*. Measures of persistent or 'core' inflation have remained very high, indicating that high inflation remains broad based. Medium- and longer-term inflation expectations have stabilised recently, but remain elevated. The potential for a persistent continuation of global and domestic supply constraints, greater persistence in core inflation and elevated inflation expectations were seen as upside risks to the economic projections.

The Committee noted that a range of measures indicated that labour shortages continue to be a significant constraint on economic activity, contributing to strong wage inflation. Measures of labour force utilisation are near record levels and firms continue to report severe difficulties finding labour. Private sector employees are also transitioning between jobs at an elevated pace, consistent with significant labour shortages and strong demand in the economy.

The Committee discussed financial conditions noting that increases in both shorter-term wholesale and mortgage rates have exceeded longer-term maturities. It was also noted that deposit rate increases continue to lag the increases in wholesale and mortgage rates resulting in a further widening of bank margins between lending and deposit rates. The Committee expect deposit rates to increase over the coming year incentivising savings, further dampening inflation and supporting the maintenance of current mortgage rates for a longer period.

The Committee also discussed the functioning of the New Zealand Government bond market, in the context of sales of bonds in the Large Scale Asset Purchase Programme portfolio. Measures of secondary market liquidity were generally in line with historic norms and observed volatility was consistent with trends seen in international interest rate markets.

The Committee considered the economic projections. As in the November *Statement*, the central projections show a decline in GDP this year. Members noted that this reduction in aggregate demand was necessary to return inflation to target over the forecast period. Members agreed that the exact timing and extent of negative GDP growth was difficult to predict, but historical evidence suggests risks are skewed toward a more concentrated period of contraction. Members also agreed that the sooner supply and demand were better matched in the economy, the lower the overall cost of reducing inflation.

The Committee discussed the resilience of household balance sheets in the context of rising interest rates and the outlook for reduced labour demand. This was seen as a downside risk – with the potential for monetary policy to have larger effects on the economy in an environment of elevated debt levels. However, it was noted that while measures of financial stress have increased marginally, they remain low. The Committee agreed that as debt servicing costs rise, spending decisions for many households will become increasingly constrained. These constraints would be felt most by recent home buyers with a high debt servicing commitment relative to their income.

The Committee agreed that the impact of rising interest rates on households' spending and saving decisions is an important channel for monetary policy. The Committee also agreed that housing market related activity was a downside risk. Projections incorporate a substantial decline in construction. However, there are significant uncertainties. Feedback from the construction industry points to a significant lack of forward activity. In contrast, rebuilding in the wake of Cyclone Gabrielle will support construction activity.

The Committee agreed that fiscal policy can also act to reduce demand in the economy. The current projection assumes government consumption and investment will fall as a share of the economy in coming years. However, members viewed the risks to inflation pressure from fiscal policy as skewed to the upside, particularly given the ongoing demand for government services in an environment of rising costs of provision. In addition, the economic impact of the Government response to recent severe weather events will depend on the scale of damage, fiscal reprioritisation decisions, timing of activity and how the fiscal costs are funded.

The Committee discussed the extent of additional monetary tightening required to achieve its *Remit*. Members noted the rapid pace and extent of tightening to date implies monetary policy is now contractionary. The Committee noted the long lags of monetary transmission to the economy means the impact of this tightening is still to be fully seen. Committee members agreed that the OCR needed to reach a level where the Committee could be confident it would reduce actual inflation to within the target range over the forecast horizon. Members agreed that this level of the OCR was broadly consistent with expectations at the time of the November *Statement*.

The Committee discussed the size of the OCR increase to be delivered at this meeting. Increases of 50 and 75 basis points were considered. The Committee assessed that, while the balance of risks around inflation remain skewed to the upside, the extent of this risk had moderated somewhat since the November *Statement*. As a result, a 50 basis point move balanced the need to ensure core inflation and inflation expectations fall, against the early signs that demand was beginning to moderate towards the economy's productive capacity.

On Wednesday 22 February, the Committee reached a consensus to raise the OCR by 50 basis points from 4.25 percent to 4.75 percent.

**Attendees:****Reserve Bank members  
of MPC:**

Adrian Orr, Karen Silk,  
Christian Hawkesby,  
Paul Conway

**External MPC members:**

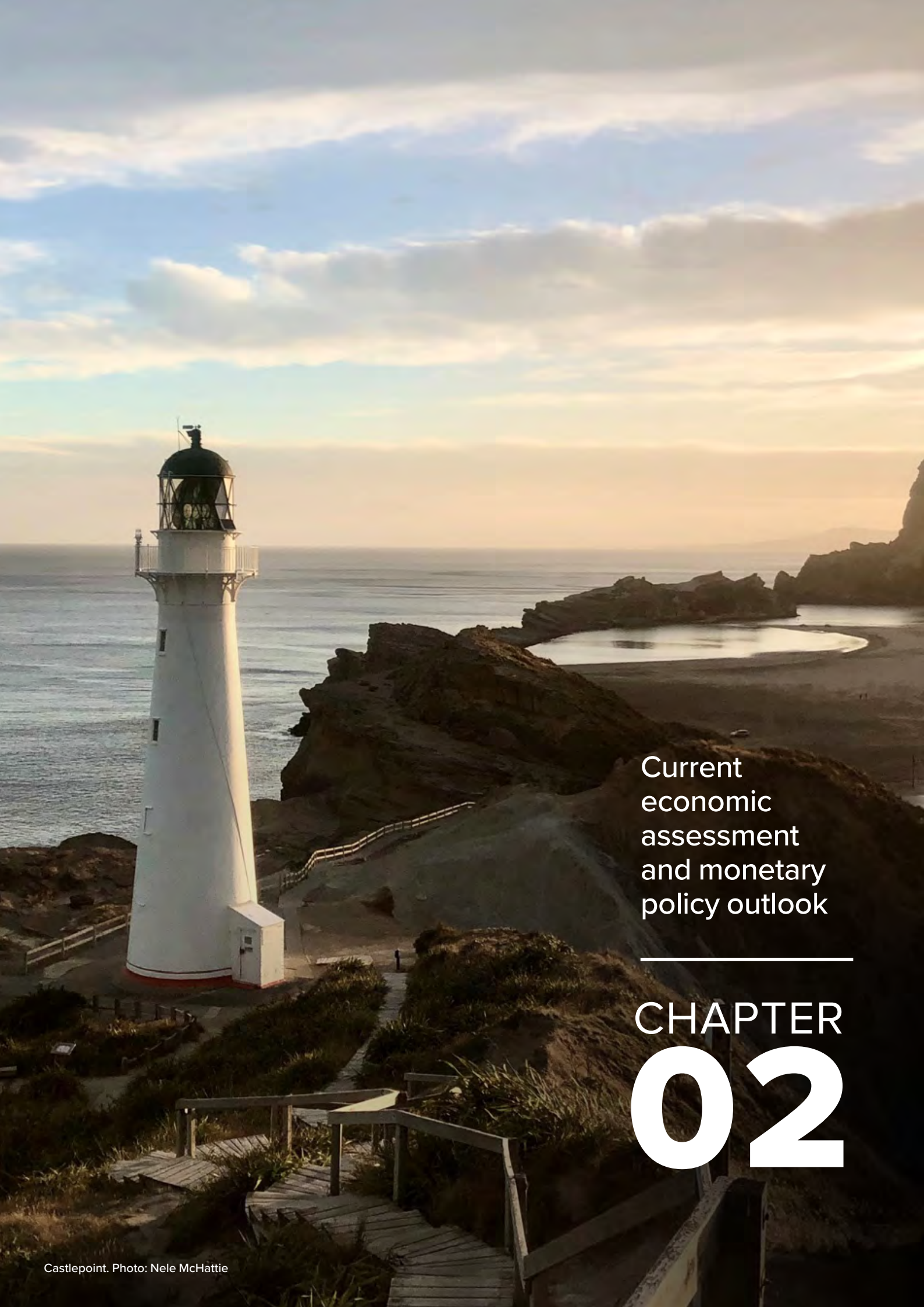
Bob Buckle, Peter Harris,  
Caroline Saunders

**Treasury Observer:**

Dominick Stephens

**MPC Secretary:**

Adam Richardson



Current  
economic  
assessment  
and monetary  
policy outlook

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# CHAPTER 02

# CHAPTER 2

## Current economic assessment and monetary policy outlook



### Key points

- Demand in the New Zealand economy remained robust in 2022, despite significant global and domestic challenges. Economic growth has been underpinned by resilient household spending and construction activity, high government spending and a swift recovery in international tourism as the border reopened.
- Demand in the economy has not been matched with enough supply. While supply-chain bottlenecks are easing globally, they continue to delay the production of some goods in New Zealand and are adding to high overall cost pressures. Business activity throughout New Zealand continues to be held back by worker shortages, despite a record share of the population being employed. The unemployment rate has remained low, at 3.4 percent in the December 2022 quarter. Employment is above its maximum sustainable level.
- An extremely tight labour market has been contributing to high consumers price index (CPI) inflation. Wage growth remains elevated. This is supporting household incomes while adding to business costs, creating upwards pressure on firms' selling prices. The recovery in tourism has also boosted airfares, accommodation and other tourism-sensitive prices. Annual food price inflation is near its 30-year high, reflecting domestic factors – such as worker shortages – and global factors partly stemming from the war in Ukraine. Very high inflation globally has also led to large increases in the prices of other imported goods and services.
- While the domestic economy remained strong through 2022, there have been some signs that domestic demand is starting to ease as expected at the time of the November *Statement*. House prices continued to fall through 2022. Lower house prices and higher interest rates and living costs are weighing on some parts of household consumption, such as durable goods. Some labour market indicators have eased from very high levels, although remain strong.
- Annual CPI inflation was 7.2 percent in the December 2022 quarter, well above the MPC's 1 to 3 percent target range. Measures of persistent or 'core' inflation have remained very high, indicating that strong inflation continues to be broad-based. Inflation expectations have also remained elevated at all horizons.
- The MPC has been increasing interest rates since the latter half of 2021. Higher interest rates lower domestic demand relative to the economy's ability to sustainably supply goods and services. This reduces inflationary pressure over the medium term.

- Moderating global growth and temporary COVID-19-related disruption in China have led to less demand for New Zealand's key commodity exports, such as dairy. The reopening of China has yet to translate into sustained higher demand for New Zealand's goods and services exports. Improved financial market sentiment following lower global inflation outturns and the reopening of China has contributed to an increase in the New Zealand dollar Trade-Weighted Index (TWI) exchange rate relative to what had been assumed at the time of the November *Statement*. All else being equal, a higher exchange rate will dampen exporters' incomes and reduce the costs of our imported goods and services, reducing inflationary pressure in New Zealand.
- The recent severe storms over much of the North Island have had a devastating impact on the lives of many New Zealanders, and led to considerable economic losses. While it is too early to confidently estimate the likely impacts of these events on economic activity, the recovery will be taking place at a time when labour and materials are already scarce. As a result, the recovery from these events is expected to lead to an increase in inflation over the next few months. This is expected to occur via higher fruit, vegetable, construction and used car prices in particular.
- Conditional on our central economic outlook, it is expected that the OCR will need to increase to a similar extent as assumed in the November *Statement* in order for the MPC to meet its inflation and employment objectives. CPI inflation was slightly lower than expected in the December 2022 quarter. Export prices have also fallen more quickly than assumed. However, capacity pressures have been stronger than expected at the time of the November *Statement* and core inflation remains too high.
- Because the New Zealand economy is starting from a position of high inflation and ongoing labour shortages, a period of economic contraction remains likely. Overall, the peak-to-trough decline in the level of GDP is assumed to be about 1 percent over 2023. Employment may also fall below its maximum sustainable level.



## Current economic assessment

### Demand in the New Zealand economy remained robust in 2022

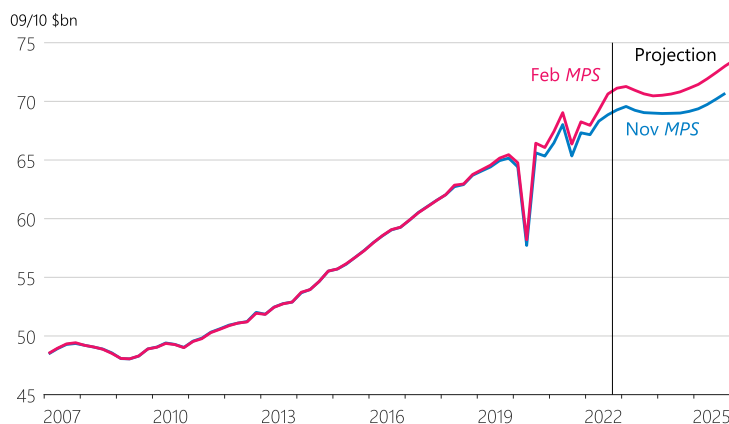
The New Zealand economy expanded by 2.0 percent in the September 2022 quarter. This was much higher than expected at the time of the November *Statement*, and was above market expectations. In addition to stronger quarterly growth, upwards revisions by Stats NZ to the level of GDP in recent years suggest that the starting point for economic activity is much higher than previously assumed (figure 2.1).

Most sectors of the economy expanded in the September 2022 quarter. However, there was particularly strong growth in services industries that had previously been most affected by the COVID-19 activity restrictions. In addition, the construction sector more than reversed its recent decline by expanding 5.1 percent in the quarter. This likely reflected the easing of some constraints on building activity, such as materials shortages, and the large pipeline of consented work yet to occur.

Despite significant falls in house prices, increases in interest rates and high inflation, real household spending has remained stronger than anticipated (figure 2.2). Quarterly growth in consumption has been volatile due to changing seasonal patterns since the start of the COVID-19 pandemic, but remains elevated. Household consumption has been supported by high employment and income growth, government support measures and savings built up by the household sector in recent years.

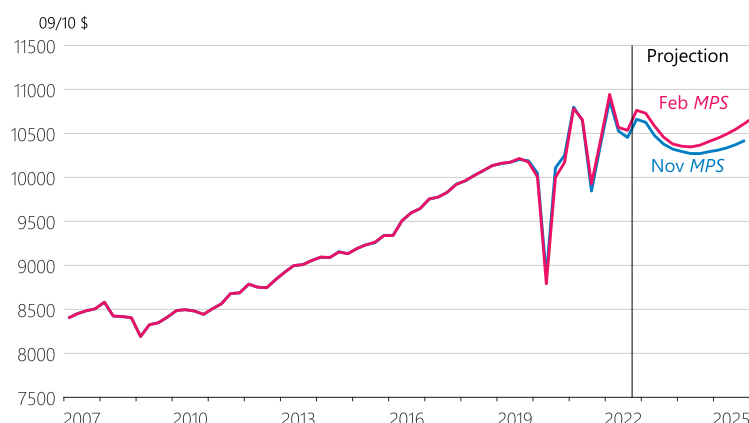
Since the border was reopened over the latter half of 2022, the recovery in international tourism has been swift. This is consistent with the experience of other countries that unwound their pandemic restrictions earlier. While still below their pre-COVID-19 levels, the number of international visitors has increased rapidly (figure 2.3).

**Figure 2.1**  
**Production GDP**  
(quarterly, seasonally adjusted)



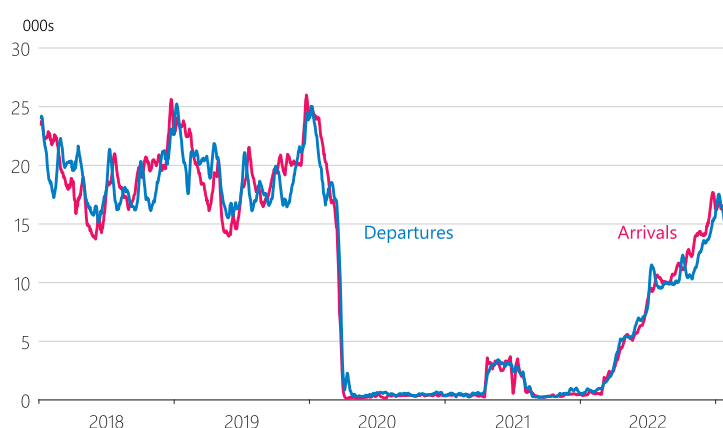
Source: Stats NZ, RBNZ estimates.

**Figure 2.2**  
**Private consumption expenditure per working-age person**  
(quarterly, seasonally adjusted)



Source: Stats NZ, RBNZ estimates.

**Figure 2.3**  
**Air passenger arrivals and departures**  
(7-day moving average)



Source: New Zealand Customs Service.

## Demand has not been met with enough supply

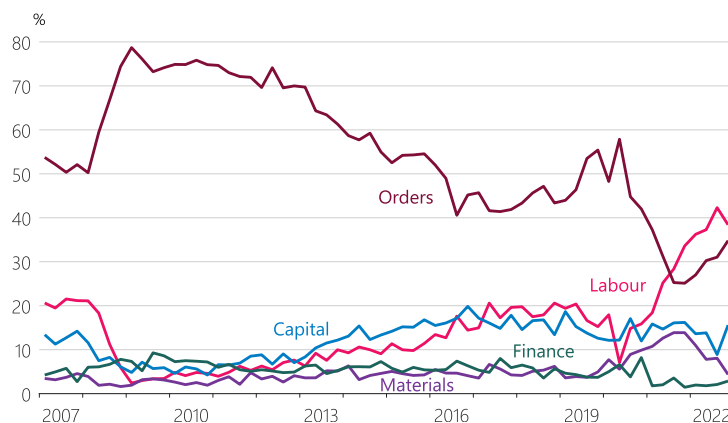
Although demand has been robust, the availability of labour has continued to fall short throughout New Zealand. Worker shortages have held back business activity across most industries, regions and skill levels. As reported in the Quarterly Survey of Business Opinion (QSBO), labour remains the factor most limiting production overall for businesses (figure 2.4). New Zealand’s tourism industry has found it challenging to meet higher demand as international visitor numbers have increased. Many businesses in this industry are unable to find sufficient staff to provide their usual levels of service.

## Employment remains above its maximum sustainable level

Employment as a share of the working-age population reached record levels in the second half of 2022. The unemployment rate remained very low at 3.4 percent in the December 2022 quarter (figure 2.5), and is one of many indicators that suggest employment remains above its maximum sustainable level. However, most of our labour market indicators show that pressures eased marginally over 2022, while still remaining strong (figure 2.6).

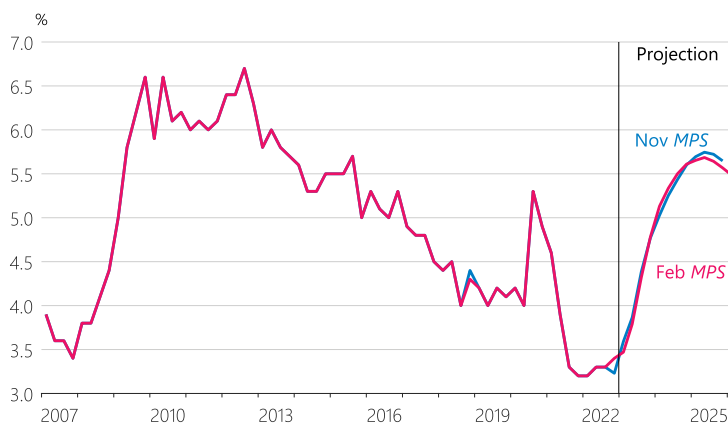
While businesses report labour as being the most significant factor holding back production, delays in shipping and production continue to act as constraints on economic activity. Supply-chain bottlenecks are easing globally, but this has yet to translate meaningfully into improved supply conditions and lower costs for New Zealand firms (figure 2.7). Discussions with businesses suggest that these pressures are likely to persist in New Zealand for some time.

**Figure 2.4**  
**QSBO factor most limiting production**  
*(seasonally adjusted)*



Source: NZIER, RBNZ estimates.

**Figure 2.5**  
**Unemployment rate**  
*(unemployed people as a share of the labour force, seasonally adjusted)*



Source: Stats NZ, RBNZ estimates.

**Figure 2.6**  
**Maximum sustainable employment (MSE) indicator suite**



Source: NZIER, Stats NZ, MBIE, ANZ, RBNZ estimates.

Note: The Reserve Bank uses a range of indicators when assessing MSE, consistent with clause 2.1b of the *Remit*. The vertical lines on the left-hand and right-hand sides represent the weakest and strongest data outcomes since 2000, respectively. For example, a lower unemployment rate is considered to be stronger. An orange dot to the left of a black dot means that the latest data outcome was weaker than in the March 2022 quarter, when the labour market was particularly tight.

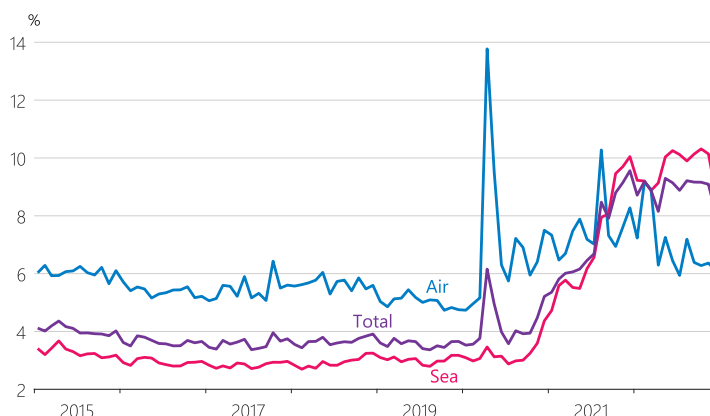


## The tight labour market has contributed to high CPI inflation

Although same-job wage inflation has not kept pace with higher CPI inflation, broader measures of average earnings and incomes have been more resilient (figure 2.8). As discussed further in chapter 4.2, other ways in which workers have obtained higher wages in an environment of labour shortages have been through increased movement between employers and potentially asking for more frequent wage increases. If these behaviours continue, they will increase the risk of more persistent wage and CPI inflation.

High wage inflation has contributed to broad-based strength in domestic inflation. Annual non-tradables inflation – which measures price changes for goods and services that are less exposed to international competition – was 6.6 percent in the December 2022 quarter. Housing construction costs, rent, and domestic airfares and accommodation have been significant contributors to non-tradables inflation (figure 2.9). The lag between changes in house prices and construction costs has been longer than usual in recent years. This may be due to unusual supply-chain bottlenecks and a long pipeline of residential development work. However, construction cost inflation eased in the December quarter to its lowest rate in nearly two years. As discussed in Box A, repairs and rebuilding activity following the severe storms over much of the North Island will likely lead to upward pressure on construction cost inflation, particularly in the near term.

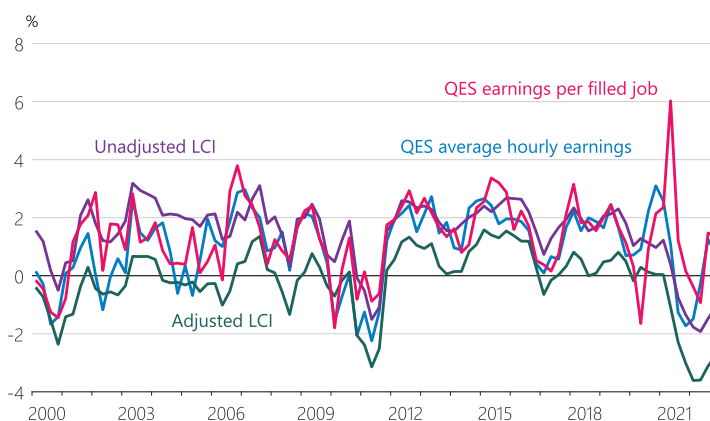
**Figure 2.7**  
Shipping costs for consumer goods  
(share of import value for duty)



Source: Stats NZ, RBNZ estimates.

Note: These series are estimated by taking the value of consumer merchandise imports including freight and insurance costs (CIF) and subtracting the reported value for duty (VFD), which excludes these costs. They are expressed as a percentage of the VFD figure.

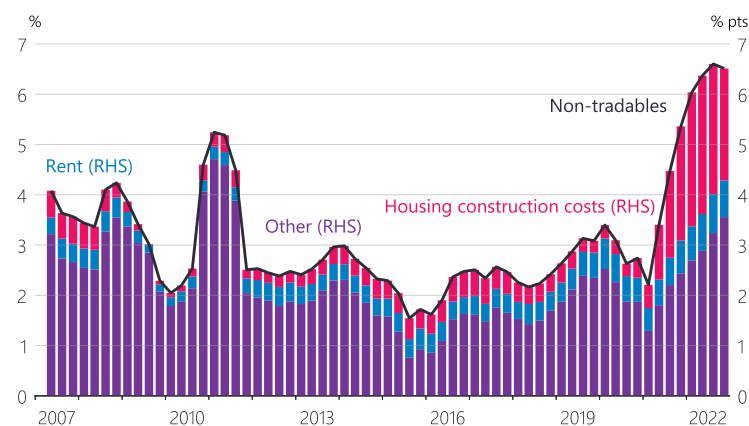
**Figure 2.8**  
Real wage and income growth  
(annual)



Source: Stats NZ, RBNZ estimates.

Note: Deflated by headline CPI.

**Figure 2.9**  
Contributions to non-tradables inflation  
(annual)



Source: Stats NZ.

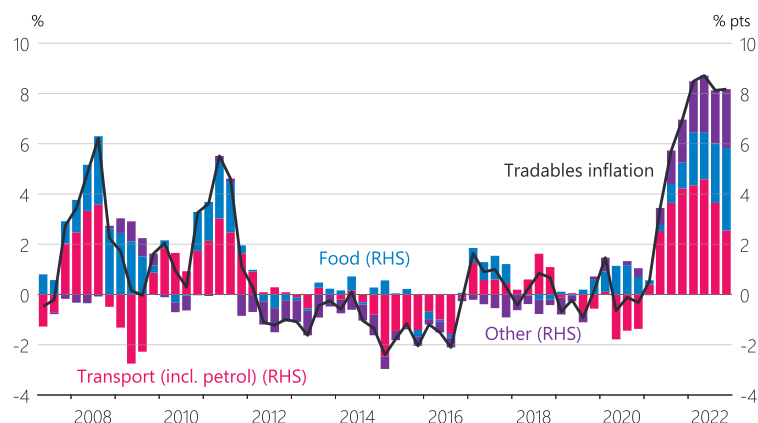
## High inflation has also reflected global factors

The lagged impacts of high global commodity prices, in addition to worker shortages and difficult growing conditions in New Zealand, have translated into very high food price inflation (figure 2.10). The recent increase in international visitors has also boosted inflation in tourism-related sectors. For example, international airfares have increased nearly 20 percent in each of the past two quarters. Petrol prices, which accounted for some of the increase in inflation through 2022, have since declined from their peak as global oil prices have eased (figure 2.11). Overall, annual tradables inflation was 8.2 percent in the December quarter.

## Inflation is too high

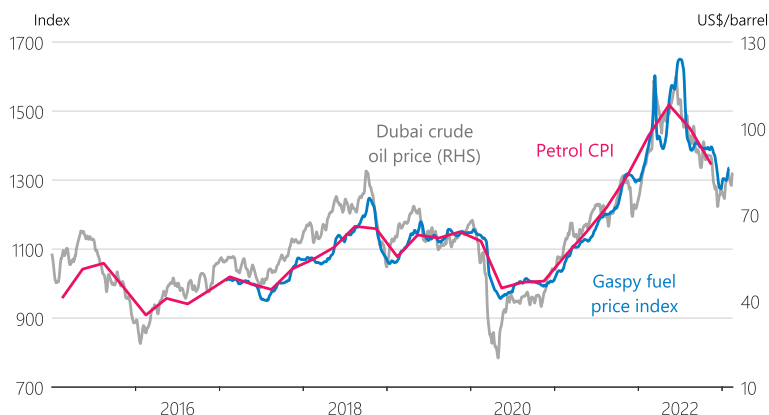
As discussed further in chapter 4.1, the correlation between global and domestic inflation appears to have been increasing gradually throughout time, and more sharply since the start of the COVID-19 pandemic. Global and domestic factors have both contributed significantly to high CPI inflation since 2021 (figure 2.12). While inflation is broad-based, services sector prices have accounted for an increasing share of price growth in recent quarters (figure 2.13). This reflects the shift in household spending from goods towards services in New Zealand and overseas over the past year, as COVID-19 restrictions have been unwound.

**Figure 2.10**  
Contributions to tradables inflation  
(annual)



Source: Stats NZ.

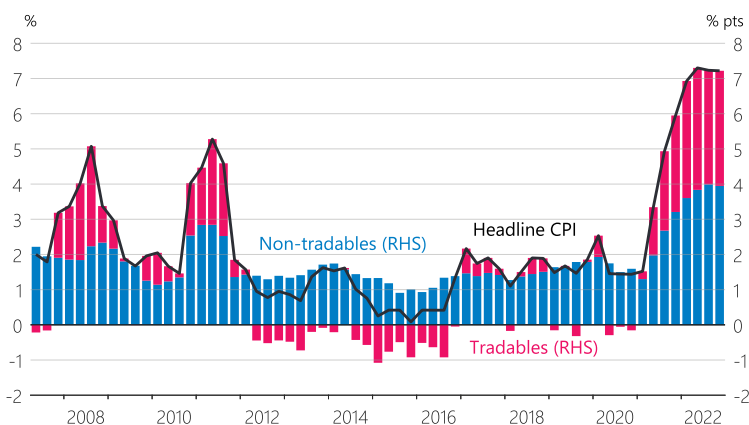
**Figure 2.11**  
Petrol and Dubai oil prices



Source: Datamine – Gaspys data, Stats NZ, Reuters, RBNZ estimates.

Note: Gaspys fuel prices are indexed to the petrol CPI level in the December 2019 quarter.

**Figure 2.12**  
Contributions to CPI inflation  
(annual)



Source: Stats NZ.

At 7.2 percent, annual CPI inflation is too high. Measures of core inflation, which attempt to remove one-off or particularly volatile price movements, also remain elevated (figure 2.14). High core inflation is particularly concerning for central banks because it tends to be persistent. It is also the aspect of inflation on which monetary policy has the greatest influence, albeit with significant lags.

Inflation expectations across all time horizons have also increased since 2021. These expectations remained at elevated levels following the release of the latest CPI data (figure 2.15). As discussed in the November *Statement*, elevated inflation expectations imply that the short-term nominal neutral interest rate has increased recently, meaning that interest rates need to increase by more to exert the same influence on the economy.

### There are signs that domestic demand is starting to ease as expected

The MPC has been increasing interest rates since the latter half of 2021. Higher interest rates lower domestic demand relative to the economy's ability to sustainably supply goods and services. This reduces inflationary pressure over the medium term.

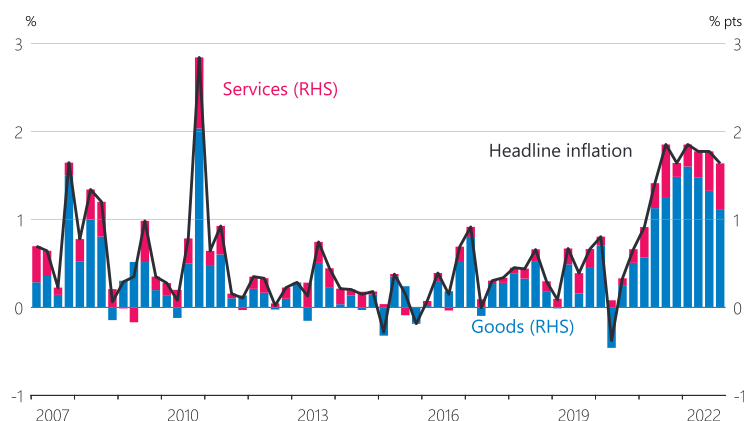
Actual and expected OCR increases have seen the interest rates faced by households and businesses increase quickly over the past 18 months. Although the New Zealand economy remained strong in 2022, there are signs that domestic demand may be slowing as expected at the time of the November *Statement*. In particular, areas of the economy more directly affected by changes in interest rates – such as household spending and construction – showed some early signs of easing in late 2022:

- While only a partial measure of household spending, the value of electronic card transactions declined in nominal terms in November and December, particularly for durable goods (figure 2.16).

Figure 2.13

### CPI inflation for goods and services components

(quarterly, seasonally adjusted)

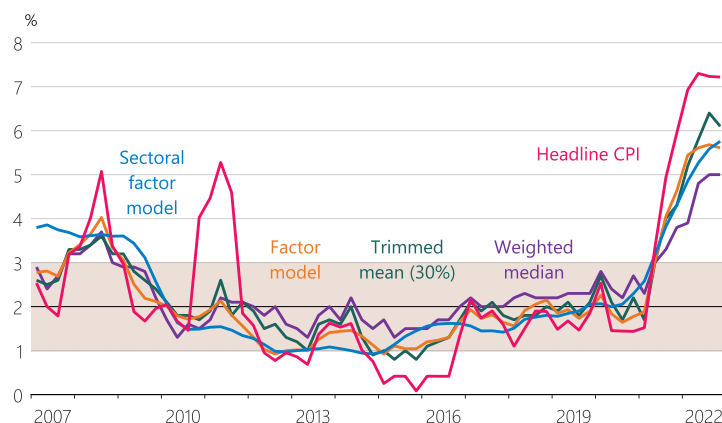


Source: Stats NZ, RBNZ estimates.

Figure 2.14

### Headline and core inflation measures

(annual)



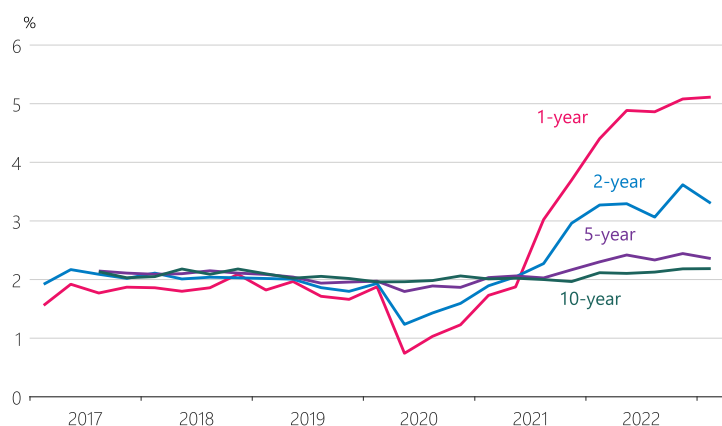
Source: Stats NZ, RBNZ estimates.

Note: The light brown shaded area represents the MPC's 1-3 percent target range for inflation over the medium term.

Figure 2.15

### Inflation expectations

(annual, years ahead)



Source: RBNZ Survey of Expectations (Business).

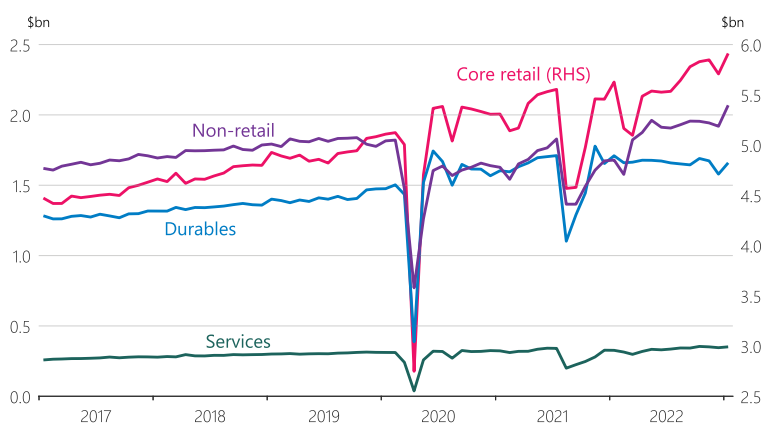
- New building consent numbers are also declining as the outlook for the residential construction sector has deteriorated.
- Although the labour market remains very tight, most indicators marginally eased over 2022 (figure 2.6). In particular, job vacancy numbers have started to decline across most regions and industries (figure 2.17).

High-frequency activity indicators over the start of 2023 have been mixed, and may be subject to higher volatility in coming months due to the effects of recent severe storms in the North Island.

Many mortgage borrowers are re-pricing to new interest rates that are higher than the 'stress' test rates used by banks in recent years to assess loan affordability. To date, the share of mortgages for which scheduled payments have fallen behind remains very low, likely reflecting that household incomes have also increased during this time. However, this share is expected to increase as the economy contracts and employment declines from very high levels.

Higher interest rates, lower house prices and a weaker labour market are expected to lower household consumption over coming years, with per-person consumption assumed to return to around its pre-pandemic level over the projection (figure 2.2). Residential investment is also assumed to start to decline from high levels around the middle of this year, and fall to a much lower share of the economy over the forecast horizon. As discussed in Box A, this underlying decline may be masked by repair work following the severe storms over much of the North Island.

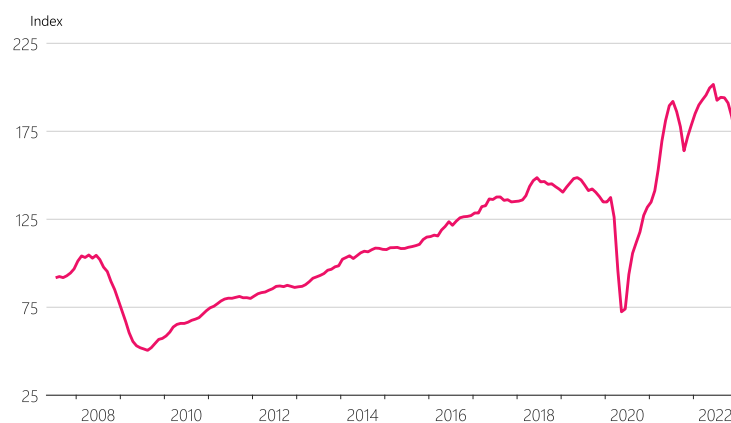
**Figure 2.16**  
**Electronic card transactions**  
(seasonally adjusted)



Source: Stats NZ.

Note: Core retail excludes fuel, vehicles, non-retail and services. Durables are included in core retail.

**Figure 2.17**  
**Job vacancies**  
(3-month moving average, seasonally adjusted)



Source: MBIE, RBNZ estimates.

Average house prices across New Zealand have continued to fall from their November 2021 peak, in response to higher interest rates, low population growth and increased housing supply. House prices have declined by around 15 percent to date, and are assumed to fall by about 23 percent in total from their peak by 2024 (figure 2.18). This decline is larger than that assumed in the November *Statement*, in part due to our continually evolving understanding of house price sustainability. The extent of the house price decline is highly uncertain.

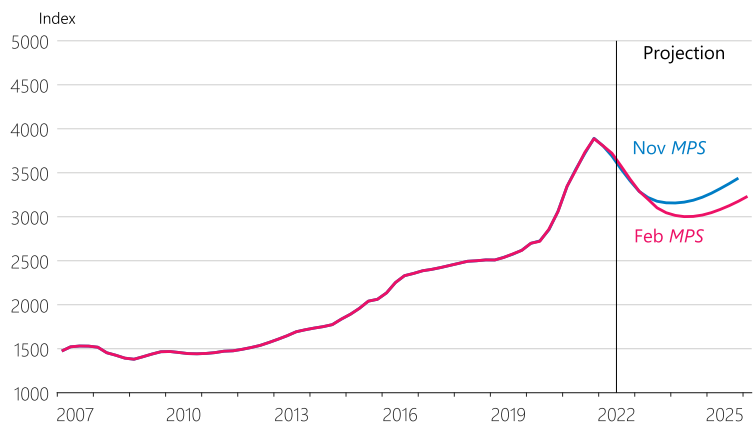
High levels of government spending, including activities related to the COVID-19 pandemic response and ongoing cost-of-living support measures, have contributed to strong domestic demand. Over the medium term, real government spending is assumed to decline in line with the *Half Year Economic and Fiscal Update 2022* projections.

### Global factors are contributing to softening demand

While there are signs that the more domestically driven areas of demand in New Zealand may be easing as expected, the weaker global environment appears to be having a faster impact than assumed. Central banks responded to high inflationary pressures in their own economies by increasing interest rates, rapidly in some cases. The resulting declines in economic growth in some of our key trading partners and the temporary disruption caused by the spread of COVID-19 in China have contributed to recent weaker demand for New Zealand's key commodity exports, such as dairy and meat. While these prices were expected to decline at the time of the November *Statement*, the decline has occurred more quickly than assumed, and led to a lower outlook for New Zealand's terms of trade (figure 2.19).

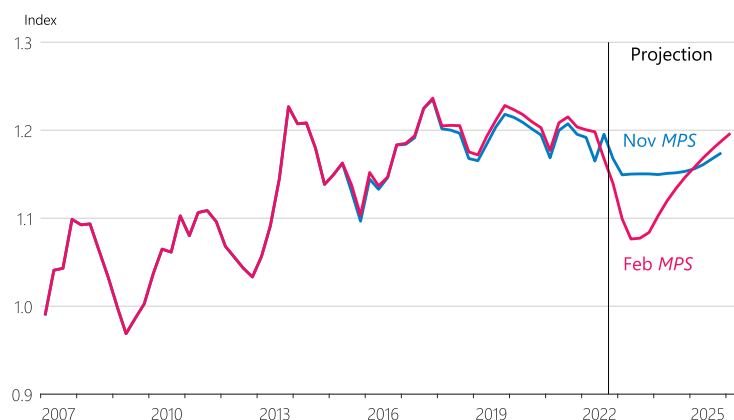
The medium-term outlook for our goods and services export volumes has improved slightly since the November *Statement*, due to the earlier reopening of China than expected. Overall, global developments are assumed to have a similar effect on the New Zealand economy as in the November *Statement*, although the timing and channels differ.

**Figure 2.18**  
House prices  
(nominal)



Source: CoreLogic, RBNZ estimates.

**Figure 2.19**  
Terms of trade  
(goods and services, seasonally adjusted, System of National Accounts)



Source: Stats NZ, RBNZ estimates.

As discussed in chapter 3, improved financial market sentiment following lower global inflation outturns and the reopening of China has contributed to an appreciation of the New Zealand dollar relative to that which was assumed at the time of the November *Statement*. All else being equal, a higher New Zealand dollar exchange rate reduces demand for our goods and services exports, dampening exporters' incomes. A higher exchange rate also lowers the costs of the goods and services we import, reducing inflationary pressure in New Zealand.

The continued weakening in global economic growth is assumed to further reduce demand growth for New Zealand's exports over the medium term. Businesses are also expected to delay or cancel investment plans in the face of heightened global uncertainty, lower export revenue and higher domestic interest rates. However, continued growth in New Zealand's services exports is assumed to provide some offset, and the easing of travel and activity restrictions in China may also support global demand over the medium term.

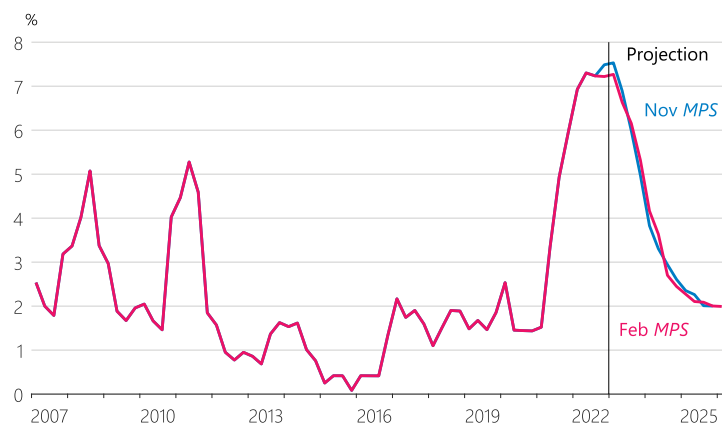
### Annual inflation will return to 2 percent over the medium term

An easing in overall demand due to higher interest rates here and abroad is expected to reduce inflationary pressure over coming years. Lower demand will result in less pressure on the available supply of labour and goods, resulting in less pressure on prices and lower domestic inflation. Slow growth in our trading partner economies will lead to easing imported inflation and demand for New Zealand's goods exports. With both non-tradables and tradables inflation expected to decline over the medium term, annual CPI inflation is assumed to return to within the 1 to 3 percent target band in the second half of 2024, and to 2 percent by the end of 2025 (figure 2.20).

Because the New Zealand economy is starting from a position of very high inflation and a tight labour market, an economic contraction is likely. The peak-to-trough decline in the level of GDP over 2023 is expected to be about 1 percent in the central projection. While this recession is assumed to be spread over several quarters from the middle of this year, there is considerable uncertainty about the timing. The extent of the underlying contraction may also be masked by volatility in activity due to the recovery from the severe storms throughout the North Island.

A consequence of slowing economic growth is that the unemployment rate is likely to increase from current low levels. Net immigration is also assumed to return towards long-run average levels, which will increase labour supply while also adding to overall demand. Keeping the unemployment rate near current levels without experiencing unsustainably high wage and inflation pressures would require structural changes in the labour market that are beyond the control of the Reserve Bank.

**Figure 2.20**  
**CPI inflation**  
(annual)



Source: Stats NZ, RBNZ estimates.



## Box A

# The economic impacts of recent severe storms in the North Island

Over the past few weeks, severe storms – including Cyclone Gabrielle – have occurred throughout the North Island, particularly in Northland, Auckland, Coromandel, Waikato, Bay of Plenty, Gisborne and Hawke’s Bay. Some people have lost their lives. Many people have lost their homes, vehicles and possessions. Others have had their businesses disrupted. There has been significant damage to crops, land, inventories and equipment. Apart from these financial and material losses, the emotional stress continues to be immense and our thoughts are with those affected.

These storms have occurred at a time when labour and other resources in the economy are already scarce. Existing capacity constraints may mean these storms are more inflationary than previous natural disasters and it may take longer for recovery work to take place. The best contribution monetary policy can make is to free up resources by slowing demand elsewhere in the economy with higher interest rates. This will also limit further increases in the cost of living over the medium term.

It is still early in the recovery process and estimates of the wider economic impacts are highly uncertain. However, these events will likely result in somewhat higher-than-otherwise inflation in the near term. They have destroyed capital stock, thereby reducing supply, and will increase demand over coming years (table A1).

**Table A1**

**Summary of economic impacts of the North Island storms**

|                          | Near-term effects   | Beyond  |
|--------------------------|---|---|
| <b>Inflation</b>         | <ul style="list-style-type: none"> <li>Increased prices for cars, food, accommodation and construction work</li> </ul>  | <ul style="list-style-type: none"> <li>Higher-than-otherwise prices for construction work</li> <li>Possibility of inflation expectations remaining high</li> </ul>  |
| <b>Economic activity</b> | <ul style="list-style-type: none"> <li>Decreased consumption and imports due to business and transport disruptions</li> <li>Increased consumption and imports of replacement goods such as carpets, furniture, appliances and vehicles</li> <li>Decreased goods exports, including fruit, vegetables, logs, meat and dairy</li> </ul> | <ul style="list-style-type: none"> <li>Increased private construction activity and investment to repair houses and businesses</li> <li>Increased government funded construction activity to repair roads, bridges, schools and other affected infrastructure</li> </ul> |
| <b>Capital stock</b>     | <ul style="list-style-type: none"> <li>Reduced productive capacity due to damaged infrastructure, buildings and land</li> </ul>   | <ul style="list-style-type: none"> <li>Rebuilding of the capital stock, including making it more resilient to future severe weather events</li> </ul>   |

## Acute shortages from the storms will contribute to near-term inflation

Shortages of goods and services arising as a consequence of these storms are likely to put upwards pressure on already elevated prices. In particular, fruit, vegetables, cars and appliances are all likely to see price increases. Likewise, the acute need for building and land repair work will contribute to price pressures in the construction sector. As a consequence, headline inflation is likely to remain elevated in the near term, even as inflationary pressure in other parts of the economy eases. While estimates are highly uncertain, our central projection assumes the storms result in an additional 0.3 percentage points on CPI inflation in each of the March and June 2023 quarters.

Widespread damage has occurred to fruit and vegetable crops throughout the North Island. For example, apples, avocados, kiwifruit, kumara, maize, onions, potatoes and wine grapes have all been affected to varying degrees and may see reduced availability and higher prices. Poor growing conditions had already reduced fruit and vegetable quality this season, and these effects will be compounded by the severe storms.

Vehicle flooding is likely to create significant shortages in the used and new car markets. The near-term supply of vehicles has been reduced by floods in some car yards. High inflation in car prices is likely to persist in the first half of this year.

Many homes have had flooding that damaged appliances and furnishings. Appliances with electrical components that have flooded will need to be replaced. Although inventories are reportedly relatively high at present, the volume of replacements required at the same time may exceed capacity. As a result, already elevated inflation in this CPI subcomponent is likely to persist. Repairing homes will require materials and construction workers, which may keep construction cost inflation higher for longer than assumed in the November *Statement*.

All else being equal, these severe storms will keep CPI inflation high for longer and may lead to a longer period with inflation above 7 percent. Monetary policy will look through the direct effects of these events on near-term inflation, as they are likely to be temporary. The largest risk of higher near-term inflation to the medium-term outlook – and therefore to monetary policy – comes from inflation expectations remaining elevated for longer than otherwise.

## Storm damage may reduce GDP growth in the near term

Storms throughout the North Island have temporarily closed many businesses, caused power outages and blocked transport routes for customers and suppliers. These disruptions have been extensive in some regions and will reduce consumption and imports over the first half of this year. However, purchases of replacement goods, including appliances, carpets, clothing and vehicles, will at least partially provide offsets to any fall in consumption and imports. At this stage, the net near-term effects on consumption and imports are uncertain.

Exports are likely to be weaker in the near term. The storms will reduce horticultural exports this season and may affect future seasons depending on the extent of damage to trees, vines, land and equipment. Slips on roads and closures of processing facilities mean some exports will be delayed and some production will be wasted. Harvesting of forests and transporting and processing of logs have been disrupted, decreasing near-term exports. Long-term supply may be affected by damages to forests. Losses of livestock may also reduce the exports of meat and dairy. Travel disruptions, especially at Auckland Airport, may lower services exports. In our central projection we have assumed some near-term reduction in exports, although the magnitude is highly uncertain given limited information at this time.



## Rebuilding New Zealand's productive capacity will take time and resources

Slips, flooding and strong winds have damaged land, buildings and infrastructure. This has reduced the productive capacity of New Zealand and may worsen pre-existing capacity constraints. It is also likely that these storms will encourage further activity to increase the resilience of households and businesses to such weather events, although this is likely to take at least several years.

Damage to property will require resources from the construction sector to repair and rebuild, adding to the existing pipeline of construction work. Any payouts from insurers will likely take some time to be made and it will take even longer for construction work to start. Insurance costs will provide an initial indication of the extent of the impacts on medium-term economic activity. However, the effects on economic activity will likely be larger than the insurance costs due to the damage to uninsured or underinsured assets.

While estimates are highly uncertain, our central projection incorporates an assumption that the recovery from these storms will add about 1 percent to annual GDP, spread over coming years. It is possible that the recovery will evolve in such a way that the expected contraction in GDP through 2023 will be delayed or reduced, at the margin. Our central projection also assumes a reduction in the productive capacity of the economy.

Our early assumption is based on recoveries from other natural disasters, including the 2021 Queensland floods, the 2016 Kaikōura earthquake and the 1968 Cyclone Giselle. We have assumed that the repair and rebuild from the storms will crowd out or delay activities that would otherwise have occurred. For example, some building work is likely to be delayed as repairs are undertaken. Any additional capacity pressure over the medium term may need to be offset through monetary policy, to ensure that inflation sustainably returns to the target band.



## Monetary policy outlook

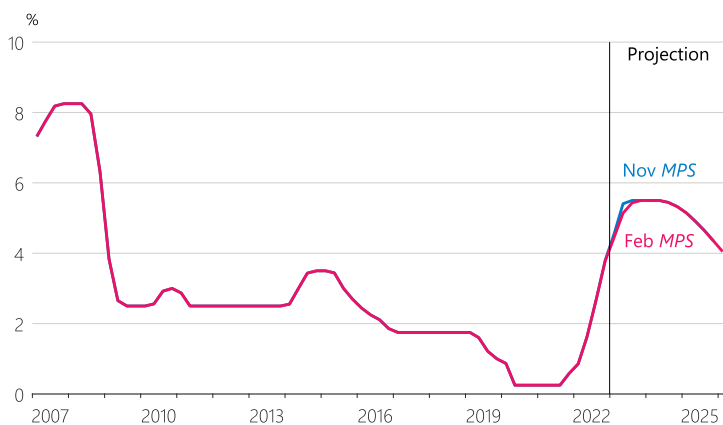
Overall, the New Zealand economy has evolved largely as expected at the time of the November *Statement*. CPI inflation in the December 2022 quarter was lower than expected. However, the downside surprise was mainly accounted for by declines in petrol prices in December 2022 and lower-than-expected construction cost inflation. Inflation in other non-tradable components was broadly as assumed. Measures of core inflation and inflation expectations remain elevated. The starting point for capacity pressure in the economy is also stronger than was assumed. Employment remains above its maximum sustainable level.

Conditional on our central economic outlook, it is expected that the OCR will need to increase to a similar extent as assumed in the November *Statement*, in order for the MPC to meet its inflation and employment objectives (figure 2.21).

Figure 2.21

### OCR

(quarterly average)



Source: RBNZ estimates.



Global  
developments  
and outlook

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CHAPTER  
**03**

# CHAPTER 3

## Global developments and outlook

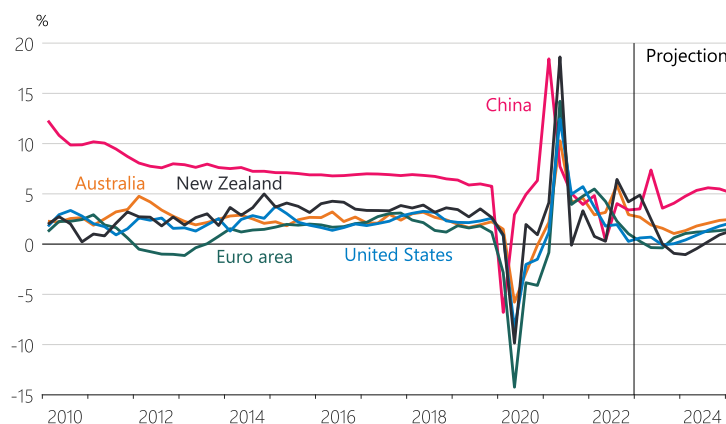
### Global economic growth is expected to slow in 2023

Global growth is expected to moderate in 2023, following a strong recovery after the COVID-19 pandemic. This easing in growth reflects the effects of the ongoing war in Ukraine, high inflation and higher global interest rates on economic activity. However, forecasts for global growth have increased slightly since the November *Statement*. The International Monetary Fund (IMF) has increased its forecast for global annual average growth over 2023 by 0.2 percentage points to 2.9 percent since October, although this remains lower than the estimated growth of 3.4 percent in 2022.

A key change in the outlook has been the removal of many COVID-19 restrictions in China. This has increased expectations for near-term economic growth in China, as most forecasters did not expect restrictions to change much until later in 2023. Firmer Chinese demand may also spill over into stronger demand for many of China's trading partners, including New Zealand.

Continued strength in the US labour market and lower energy prices than expected in Europe, due to a mild winter, have also led to an improved global growth outlook at the margin. However, global economic growth is still expected to slow and be well below historical average rates (figure 3.1). Despite the weak growth outlook, unemployment is expected to increase only slightly back to around pre-COVID-19 levels (figure 3.2).

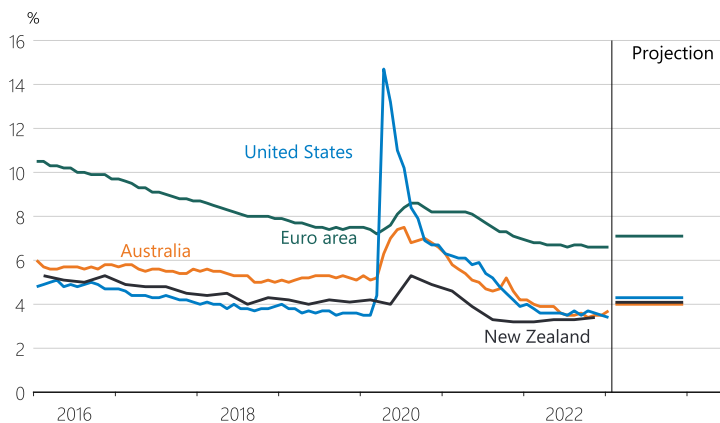
**Figure 3.1**  
Annual GDP growth forecasts for key trading partners



Source: Haver Analytics, Consensus Economics, RBNZ estimates.

Note: Growth rate forecasts are based on Consensus Economics estimates, except for New Zealand's, which is based on our current projection.

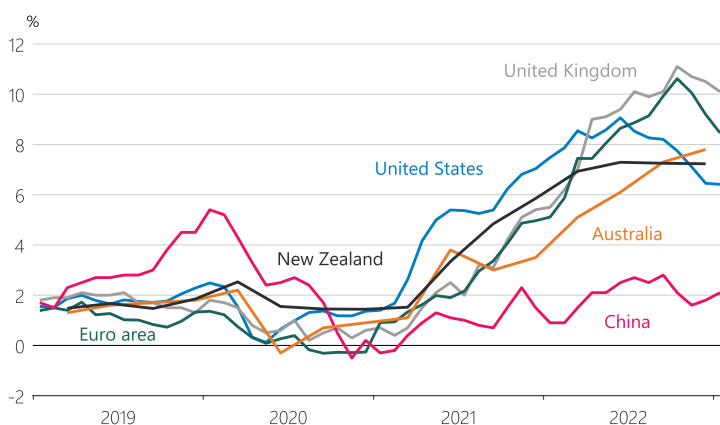
**Figure 3.2**  
**Unemployment rates for key trading partners**  
*(seasonally adjusted)*



Source: Bloomberg, Consensus Economics, RBNZ estimates.

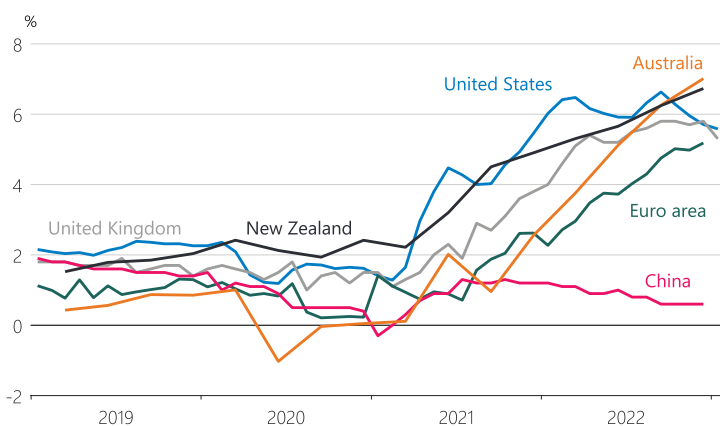
Note: Unemployment rate forecasts are an average for 2023 based on Consensus Economics estimates, except for New Zealand's, which is based on our current projection.

**Figure 3.3**  
**Annual headline inflation for key trading partners**



Source: Haver Analytics.

**Figure 3.4**  
**Annual inflation excluding food and energy for key trading partners**



Source: Haver Analytics.

In the US, GDP grew by 0.7 percent in the December 2022 quarter. Domestic consumption rose by 0.5 percent, supported by the rundown of savings and a higher usage of credit. However, consumer confidence remains low and the household savings rate is now below pre-COVID-19 levels. The US unemployment rate has fallen to its lowest rate in more than 50 years. Wage growth remains strong, although has eased slightly over recent quarters.

Economic growth in the euro area remains low, but has been better than expected, with GDP increasing by 0.1 percent in the December 2022 quarter. A mild winter, falling energy prices and fiscal support contributed to this resilience. Household consumption in the euro area has continued to increase, driven by spending on services rather than goods. Unemployment in the euro area remains historically low at 6.6 percent, although there has been some decline in the number of job vacancies.

In Australia the labour market remains strong, with unemployment at 3.7 percent. The IMF expects annual average GDP growth in Australia to slow to 1.6 percent in 2023, compared to 3.6 percent in 2022.

### Inflation has eased in some economies in recent months

Commodity prices remain high, in part because of the war in Ukraine, but have eased from their peaks. This decrease has contributed to declines in headline inflation (figure 3.3). However, inflation remains well above historical averages, and measures of core inflation remain high (figure 3.4).

- In the US, annual headline inflation eased to 6.4 percent in January 2023. Falling prices for fuel and a range of other goods contributed to the decline. Annual core inflation (excluding food and energy) was 5.6 percent in January 2023, down slightly from recent peaks.

- Also due to lower energy prices, annual headline inflation in the euro area declined to 8.5 percent in January 2023, down from a peak of 10.6 percent in October 2022. Annual core inflation in the euro area has continued to increase, to 5.2 percent, but is much lower than for most other key trading partners.
- In Australia, annual headline inflation rose to 7.8 percent in the December 2022 quarter, and core inflation measures have also increased. Inflation remains widespread, with a notable increase in holiday and accommodation costs as Australia's tourism sector recovers.

### COVID-19 restrictions in China have eased

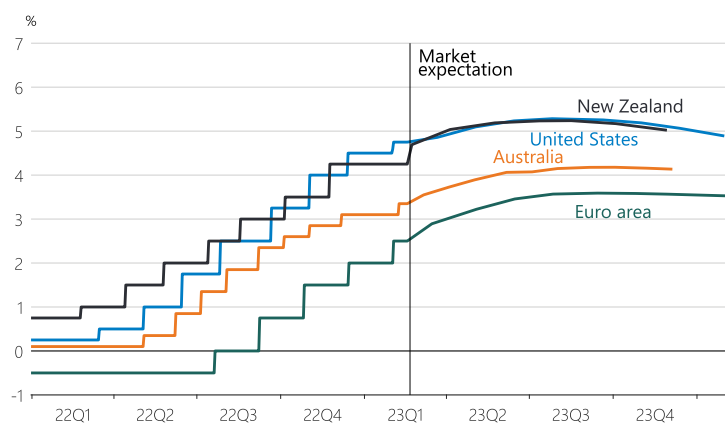
In December 2022, Chinese authorities announced the country would remove COVID-19 restrictions following years of mobility restrictions and rigorous testing. Recent data suggest activity has rebounded quickly after an initial spike in COVID-19 cases. Because COVID-19 restrictions have eased much faster and sooner than forecasters anticipated, an earlier rebound in economic activity has been incorporated into projections for Chinese growth. For instance, in January 2023 the IMF increased its forecast for GDP growth in China for 2023 to 5.2 percent, compared to 4.4 percent in October 2022.

The reopening of China is likely to add to global demand over 2023. Chinese consumption is expected to increase, in particular for labour-intensive service sectors such as dining and entertainment. Increased activity and economic confidence are likely to increase demand for global commodities, including for meat and dairy – important goods exports for New Zealand. Fewer border restrictions mean the number of Chinese travelling overseas is likely to rapidly increase. This fast demand recovery may cause a lift in inflationary pressure in China.

### Central banks are slowing the pace of tightening

Many central banks have slowed the pace of policy rate increases over recent months (table 3.1). In some countries this reflects central bank assessments that inflation has peaked. Consistent with this, market pricing for the peak in central bank policy rates has decreased slightly since the November *Statement*. Central banks are slowing the pace of monetary policy tightening to assess the lagged impacts of recent rapid policy tightening on economic growth, the labour market and inflation (figure 3.5). Overall, further declines in inflation are expected through 2023.

**Figure 3.5**  
Central bank policy interest rates and market pricing for future policy rate levels  
(as at 16 February 2023)



Source: Bloomberg.

**Table 3.1****Selected central bank policy rate changes**

|                                   | <b>Fed</b> | <b>ECB</b> | <b>BoE</b> | <b>RBA</b> | <b>RBNZ</b> |
|-----------------------------------|------------|------------|------------|------------|-------------|
| <b>Current policy rate (%)</b>    | 4.50-4.75  | 2.50       | 4.00       | 3.35       | 4.25        |
| <b>Expected peak rate (%)</b>     | 5.2        | 3.5        | 4.5        | 4.1        | 5.5         |
| <b>Previous policy move (bps)</b> | +25        | +50        | +50        | +25        | +75         |
| <b>Expected next move (bps)</b>   | +25        | +50        | +25        | +25        | +50         |
| <b>Next meeting date</b>          | 23 March   | 17 March   | 23 March   | 7 March    | 22 February |

Source: Bloomberg.

Note: The 'expected peak rate' and 'expected next move' are implied by overnight indexed swaps as of 16 February 2023.

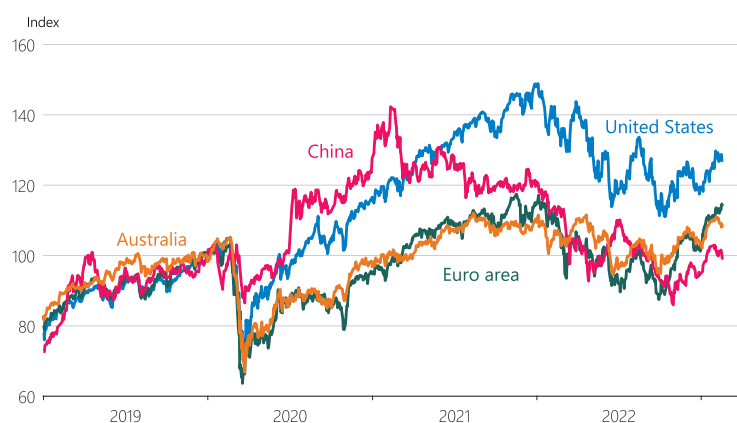
### Financial market risk sentiment has improved

Risk sentiment in global financial markets has improved recently. Global equity indices have increased, and the US dollar has depreciated. This reflects increasing confidence among investors that headline inflation has peaked across most economies, together with a slight improvement in the global economic growth outlook, particularly for China and the euro area.

Since the November *Statement*, the US dollar index has depreciated by 2 percent. The US S&P 500 equity index has increased by 3 percent since the November *Statement* (figure 3.6), supported by a rise in interest-rate-sensitive sectors such as technology and real estate. European equity market returns have increased as economic activity has proven more resilient than expected.

A number of commodity prices have increased on expectations of stronger Chinese demand, although levels remain below recent peaks. They include rises in industrial metals prices, with iron ore prices having increased by 21 percent and copper prices by 9 percent since the November *Statement*. Soft commodity prices such as those for dairy and meat – particularly relevant for New Zealand exporters – have not recovered as much.

**Figure 3.6**  
**Equity market indices**  
(index=100 on 1 January 2020)



Source: Bloomberg.



Special topics

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CHAPTER  
**04**



# CHAPTER 4

## Special topics

Before the publication of each *Statement*, the MPC is provided with analyses of some topical issues.

Topics for the February *Statement* included:

1. The international dimension of non-tradables inflation
2. Monitoring the labour market for inflationary pressures with high-frequency microdata

### Special topics in the past 12 months

| Topic  | Date/publication                              |
|--|---|
| The neutral interest rate  | <a href="#">MPS November 2022 (Chapter 4)</a> |
| Developments in real wages   | <a href="#">MPS November 2022 (Chapter 4)</a> |
| Global inflation developments                                      | <a href="#">MPS August 2022 (Chapter 3)</a>   |
| Assessing recent inflation surprises                               | <a href="#">MPS August 2022 (Chapter 3)</a>   |
| Business conditions  | <a href="#">MPS August 2022 (Chapter 3)</a>   |
| Global inflation developments                                      | <a href="#">MPS May 2022 (Chapter 4)</a>      |
| The outlook for household spending, house prices, and construction | <a href="#">MPS May 2022 (Chapter 4)</a>      |
| International developments and risks                               | <a href="#">MPS February 2022 (Chapter 4)</a> |
| Inflation expectations   | <a href="#">MPS February 2022 (Chapter 4)</a> |

# 1

## The international dimension of non-tradables inflation

### Summary

- In a globalised world with interdependent supply chains, few prices are completely immune to international influences.
- In principle, non-tradables inflation has a low direct exposure to international competition. This should ensure that non-tradables prices are more determined by domestic demand and supply. In contrast, tradables inflation largely reflects international factors.
- However, the correlation between non-tradables inflation and global inflation has steadily increased since the Global Financial Crisis (GFC). Two key drivers may be at play:
  - There may be global factors that are influencing New Zealand inflation more, either directly or indirectly.
  - Advanced economies have seen similar macroeconomic developments and responses from policymakers over this period, causing inflation in these economies to co-move more.
- When global factors have a stronger influence on New Zealand, monetary policy may face larger trade-offs between reducing high inflation and higher economic costs through lost output and lower employment.

Central banks in open economies have more influence on the prices of goods and services that are less exposed to fluctuations in exchange rates and international prices. In the New Zealand CPI, a good or service is categorised as being ‘non-tradable’ if it faces little foreign competition.<sup>1</sup>

More than 60 percent of the CPI basket is attributed to the prices of non-tradable goods and services. In principle, low exposure to international trade should ensure that non-tradables prices are more determined by domestic demand and supply than international factors.

However, in recent years the COVID-19 pandemic and the war in Ukraine have disrupted global supply chains. This has contributed to high and broad-based inflation in New Zealand and globally. During this extreme period, global factors may have had a greater influence on domestic inflation than usual. Examining correlations in inflation data across countries is a first step towards understanding the influence of international factors on non-tradables inflation in New Zealand.

<sup>1</sup> A good or service is categorised as being ‘tradable’ if they are imported or are in competition with foreign goods, either in domestic or foreign markets. Using this definition, tradables tend to be dominated by goods, such as clothing, household contents, transport vehicles, recreational equipment and supplies. The non-tradables class tends to be more dominated by services such as housing, utilities, education, insurance, and transport services. Some groups can have both tradable and non-tradable constituents, as the distinctions are made at the subgroup and in some cases at the item level. For example, the food category was 62 percent tradables and 38 percent non-tradables in the 2020 CPI weightings.

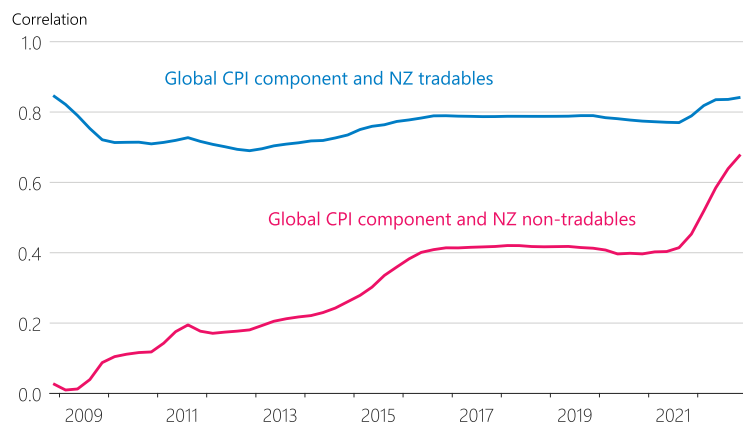
## Non-tradables inflation and global inflation have become increasingly correlated

The correlation between non-tradables inflation and global inflation has increased since the GFC (figure 4.1). In this analysis, global inflation is measured using headline CPIs of 24 countries<sup>2</sup> between the March 1994 quarter and the December 2022 quarter. The common movements in global inflation or the ‘global CPI component’ are calculated using the first principal component for the annual percentage changes of the 24 CPI series.<sup>3</sup>

The correlation between annual non-tradables inflation and the global CPI component is calculated through an expanding range that starts in the March 1999 quarter, with the end point progressively extending from the December 2008 to the December 2022 quarter. The correlation between non-tradables inflation and the global CPI component has risen from weakly positive levels after the GFC to about 0.68 by the end of 2022 (figure 4.1). A peak level of 0.68 suggests that non-tradables inflation in New Zealand is at least in part related to movements in global prices.

As expected, the prices of tradable New Zealand goods and services are highly correlated with global inflation, and this relationship appears relatively stable through time.

**Figure 4.1**  
Correlations of New Zealand inflation with global headline inflation



Source: OECD, Stats NZ, RBNZ estimates.

Note: The chart shows how the correlations have evolved based on a sample range starting from Q1 1999 and ending between Q4 2008 and Q4 2022 (the sample range sequentially expanding from Q4 2008). The correlation coefficient is the simple contemporaneous correlation, and not the dynamic correlations between leads and lags of the data series.

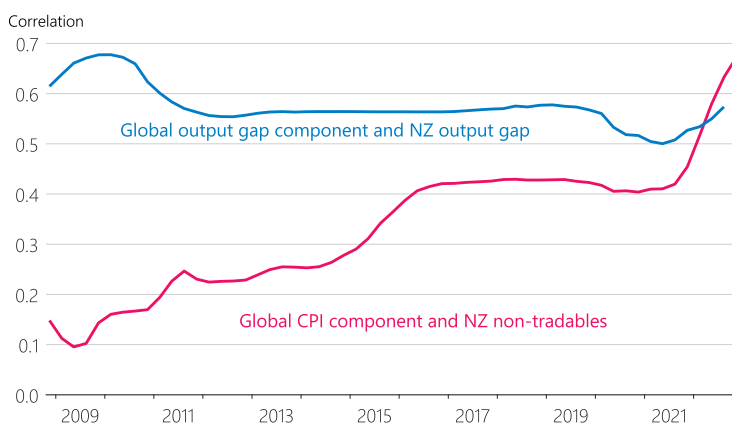
2 The international dataset excludes New Zealand. The countries we include are: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Hungary, Israel, Italy, Japan, Korea, Luxembourg, Mexico, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, the UK and the USA.

3 Principal component analysis is a statistical technique that reduces the number of data series dealt with, while still preserving much of the variation in the original dataset.

## Is this because the New Zealand economy has become more similar to other economies in general?

A possible explanation for the higher correlation between global inflation and New Zealand non-tradables inflation is that economies have become more aligned and prices are merely one aspect of those relationships. The correlation of the New Zealand output gap – how much the economy is producing relative to its potential – with the first principal component of output gaps across the same 24 countries can be considered to explore this. However, the correlation has not significantly increased over the last 15 years (figure 4.2).<sup>4</sup> This suggests that the increased correlation of global inflation with New Zealand inflation is unlikely to be associated with greater synchronisation of business cycles.

**Figure 4.2**  
Inflation correlations and economic activity correlations



Source: OECD, Stats NZ, RBNZ estimates.

Note: The chart shows how the correlations have evolved based on a sample range starting from Q1 1999 and ending between Q4 2008 and Q4 2022 (the sample range sequentially expanding from Q4 2008). The correlation coefficient is the simple contemporaneous correlation, and not the dynamic correlations between leads and lags of the data series.

## Are there specific non-tradable goods or services driving the relationship?

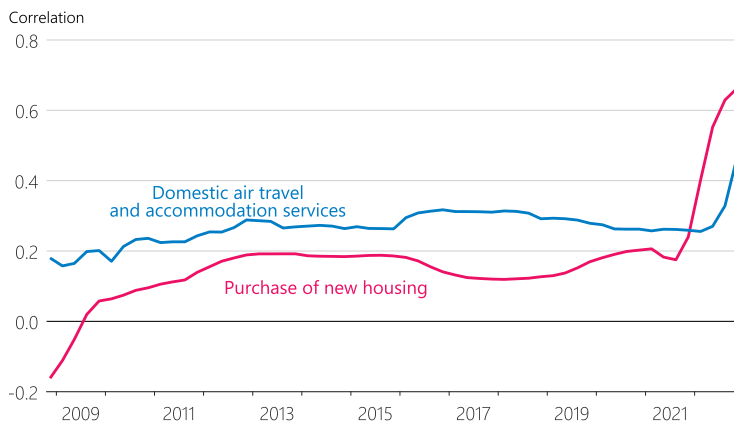
Certain non-tradable goods and services may have become more related globally, explaining the stronger correlation between global inflation and New Zealand non-tradables inflation overall. The New Zealand and Australian CPIs provide similar groupings that allow for a more disaggregated analysis to investigate this potential driver.<sup>5</sup> This analysis finds that no common pattern emerges across the CPI basket items considered. The price inflation in some New Zealand non-tradables shows a decreasing correlation with the Australian equivalents over time, while some others stay stable. Several correlations remain extremely low over history.

However, two items in the non-tradables grouping that show strengthening correlations over time are the purchase of new housing, and domestic air travel and accommodation services (figure 4.3). This may in part reflect the worldwide impact of sharply lower interest rates supporting housing as well as travel disruptions associated with the effects of the COVID-19 pandemic and respective policy responses. The New Zealand-Australia correlation profiles for these items steepen over 2020-22, much like the correlation of non-tradables inflation with the global inflation component in figure 4.1. However, these patterns do not recur consistently across other items in the New Zealand and Australian CPI non-tradables basket. The evidence of co-movement is much stronger in the case of aggregate New Zealand non-tradables inflation and broader global inflation.

4 This finding does differ from the academic literature that has found that the co-movement between economic activity across countries has increased over the period from 1985 to 2008. For example, see Kose, Otrok and Prasad (2012), '[Global Business Cycles: Convergence or Decoupling](#)', *International Economic Review*, Vol 53, No 2.

5 The items included in our analysis cover 96 percent of New Zealand's non-tradables CPI, which comprise 58 percent of the total CPI basket.

**Figure 4.3**  
**Correlations of selected New Zealand and Australian CPI subgroups**



Source: Australian Bureau of Statistics, Stats NZ, RBNZ estimates.

Note: The chart shows how the correlations have evolved based on a sample range starting from Q1 1999 and ending between Q4 2008 and Q4 2022 (the sample range sequentially expanding from Q4 2008). The correlation coefficient is the simple contemporaneous correlation, and not the dynamic correlations between leads and lags of the data series.

### Why might non-tradables inflation and global inflation have become more correlated?

The correlations shown do not identify the causal drivers of the co-movement between non-tradables inflation and global inflation.

There are several possible causes:

- Global inflation may influence New Zealand non-tradables inflation more. This could be directly by entering into the production process of non-tradable goods and services (e.g. through fuel costs). Or it could be indirectly, such as through global inflation feeding into New Zealand inflation expectations, in turn affecting the price- and wage-setting behaviour in the non-tradables sector.
- During periods of global disruption – such as the COVID-19 pandemic and the war in Ukraine – countries may suffer similar economic impacts and see similar policy responses. This can create a similar impact on inflation overseas and in New Zealand, irrespective of any spillovers from global inflation to New Zealand non-tradables inflation.

- Longer-term ‘structural’ change may have occurred across countries simultaneously. Common international trends in labour market policy, demographics and technology would also strengthen the correlation between New Zealand non-tradables inflation and global inflation.

### What does this mean for monetary policy?

If non-tradables inflation remains high due to international influences, monetary policy may face a larger trade-off between reducing high inflation and higher economic costs through lost output and lower employment. If the effects of the extraordinary international price dynamics of the recent years persist, the costs of contractionary monetary policy on real activity may increase. Conversely, if global pressures are deflationary, monetary policy may not need to tighten as much in order to sustainably reduce New Zealand’s headline inflation. We will continue to monitor the impacts of international forces on New Zealand inflation.

## 2

# Monitoring the labour market for inflationary pressures with high-frequency microdata

## Summary

- High-frequency ‘microdata’ (pay-period data at the individual worker level) for job changes and wage adjustments help us better monitor and understand inflationary pressures in the labour market and wider economy.
- Workers are changing jobs more often since the start of the COVID-19 pandemic, consistent with other labour market indicators.
  - Higher job-to-job transitions suggest relatively greater competition between firms for workers, creating upward pressure on wages.
  - This increased competition for labour is broad-based across industries in New Zealand. Most industries are offering above-average pay rises.
- In line with overall wage growth, the higher-frequency data indicate that wage increases have become larger and more broad-based, particularly in the second half of 2022. In addition, wage adjustments show tentative signs of occurring more frequently.
- Overall, these newer high-frequency measures indicate that wage inflation, and relatedly consumer price inflation, will remain high over coming months.

Recent strong overall growth in demand and widespread labour shortages have contributed to the tightest domestic labour market since 2007. Previous analysis indicates that same-job wage increases have not yet outpaced CPI inflation (see chapter 4.2 in the November *Statement*).

However, broader measures of wage and income growth have shown greater strength. At the aggregate level, it appears that one way in which workers have gained higher wages is by moving employers or obtaining promotions. The newer high-frequency data can help us better monitor and understand the degree to which this is occurring by allowing us to consider how much workers move between jobs, and the frequency and size of pay adjustments made by firms.<sup>6</sup> This supports our assessment of where the labour market is relative to maximum sustainable employment. We can then assess the corresponding impacts of these capacity pressures on wage growth and on domestic inflation.

<sup>6</sup> These results are not official statistics. They have been created for research purposes from the Integrated Data Infrastructure (IDI) and Longitudinal Business Database (LBD) which are carefully managed by Stats NZ. For more information about the IDI and LBD please visit <https://www.stats.govt.nz/integrated-data/>. The results are based in part on tax data supplied by Inland Revenue to Stats NZ under the Tax Administration Act 1994 for statistical purposes. Any discussion of data limitations or weaknesses is in the context of using the IDI for statistical purposes, and is not related to the data’s ability to support Inland Revenue’s core operational requirements.

## How changing jobs and wage adjustments impact inflation

### Job-to-job transitions help gauge the degree of competition between employers

Job-to-job transitions (people moving directly from one job to another) are the most common way vacancies are filled in New Zealand.<sup>7</sup> Increasing job-to-job transitions indicate greater competition between employers. If some people in a firm change jobs for higher pay, others may follow.

For example, job-to-job transitions are negotiated at the market wage. This has the potential to affect both current and previous employers' wage setting, placing upwards pressure on the wages paid by each. For previous employers, high turnover signals to other undervalued staff to consider switching jobs. Further, this potentially increases the workloads of remaining employees until replacements are hired and trained. This increases the likelihood that overworked staff will look for work elsewhere. On the other hand, a business hiring new staff on higher wages than existing staff may encourage current employees to look elsewhere for better pay. These factors increase the pressure for employers to raise the wages of existing staff to retain them. Businesses have confirmed higher job turnover and wage increases in conversations with the Reserve Bank over the past 18 months.

When job turnover is higher, employees are in a stronger bargaining position to seek higher pay. This adds upward pressure to nominal wage inflation.

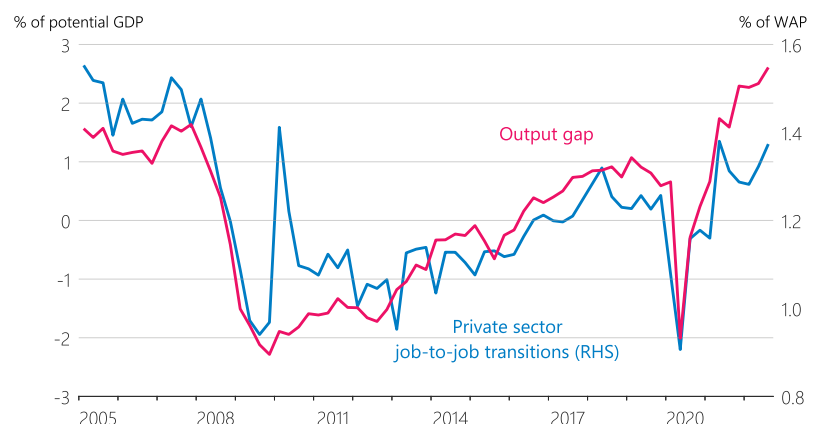
### Wage adjustment frequency affects the speed of pass-through from wages to prices

As pay rises are given more often, there is likely to be a faster pass-through of higher wage costs to prices. This is because it is likely to lead firms to make more frequent price changes to preserve profitability where possible. More frequent pay rises are also indicative of greater competition for labour as employers bid up available labour more rapidly.

### Job-to-job transitions are elevated

In line with a tight labour market, job-to-job transitions in the domestic economy have increased since the start of the COVID-19 pandemic. Relative to the total working-age population, job-to-job transitions are around levels last seen just prior to the GFC (figure 4.4). This is indicative of increased competition between firms for workers.

**Figure 4.4**  
Job-to-job transitions and the output gap



Source: Stats NZ, Stats NZ IDI, RBNZ estimates.

Note: WAP stands for 'working-age population'. Private sector job-to-job transitions exclude transitions in the Education and Training and Public Administration and Safety industries. Job-to-job transitions data points for December 2017 and March 2018 have been removed due to quality concerns.

Many people switching jobs likely reflects both cyclical and structural drivers:

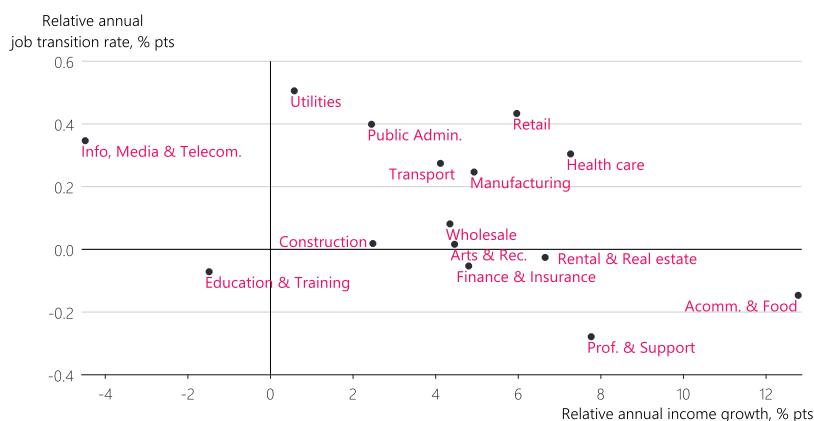
- Cyclical: A strong positive output gap (where actual output is above its long-run capacity) is consistent with high labour demand (figure 4.4).

<sup>7</sup> New Zealand averages about 150,000 job-to-job transitions per quarter. See Karagedikli (2018), 'Job-to-job flows and inflation: Evidence from administrative data in New Zealand', *Analytical Note*, Reserve Bank of New Zealand. This is, on average, about 2.5 times larger than the 60,000 people entering employment from Not In the Labour Force (NILF) and 6.25 times larger than the 24,000 people entering employment from unemployment.

- Structural: Changes to the structure of New Zealand's economy in response to COVID-19-related health restrictions (e.g. border restrictions and consequently reduced international labour supply; a shift towards remote working) may have an impact. The structure of the economy can also change through changing preferences. For example, firms may be less willing to train new staff or would prefer to instead compete over existing workers to a greater extent than before. Such changes can result in increased job-to-job transitions, particularly across industries and regions, which would further support wage growth.

The relationship between job-to-job transitions and income growth is fairly broad-based across industries in the latest available data (September 2022). Most industries were offering above-average nominal pay increases. At the same time, job-to-job transitions were higher than when employment was last assessed to be around its maximum sustainable level in the second half of 2019 (figure 4.5).

**Figure 4.5**  
**Job-to-job transitions and income growth across industries**  
(September 2022 quarter)



Source: Stats NZ, Stats NZ IDI.

Note: Any industry above the x-axis is currently experiencing higher than average annual job-to-job transition rates. Any industry to the right of the y-axis is experiencing higher than average annual income growth.

Annual income growth is compared to the industry average from 2000 to 2019, with the historical average indexed to 0 percent. The job-to-job transition rate is the ratio of the number of outward job transitions (employees leaving their previous employer) against total employment per industry. Owing to the short time series, the job-to-job transition rate is compared to the industry average from the second half of 2019.

## Wage adjustment data confirms ongoing pressure in the labour market

To construct measures of wage adjustment, a measure of 'usual wage' is derived from the administrative tax data available through Stats NZ's Integrated Data Infrastructure (IDI). Three measures of wage adjustment are then calculated using this 'usual wage':

- annualised wage increase;<sup>8</sup>
- time since last increase; and
- number of people receiving increases.<sup>9</sup>

These measures enhance the currently published labour market statistics on wages because they can also track wage adjustments that have been realised due to job switching. They also suggest that pay growth has increased and broadened since mid-2021. In addition, wage adjustments show early signs of occurring more frequently. Current higher-frequency measures of labour market activity indicate that:

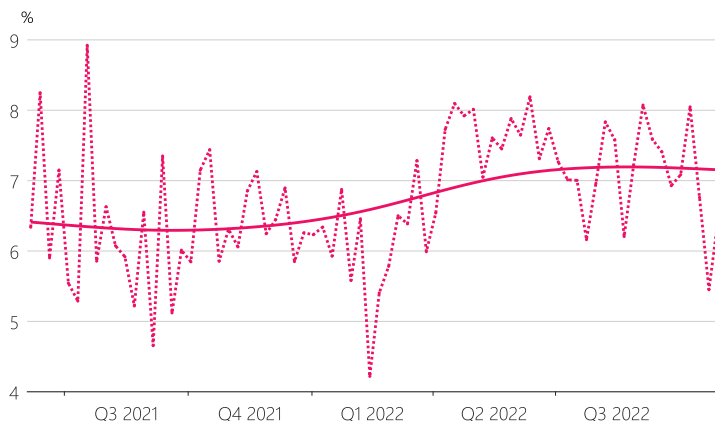
- The median annualised pay increase for those receiving it in a given week has increased from around 6.2 percent at the start of 2022 to around 7.5 percent in September (figure 4.6). In addition, more people have been receiving pay increases over this time period (figure 4.7).
- The median time since the previous pay increase remained relatively flat over 2022 (figure 4.8). While this series is volatile there are clear indications of more frequent pay adjustments for those who have waited longer than average, as well as in most of the industries included in the higher-frequency data. However, to confirm the robustness of this change, more data points will need to be collected over time as the current time series is too short.

8 Annualised pay increases reflect a standardised pay increase scaled to the annual equivalent. So for someone who has waited six months since their last pay increase the annualised version would be roughly twice the amount observed, and for someone who has waited two years since their last increase the annualised version is roughly half.

9 The high-frequency pay period data collected by Inland Revenue from April 2019 can be used to identify 'usual' income spells – continuous periods of time when an employer/employee relationship has a frequently observed income over the period. These Inland Revenue data are noisy, and the income in a given pay period may vary from the usual income due to a range of factors such as unpaid leave, variability in hours worked, overtime, public holidays and other data entry errors.



**Figure 4.6**  
**Annualised pay increases**

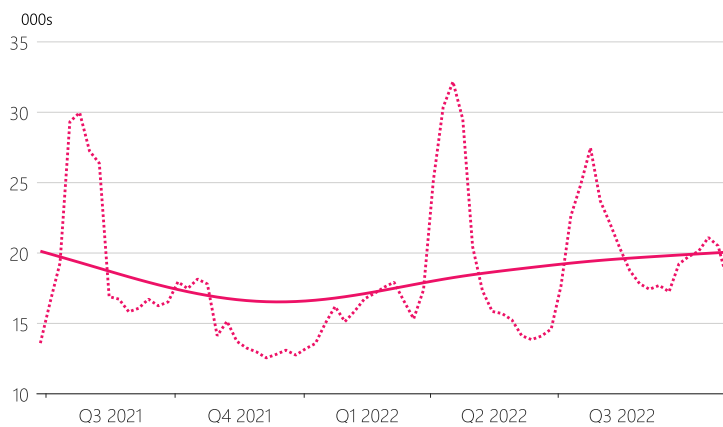


Source: Stats NZ, Stats NZ IDI, RBNZ estimates.

Note: The solid pink line shows the smoothed trend constructed using the Hodrick-Prescott filter method. This smoothing method constructs a trend series by ignoring short-term data fluctuations.

All four of the new higher-frequency measures of labour market activity discussed in this section point to a tight labour market supporting higher nominal wage growth. Job-to-job transitions usually lead nominal wage growth. The currently elevated number of job-to-job transitions suggest that both wage and price inflation will remain elevated in the near term. The Reserve Bank will continue to monitor these indicators as part of a wider range of labour market measures to help us continuously improve our understanding of inflationary pressures in the labour market.

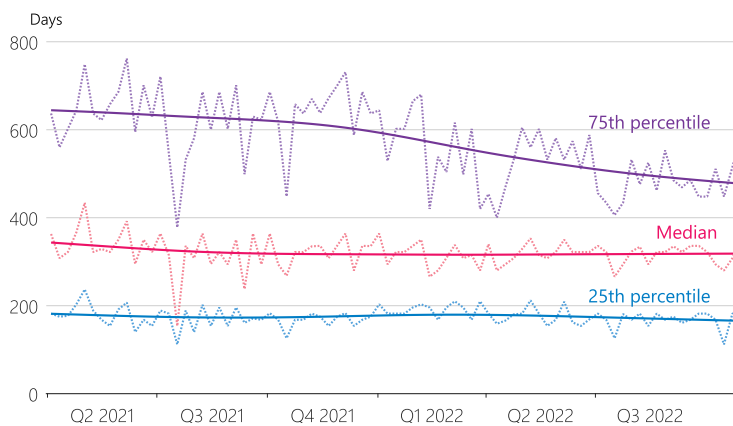
**Figure 4.7**  
**Number of workers receiving pay increases**



Source: Stats NZ, Stats NZ IDI, RBNZ estimates.

Note: The solid pink line shows the smoothed trend constructed using the Hodrick-Prescott filter method.

**Figure 4.8**  
**How long are workers waiting for an increase?**



Source: Stats NZ, Stats NZ IDI, RBNZ estimates.

Note: Data has been sorted based on the time since their last pay increase. For example, the 75th percentile is the boundary above which 25 percent of people have waited longest. The solid lines show the smoothed trends constructed using the Hodrick-Prescott filter method.



Financial  
conditions

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CHAPTER  
**05**

# CHAPTER 5

## Financial conditions

**Monetary policy affects economic activity by influencing financial conditions in New Zealand. These include the interest rates at which households and businesses save and borrow, the exchange rate, and other factors such as credit availability.**



**Financial conditions have tightened since the November *Statement*, with retail interest rates rising in response to past increases in wholesale interest rates.**

Market participants' expectations for the OCR have risen since the November *Statement*, with market pricing for the OCR moving higher across 2023 and expected to peak in the middle of the year (figure 5.1). In line with this, shorter-term wholesale interest rates have increased slightly (figure 5.2), while domestic interest rates at longer terms have remained broadly unchanged. This has driven the interest rate swap curve to invert further. Inverted interest rate curves are usually a sign of slowing expected growth.

Economic data surprises in major economies continue to result in strong reactions in global financial markets. Despite this, the New Zealand financial markets continue to function well (figure 5.3). The New Zealand dollar is broadly unchanged on a trade-weighted basis since the November *Statement*, with a period of appreciation in late 2022 followed by a depreciation in early 2023 (figure 5.4). US dollar weakness has been partially offset by strength in the Australian dollar, Japanese yen and Chinese yuan. Risk sentiment has been buoyed recently by an earlier-than-expected reopening of China and tentative signs that inflation is starting to decline globally.

Both mortgage and term deposit rates have risen since the November *Statement*, slightly more than their comparable wholesale rates. Short-term mortgage rates have risen by more than longer-term mortgage rates, leading to an inversion of the mortgage curve for the first time since 2008. Interest rates on term deposits, which make up a large percentage of banks' core funding, have increased significantly (figure 5.5). These increases in retail rates partially reflect the lagged transmission of past increases in wholesale interest rates.

The Funding for Lending (FLP) programme additional allocation window ended on 6 December 2022, with total drawdowns amounting to just over \$19 billion. The FLP funding (3-year duration) will begin to mature in December 2023. The cost of raising long-term wholesale bank funding relative to benchmark wholesale rates (credit spread) is expected to increase as the FLP funding matures, but has remained relatively stable since the November *Statement* (figure 5.6).

Table 5.1

## Developments in domestic financial conditions as at 16 February 2023

| Wholesale interest rates                   |   |
|--|---|
| <b>Market pricing for the OCR</b>          | <ul style="list-style-type: none"> <li>• Current market expectations for the OCR are contractionary, above our estimates for the neutral OCR (see figure 7.4). Market participants now expect a slightly higher peak in the OCR than just before the time of the November <i>Statement</i>. Financial market expectations for the peak OCR in this tightening cycle, as measured by overnight indexed swap pricing, have risen around 15 basis points over this period, to 5.3 percent as at 16 February.</li> <li>• These moves have been influenced by a combination of both domestic and offshore economic data releases, with market pricing for the peak OCR trading within a range of 5.2 to 5.6 percent since the November <i>Statement</i>.</li> </ul>  |
| <b>New Zealand Government Bonds (NZGB)</b> | <ul style="list-style-type: none"> <li>• NZGB yields at 1- and 2-year terms have increased by 25-30 basis points since the November <i>Statement</i>. Longer-term yields are broadly unchanged however, with the 10-year NZGB trading at 4.35 percent, as at 16 February.</li> <li>• The NZGB market continues to function well despite a temporary pick-up in volatility through late December. This volatility has been mostly attributed to a reduction in liquidity over the festive period, as opposed to any significant deterioration in market conditions. Despite this volatility, bid-ask spreads (how far apart buyers and sellers are from reaching an agreed price to trade) have returned to their November 2022 levels. The intraday range for the NZGB 10-year (the difference between the low and high prices on a given trading day) is currently lower than at the time of the November <i>Statement</i>.</li> </ul> |
| <b>Interest rate swaps</b>                 | <ul style="list-style-type: none"> <li>• New Zealand dollar interest rate swaps have been broadly consistent with the change in NZGB yields since the November <i>Statement</i>. The 2-year swap rate is now around 10 basis points higher than it was at the November <i>Statement</i>. As a consequence, there is now a steeper inversion across the swap curve. The difference between 2- and 10-year swap rates is now 75 basis points.</li> <li>• Global interest rate swaps have increased in recent weeks, but are broadly unchanged since the November <i>Statement</i>. These rates continue to be a key influence on domestic interest rate movements. The US 2-year swap moved lower at the start of the year following weaker-than-expected US inflation. However, this move has retraced in response to strong US labour market data and contributed to the recent increase in New Zealand interest rates.</li> </ul>      |

## New Zealand dollar

### Interest rate differentials

- In recent months, the difference between interest rates in New Zealand and those in major economies such as Australia, the US and Europe has narrowed. For example, since the start of 2023 the difference between the 2-year NZGB yield and the 2-year Australian government bond yield has decreased by around 20 basis points. Decreases in New Zealand interest rates relative to key trading partners would typically be associated with a depreciation in the New Zealand dollar.
- Even though interest rate differentials between New Zealand and its key trading partners have been narrowing in recent months, the New Zealand dollar remains at a similar level to that at the time of the November *Statement*.

### Risk sentiment

- During periods of low uncertainty, financial market participants' willingness to take on additional risks increases and demand for safe haven currencies, such as the US dollar, decreases. Typically, more positive risk sentiment is associated with an appreciating New Zealand dollar.
- Market risk appetite appears to have improved since the November *Statement* in anticipation of the end of monetary policy tightening cycles globally, easing global inflationary pressure, and a better-than-expected, but still weak, global growth outlook. Risk sentiment has also been buoyed by the removal of COVID-19 restrictions in China.

### Commodity prices

- Global prices of New Zealand's key export commodities fell steadily over 2022. In particular, dairy prices hit a 2-year low in mid-January this year, but have since stabilised.
- Decreases in New Zealand's key export commodity prices tend to be associated with a depreciation in the New Zealand dollar.

## Retail interest rates

### Mortgage rates

- For the first time since 2008, the mortgage rate curve has inverted. As at 16 February, the 1- and 2-year fixed rate terms had increased by 65 and 45 basis points, respectively, since the November *Statement*. Increases have been smaller in the 3- to 5-year terms, leading to an inversion of the mortgage curve, with some banks even decreasing rates at these longer terms.
- Bank funding costs remain historically low relative to wholesale rates. However, mortgage rate increases have been larger than moves in wholesale interest rates at comparable terms, meaning the historically small spread between mortgage rates and wholesale interest rates is beginning to normalise.

### Deposit rates

- Term deposit rates have increased since the November *Statement*. As at 16 February, they had increased by 85 basis points and 70 basis points in the popular terms of 6 months and 1 year respectively.
- These increases mean that the 6-month rate is now at its highest since 2011, and the 1-year rate is at its highest since 2008.
- The deposit curve is now relatively flat, with the 5-year term deposit rate currently a few basis points below the 1-year rate. The spreads between term deposit rates and wholesale rates at comparable terms are still low.

## Bank funding conditions

### Funding composition

- Term deposit volumes continue to increase, particularly at the 6-month and 1-year terms, as depositors switch from on-call accounts. This is increasing banks' average funding costs, as the interest rates paid on term deposits are higher than those for on-call accounts.
- FLP drawdowns between the November *Statement* and the end of the additional allocation drawdown window on 6 December 2022 were \$2.6 billion. This took the total drawdowns to \$19 billion.
- Banks remain well-funded and have strong liquidity buffers. The core funding ratio rose by 0.2 percentage points in December, to 91.2 percent. This is the highest ratio since data collection began in April 2010.

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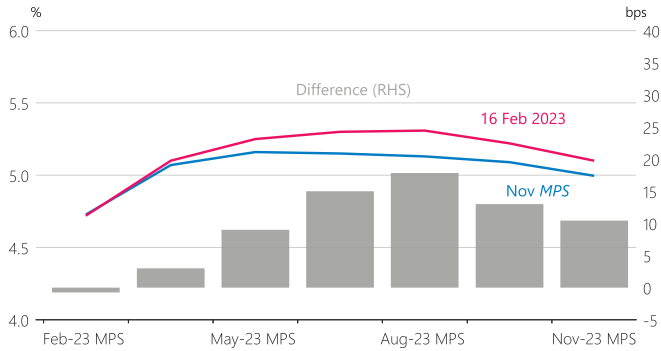
### Credit spreads

- The cost of raising long-term wholesale bank funding relative to benchmark wholesale rates has been relatively stable since the November *Statement*. It sits at levels higher than the 2020/21 period and is also slightly higher than pre-pandemic levels. Short-term credit spreads have not risen and remain around the levels prevailing since the monetary response to the pandemic.
  - Domestic credit spreads have increased at a slower pace than comparable measures for offshore issuers, although offshore credit spreads have decreased recently.
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# Charts

All charts are as at 16 February 2023.

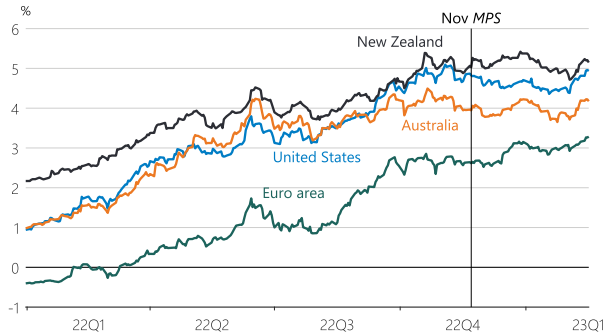
**Figure 5.1**  
Market expectations for the OCR



Source: Bloomberg.

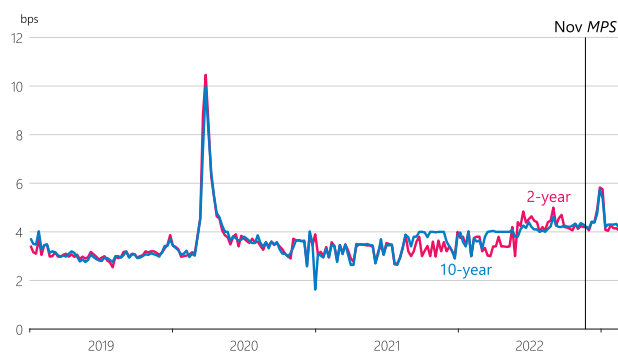
Note: Each data point represents market expectations of the level of the OCR at a given point in the future, as measured by overnight indexed swap pricing. For example, at the time of the November 2022 *Statement* market participants expected the OCR to reach 4.75 percent at the February 2023 *Statement*.

**Figure 5.2**  
Global 2-year interest rate swaps



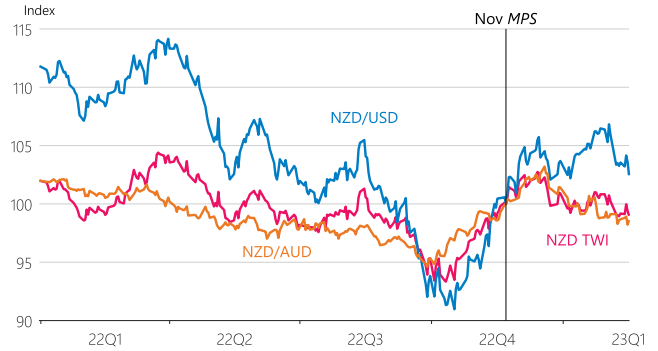
Source: Bloomberg.

**Figure 5.3**  
2-year and 10-year New Zealand government bond bid-ask spreads



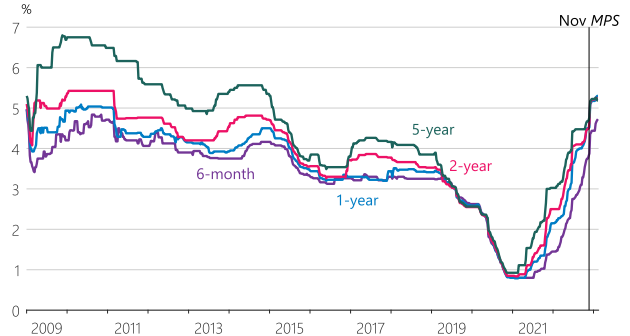
Source: Bloomberg.

**Figure 5.4**  
New Zealand dollar TWI and selected bilateral exchange rates  
(index=100 at November Statement)



Source: RBNZ, NZFMA.

**Figure 5.5**  
Term deposit rates



Source: interest.co.nz.

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

**Figure 5.6**  
5-year bank credit spread



Source: Bloomberg, RBNZ estimates.

Note: This credit spread is the difference between banks' secondary market bond yields and the interest rate swap curve. The bond yield used for the 5-year measure is the average of bonds with a remaining maturity of five years issued in New Zealand dollars by ANZ, ASB, BNZ, and Westpac. A lower spread represents a lower implied borrowing cost.



Economic  
projections

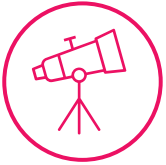
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CHAPTER  
**06**



# CHAPTER 6

## Economic projections



**This chapter summarises the baseline economic projections that the MPC members considered when making their policy assessment. The projections were finalised on 16 February 2023.**

These projections rely on a set of key assumptions about the global and domestic factors influencing the New Zealand economy. These include:

- the extent to which global monetary tightening reduces activity and inflation in our key trading partners, and demand for New Zealand's export goods and services;
- the speed and strength of the recovery of international tourism in New Zealand;
- the level of the exchange rate, which could add to or reduce imported inflation and domestic inflationary pressure;
- the outlook for the housing market, and the extent to which recent house price declines contribute to lower residential construction activity and household consumption;
- how businesses, consumers and workers respond to rising costs and higher interest rates in New Zealand; and
- the scale of repair and rebuild activity associated with recent severe storms throughout the North Island, and the associated impacts on prices of some key goods and services.

There is significant uncertainty about these assumptions, and actual outcomes could be different if they do not hold.

The projections take into account recent data, which show strong levels of economic activity, high inflation and a very tight labour market. High-frequency and forward-looking indicators suggest that economic growth is starting to slow, providing an early signal that capacity pressures may be easing from very elevated levels. The factors underpinning this starting point are discussed in chapter 2.

Inflation is expected to remain elevated in the near term. The ongoing recovery of international tourism in the 2022/23 summer has put further strain on an already stretched services sector, including transportation, hotels and restaurants. The severe storms throughout the North Island are likely to put additional pressure on scarce resources in the near term.

However, global inflationary pressures are showing early signs of easing. Global shipping costs have declined substantially from their peak, and the prices of many commodities, including oil, have declined. Over time, these lower global price pressures are expected to result in lower imported inflation in New Zealand.

Over the medium term, we assume that lower export prices, ongoing weakness in the housing market, a declining share of government spending in the economy, and higher interest rates in New Zealand will substantially slow domestic demand growth. This will help labour market pressures to ease, as will an increasing labour supply through domestic population growth and net immigration.

Consumer price inflation is expected to return to its 2 percent target midpoint towards the end of 2025. Given the expected slowing in domestic demand, the unemployment rate is likely to rise from exceptionally low levels. Employment is expected to fall below its maximum sustainable level.

Table 6.1

## Key projection assumptions

| Key factors                                      |  |
|--|--|
| <b>Global factors</b>                            | <ul style="list-style-type: none"> <li>The global economic environment is highly inflationary, particularly in the short term. COVID-19 and the war in Ukraine are still contributing to supply-chain disruptions and high energy costs. In the near term, elevated global inflation is expected to contribute to strong imported inflation in New Zealand. Over the medium term, falling global inflation is expected to see tradables inflation in New Zealand fall.</li> <li>The global economy is slowing in response to monetary policy tightening. Over the coming year, softening global demand is expected to reduce confidence, activity and export revenue in New Zealand.</li> <li>COVID-19 restrictions in China were eased earlier than expected at the end of 2022. This has likely contributed to lower commodity prices and reduced export demand out of China initially, as the country works through a difficult transitional phase. Over the second half of this year and beyond, the removal of restrictions on Chinese activity is expected to support goods export prices and volumes, and Chinese tourists are expected to gradually return to New Zealand.</li> <li>Prices for New Zealand's export commodities have declined. The total expected peak-to-trough decline in New Zealand's export goods basket is about 9 percent in world terms. In the near term, the weaker terms of trade are expected to reduce economic activity in New Zealand. However, this is expected to reverse in the medium term as real (inflation-adjusted) import prices fall to pre-COVID-19 levels and real export prices recover to around long-run historical averages.</li> <li>The New Zealand dollar TWI is assumed to remain around 71.5 over the projection.</li> </ul> |
| <b>International tourism</b>                     | <ul style="list-style-type: none"> <li>International tourism has recovered strongly over the 2022/23 summer, in line with expectations at the time of the November <i>Statement</i>. Additional spending by overseas tourists is contributing to capacity pressures across the transport, accommodation and hospitality sectors.</li> <li>We assume that tourism exports will have recovered to around 75 percent of their pre-pandemic levels by the end of the summer season, and will surpass pre-pandemic levels by the end of the projection. The positive impulse to economic activity from the reopening of the border is expected to outweigh any negative impacts from softening global demand.</li> </ul>  |
| <b>House prices and residential construction</b> | <ul style="list-style-type: none"> <li>House prices have fallen by 15.2 percent since the peak in November 2021. House prices are projected to keep falling in 2023, consistent with very low sales volumes in recent months. House prices are assumed to have fallen by around 23 percent from their peak in 2021 to their trough in mid-2024, before recovering as interest rates decline toward their neutral setting.</li> <li>Higher interest rates and lower house prices are expected to reduce incentives for residential construction over the projection horizon. Over the medium term, we assume that residential investment will decline towards its pre-pandemic share of the economy.</li> <li>Continued house price falls are expected to slow household spending growth over the projection as aggregate household wealth falls.</li> </ul>  |
| <b>Severe storms throughout the North Island</b> | <ul style="list-style-type: none"> <li>Severe storms have occurred over much of the North Island. It is still early in the recovery process and estimates of the wider economic impacts are highly uncertain (see Box A in chapter 2).</li> <li>Although estimates are uncertain, we assume that the recovery from these events adds about 1 percent to annual GDP, spread over coming years. This estimate assumes that some recovery activity crowds out activity that would have otherwise occurred.</li> <li>We assume that the additional strain on resources, particularly in food, used cars, construction and maintenance materials, will increase quarterly inflation by about 0.3 percentage points in the March 2023 quarter, and an additional 0.3 percentage points in the June 2023 quarter. These effects are assumed to be largely temporary.</li> </ul>   |

## Economic growth

### Production

- We assume the economy is still growing in the March 2023 quarter, supported by the return of international visitors.
- Economic activity has been expanding much faster than is sustainable over the past two years, leading to a large positive output gap and high inflation. The average annual output gap in 2022 is estimated to be 2.4 percent of potential GDP, compared to 2.1 percent in 2021.
- These projections contain a sustained, albeit shallow, period of economic contraction. GDP is assumed to decline by 1.1 percent over 2023. The timing of this contraction is highly uncertain.
- We expect the output gap to start closing quickly as households and businesses cut back spending in response to higher interest rates.
- Over the medium term, the supply of goods and services is also expected to improve, expanding the productive capacity of the economy.
- The combination of slower demand and rising supply is expected to result in a negative output gap for an extended period. The annual average output gap in 2024 is assumed to be -1.6 percent of potential GDP.

### Consumption

- Consumption growth was strong over 2022, supported by rising aggregate incomes. Incomes were buoyed by high export prices through 2022, high employment and longer working hours.
- High interest rates and lower house prices are expected to slow consumption growth over the coming quarters. Consumption is expected to decline on a per capita basis to trough at slightly above pre-pandemic levels by mid-2024.

### Investment

- We assume that business investment is robust in the near term, reflecting the impacts from currently high capacity pressures. Business investment is expected to decline over the medium term, due to higher interest rates, declining export prices and easing capacity pressures. Global weakness is also likely to weigh further on business investment by adding to uncertainty about future global demand.
- The outlook for residential construction remains similar to that of the November *Statement*. While building consent issuance has remained relatively elevated, we assume the construction sector remains at capacity and experiences limited near-term growth. Higher interest rates and lower house prices are expected to reduce demand and result in declines in residential construction over the next year.

### Government

- We assume that government consumption and investment evolve in line with the fiscal forecasts in the *Half Year Economic and Fiscal Update 2022*. Elevated inflation is assumed to reduce government consumption in real terms.

### Exports and imports

- Goods export prices and volumes have deteriorated in recent months as the global slowdown has started to impact export demand and domestic supply challenges have arisen. In the medium term, we assume that goods exports recover, in part due to the earlier-than-anticipated loosening of COVID-19 restrictions in China.
- International tourist arrivals and departures have increased roughly as anticipated in the November *Statement*, and with the eventual resumption of Chinese tourism we expect services export prices and volumes to be stronger over the next year than previously assumed.
- Non-oil import prices are currently elevated in real (inflation-adjusted) terms. Non-oil import prices are expected to decline over the projection in line with moderating global inflation, declining shipping costs and easing of acute bottlenecks in global production.
- In the near term, imports have been weaker than expected, despite stronger GDP growth. However, a number of factors make data on the import share of GDP difficult to interpret, including the resumption of international travel and changes in the composition of oil imports following the closure of the Marsden Point oil refinery.

## Labour market

### Employment and wages

- The New Zealand labour market has remained exceptionally tight. Labour constraints are prevalent and the unemployment rate remained near record lows at 3.4 percent in the December 2022 quarter, while employment as a share of the working-age population reached record high levels. Our suite of labour market indicators continues to suggest that the economy is well above maximum sustainable employment (MSE).
- Employment is starting from a very strong level. Over the medium term, employment is projected to decline in line with the economic contraction and may fall below MSE. This projection contains a modest decline in total employment, while the population continues to grow. The slowing in economic activity over several quarters, together with gradual growth in the labour force, is expected to reduce labour market pressures. The unemployment rate is assumed to increase from very low levels to around 5.7 percent at the end of the projection.
- Annual labour cost index (LCI) private sector wage inflation is expected to continue to increase, peaking at around 5.2 percent in 2023. This reflects ongoing labour shortages, expected further rises in the minimum wage and increased living-cost adjustments by employers.

## Inflation

### Headline

- Annual headline inflation is assumed to be 7.3 percent in the March 2023 quarter.
- Annual headline inflation is projected to decline to the top of the 1 to 3 percent target band in the second half of 2024, reaching the 2 percent target midpoint in 2025.

### Tradables

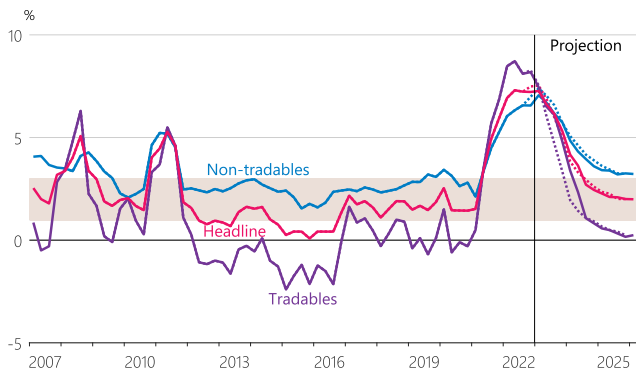
- In the near term, the prices for some tradable goods, particularly food, appliances and used cars, are likely to increase. The severe storms have destroyed some supply of fruit, vegetables and other crops and have damaged some goods, increasing demand for these goods as people seek to replace them.
- Tradables inflation is assumed to have peaked and is projected to decline over the projection horizon. This reflects lower petrol prices, falling prices for food and other commodities over the medium term, and generalised easing in global inflationary pressures.

### Non-tradables

- Non-tradables inflation is expected to remain high over the next two quarters. This is being driven by ongoing labour shortages, and is likely to be exacerbated by rising international tourism spending.
- Shortages of materials and labour in the construction industry have continued to underpin housing-related cost increases. In the very near term, maintenance, rebuild and repair work associated with the severe storms throughout the North Island are expected to put upward pressure on building costs.
- Capacity pressures are expected to ease as higher interest rates reduce consumption and house prices and slow home building. Slower domestic activity and lower house prices are expected to cause non-tradables inflation to ease over coming years.

# Charts

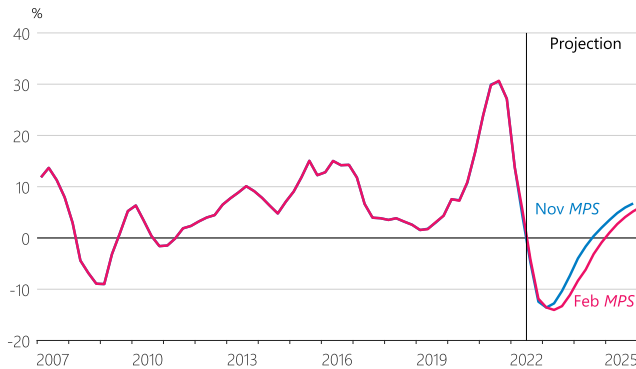
**Figure 6.1**  
Inflation breakdown  
(annual)



Source: Stats NZ, RBNZ estimates.

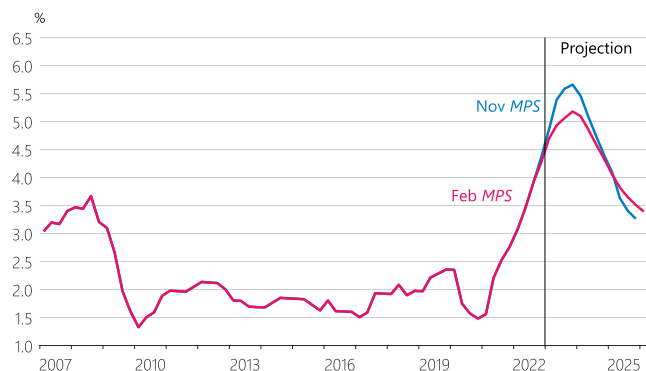
Note: Dotted lines show the projections from the November Statement. The light brown shaded area represents the MPC's 1-3 percent target range for inflation over the medium term.

**Figure 6.4**  
House price growth  
(annual)



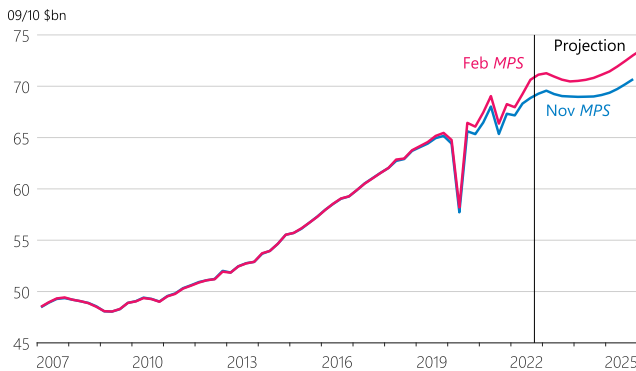
Source: CoreLogic, RBNZ estimates.

**Figure 6.2**  
Private sector LCI wage inflation  
(annual)



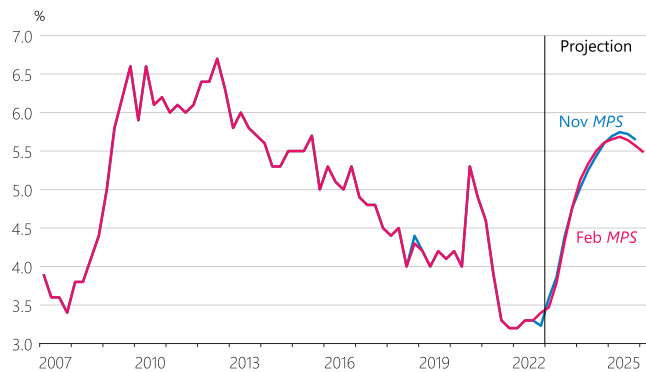
Source: Stats NZ, RBNZ estimates.

**Figure 6.5**  
Production GDP  
(quarterly, seasonally adjusted)



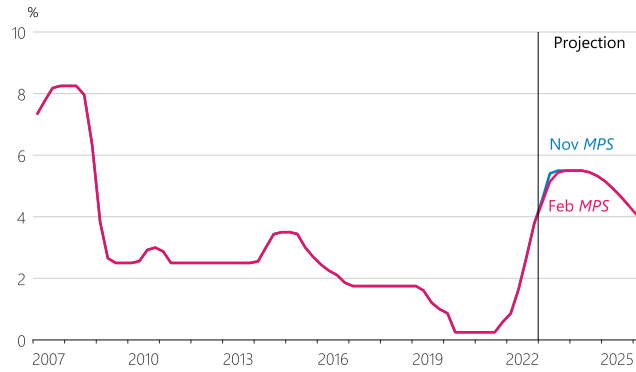
Source: Stats NZ, RBNZ estimates.

**Figure 6.3**  
Unemployment rate  
(unemployed people as share of labour force, seasonally adjusted)



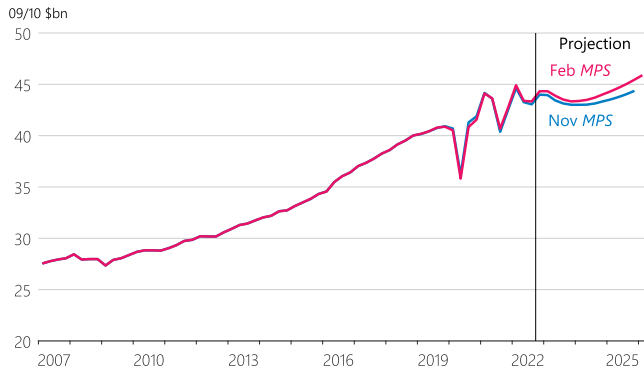
Source: Stats NZ, RBNZ estimates.

**Figure 6.6**  
OCR  
(quarterly average)



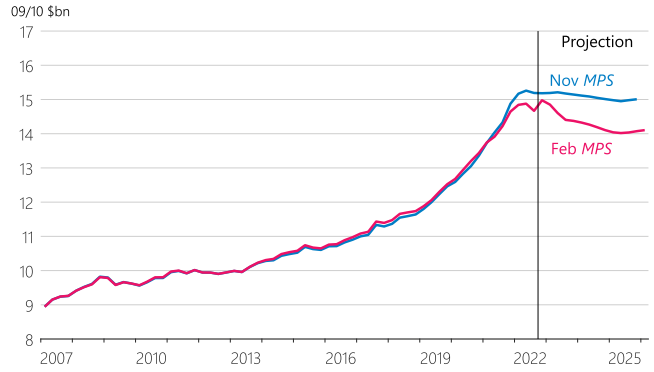
Source: RBNZ estimates.

**Figure 6.7**  
**Private consumption**  
*(quarterly, seasonally adjusted)*



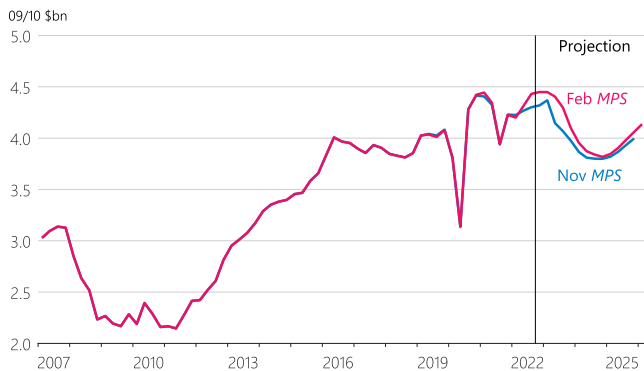
Source: Stats NZ, RBNZ estimates.

**Figure 6.10**  
**Government consumption**  
*(quarterly, seasonally adjusted)*



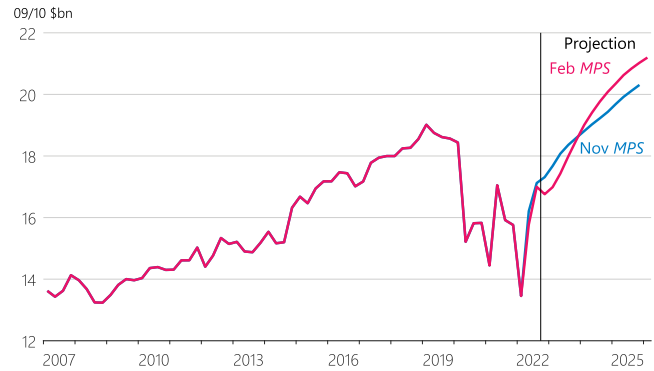
Source: Stats NZ, RBNZ estimates.

**Figure 6.8**  
**Residential investment**  
*(quarterly, seasonally adjusted)*



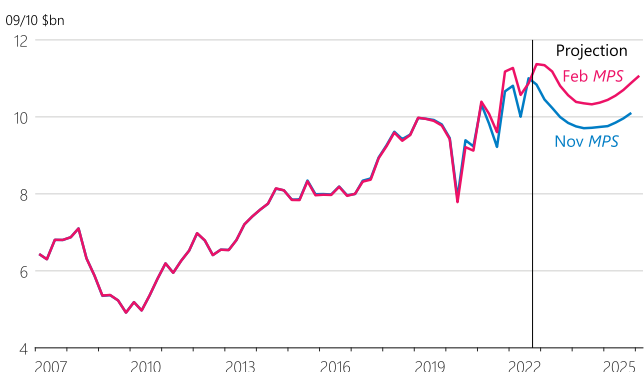
Source: Stats NZ, RBNZ estimates.

**Figure 6.11**  
**Total exports**  
*(quarterly, seasonally adjusted)*



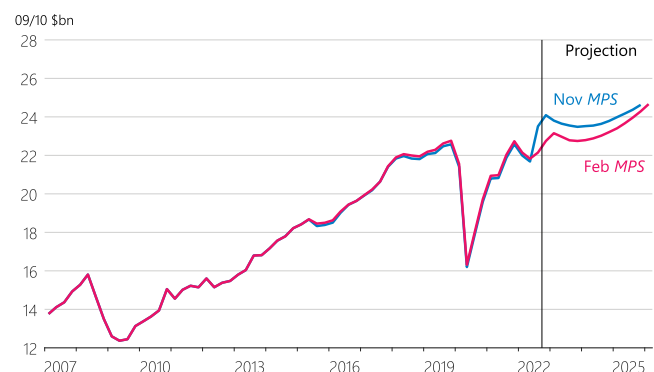
Source: Stats NZ, RBNZ estimates.

**Figure 6.9**  
**Business investment**  
*(quarterly, seasonally adjusted)*



Source: Stats NZ, RBNZ estimates.

**Figure 6.12**  
**Total imports**  
*(quarterly, seasonally adjusted)*



Source: Stats NZ, RBNZ estimates.



Appendices

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CHAPTER  
**07**

# CHAPTER 7

## Appendices

### Appendix 1: Our recent research

**This appendix summarises the Reserve Bank’s monetary-policy-related research that has been published over the past twelve months, together with speeches made by the Reserve Bank’s senior leaders at various forums over this period.**

The Monetary Policy Committee (MPC) is responsible for achieving and maintaining price stability and supporting maximum sustainable employment. Several publications and speeches over the past year review the performance of monetary policy over the turbulent times of recent years, ranging from assessing our forecast errors to our use of alternative monetary policy tools. We have also undertaken research to deepen our understanding of the labour market. The research has been developed to aid our efforts in supporting maximum sustainable employment, and to help analyse distributional issues relevant to monetary policy.

Since March 2021, the MPC’s *Remit* has also directed the MPC to assess the effects of its decisions on the Government’s policy of supporting sustainable house prices. The Bank’s assessment of the impacts of MPC decisions on the wider economy, including the Government’s housing objective, is underpinned by its research programme. Over the past twelve months, Reserve Bank staff have investigated the drivers of house prices. This has included exploring factors that have increased demand and limited the supply of housing, and the role that monetary policy plays in influencing house prices.

The Bank’s research is disseminated through *Analytical Notes*, *Bulletin* articles and *Discussion Papers* as well as publications in external outlets such as academic journals and working paper series of other policy institutions and universities. The Bank also produces a series of accompanying videos where staff present their published research.

### *Analytical Notes*

#### Alternative monetary policy

##### The effects of the Funding for Lending Programme (FLP) on funding costs and mortgage rates

The Reserve Bank deployed the Funding for Lending Programme (FLP) to offer low-cost, 3-year funding to banks in 2020 as part of a package to deliver monetary stimulus to the economy during the pandemic. Using a counterfactual analysis, Gulnara Nolan and Eric Tong examine the programme and find the FLP lowered banks’ funding costs by about 15 basis points from the policy announcement date (12 August 2020) to the end of 2020. While banks passed on these reduced costs to households over this period, the pass-through from funding costs to mortgage rates was slow. As a result, the 6-month, 1-year and 2-year mortgage rates would fall by about 10-20 basis points over a period of up to a year. They highlight these results may underestimate the full impact of the programme, as pass-through likely continues beyond the sample period studied.



## Housing

### How does monetary policy affect the New Zealand housing market through the credit channel?

Meltem Chadwick and Aynaz Nahavandi analyse the effects of a monetary policy shock on real house prices in New Zealand through the credit channel of monetary policy transmission. They find that an unanticipated increase in the policy rate of 1 percent reduces real house prices by up to 1.6 percent and the growth rate of residential loans by 0.6 percent after two and a half years. After an unanticipated increase in the policy rate, total bank loans stay broadly unchanged for 12 months. They consider this as evidence that total bank loans may contain a countercyclical component in New Zealand.

### Housing supply, house prices, and monetary policy

Meltem Chadwick, Karan Dasgupta and Punnoose Jacob present empirical evidence that confirms the effects of monetary policy on house prices in New Zealand are amplified when housing supply is not responsive to strong housing demand. They focus on intra-national differences in the house price responses to monetary policy in order to understand the role of housing supply rigidities. In their *Analytical Note*, they show that 12 months after an unanticipated increase of 40 basis points in the Official Cash Rate, the real median house price in the least supply-responsive areas declines by over six times more than house prices in the most responsive areas.

### Housing as an investment asset in New Zealand

Why has housing been a popular investment asset in New Zealand? Patrick Aguiar Carvalho, Ben Baker and Ashley Farquharson explain housing's popularity from a portfolio investment perspective. They highlight housing's relatively robust financial returns over the past two decades. From a risk-return portfolio perspective, the New Zealand housing share of portfolio investment is no international outlier and is in line with historical investment return data. They add that both the ability to leverage and favourable tax treatment support housing investment attractiveness across a range of portfolios. However, investing in housing is not without risks and past performance is no guarantee of future results.

### New Zealand house prices and the decline in longer-term financing costs

Matthew Brunton and Punnoose Jacob examine the contributions of long-term and short-term financing costs to the growth in New Zealand house prices over the past two decades by employing a user cost model. They find that the decline in expected future financing costs over a longer term has been the single most important driver of house price growth. They also demonstrate that the response of house prices to declines in interest rates is amplified when housing supply is less responsive to prices. The determinants of shorter-term financing costs, such as monetary policy, are more likely to shape the cyclical dynamics of New Zealand house prices than the long-term trend.

### How do we stack up? The New Zealand housing market in the international context

Several developed countries have experienced increasing house prices since the Global Financial Crisis (GFC). But why have New Zealand's house prices increased the most? To answer this question, Hamish Fitchett and Punnoose Jacob investigate a wide range of factors such as population growth, housing supply and interest rates. They conclude that New Zealand has seen the steepest decline in mortgage rates since the GFC and almost the strongest increase in population. Despite the rapid pace of residential construction in New Zealand in the past decade, the number of dwellings per inhabitant remains low and below the average for OECD countries. These factors led the supply of housing to fail to keep pace with demand for housing in New Zealand, leading to high house price growth.

## Differences in labour and capital market outcomes across groups

### Labour market cycles across different groups: What does history tell us? Part I: Theory, ethnicities

Ethnic minorities usually experience poor labour market outcomes across countries. Are Māori and Pasifika more exposed to labour market changes in New Zealand? Shaun Markham, Murat Özbilgin and Finn Robinson analyse labour market cycles in New Zealand and find that Māori and Pasifika are much more exposed to labour market fluctuations than Europeans. One explanation could be that Māori and Pasifika have relatively young populations with less experience and lower levels of education, and hence may be over-represented in low-skilled industries. They also find that labour market contractions in New Zealand last considerably longer than contractions in gross domestic product.

### Labour market cycles across different groups: What does history tell us? Part II: Age and sex

Shaun Markham, Murat Özbilgin and Finn Robinson look at different age groups in the New Zealand labour market. They find that young males and females are much more affected by labour market fluctuations than older age groups. Older people have a higher chance of remaining in employment throughout an economic downturn as they are likely to have more experience and higher levels of education, and to work in industries that are less vulnerable to economic downturns.

### Labour market cycles across different groups: What does history tell us? Part III: Regions

Shaun Markham, Murat Özbilgin and Finn Robinson analyse how New Zealand's regions have been affected by previous labour market cycles. They find that the length of labour market cycles differs across regions. Smaller regions tend to experience more volatility in unemployment cycles than larger regions. For example, Northland's unemployment rate increases by twice as much as Wellington's during labour market contractions. This is perhaps because smaller regions may not have a diverse mix of industries, and the industries that are located there may be more susceptible to shocks.

### Ethnic variations in firm financing

Christopher Ball, Adam Richardson and Guanyu Zheng use annual tax filings from firms to calculate an implied interest rate on debt. They find Māori firms, defined using the ethnicity of the owners, are paying higher implied interest rates on average than non-Māori firms, by about 50 basis points. However, their analysis does not find evidence of systemic ethnic bias in the financial sector contributing to the interest rates paid by firms. The difference in interest rates paid by Māori and non-Māori firms perhaps can be explained by the characteristics of the firms receiving the loans.

## ***Bulletin* articles and *Discussion Papers***

### **Money creation in New Zealand**

Money plays an essential role in the economy. There are several forms of money – some are created by the Reserve Bank directly, and others are created by commercial banks via interactions with their customers. In this *Bulletin*, John Knowles, Laura Austin and Lewis Kerr describe the mechanics of how money is created and by whom. They also explain how the money supply fits in with monetary policy.

### **Evaluating the Reserve Bank’s forecasting performance**

This *Bulletin* article looks at the accuracy of the Reserve Bank’s forecasts, including if they are unbiased and how they compare with forecasts from other frameworks. It finds that the forecast process is structured to ensure that the economic outlook and associated risks are comprehensively considered. Thomas Bohm and Marea Sing’s findings include how our forecast errors during the COVID-19 pandemic were comparable to those of the big four private banks – ANZ, ASB, BNZ and Westpac. None of the forecasters foresaw the strong inflation increases that have occurred since the June 2021 quarter.

### **What matters for job finding and separation in the long-run? Evidence from labour market dynamics in New Zealand.**

This *Discussion Paper* is a joint work with the IMF. The paper analyses job finding rates (the probability of an individual moving from being unemployed to employed) and job separation rates (the probability of an individual moving from being employed to unemployed) in New Zealand. Guanyu Zheng, Gulnara Nolan, Christopher Ball, Siddharth Kothari and Yosuke Kido find that individual characteristics, including age, gender, ethnicity and education have a significant impact on job finding and separation rates. Further, they find that higher separation rates of young workers play a large role in explaining differences in employment outcomes across age groups, while differences in finding rates are more important in explaining differences by education level. Both finding and separation rate differences are important in explaining differences across ethnicities. The results underscore the importance of well-targeted labour market support policies.

## Speeches on monetary policy

Insights from staff research also inform the speeches made by the Reserve Bank's senior leaders at various domestic and international forums. This section lists recent Reserve Bank **speeches** on monetary policy that have been made available on the Bank's website.

### Testing our resilience

27 October 2022

Governor Adrian Orr discusses recent global economic challenges, including COVID-19 and high inflation. In responding to these challenges, central banks worldwide face a trade-off between the long-run benefits of low and stable inflation and near-term spending and employment. These trade-offs are complicated in the context of rising geopolitical tensions and climate change adaptation. However, New Zealand's financial system remains well placed to support the economy, and the Reserve Bank is firmly focused on meeting its policy targets.

### New Zealand's monetary policy implementation framework

7 September 2022

To implement monetary policy, the Reserve Bank manages the supply of settlement cash in order to keep short-term interest rates anchored around the Official Cash Rate (OCR). Assistant Governor Karen Silk explains recent changes to the monetary policy implementation framework that were made during the pandemic. Alternative monetary policy (AMP) tools influenced settlement cash levels, with Large Scale Asset Purchases financed by settlement cash while the Funding for Lending programme lent settlement cash to banks. To ensure the Reserve Bank could still anchor short-term interest rates around the OCR, there was a shift from a 'tier' to a 'floor' system for managing settlement cash. In the future, settlement cash will decline to a lower level as AMP tools wind down and the Reserve Bank's balance sheet reduces, but the 'floor' system will be retained.

### Housing (still) matters – the big picture

30 June 2022

Chief economist Paul Conway discusses how, over the past decade, the demand side of New Zealand's housing market has been boosted by strong population growth, steadily declining neutral interest rates and a favourable tax system. The supply side, however, has been held back by strict land-use regulations and a construction sector prone to boom-bust cycles while carrying very high building costs. Excess demand led to New Zealand's experience with some of the highest house prices relative to income in the world. In this speech, Paul explores these drivers of supply and demand, and concludes with how we can forge a new approach to housing and economic prosperity in Aotearoa New Zealand.

### Why we embraced Te Ao Māori

13 June 2022

Governor Adrian Orr explains how the Reserve Bank embraces its indigenous history and heritage, and applies a Te Ao Māori – or Māori world view – in what it does. The inclusion of a Te Ao Māori view encourages the Reserve Bank to think holistically and long term as it goes about its legislative tasks. The Reserve Bank has refreshed its vision and values via a reconceptualisation through Te Ao Māori, and utilised a Te Ao Māori framework to describe the purpose and interconnectedness of its work. To do this, the Reserve Bank adopted the legend of Tāne Mahuta, with the Bank akin to the being Tāne Mahuta of New Zealand's financial landscape. Finally, Governor Orr explains how the Reserve Bank breathes life into its Te Ao Māori strategy through three key work programmes: policy, engagement and culture.

### Tackling inflation during a pandemic

25 February 2022

Governor Adrian Orr discusses the key monetary policy challenges facing the Reserve Bank of New Zealand – Te Pūtea Matua. The COVID-19 pandemic presented a unique setting for many central banks globally. The Reserve Bank must meet its low and stable inflation mandates in the context of a large and evolving health shock to the global economy, global and domestic inflationary pressures, and volatile asset prices. Governor Orr concludes that the Reserve Bank is committed and confident it will return inflation back towards its medium-term target levels (ie, 1-3 percent with a focus on 2 percent) through the use of its monetary policy tools.

## Appendix 2: Statistical tables

Table 7.1

### Key forecast variables

|      |     | GDP growth<br>Quarterly | CPI inflation<br>Quarterly | CPI inflation<br>Annual | Unemployment<br>rate | TWI         | OCR        |
|------|-----|-------------------------|----------------------------|-------------------------|----------------------|-------------|------------|
| 2021 | Mar | 2.1                     | 0.8                        | 1.5                     | 4.6                  | 74.9        | 0.3        |
|      | Jun | 2.4                     | 1.3                        | 3.3                     | 3.9                  | 74.7        | 0.3        |
|      | Sep | -3.9                    | 2.2                        | 4.9                     | 3.3                  | 74.4        | 0.3        |
|      | Dec | 2.9                     | 1.4                        | 5.9                     | 3.2                  | 74.3        | 0.6        |
| 2022 | Mar | -0.4                    | 1.8                        | 6.9                     | 3.2                  | 72.6        | 0.9        |
|      | Jun | 1.9                     | 1.7                        | 7.3                     | 3.3                  | 72.1        | 1.6        |
|      | Sep | 2.0                     | 2.2                        | 7.2                     | 3.3                  | 70.6        | 2.7        |
|      | Dec | <b>0.7</b>              | 1.4                        | 7.2                     | 3.4                  | 70.8        | 3.8        |
| 2023 | Mar | <b>0.2</b>              | <b>1.8</b>                 | <b>7.3</b>              | <b>3.5</b>           | <b>71.5</b> | <b>4.5</b> |
|      | Jun | <b>-0.5</b>             | <b>1.1</b>                 | <b>6.6</b>              | <b>3.8</b>           | <b>71.5</b> | <b>5.1</b> |
|      | Sep | <b>-0.4</b>             | <b>1.7</b>                 | <b>6.2</b>              | <b>4.3</b>           | <b>71.5</b> | <b>5.4</b> |
|      | Dec | <b>-0.2</b>             | <b>0.6</b>                 | <b>5.3</b>              | <b>4.8</b>           | <b>71.5</b> | <b>5.5</b> |
| 2024 | Mar | <b>0.1</b>              | <b>0.7</b>                 | <b>4.2</b>              | <b>5.1</b>           | <b>71.5</b> | <b>5.5</b> |
|      | Jun | <b>0.1</b>              | <b>0.5</b>                 | <b>3.6</b>              | <b>5.3</b>           | <b>71.5</b> | <b>5.5</b> |
|      | Sep | <b>0.3</b>              | <b>0.8</b>                 | <b>2.7</b>              | <b>5.5</b>           | <b>71.5</b> | <b>5.4</b> |
|      | Dec | <b>0.4</b>              | <b>0.4</b>                 | <b>2.4</b>              | <b>5.6</b>           | <b>71.5</b> | <b>5.3</b> |
| 2025 | Mar | <b>0.5</b>              | <b>0.5</b>                 | <b>2.3</b>              | <b>5.7</b>           | <b>71.5</b> | <b>5.1</b> |
|      | Jun | <b>0.7</b>              | <b>0.4</b>                 | <b>2.1</b>              | <b>5.7</b>           | <b>71.5</b> | <b>4.9</b> |
|      | Sep | <b>0.8</b>              | <b>0.8</b>                 | <b>2.1</b>              | <b>5.6</b>           | <b>71.5</b> | <b>4.6</b> |
|      | Dec | <b>0.8</b>              | <b>0.3</b>                 | <b>2.0</b>              | <b>5.6</b>           | <b>71.5</b> | <b>4.3</b> |
| 2026 | Mar | <b>0.7</b>              | <b>0.5</b>                 | <b>2.0</b>              | <b>5.5</b>           | <b>71.5</b> | <b>4.0</b> |

Table 7.2

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

|   | 2021 |      |      | 2022 |      |       | 2023  |      |
|---|------|------|------|------|------|-------|-------|------|
|   | Jun  | Sep  | Dec  | Mar  | Jun  | Sep   | Dec   | Mar  |
| <b>Inflation (annual rates)</b>   |      |      |      |      |      |       |       |      |
| CPI   | 3.3  | 4.9  | 5.9  | 6.9  | 7.3  | 7.2   | 7.2   |      |
| CPI non-tradables   | 3.3  | 4.5  | 5.3  | 6.0  | 6.3  | 6.6   | 6.6   |      |
| CPI tradables   | 3.4  | 5.7  | 6.9  | 8.5  | 8.7  | 8.1   | 8.2   |      |
| Sectoral factor model estimate of core inflation                          | 3.2  | 3.8  | 4.3  | 4.9  | 5.3  | 5.6   | 5.8   |      |
| CPI trimmed mean (30 percent measure)                                     | 3.0  | 4.0  | 4.3  | 5.2  | 5.8  | 6.4   | 6.1   |      |
| CPI weighted median   | 3.0  | 3.3  | 3.8  | 3.9  | 4.8  | 5.0   | 5.0   |      |
| GDP deflator (expenditure)  | 2.1  | 3.7  | 5.4  | 6.2  | 6.4  | 5.4   |       |      |
| <b>Inflation expectations</b>   |      |      |      |      |      |       |       |      |
| ANZ Business Outlook – inflation 1 year ahead (quarterly average to date) | 2.2  | 2.9  | 4.0  | 5.4  | 6.0  | 6.1   | 6.3   | 6.0  |
| RBNZ Survey of Expectations – inflation 2 years ahead                     | 2.0  | 2.3  | 3.0  | 3.3  | 3.3  | 3.1   | 3.6   | 3.3  |
| RBNZ Survey of Expectations – inflation 5 years ahead                     | 2.1  | 2.0  | 2.2  | 2.3  | 2.4  | 2.3   | 2.4   | 2.4  |
| RBNZ Survey of Expectations – inflation 10 years ahead                    | 2.0  | 2.0  | 2.0  | 2.1  | 2.1  | 2.1   | 2.2   | 2.2  |
| Long-run inflation expectations*  | 2.1  | 2.1  | 2.1  | 2.2  | 2.2  | 2.2   | 2.3   | 2.3  |
| <b>Asset prices (annual percent changes)</b>                              |      |      |      |      |      |       |       |      |
| Quarterly house price index (CoreLogic NZ)                                | 29.8 | 30.7 | 27.1 | 13.7 | 5.4  |       |       |      |
| REINZ Farm Price Index (quarterly average to date)                        | 6.3  | 15.1 | 20.5 | 25.6 | 31.0 | 5.9   | 0.6   |      |
| NZX 50 (quarterly average to date)  | 16.7 | 10.3 | 3.0  | -4.0 | -9.3 | -11.3 | -12.8 | -2.6 |

\* Long-run expectations are extracted from a range of surveys using a Nelson-Siegel model. Source: ANZ, Consensus Economics, RBNZ estimates.

**Table 7.3****Measures of labour market conditions***(seasonally adjusted, changes expressed in annual percent terms, unless specified otherwise)*

|  | 2021  |      |      | 2022 |      |      |      |
|--|-------|------|------|------|------|------|------|
|  | Jun   | Sep  | Dec  | Mar  | Jun  | Sep  | Dec  |
| <b>Household Labour Force Survey</b>                           |       |      |      |      |      |      |      |
| Unemployment rate  | 3.9   | 3.3  | 3.2  | 3.2  | 3.3  | 3.3  | 3.4  |
| Underutilisation rate  | 10.5  | 9.2  | 9.2  | 9.3  | 9.3  | 9.0  | 9.4  |
| Labour force participation rate                                | 70.6  | 71.1 | 71.0 | 70.9 | 70.9 | 71.7 | 71.7 |
| Employment rate (percentage of working-age population)         | 67.8  | 68.8 | 68.7 | 68.6 | 68.6 | 69.3 | 69.3 |
| Employment growth  | 1.5   | 3.9  | 3.3  | 2.5  | 1.4  | 1.2  | 1.3  |
| Average weekly hours worked                                    | 34.0  | 31.3 | 33.4 | 33.4 | 33.7 | 33.7 | 34.1 |
| Number unemployed (thousand people)                            | 114   | 97   | 92   | 94   | 96   | 97   | 99   |
| Number employed (million people)                               | 2.78  | 2.82 | 2.82 | 2.82 | 2.82 | 2.85 | 2.86 |
| Labour force (million people)                                  | 2.89  | 2.92 | 2.91 | 2.91 | 2.91 | 2.95 | 2.95 |
| Extended labour force (million people)                         | 2.98  | 3.00 | 2.99 | 3.00 | 3.00 | 3.03 | 3.04 |
| Working-age population (million people, age 15 years+)         | 4.10  | 4.10 | 4.10 | 4.10 | 4.11 | 4.11 | 4.12 |
| <b>Quarterly Employment Survey – QES</b>                       |       |      |      |      |      |      |      |
| Filled jobs growth   | 2.5   | 4.0  | 4.1  | 4.2  | 1.5  | 1.5  | 1.3  |
| Average hourly earnings growth (private sector, ordinary time) | 4.4   | 3.6  | 4.1  | 5.3  | 7.0  | 8.6  | 8.1  |
| <b>Other data sources</b>                                      |       |      |      |      |      |      |      |
| Labour cost index growth, private sector, adjusted             | 2.2   | 2.5  | 2.8  | 3.1  | 3.4  | 3.9  | 4.3  |
| Labour cost index growth, private sector, unadjusted           | 3.7   | 4.1  | 4.5  | 5.0  | 5.2  | 5.6  | 6.1  |
| Estimated net working-age immigration (thousands, quarterly)   | -4.8  | -3.2 | -6.0 |      |      |      |      |
| Change in All Vacancies Index                                  | 162.9 | 50.0 | 33.4 | 21.4 | 3.2  | 8.7  | -3.4 |

Note: The All Vacancies Index is produced by MBIE as part of the monthly Jobs Online report, which shows changes in job vacancies advertised by businesses on internet job boards. The unadjusted labour cost index (LCI) is an analytical index that 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 working-age immigration 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)*

| March year                               | Actuals    |            |            |            |            |             |             | Projection |             |             |             |
|--|------------|------------|------------|------------|------------|-------------|-------------|------------|-------------|-------------|-------------|
|  | 2016       | 2017       | 2018       | 2019       | 2020       | 2021        | 2022        | 2023       | 2024        | 2025        | 2026        |
| <b>Final consumption expenditure</b>     |            |            |            |            |            |             |             |            |             |             |             |
| Private                                  | 4.2        | 6.5        | 4.8        | 4.5        | 2.4        | -0.2        | 5.9         | <b>2.0</b> | <b>-0.7</b> | <b>0.8</b>  | <b>3.1</b>  |
| Public authority                         | 2.1        | 2.1        | 3.9        | 3.4        | 5.5        | 7.6         | 8.1         | <b>3.0</b> | <b>-2.8</b> | <b>-1.9</b> | <b>-0.6</b> |
| <b>Total</b>                             | <b>3.7</b> | <b>5.4</b> | <b>4.6</b> | <b>4.3</b> | <b>3.1</b> | <b>1.6</b>  | <b>6.5</b>  | <b>2.3</b> | <b>-1.3</b> | <b>0.1</b>  | <b>2.2</b>  |
| <b>Gross fixed capital formation</b>     |            |            |            |            |            |             |             |            |             |             |             |
| Residential                              | 7.1        | 8.8        | -1.8       | -0.1       | 2.7        | 2.2         | 2.6         | <b>5.6</b> | <b>-5.0</b> | <b>-8.2</b> | <b>4.6</b>  |
| Other                                    | 2.2        | 0.0        | 10.1       | 7.2        | 2.8        | -3.1        | 12.9        | <b>5.4</b> | <b>-0.8</b> | <b>-5.2</b> | <b>1.9</b>  |
| <b>Total</b>                             | <b>3.4</b> | <b>2.3</b> | <b>6.8</b> | <b>5.3</b> | <b>2.8</b> | <b>-1.8</b> | <b>10.3</b> | <b>5.5</b> | <b>-1.8</b> | <b>-5.9</b> | <b>2.5</b>  |
| Final domestic expenditure               | 3.6        | 4.7        | 5.1        | 4.5        | 3.0        | 0.8         | 7.4         | <b>3.0</b> | <b>-1.4</b> | <b>-1.3</b> | <b>2.3</b>  |
| Stockbuilding*                           | -0.3       | 0.1        | 0.2        | -0.2       | -0.2       | -0.3        | 0.6         | <b>0.1</b> | <b>-0.3</b> | <b>-0.1</b> | <b>0.0</b>  |
| <b>Gross national expenditure</b>        | <b>3.2</b> | <b>4.8</b> | <b>5.6</b> | <b>4.4</b> | <b>2.7</b> | <b>-0.4</b> | <b>8.6</b>  | <b>3.2</b> | <b>-1.4</b> | <b>-1.4</b> | <b>2.3</b>  |
| Exports of goods and services            | 6.9        | 2.0        | 3.8        | 3.3        | 0.4        | -17.6       | 1.4         | <b>7.0</b> | <b>9.7</b>  | <b>9.2</b>  | <b>5.1</b>  |
| Imports of goods and services            | 3.1        | 5.2        | 7.8        | 4.8        | 1.2        | -15.9       | 17.2        | <b>2.3</b> | <b>1.6</b>  | <b>1.3</b>  | <b>4.4</b>  |
| <b>Expenditure on GDP</b>                | <b>4.3</b> | <b>3.9</b> | <b>4.3</b> | <b>3.9</b> | <b>2.5</b> | <b>0.0</b>  | <b>4.5</b>  | <b>4.4</b> | <b>0.2</b>  | <b>0.4</b>  | <b>2.4</b>  |
| GDP (production)                         | 3.7        | 3.8        | 3.5        | 3.5        | 2.4        | -0.7        | 5.2         | <b>3.9</b> | <b>0.1</b>  | <b>0.5</b>  | <b>2.4</b>  |
| GDP (production, March qtr to March qtr) | 4.0        | 3.3        | 3.6        | 3.4        | 0.9        | 4.1         | 0.8         | <b>4.9</b> | <b>-1.0</b> | <b>1.3</b>  | <b>2.9</b>  |

\*Percentage point contribution to the growth rate of GDP.



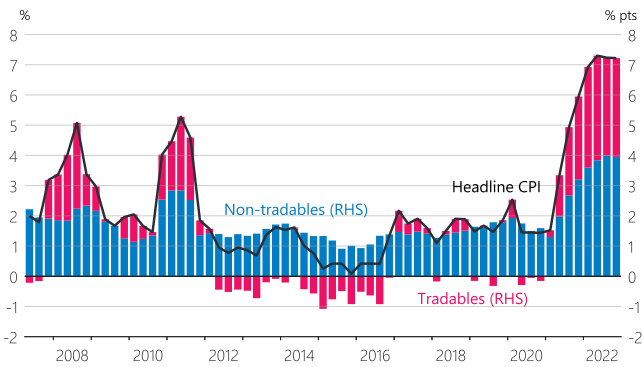
**Table 7.5****Summary of economic projections***(annual percent change, March years, unless specified otherwise)*

| March year   | Actuals |      |      |      |      |      |      | Projection  |             |             |             |
|--|---------|------|------|------|------|------|------|-------------|-------------|-------------|-------------|
|  | 2016    | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023        | 2024        | 2025        | 2026        |
| <b>Price measures</b>  |         |      |      |      |      |      |      |             |             |             |             |
| CPI  | 0.4     | 2.2  | 1.1  | 1.5  | 2.5  | 1.5  | 6.9  | <b>7.3</b>  | <b>4.2</b>  | <b>2.3</b>  | <b>2.0</b>  |
| Labour costs   | 1.8     | 1.5  | 1.9  | 2.0  | 2.4  | 1.6  | 3.1  | <b>4.7</b>  | <b>5.1</b>  | <b>4.1</b>  | <b>3.4</b>  |
| Export prices<br>(in New Zealand dollars)                    | 0.7     | 4.1  | 3.3  | 1.1  | 6.8  | -6.2 | 21.4 | <b>-1.1</b> | <b>-1.2</b> | <b>4.5</b>  | <b>3.0</b>  |
| Import prices<br>(in New Zealand dollars)                    | 0.5     | 1.2  | 1.6  | 4.0  | 2.3  | -2.5 | 19.0 | <b>8.0</b>  | <b>-1.5</b> | <b>-0.5</b> | <b>-0.4</b> |
| <b>Monetary conditions</b>                                   |         |      |      |      |      |      |      |             |             |             |             |
| OCR (year average)   | 2.9     | 2.0  | 1.8  | 1.8  | 1.2  | 0.3  | 0.5  | <b>3.1</b>  | <b>5.4</b>  | <b>5.4</b>  | <b>4.5</b>  |
| TWI (year average)   | 72.6    | 76.5 | 75.6 | 73.4 | 71.7 | 72.4 | 74.0 | <b>71.3</b> | <b>71.5</b> | <b>71.5</b> | <b>71.5</b> |
| <b>Output</b>  |         |      |      |      |      |      |      |             |             |             |             |
| GDP (production, annual<br>average % change)                 | 3.7     | 3.8  | 3.5  | 3.5  | 2.4  | -0.7 | 5.2  | <b>3.9</b>  | <b>0.1</b>  | <b>0.5</b>  | <b>2.4</b>  |
| Potential output (annual<br>average % change)                | 3.2     | 3.3  | 3.3  | 3.3  | 3.0  | -0.6 | 3.1  | <b>3.4</b>  | <b>2.8</b>  | <b>2.4</b>  | <b>2.4</b>  |
| Output gap (% of potential<br>GDP, year average)             | -0.2    | 0.3  | 0.5  | 0.7  | 0.1  | 0.0  | 2.1  | <b>2.7</b>  | <b>0.0</b>  | <b>-1.9</b> | <b>-1.9</b> |
| <b>Labour market</b>   |         |      |      |      |      |      |      |             |             |             |             |
| Total employment<br>(seasonally adjusted)                    | 2.2     | 5.9  | 2.9  | 1.5  | 2.6  | 0.1  | 2.5  | <b>1.5</b>  | <b>-0.3</b> | <b>0.7</b>  | <b>1.4</b>  |
| Unemployment rate<br>(March qtr, seasonally<br>adjusted)     | 5.3     | 4.9  | 4.4  | 4.2  | 4.2  | 4.6  | 3.2  | <b>3.5</b>  | <b>5.1</b>  | <b>5.7</b>  | <b>5.5</b>  |
| Trend labour productivity                                    | 0.7     | 0.6  | 0.6  | 0.7  | 0.9  | 1.0  | 0.9  | <b>0.7</b>  | <b>0.7</b>  | <b>0.8</b>  | <b>0.9</b>  |
| <b>Key balances</b>  |         |      |      |      |      |      |      |             |             |             |             |
| Government operating<br>balance* (% of GDP,<br>year to June) | 0.7     | 1.5  | 1.9  | 2.4  | -7.3 | -1.3 | -2.6 | <b>-0.9</b> | <b>-0.5</b> | <b>-0.2</b> |             |
| Current account balance<br>(% of GDP)                        | -2.4    | -2.6 | -3.1 | -3.8 | -2.3 | -2.5 | -6.6 | <b>-7.7</b> | <b>-8.1</b> | <b>-5.4</b> | <b>-4.1</b> |
| Terms of trade<br>(SNA measure, annual<br>average % change)  | -2.6    | 2.1  | 4.5  | -2.1 | 2.0  | -1.0 | 0.4  | <b>-4.6</b> | <b>-5.7</b> | <b>5.0</b>  | <b>3.8</b>  |
| Household saving rate<br>(% of disposable income)            | -0.8    | -0.4 | -0.5 | 0.3  | 2.6  | 8.9  | 4.7  | <b>4.1</b>  | <b>2.1</b>  | <b>2.1</b>  | <b>1.8</b>  |
| <b>World economy</b>   |         |      |      |      |      |      |      |             |             |             |             |
| Trading-partner GDP<br>(annual average % change)             | 3.4     | 3.5  | 3.9  | 3.5  | 1.7  | -0.6 | 5.9  | <b>2.7</b>  | <b>2.5</b>  | <b>3.2</b>  | <b>3.1</b>  |
| Trading-partner CPI<br>(TWI weighted)                        | 1.2     | 1.9  | 1.8  | 1.4  | 2.4  | 0.8  | 4.0  | <b>5.0</b>  | <b>2.8</b>  | <b>2.1</b>  | <b>2.2</b>  |

\* Government operating balance is a model-based estimate of OBEGAL divided by nominal GDP in the projection. The estimate is partial because it relies on projections for some components from the HYEPU 2022.

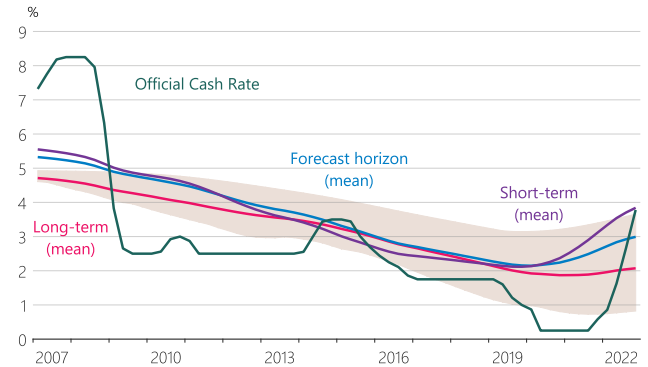
# Appendix 3: Chart pack

**Figure 7.1**  
Composition of CPI inflation  
(annual)



Source: Stats NZ.

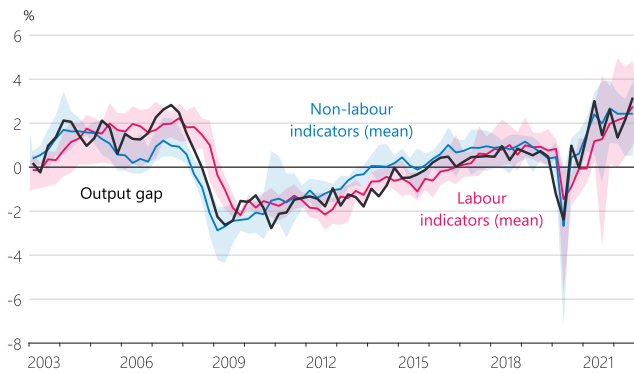
**Figure 7.4**  
OCR and nominal neutral OCR indicator suite  
(quarterly average)



Source: RBNZ estimates.

Note: The shaded area indicates the range between the maximum and minimum values from our suite of long-run nominal neutral OCR indicators. See chapter 4.1 of the November 2022 *Statement* for more information.

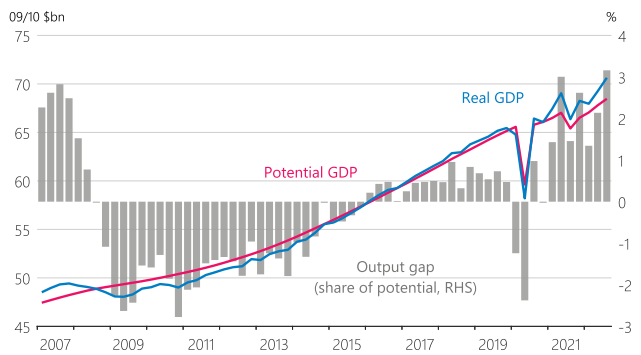
**Figure 7.2**  
Output gap and output gap indicators  
(share of potential)



Source: NZIER, MBIE, Stats NZ, RBNZ estimates.

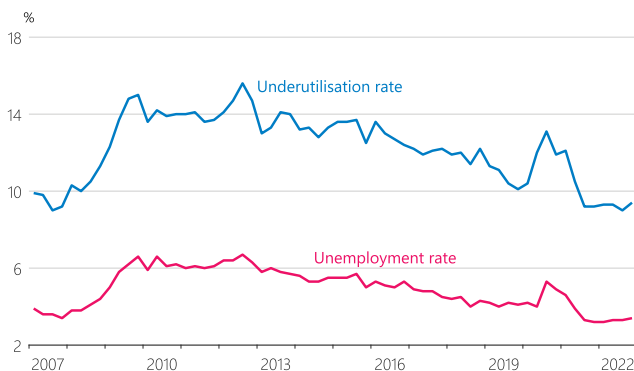
Note: The output gap indicators based on information about the labour market are shown separately from the other indicators. For each group of indicators, the shaded area shows the range of values and the line shows the mean value.

**Figure 7.5**  
GDP and potential GDP  
(seasonally adjusted)



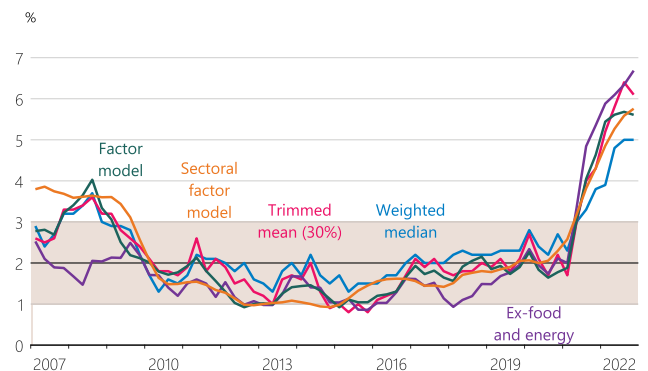
Source: Stats NZ, RBNZ estimates.

**Figure 7.3**  
Unemployment and underutilisation rates  
(seasonally adjusted)



Source: Stats NZ.

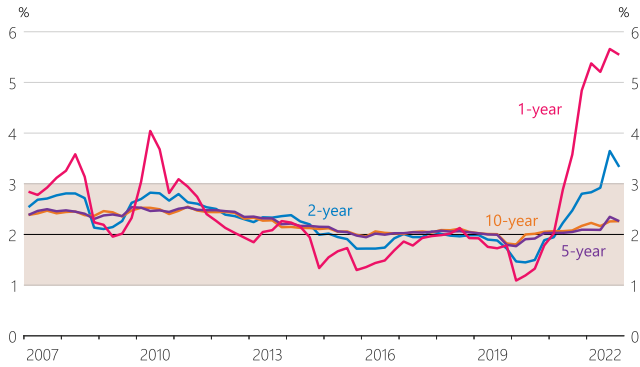
**Figure 7.6**  
Measures of core inflation  
(annual)



Source: Stats NZ, RBNZ estimates.

Note: Core inflation measures exclude the GST increase in 2010. The light brown shaded area represents the MPC's 1-3 percent target range for inflation over the medium term.

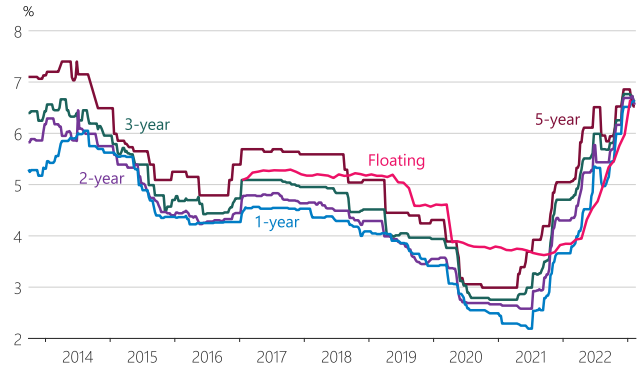
**Figure 7.7**  
Inflation expectations  
(annual)



Source: RBNZ estimates.

Note: Inflation expectations are estimates from the RBNZ inflation expectations curve, based on surveys of businesses and professional forecasters. The light brown shaded area represents the MPC's 1-3 percent target range for inflation over the medium term.

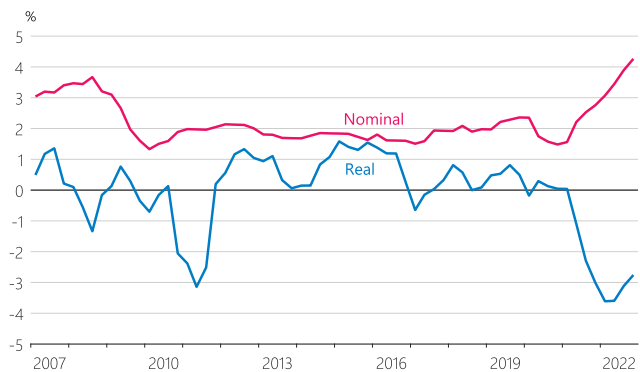
**Figure 7.10**  
Mortgage interest rates



Source: interest.co.nz, RBNZ estimates.

Note: The rates shown for the fixed terms are the average of the advertised rates from ANZ, ASB, BNZ, and Westpac, shown as weekly data. The floating rate represents the monthly yield on floating housing debt from the RBNZ Income Statement survey.

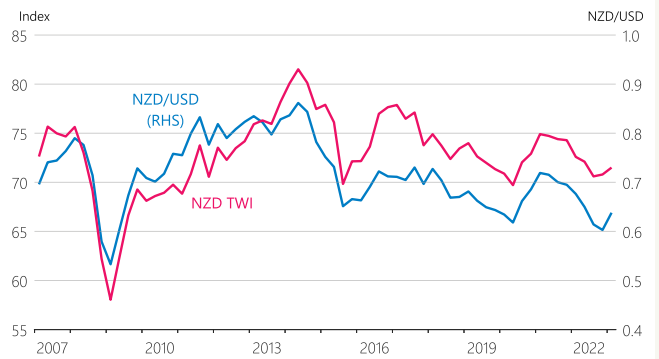
**Figure 7.8**  
Private sector wage growth  
(annual)



Source: Stats NZ, RBNZ estimates.

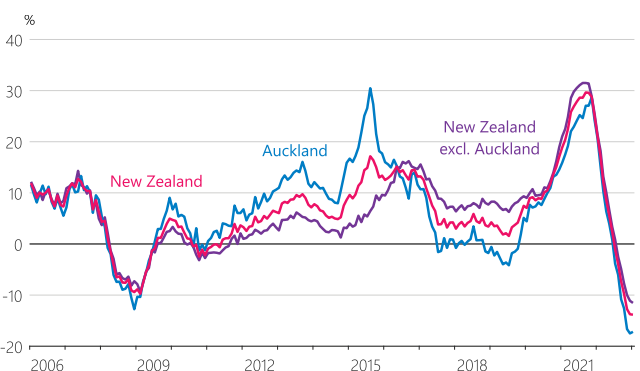
Note: Private sector wage growth is measured by the labour cost index, all salary and wage rates, private sector. Real labour cost index is deflated with headline CPI inflation.

**Figure 7.11**  
New Zealand dollar exchange rates  
(quarterly average)



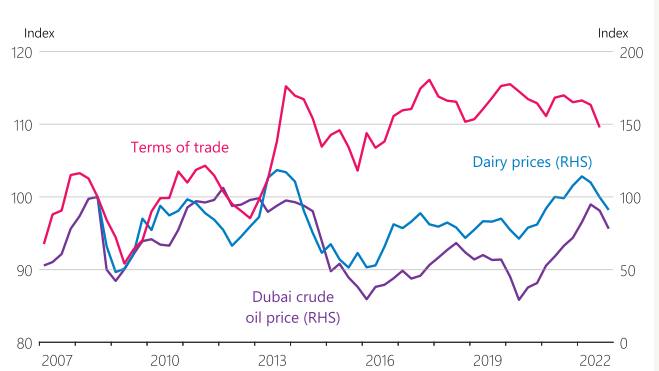
Source: Reuters, RBNZ.

**Figure 7.9**  
House price inflation  
(annual, nominal)



Source: REINZ.

**Figure 7.12**  
Terms of trade, dairy and oil price indices



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