Foreword

On 1 April 2019, amendments to New Zealand’s monetary policy framework came into effect. The amendments to the Reserve Bank of New Zealand (RBNZ) Act 1989 ("the Act") added an employment objective to the RBNZ’s long-standing price stability objective, and created a formal Monetary Policy Committee (MPC) with members internal and external to the RBNZ. The amendments also articulated the Act’s overarching purpose, which is to promote the prosperity and well-being of New Zealanders, and contribute to a sustainable and productive economy.

This Handbook has been prepared by members of the RBNZ’s Economics department to support the transition of New Zealand’s monetary policy framework from one where the Governor has sole legal responsibility to one where a committee is responsible for formulating monetary policy. This transition provides the RBNZ with a welcome opportunity to set forth key assumptions about how the economy operates, the contribution of monetary policy to the New Zealand economy, and how to best design processes to optimise the benefits provided by a legislated MPC.

The Handbook contains seven chapters regarding monetary policy in New Zealand. Chapter 1 provides a description of the framework, paying particularly close attention to the three ‘secondary instruments’ provided for in the Act: The Remit for the Monetary Policy Committee (Remit), the Monetary Policy Committee Charter (Charter), and the Monetary Policy Committee Code of Conduct (Code of Conduct). Chapter 2 suggests some underlying principles for deliberation by an MPC, and Chapter 3 describes a monetary policy process that best upholds these underlying principles. Chapter 4 contains a historical perspective of how the objectives of central banks have evolved to reflect the economic and political circumstances of the time, and discusses the costs of high inflation. Chapters 5 and 6 set out our current understanding of how the New Zealand economy and monetary policy operate respectively, providing descriptions of key data and our core forecasting model. Finally, Chapter 7 discusses how the MPC might wish to consider setting monetary policy strategy, which is much more than simply deciding the level of the Official Cash Rate (OCR).

In setting out core assumptions, the intent is not to provide a view of the world to which we believe all committee members should adhere. Rather, the aim is to be very clear about what assumptions we hold so we can support effective and targeted deliberations, and best utilise the diverse perspectives within the MPC. We have named it a handbook – instead of a briefing or a guide – because we hope the MPC will use and adapt it to document their shared understanding of monetary policy in New Zealand as it evolves.
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Chapter 1: New Zealand’s monetary policy framework and the duties of the MPC

1.1 Introduction

New Zealand’s monetary policy framework is set out in the Reserve Bank of New Zealand (RBNZ) Act (1989), and in three ‘secondary instruments’ that are established within the Act – the Remit, Charter, and Code of Conduct.

The overall purpose of the Act (section 1) is to promote the prosperity and well-being of New Zealanders, and contribute to a sustainable and productive economy. The Monetary Policy Committee (MPC) is responsible for formulating monetary policy towards the economic objectives of:

- Achieving and maintaining stability in the general level of prices over the medium term.
- Supporting maximum sustainable employment.

These two objectives are commonly referred to as a ‘dual mandate’. In formulating monetary policy, the MPC is required to meet the operational objectives contained in the Remit, and act in accordance with the Charter and Code of Conduct.

The three secondary instruments each serve a distinct purpose, and are set in different ways (summary provided in table 1.1).
Table 1.1: The secondary instruments

<table>
<thead>
<tr>
<th>Purpose</th>
<th>How set (initially)</th>
<th>How set (in future)</th>
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<tbody>
<tr>
<td>Remit</td>
<td>Sets operational objectives (inflation target and guidance on supporting maximum sustainable employment)</td>
<td>Agreement between Minister of Finance (“the Minister”) and Governor</td>
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<tr>
<td>Charter</td>
<td>Sets additional transparency and accountability requirements, and guidance on decision-making procedures</td>
<td>Agreement between the Minister and Governor</td>
</tr>
<tr>
<td>Code of Conduct</td>
<td>Sets minimum standards of conduct for MPC members (e.g. managing or avoiding conflict of interest)</td>
<td>Prepared by the RBNZ, approved by the RBNZ Board of Directors.</td>
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Section 1.2 will address each of these secondary instruments in turn. Section 1.3 will provide a brief discussion on the evaluation of monetary policy and the MPC.

1.2 The secondary instruments

1.2.1 The Remit

The Act provides the MPC with its high-level economic objectives: price stability and supporting maximum sustainable employment. The Remit provides the MPC with more detail about how these high-level objectives are to be defined or addressed – referred to as ‘operational objectives’. The Remit also provides the MPC with ‘secondary’ considerations.¹

The Remit: operational objectives

Section 2(a) of the current Remit (included in full in the appendix) states that the MPC’s operational objectives will be to:

(i) 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. This target will be defined in terms of the All Groups Consumers Price Index, as published by Statistics New Zealand; and

(ii) support maximum sustainable employment. The MPC should consider a broad range of labour market indicators to form a view of where employment is relative to its maximum sustainable level, taking into account that the level of maximum sustainable employment is largely determined by non-monetary factors that affect the structure and dynamics of the labour market and is not directly measurable.

¹ The purpose of the Remit is similar to the Policy Targets Agreement under the previous monetary policy framework, although as shown in table 1.1 will no longer be an agreement in future.
While the operational objective for price stability is well defined (in terms of the numerical inflation target and measure), there is some room for interpretation regarding ‘medium term’ and ‘near the 2 percent mid-point’. Historically, the RBNZ has interpreted the medium term as the second half of a three-year forecast horizon. This interpretation reflects that monetary policy affects the real economy and inflation with a lag (monetary policy transmission is discussed in chapter 6). The use of the phrase ‘medium term’ rather than a defined period of time, reflects that this lag can change over time depending on the structure of the economy.

The Bank has recently defined maximum sustainable employment (MSE) as “the highest utilisation of labour resources that can be maintained over time without generating an acceleration in inflation” (November 2018 Monetary Policy Statement). Yet unlike inflation, MSE is unobservable. In addition, it is largely determined by factors other than monetary policy, such as demographics, the match between workers’ skills and firms’ needs, and labour market policy (further discussion is contained in chapters 4 and 5 of this Handbook). Section 2(a)(ii) of the Remit explicitly recognises these factors, and directs the MPC to consider a broad range of indicators of MSE.

**The Remit: secondary considerations**

Section 2(b) of the Remit provides the MPC with a range of secondary considerations, which will now be discussed in turn, when pursuing the operational objectives described above.

(i) Have regard to the efficiency and soundness of the financial system

This requirement is also stated in section 8(2)(a) of the Act, and is an enduring feature of monetary policy in New Zealand. The RBNZ’s regulation of the financial system (e.g. fixed capital and liquidity requirements) is one of our three pillars of prudential supervision, used to promote the efficiency and soundness of the financial system. Market discipline and self-discipline are the remaining two. Prudential regulation includes macro-prudential policies, which target risks that change over time and tend to be focused at the macro level.

Monetary policy and macro-prudential policy have separate objectives but can interact because they are both time varying and work through the macro-economy. For example, monetary policy and certain macro-prudential policies both have an effect on the housing market. It remains an open question, in New Zealand and around the world, just how co-ordinated these types of policies should be. Chapter 7 briefly discusses how monetary policy could have regard to the efficiency and soundness of the financial system.

(ii) Seek to avoid unnecessary instability in output, interest rates, and the exchange rate

Instability refers to the volatility of each factor listed. The extent to which it is ‘unnecessary’ is subject to interpretation – there are no rules or simple mechanical calculations to enable precise differentiation between necessary and unnecessary volatility across all

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3 See, for example, Hunt (2016).
4 See Dunstan (2014).
circumstances. Chapter 7 discusses how the Bank has interpreted this clause in the past, and what implications it has for the setting of monetary policy strategy.

Interest rates refer to both the OCR itself, and the effects of the OCR on market interest rates. The exchange rate is volatile by nature, and in a floating exchange rate regime acts as a ‘shock absorber’, allowing economic adjustments to be buffered through exchange rate appreciations or depreciations.

(iii) Discount events that have only transitory effects on inflation, setting policy with a medium-term orientation

The Bank has understood this to mean that monetary policy should ‘look through’ temporary shocks to inflation. Monetary policy operates with a lag. Consequently, it cannot affect the economy in a timely enough manner to offset short-term ‘shocks’ (such as a weather-induced increase in food prices). Reacting to such shocks would create unnecessary volatility in the economy.

1.2.2 The Charter

The Act sets various requirements for the MPC with regards to transparency, accountability and decision making. The Charter sets additional requirements regarding these elements, and is divided into three parts: decision making, transparency and accountability, and external communication. The Charter is included in full in the appendix.

The Charter aims to facilitate effective decision making by the MPC and ensure transparency of these decisions and the decision-making process. This is to aid the effectiveness of monetary policy and enable the public to hold the MPC accountable – the two goals of monetary policy communication.

Communication goal one: clear and effective policy signal

Monetary policy communication must provide a clear and effective policy signal. Sections 3(a)-3(b) in the Charter set out requirements to achieve this signal.

Clear central bank communication enhances the effectiveness of policy. Effective communication helps financial market participants, economic analysts, the government and the public understand how the central bank will respond to the different forces that affect the economy. This clarity helps improve policy outcomes by keeping inflation expectations anchored and maintaining credibility in the MPC’s ability to meet its dual mandate.

In general, there are three broad audiences for monetary policy communication. The MPC’s communication must be accessible to each group in both its writing style and distribution.

1. Monetary policy announcements aim to influence the behaviour of the financial market. This refers to the traders and allocators of capital in financial markets who

See Blinder (2008) and Bascand (2013) for a discussion of how effective communication can enhance the effectiveness of monetary policy.

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6 See Blinder (2008) and Bascand (2013) for a discussion of how effective communication can enhance the effectiveness of monetary policy.
have direct influence on short- and long-term interest rates, as well as other asset classes in the economy.

2. The MPS is intended to educate and advise economic analysts and others who are providing advice to traders in the financial market on recent developments and expectations for future economic developments.

3. The announcement of the monetary policy decision, press conference and visual summary of the MPS are intended to communicate the MPC’s high level outlook for policy, inflation and employment to businesses, journalists, government and the general public.

**Communication goal two: enable public accountability**

Monetary policy communication should also enable public accountability. The transparency and accountability requirements for the MPC’s publications are expressed in section 2 of the Charter and section 15c of the Act.

Open and transparent communication is crucial for the public legitimacy of monetary policy. Communicating what data were used to inform policy, what perspectives were shared in the deliberations and how decisions were made, enables the public and financial markets to assess the credibility of policy decisions ex ante. It also enables the public and markets to assess the credibility of the institution’s processes ex post (ex ante and ex post assessment are discussed in section 1.3). Communication of how key assumptions are updated as new information arises also enhances accountability.

As monetary policy decisions are made by an MPC, public accountability of the decision can be at a group level, individual level or both. Section 1(b) of the Charter requires the MPC to aim to reach decisions by consensus. Section 1(c) states that if consensus cannot be reached, the MPC will vote (with the Governor, as chairperson, having a casting vote if required); section 2(a) states that a non-attributed record of any vote will be published. This process suggests that for the most part, the MPC will be held collectively accountable by the public for decisions made. Section 53(2)(d) of the Act states that each MPC member will also be held individually accountable by the RBNZ Board (discussed further towards the end of this chapter).

**Consideration and publication of diverse views**

The Charter specifies that the MPC will seek to reach decisions by consensus. Consensus decision making is neither compromise nor unanimity, but rather supports the best interests of the group as a whole. This means that there is freedom to disagree, and that all views are aired and considered during the decision-making process. Chapter 2 of this Handbook sets out how the MPC might be able to achieve an environment that best supports this type of decision making. This style of decision making raises the question of how much of the debate to make public and whether, or how, to allow additional expression of diverse views.

There can be tension between the two goals of MPC public communication and allowing diverse views to be expressed. In particular, greater transparency of different views behind monetary policy trade-offs and strategy could reduce the clarity of the policy signal to the market. In addition, dissenting views might reduce the credibility of the decision to some observers. However, there are also areas of alignment between the two goals of MPC
communication and expressing diverse views. For example, portraying the diverse range of views behind policy strategy could increase the public’s understanding of the final MPC decision, increase the public legitimacy of policy, and improve the market’s assessment of how the balance of views in the committee is developing. Publicly communicating the views behind the policy decision could also prevent groupthink in the MPC to the extent it increases accountability at a group level and at an individual level.

Sections 2(a), 3(a) and 3(c) of the Charter direct how the committee should balance the expression of diverse views with the two primary goals of monetary policy communication. It specifies that:

- The Governor is the “sole spokesperson” for the announcement of the MPC decision.
- The decision announcement will be accompanied by a summary record of the MPC meetings, which will include a description of material differences of view and judgement discussed.
- Remarks by MPC members are to “draw on the MPC’s official communications and on the Governor’s media conference remarks”, and non-public remarks should “avoid providing, or appear providing, new information to a subset of individuals”.

The Charter also permits MPC members to publicly communicate their individual views on the balance of risks and economic outlook regarding the policy strategy. It mitigates the potential for reduced policy clarity by requiring that:

- Members “should do so with respect for other members and the MPC as a whole. Members are to consult with the MPC within a reasonable timeframe in advance of any public communication, refrain from characterising the individual views of other MPC members, and ensure such communication is publicly advised in advance and on the record (on the Bank’s website) in real-time.”

Summary of key regular output required
The Charter requires the MPC to publish each monetary policy decision “promptly” on the Bank’s website (in practice, “promptly” is expected to be on the same day that the decision is made – discussed further in chapter 3). The Charter also reiterates the requirement in the Act that a summary record of each MPC meeting be published. The Charter gives additional requirements that these summary records of meetings are to meet. They are to include:

- An overview of the economic outlook;
- The risks and policy options discussed;
- Any material differences in view or judgement; and
- An unattributed record of any vote taken.

On a quarterly basis, the announced decision is also to be accompanied by a Monetary Policy Statement (referred to in more general terms as “regular reports on monetary policy” in the Act). Section 15C of the Act requires every report to:

- Specify the approach by which the MPC intends to achieve the operational objectives;
- State the MPC’s reasons for adopting that approach; and
- Contain all other information required by the Charter.

The additional requirements for these regular reports are contained in section 2(b) of the Charter. Each report must also:

- Explain how the MPC has sought to meet the requirements of section 2b of the Remit; and
- Explain why inflation outcomes, and/or expected inflation outcomes, are outside of the target range (when applicable); and
- Explain how the current monetary policy decisions contribute to supporting maximum sustainable employment within the economy.

The Bank, not the MPC, is legally responsible under section 15C of the Act for delivering regular reports of monetary policy. However, the Act also states that the Governor must ensure that the report is approved by the MPC before it is delivered (see section 1.3 for procedural responsibilities of the MPC).

1.2.3 The Code of Conduct

The Code of Conduct sets minimum standards of ethical and professional conduct for MPC members, and is included in full in the appendix. The key elements include:

- Preparing for and participating in MPC meetings;
- Acting in the interests of the Bank, and not pursuing individual interests at the expense of the Bank;
- Declaring relevant conflicts of interest, or interests that could be perceived to be in conflict (some examples, such as currency trading, are discussed); and
- Maintaining the confidentiality of information received in the course of being an MPC member, and never using that information or allowing others to use it for personal gain.

1.3 Evaluating monetary policy and the MPC

In formulating monetary policy, the MPC is required to meet the operational objectives contained in the Remit, and act in accordance with the Charter and Code of Conduct. The MPC is held directly accountable for these responsibilities by the RBNZ Board of Directors. Section 53(1)(d) of the Act states that:

[the Board of the Bank shall] keep under constant review the performance of the MPC, and each member of the MPC, in discharging their respective responsibilities.

In addition, section 53A states that the Board must prepare an annual report, and that this report must:
(1A) (a) include a statement as to whether, in the Board’s opinion, the MPC, the Governor, the Deputy Governor, and the other members of the MPC have adequately discharged their respective responsibilities during the financial year; and

(b) describe how the Board has assessed the matter under paragraph (a).

(1B) The statement must address (without limitation) whether, in the Board’s opinion, the MPC has formulated monetary policy consistent with the operational objectives set out in a Remit over the financial year.

The responsibilities of the MPC and its members can be thought of as either procedural or performance-related in nature. The procedural responsibilities contained in the Act are for the MPC and its members to:

- Approve regular monetary policy reports prepared by the Bank (at least four times a year) before the reports are delivered to the Minister.
- Be satisfied that those reports specify the approach by which the MPC intends to achieve the operational objectives and state reasons for adopting that approach.
- Consider whether it is necessary or desirable to issue a replacement Charter when a new Remit is to be issued by the Minister.
- Have regard to any report produced by the Bank on a replacement Charter.
- Act consistently with the Act and comply with the Charter and Code of Conduct.

The performance-related responsibility of the MPC is to formulate monetary policy in accordance with the Remit, i.e. keep future annual inflation between 1 and 3 percent over the medium term and support maximum sustainable employment. Assessing whether the MPC has performed this critical task requires both ex ante and ex post approaches, as discussed in the following sections.

1.3.1 Ex ante assessment of monetary policy

Monetary policy affects the real economy and inflation with a lag. This means that monetary policy must be set today in order to achieve price stability and to support maximum sustainable employment in the future. A fair evaluation of current and recent monetary policy decisions can therefore be based only on the information that was available to the MPC at the time.

In the context of the Remit (section 1.2.1. above), a comprehensive ex ante assessment of monetary policy in New Zealand might ensure that the following criteria have been met:⁷

- The forecast for inflation settles within the target band and near the 2 percent midpoint over the medium term (accounting for one-off factors that the MPC is instructed to look through), and the outlook for the labour market is consistent with maximum sustainable employment;
- The forecasts, especially for inflation and the labour market, are credible and reasonable;

⁷ Ford, Kendall and Richardson (2015) discuss the evaluation of monetary policy in more detail, although the evaluation is made in the context of previous Policy Targets Agreements.
• The monetary policy decision and projected policy path are consistent with delivering these forecasts; and
• The monetary policy decision and projected policy path avoid unnecessary instability in output, interest rates and the exchange rates, relative to other policy paths that would also ensure the operational objectives are met.

1.3.2 Ex post assessment of monetary policy
As noted above, given that monetary policy affects the real economy and inflation with a lag, it must rely on forecasts of future developments to determine how policy should be set today. It cannot be expected that the MPC will be able to predict the future perfectly. However, performance criteria for ex post assessment could include:

• Did the MPC respond reasonably to new information? If the Bank is responding to new information effectively, then there should be no systemic biases in its forecasts and the accuracy of those forecasts should compare well to other forecasters.
• Were developments communicated effectively?
• Was the credibility of the monetary policy framework maintained? Are the medium- to long-term forecasts for inflation and measures of inflation expectations credibly near the target midpoint?
Chapter 2: Principles for good deliberation in the Monetary Policy Committee

2.1 Introduction

Principles are rules or beliefs that govern behaviour. These can be influential at a group level or at an individual level. Warsh (2016) comments: “institutional dynamics influence policy decisions more than is commonly appreciated”.

Personal preferences, cognitive shortcuts and unconscious biases can dictate the way we assess situations, instead of facts and logical analysis. In a group of people, dynamics such as freeriding and groupthink (conformity to group norms or decisions) can drive decisions, instead of rigorous debate, questioning and analysis.\(^8\) To overcome these decision-making hurdles, committees often define and agree to an explicit set of decision-making principles.

Principles can also provide useful guidance to deliberations on decisions that are not straightforward, such as monetary policy. Broadly, monetary policy decisions are strategic decisions and much more than a single decision about the level of the Official Cash Rate.

The nature of deliberations regarding strategic decisions can be broad, not least because there are many different schools of thought regarding what strategy is and how to set it.\(^9\) We find Rumelt’s (2011) summary of strategy to be particularly applicable to monetary policy. Rumelt defines strategy as a cohesive response to an important challenge and describes setting good strategy as 1) the careful diagnosis of the important challenge, which requires educated judgement about the meaning of observed facts, 2) a guiding policy for dealing with the challenge, and 3) a set of coherent actions to carry out the guiding policy.

How monetary policy strategy is formed in New Zealand will depend on the collective agreement of the MPC. Using Rumelt’s description, monetary policy strategy in New Zealand could be defined as a cohesive set of actions to achieve price stability and support MSE. The principles in this chapter add clarity to MPC deliberations by facilitating an environment that supports careful diagnosis, evidence sharing and open deliberation so the committee can make unbiased strategic decisions. A summary of the principles is provide in Table 2.1.

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\(^9\) For example, Mintzberg, Ahlstrand and Lampel (1998) survey business and academic literature and find five broad groups of strategies: a plan, a pattern, a position, a perspective, or a ploy. Plan: a path to get to an outcome (intended strategy); Pattern: how people actually got to an outcome (realised strategy); Position: locating particular products in particular markets (actions strategy); Perspective: changing the company’s brand or image (identity strategy); Ploy: a manoeuvre to outwit a competitor (reactive strategy). They also find that strategy can be set in many different ways, for example as an analytical process, as a reactive process or an emergent process.
**Table 2.1: Principles of MPC deliberations for monetary policy**

<table>
<thead>
<tr>
<th>Principles of MPC deliberation</th>
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<tr>
<td><strong>Clear objectives</strong></td>
<td>• The MPC understands and is committed to the objectives of</td>
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<td></td>
<td>monetary policy.</td>
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<td></td>
<td>• MPC meetings have clear objectives and formal protocols to</td>
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<td>ensure efficient use of time, expertise and collective</td>
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<td></td>
<td>commitment.</td>
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<td><strong>Diversity</strong></td>
<td>• Decision makers are diverse in personal characteristics,</td>
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<td></td>
<td>skills, and thought.</td>
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<tr>
<td><strong>Information</strong></td>
<td>• Meetings occur in three stages: Information pooling,</td>
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<td></td>
<td>deliberation, and decision making.</td>
</tr>
<tr>
<td></td>
<td>• Experts present data and advice in information pooling</td>
</tr>
<tr>
<td></td>
<td>meetings.</td>
</tr>
<tr>
<td></td>
<td>• Decisions are based on all information and evidence.</td>
</tr>
<tr>
<td><strong>Inclusion</strong></td>
<td>• Decision meetings are chaired by the Governor to ensure all</td>
</tr>
<tr>
<td></td>
<td>views are aired and dissent is normalised.</td>
</tr>
<tr>
<td></td>
<td>• Members come prepared to engage in open and</td>
</tr>
<tr>
<td></td>
<td>constructive deliberations.</td>
</tr>
<tr>
<td></td>
<td>• Decisions are made by consensus and reflect the balance</td>
</tr>
<tr>
<td></td>
<td>of views held.</td>
</tr>
</tbody>
</table>

Historically, the RBNZ has used certain principles to guide strategy discussions in internal committees. Section 2.2 in this chapter updates our principles for monetary policy deliberations to reflect a greater diversity of views and requirement for consensus and transparency in decision making. These principles do not specify how monetary policy strategy should be set, and should be updated by the committee as needed. They are also consistent with the Act, *Remit* and *Charter* and inform the formal meeting processes set out in chapter 3.

### 2.2 Principles of genuine MPC deliberation

The three core components of rigorous monetary policy decisions are effective deliberation, high quality inputs and optimal committee design. These principles focus on how we can support effective deliberation in the MPC.

#### 2.2.1 Principle 1: Clear objectives

In any committee meeting, there is an optimal time to spend deliberating and making decisions before participants lose focus and energy. Clear objectives harness the collective focus of the group and direct it to the committee’s overall purpose and each meeting’s objectives.

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10 Warsh (2016). These principles might also contribute to high quality inputs to monetary policy.
(a) Clear objectives for the MPC
The MPC’s objectives are set by the Act, Remit, and Charter. It is crucial that the MPC understand and is committed to these objectives to ensure the collective focus of the committee. Clark and Urwin (2008b) studied board decision making and found that a lack of focus can be a barrier to collective decision making. Clark and Urwin (2008a) recommend that it is best practice to have a clear sense of mission and strong beliefs.

(b) Clear objectives for each MPC meeting
Each formal MPC meeting must have clear objectives to use the Committee’s time and expertise effectively. Clarity can be facilitated by setting clear agendas and ensuring meetings run to time. Previously, the MPC advisers and governors followed a high-level agenda for the monetary policy meetings. This high-level agenda is now broken down into more detailed agendas for each of the Committee’s meetings. A clear agenda encourages important discussions within the meetings and makes it easier to include such discussions in meeting records.

2.2.2 Principle 2: Diversity
Diversity is beneficial for robust deliberations in a committee and can reduce the likelihood of biased decisions. The MPC can benefit from diversity of thought by including members with a range of skills, personal characteristics and experiences. Hong and Page (2004) find that diverse individuals solve complex problems using different cognitive processes and so can outperform single decision makers. Blinder and Morgan (2007) find that committees can have genuine gains from group interactions, giving a higher decision quality than the group average.

The reasons why diverse committees might make better decisions is because they have access to a greater pool of knowledge, insurance against extreme views, and are less likely to suffer from groupthink. These three characteristics contribute towards unbiased decisions.

First, knowledge pooling can lead to better analysis and decisions in an uncertain environment. For example, the previous MPC advisory group had consisted of members with economics or finance backgrounds, as well as two external advisers. The external advisers came from various professional backgrounds and brought different expertise to the table, which provided a larger pool of knowledge to the discussions.

Second, diverse thinking provides a defence against extreme views. For example, a single decision maker may take a strong view against a particular risk to the economic forecasts, while a group of decision makers might more robustly consider risks to the forecasts. Levin (2014) comments that external MPC members are particularly well placed to contribute to risk analysis due to their outside perspectives.

Third, the presence of diverse views reduces the likelihood of groupthink. Groupthink occurs when group members adhere to the general trend of thought within a group without engaging in a robust debate. The Institute of Directors in New Zealand says diverse boards

ask a wider variety of questions, which reduces the risk of groupthink. The principle of diversity does not require members to remove their individual perspectives to make unbiased decisions. Rather, it advocates for each individual to contribute his or her interpretation of data, events, risks and trade-offs so that collective decisions are unbiased.

There are several pitfalls of diversity when making policy decisions. Multilateral organisations are bastions of diversity yet, even when the objectives are clear, deliberations can end in stalemate. This suggests decreasing benefits of diversity once groups reach a certain size. However, the Act provides for a vote if consensus cannot be reached.

Diverse committees with a range of views may, however, be less suited to tactical or operational decision making, or crisis situations. A small team of experts may be more suited to make these decisions as they can respond quickly and effectively. MPCs are well placed to make group decisions due to the medium-term and strategic nature of their decisions.

2.2.3 Principle 3: Inclusion

The principle of inclusive processes ensures that the committee gets the most out of key economic data and information, RBNZ staff advice, and the diversity of views within the MPC.

(a) All information is included in the deliberations

The RBNZ has long-held practices to ensure that all information relating to policy decisions is absorbed and understood before decisions are made. In particular, the Governor's decisions on monetary policy were set following several days of formal meetings that moved from informational presentations through to policy deliberations. The decision on monetary policy was typically made on the final day of deliberations. Therefore, it is appropriate that policy deliberation meetings continue to be distinct from decision-making meetings to ensure that all data and information pertaining to the decision have been understood and debated. It follows that MPC meetings should be set in three broad stages:

1. Information pooling
2. Deliberation
3. Decision making.

Governance literature also recommends that formal processes are used to combat groupthink and decision-heuristics. In particular, structuring MPC meetings to separate deliberations from decision making helps avoid biased decisions. For example, when an individual states his or her policy preference early in group discussions or during information pooling sessions, information cascades and anchoring can occur:

- An information cascade refers to when members begin revealing their policy preferences in turn. The group is then at risk of making a decision without considering all relevant information.

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13 Institute of Directors (2016).
14 This process is detailed in Richardson (2016).
15 Clark and Urwin (2008b).
Anchoring bias refers to individuals becoming anchored to their stated preference. If this occurs when only some information has been presented, then subsequent information and arguments must be relatively more convincing than early information to effectively challenge anchored preferences. This means data and forecasts presented earlier in the information pooling sessions could receive arbitrarily more weight than data and forecasts presented later on.

As well as ensuring information is presented before decisions are made, monetary policy deliberations should be designed to ensure all relevant expertise and advice is included in discussions. Wagner (2002) comments that expertise, or specialist knowledge in one discipline, is not easily transferable to other disciplines. Broader governance literature recognises that not all members on governance boards are experts in all operations.\textsuperscript{17} Therefore, although it is likely that MPC members are experts in their field, this does not necessarily equate to expertise in monetary policy. In addition, external members of the MPC do not have dedicated research staff to inform their policy decisions.

Historically, the RBNZ managed differences in expertise in the internal MPC advisory group by requiring staff to present their forecasts and be available to take questions and provide further explanations. Additionally, the Head of Economics chaired the policy review meetings. These practices helped ensure that policy deliberations were evidence-based and focused. The principle of inclusion suggests that it would be appropriate to retain the role of the Head of Economics (as the lead facilitator) and forecasting staff (as presenters) in the information pooling stage of the MPC’s meetings. External members of the MPC also have access to RBNZ staff and research between formal meetings.

Some inflation-targeting central banks place a greater value on the independence of staff forecasts from the MPC to prevent staff from being unduly influenced by the preferences of the committee. For example, some central banks do not allow staff to appear before the committee. This premium on independence is afforded as most MPC members at these central banks are experts in monetary policy or have access to dedicated research staff. For example, governors in the European Central Bank’s (ECB) governing committee and in the Federal Reserve System’s Federal Open Market Committee (FOMC) each have a regional bank providing background policy analysis and support.\textsuperscript{18} Further, the Bank of England (BoE) and Sveriges Riksbank provide dedicated staff for the external members of their MPCs. Conversely, the external MPC members at the Reserve Bank are likely to have fewer resources, as the Reserve Bank, and the Economics Department in particular, is significantly smaller than those elsewhere. Reflecting these resource constraints, the Reserve Bank places a greater value on the presence of monetary policy analysts in discussions.

Finally, allowing Reserve Bank staff to interact with MPC members boosts the quality of MPC inputs. As mentioned, high quality inputs is one of the three contributing factors to good MPC decision making. By directly presenting material and answering MPC members’ questions, analysts can better understand how members use information, and interpret the

\textsuperscript{17} See Clark and Urwin (2008b), Treasury, H. M. S. (2008), and Myners (2002). The Myners (2002) review of 250 pension fund trustees in the UK found that many trustees were not investment experts.

\textsuperscript{18} The ECB’s governing committee and the FOMC are the monetary policy decision making committees for the ECB and the Federal Reserve System in the United States respectively.
model outputs. This interaction empowers RBNZ analysts to provide information to the MPC in the most direct and effective manner.

(b) All views are included in the deliberations

Consensus decision making implies that the views of all decision makers, including dissenting views, have been aired and understood in the decision-making process. A consensus decision is “a voluntary agreement following the deliberation and synthesis of different propositions”.\(^{19}\) Consensus building is different from groupthink as members work through differing or opposing positions to come to an agreement.

The presence of diverse members and a consensus decision-making framework do not alone guarantee unbiased and rigorous decision making. Effective conduct during meetings is crucial. Committee members should be allowed to air their views freely and be open to considering other viewpoints. One challenge to effective conduct could be unacknowledged differences in decision-making styles among diverse members, which could side-track discussions and result in unproductive meetings.\(^{20}\) Therefore, it is good practice to appoint a chairperson to ensure effective conduct during MPC meetings.

The Institute of Directors advises that a chairperson has a pivotal influence on the culture of decision-making boards by stimulating debate, fostering a respectful and inclusive culture, limiting overly verbose members, drawing out contributions from reticent members, and guiding discussions so that all views are aired and dissent is normalised. The chairperson also has a role to see that decisions are reached.\(^{21}\) In the MPC, the chairperson should encourage open debate and genuinely collective decision making and guide the committee to a consensus decision. The Act states that the Governor will be the chairperson of the MPC. The chairperson role is particularly important during the deliberation and decision-making meetings.

The principle of inclusion implies that an MPC chairperson should not be overly dominant. A dominant chairperson can overpower the views of members of the committee and reduce the degree of deliberation behind decisions, which can lead to groupthink and conformity in an MPC.\(^{22}\)

The risk of an overly dominant chairperson is higher for a consensus-based MPC and lowest for an individualistic MPC. Blinder’s (2006) typology of monetary policy committees (table 2.2) suggests it is possible that a consensus decision-making MPC (such as the RBNZ MPC) could arrive at decisions in a ‘genuinely collegial’ manner or an ‘autocratically collegial’ manner, depending on the behaviour of the chairperson. As an example, Blinder (2006) asserts that historically the personality of the FOMC chairperson dictated how much influence he or she had over the decision of the committee. When Alan Greenspan chaired the FOMC he was never on the losing side of a vote. Based on transcripts of the FOMC’s meetings, Blinder notes that the committee members behaved as if they had one choice: agree with Greenspan or go on the record as opposing Greenspan (Blinder observes that

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\(^{19}\) Consensus definitions provided by the International Finance Corporation (2015).

\(^{20}\) Clark and Urwin (2008b).

\(^{21}\) Institute of Directors in New Zealand (2015).

\(^{22}\) Maier (2010)
Paul Volcker chaired the FOMC in a similar manner. However, when Ben Bernanke was the chair of the FOMC, transcripts show the committee engaged in genuine debate and decisions reflected a group majority.

**Table 2.2: An excerpt from Blinder’s MPC typology: collegial monetary policy committees**

<table>
<thead>
<tr>
<th>Genuinely collegial</th>
<th>Autocratically collegial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members argue behind closed doors before compromising on a group decision and each member then takes ownership of that decision.</td>
<td>The chair dictates the group consensus decision.</td>
</tr>
<tr>
<td>ECB</td>
<td>FOMC (Greenspan and Volcker eras)</td>
</tr>
</tbody>
</table>

Instating a chairperson is not the only way to encourage open deliberation. Another group decision-making convention to reduce the influence of dominant personalities on an MPC is to take turns putting forward the initial policy proposal for the decision. Maier (2010) suggests this convention can reduce the influence of a dominant chairperson, decision-making patterns or groupthink.

Furthermore, to ensure all views are included in the deliberation, committee members should come to MPC meetings prepared to engage in rigorous and open deliberations, and to be both persuasive and open to being persuaded. Warsh (2016) encourages MPC members to engage in inquiry, not advocacy, open and balanced information sharing, critical thinking and assumption testing to get the most out of the information pooling and deliberation phases.

One example of an open deliberation under the previous monetary policy framework was the ‘Hawks and Doves’ exercise the MPC advisers sometimes used. When the economic outlook could be at a turning point, one MPC adviser would play the role of the ‘Hawk’, presenting all analysis that would support contractionary monetary policy; and then another would play the role of the ‘Dove’, presenting all analysis that would support expansionary monetary policy. This exercise aimed to challenge the status quo and encourage wider deliberations. Another example of open deliberation in the previous monetary policy process is that alternative scenarios were presented to the MPC advisers to test the sensitivities around the central forecast and assess monetary policy trade-offs.

Normalising dissent also encourages the group to be open to alternative evidence and views, rather than discounting them.  

Blinder’s (2006) analysis suggests that the level of dissent accepted within the committee could be a key indicator of whether a collegial committee makes decisions collectively or by following the preferences of the chairperson. Lastly, normalising dissent during deliberations enables individuals to take ownership of the shared decision, therefore balancing the consensus decision with individual accountability. This reduces the likelihood of members freeriding in the MPC.

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23 Maier (2010).
Chapter 3: Monetary policy decision-making process

3.1 Introduction

Good decisions come from good processes. This chapter lays out processes that will support the MPC in being well informed and making good policy decisions. This is one model that upholds the principles of deliberation laid out in the previous chapter (chapter 2). Other models could also work. Processes that uphold the principles of chapter 2 contribute to a culture and environment of genuine policy deliberation, leading to decision making that is unbiased and evidence-based. Such processes provide a platform for consensus, as per the Charter.

3.2 The policy cycle

The monetary policy process is a continuous cycle of analysis, policy advice, and decision making. Within this broad cycle, details such as the timing, length, and purpose of meetings have been designed to uphold the principles described in chapter 2. The broad shape of each cycle is set out in figure 3.1.

*Figure 3.1: The 12-week policy cycle*

Each 12-week cycle includes two monetary policy decision points: an interim review of monetary policy settings at week six, and a full Monetary Policy Statement (MPS) and policy decision at week 12.25

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25 Policy decision dates are published around 18 months in advance to enable financial market participants to write contracts for the appropriate dates. There is no interim review between the November and February Statements due to the difficulty of scheduling meetings between Christmas and New Year.
The MPC approaches each decision armed with expert information and policy advice. Most of the information is provided shortly before each decision, ensuring that the committee has up-to-date information.

**Expert analysis and the role of MPAG**

The internal group named ‘MPAG’ (Monetary Policy Advisory Group) is the main source of the expert analysis provided to MPC. MPAG has an information-sharing and advisory role that supports and complements MPC’s policy role. MPAG meets between formal policy rounds to:

- Provide guidance on the monetary policy research agenda;
- Form a ‘Reserve Bank view’ on analytical monetary policy matters for external publication;
- Test new ideas before they’re used in monetary policy applications; and
- Advise which monetary policy matters should be escalated to MPC, and which governance matters to the Board.

There is no expectation that external members of the MPC will attend MPAG. However, they may attend if they wish, provided the chair is informed in advance. MPC members may also read MPAG papers during the quarter (via secure electronic access). To be sure policy-relevant insights are passed on, an executive summary of recent internal analysis will be included in MPC’s briefing ahead of each decision.

### 3.3 A policy process to uphold the principles

The principles established in chapter 2 suggest key elements of a robust monetary policy process. These features are set out in table 3.1.

**Table 3.1: Principles of good MPC deliberations and related process elements**

<table>
<thead>
<tr>
<th>Principle</th>
<th>Process implications</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Clear objectives</td>
<td>Each meeting has a defined purpose and agenda.</td>
</tr>
<tr>
<td>2 Diversity</td>
<td>Inclusive of different intellectual and personal styles.</td>
</tr>
<tr>
<td>3 Inclusion of information</td>
<td>Information and deliberation meetings expert-led (chaired by a senior expert with information presented by analysts).</td>
</tr>
<tr>
<td></td>
<td>Initial focus on understanding and discussing information; decision meetings clearly separated from information and deliberation meetings.</td>
</tr>
<tr>
<td>4 Inclusion of people</td>
<td>Decision meetings chaired by Governor.</td>
</tr>
<tr>
<td></td>
<td>Deliberation meetings allocated enough time for discussion.</td>
</tr>
<tr>
<td></td>
<td>Clear avenues provided for expressing minority views.</td>
</tr>
</tbody>
</table>
Applying the principles of MPC deliberation to the formal process results in the MPC meeting timetable set out in table 3.2. The full monetary policy review process (weeks 11-12) includes:

- Information-pooling meetings spread over two working days, allowing members time to consider the new information;
- Deliberation meetings spread over two days, allowing time for open discussion;
- Decision meetings taking place after the deliberation meetings, clearly separating them from the information-pooling phase; and
- A decision about the policy instrument taking place on the morning of MPS release day, reducing the risk of sensitive information being inadvertently leaked.

The process for interim policy reviews (week six) is a two-day condensed version of the full process (table 3.3).

**Table 3.2: Full MPS and policy decision timetable**

<table>
<thead>
<tr>
<th>M</th>
<th>Tu</th>
<th>W</th>
<th>Th</th>
<th>F</th>
<th>M/Tu</th>
<th>W</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff present recent developments, issues, and risks.</td>
<td>Staff present outlook and strategy.</td>
<td>MPC discusses risks and external messages.</td>
<td>MPC discusses strategy and tactics.</td>
<td>MPC decides on strategy and tactics.</td>
<td>MPC finalises risks and external messages.</td>
<td>MPC decides level and direction of policy instrument.</td>
</tr>
<tr>
<td>Information pooling (Staff as presenters)</td>
<td>MPC deliberations (Staff as advisers)</td>
<td>MPC decisions (Staff not present)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 3.3: Interim policy review decision timetable**

<table>
<thead>
<tr>
<th>Tuesday (morning)</th>
<th>Tuesday (afternoon)</th>
<th>Wednesday (morning)</th>
<th>Wednesday (afternoon)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff present recent developments and outlook; MPC members share their own view.</td>
<td>MPC discusses risks, strategy, and tactics.</td>
<td>MPC decides on strategy and tactics, finalises risks and external messages.</td>
<td>MPS release</td>
</tr>
<tr>
<td>Information pooling (Staff as presenters)</td>
<td>MPC deliberations (Staff as advisers)</td>
<td>MPC decisions (Staff not present)</td>
<td></td>
</tr>
</tbody>
</table>

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26 This internal decision timetable may be changed as needed to accommodate the availability of MPC members, public holidays, and other relevant factors. MPS release dates and times are fixed (except in extreme circumstances) and published on the RBNZ website at least a year in advance.
This process and timetable uphold the decision-making and communication requirements of the MPC that are specified in the Charter. In particular, the Charter requires the MPC to produce a summary record of meetings after each policy review, and for this to be accompanied by a Monetary Policy Statement (MPS) quarterly. The production of these two documents has been incorporated into the timetable.

The MPS contains the MPC’s views on the economic outlook and risk environment. As background to the policy decision, the MPS is drafted after the information-pooling phase and finalised two days before the policy announcement. The first chapter of the MPS, which is the same as the media release, contains the policy decision and MPC’s view on the key current risks that need to be emphasised. This chapter is inserted on the day of the announcement.

The summary record of meeting is a record of the decision meetings. It captures the diversity of views that were presented during the discussion. Along with the media release, this summary is finalised on the day of the policy decision.

3.4 Conclusion

The principle of ‘clear objectives’ is upheld by having a defined purpose for each meeting to keep discussion focused.

The principle of ‘diversity’ is upheld by designing the policy process to be inclusive of different intellectual and personal styles. In practice, this means allowing time and space for committee members to absorb information and raise queries in ways that suit them. Spreading the information-pooling phase and the deliberation phase across two days allows for reflections between meetings, and provides time for MPC members to engage informally with analytical staff if needed.

The principle of ‘inclusion of information’ is upheld by having experts lead discussion at the information-pooling and deliberation phases. These meetings are led by a senior policy expert in a signal that the focus is on facts and understanding. Staff present their own work so that the committee has direct access to experts when forming their views. To ensure decision making is evidence-based and unbiased, the decision phase is clearly separated from the information-pooling and deliberation phases.

The principle of ‘inclusion of people’ is upheld by scheduling ample time for discussion. Having enough time at the deliberation phase encourages open information sharing, and plenty of time at the decision phase creates space for constructive dissent. To ensure that dissent is heard and respected, the summary record of meeting provides an avenue for differing views to be expressed publicly. The Governor chairs decision meetings (in accordance with the Act) to ensure that the decision is collegial and reflects diverse views.
Chapter 4: Monetary policy objectives – price stability and macro-stabilisation

4.1 Introduction

As of 2018, the Reserve Bank of New Zealand has a dual mandate for monetary policy focused on targeting price stability and supporting maximum sustainable employment. In this article, we discuss the Bank’s policy objectives in a broader historical context, illustrating how the aims and objectives of monetary policy have varied over time in response to pressing societal issues.

The emphasis of this note is on the objectives of monetary policy. Monetary objectives are one component of a wider set of legislated, economic objectives determined by government. Notwithstanding central bank independence, there has often been significant interplay between monetary objectives and the macro objectives set for fiscal policy. Monetary policy objectives have also fluctuated between two orientations. First, providing a stable unit of account and predictable monetary framework to facilitate private transactions. Second, proactively using monetary policy to shape the allocation of real resources to improve welfare. Inflation targeting represents a middle ground between these two orientations.

Sections 4.2 and 4.3 discuss the history of central bank objectives leading up to the development of dual mandates. The key message from these sections is that monetary policy objectives have evolved over time, reflecting different societal needs, evolving empirical experience and theoretical insights. Section 4.4 outlines why price stability and macroeconomic stabilisation are common objectives for monetary authorities, and discusses the interplay between monetary objectives and theoretical insights over time. Section 4.5 concludes.

4.2 Monetary policy objectives prior to World War II

4.2.1 The role of early central banks

From their inception, the monetary objectives of central banks have been intertwined with the provision of currency – notes and coins – and with the stability of the financial institutions that provide related forms of money (e.g. deposits). Other objectives – such as the need to finance government during wartime – have also been prominent at various times. Monetary policy objectives have evolved as major macroeconomic problems have arisen. Many central banks either did not exist or were private institutions until the 20th century, and 19th century central banks did not have public policy objectives as we now understand them.

The Sveriges Riksbank (Riksbank) and the Bank of England were the first central banks, established in 1668 and 1694, respectively. These early central banks had multiple objectives. In Sweden’s case, the Riksbank introduced paper money and was particularly concerned with ensuring that it retained a stable value. The Riksbank also made it easier for the Swedish Crown to borrow funds to finance wars when needed.
Similarly, the Bank of England was established to enable the British government to borrow from the private sector to finance one of many wars against France. The loans were secured against excise taxes. For many centuries, taxation systems were underdeveloped and governments often debased their coinage or expanded the supply of paper currency to fund public expenditure. Convertibility into gold was one mechanism to maintain the value of currency, but was periodically suspended during wartime.27

Conflict with France was an important influence on British monetary policy in the latter stages of the 18th century and early 19th century. Convertibility of British notes into gold was suspended in 1797 – in the middle of the French Revolutionary Wars – in part prompted by a run on the Bank of England’s gold reserves. This lack of convertibility continued throughout the Napoleonic wars.

The United Kingdom adopted the Gold Standard sometime between 1821 and 1844 to anchor expectations and reassure the public that the paper money on issue would not be debased. In setting interest rates, the Bank of England also played a role in managing the public debt. Flows of bullion were also used to intermediate international transactions – the balance of payments. These flows were considered part of a mechanism that would stabilise domestic economic activity and prices.

When the Gold Standard was introduced, central banks began to transition towards a stable and predictable approach to monetary policy. Rather than serving as a source of temporary financing to pursue foreign or civil wars, monetary policy was used to ensure that money remained a desirable medium for transacting.

Unlike countries that debased currencies to finance wars, Australia and New Zealand experienced an insufficient supply of money during Victorian times. In the absence of well-established commercial and public banks, it was difficult to transact.28 Coins issued from various jurisdictions were used as an ad hoc means of payment.

During the Gold Standard era, financial stability was a crucial element to ensure that convertibility into gold was maintained and that the financial system could facilitate private transactions. For example, in the United States, following the banking panic of 1907, the Federal Reserve System was established in 1913 to serve as a backstop to private financial banks, to provide liquidity, and to have monitoring powers to ascertain the financial position and creditworthiness of such institutions.

4.2.2 The interwar years
The years between World War I and II prompted a shift towards more activist government policy in determining monetary and credit conditions. In this respect, views against private finance hardened in favour of greater emphasis on the role of the state.29

During the Great Depression in the 1930s, high rates of unemployment made it abundantly clear that resources were not being fully utilised. Poverty was widespread, with many in the labour force unable to find work to support themselves. Public assistance and social welfare

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27 As in the case of the Napoleonic wars for example.
28 The first trading bank in New Zealand was established in Petone in 1840. Banking received an additional fillip when gold was found in central Otago in 1861.
29 In Australia, for instance, a report by the Royal Commission on Monetary and Banking Systems in 1936 proposed that the power to “expand or contract credit … should be in the hands of a national credit authority” and not banks “whose principal motive for existence [was] the making of profits”.
systems were developed in the 1930s because private social assistance and social security networks could not cope with the scale of unemployment and hardship. Views about the role of the state in resource allocation also evolved in conjunction with the rise of socialism.

Macroeconomics began to develop as an independent field of study following the Great Depression. Empirical macroeconomics was bolstered by the production of aggregate macroeconomic data in the 1930s and 1940s, and by efforts to harmonise national accounts undertaken on behalf of the United Nations and, later, the European Economic Community. In principle, this new data could inform and guide macroeconomic policies.

John Maynard Keynes played a prominent role in the development of macroeconomics, and its post-war evolution. In his book *The General Theory of Employment, Interest, and Money* (1936), Keynes sought to explain why market-based systems could lead to an under-utilisation of resources, and to identify public policies – fiscal and monetary – that could be used to stabilise the macro-economy. Keynes was of the view that “[t]he outstanding faults of the economic society in which we live are its failure to provide for full employment and its arbitrary and inequitable distribution of wealth and incomes.”30

In the framework of Keynes's *General Theory*, fiscal policy assumed primary importance as a mechanism to stimulate and stabilise aggregate demand, with monetary policy playing a lesser role.

4.3 Post-war development of macroeconomic research and policy

4.3.1 Inflation and unemployment

The activist approach for macroeconomic policy was incorporated into central bank mandates in several countries, including Australia and New Zealand. However, policy activism was controversial. Subsequent theoretical criticism from Monetarist and New Classical economists highlighted the possibility that the benefits of activist policy might be over-sold, and might simply lead to higher inflation.

The IS-LM model of Hicks (1937) became pre-eminent as a representation of the insights of Keynes's *General Theory*, through until the 1970s.31 This model was used to explain how monetary and fiscal policy could be deployed to achieve full employment given different kinds of shocks to the economy. However, the IS-LM model did not explain the origins of inflation. The model was static – discussing outcomes at single points in time – and not explicit about the dynamic evolution of the economy through time. This static framework was problematic because inflation is inherently a dynamic phenomenon as it measures the change in prices across time.

In the 1950s and 1960s, inflation in most countries was modest, so the IS-LM model’s structure and the absence of an inflation mechanism, was not particularly problematic. Yet periodic episodes with heightened inflation prompted a debate about the origins of inflation.

Influentially, Phillips (1958) observed an empirical relationship between unemployment and nominal wage rate inflation. Samuelson and Solow (1960) later proposed a "modified Phillips curve for the U.S." (figure 4.1). Their article suggested that policy-makers faced a

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30 See Keynes (1936).
macroeconomic ‘menu’ and that they could choose high-inflation and high-employment or low-inflation and low-employment. Tobin (1967) referred to this trade-off as a “cruel dilemma”, since it suggested that good outcomes for inflation and employment could not be achieved simultaneously.

**Figure 4.1: A stylised Phillips curve**

This menu view was subject to theoretical and empirical challenge in the late 1960s and 1970s. Phelps (1968) and Friedman (1968) argued that the empirical correlation found by Phillips was unstable.

Friedman (1968) argued that monetary policy “cannot peg the rate of unemployment for more than very limited periods”. In contrast, he argued, the long-run Phillips curve was in fact vertical. That is, unemployment in the long run gravitates to its ‘natural’ rate, and this natural rate could be compatible with any level of inflation. Although the natural rate of employment is largely determined by structural factors – demographics, the role of women in the labour force, etc. – the level of long-run inflation simply depends on the conduct of monetary policy.

Friedman was concerned that monetary policy could become a source of shocks, rather than a dampener of fluctuations. To offset this tendency, he argued for predictable and consistent policy rules that specified how policy instruments should be set given circumstances in the economy and in particular, for a consistent increase in the growth of money. Although the particular money growth rule suggested by Friedman never gained much popularity, the importance of predictable rules is now a centrepiece of monetary theory and policy.

Friedman and Phelps’s theoretical arguments were also bolstered by the empirical experience of the 1970s. Rather than inflation and unemployment being inversely related to each other, as in the Phillips curve, inflation and unemployment increased in tandem (figures 4.2 and 4.3).

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32 Reproduced from Samuleson and Solow (1960)
33 The nature of work and labour participation has changed over the past decades and it is not clear that a simple employed-unemployed dichotomy remains an adequate characterisation of the labour market.
Together, theory and empirics disputed conventional ‘Keynesian’ views about the effects of monetary policy and how such policy should be evaluated. Up until the 1970s, economists thought that simple econometric exercises could explain how changes in policy would affect the economy, but academic research in the 1970s highlighted that the effects of policy depended on people’s expectations of policy. This critical insight added further complexity to macro modelling and hence policy evaluations.

\section*{Figure 4.2: US unemployment and inflation}\textsuperscript{34}

![Figure 4.2: US unemployment and inflation]

\section*{Figure 4.3: Scatterplot of 1970s inflation and unemployment}\textsuperscript{35}

![Figure 4.3: Scatterplot of 1970s inflation and unemployment]

In the 1970s, economic models that described the macro economy using assumptions about the ‘micro behaviour’ of individual agents were developed. Early versions of these models suggested that activist policy would not be effective if individuals form expectations rationally, that is, consistently with the underlying structure of the economy.

Controversially, Sargent and Wallace (1975, 1976) argued that the impacts of short-run monetary policy in a then-conventional macro model were markedly different if expectations

\textsuperscript{34} Source: RBNZ

\textsuperscript{35} Source: RBNZ. The scatterplot of US unemployment in the 1970s shows positive co-movement between inflation and unemployment, in contrast to the inverse relationship found by Phillips (1958) with earlier data.
were rational. They showed that monetary policy might not even have transitory real effects unless the central bank was surprising firms and consumers. Research by Fischer (1977) and Taylor (1979) showed that predictable monetary policy could have short-run real effects even if policy actions were rationally anticipated. Indeed, modern monetary policy expressly focuses on influencing such expectations.

The relative importance of monetary policy for macroeconomic stabilisation has also been affected by changing perceptions of the efficacy of fiscal policy, primarily because of implementation lags. In a famous example, President John F. Kennedy proposed a tax cut in 1960 when the US economy was in recession, but the tax cut was passed into law only shortly after his death in 1964. By this point, the US economy was growing more than 5 percent per annum.

4.3.2 Dual mandates – price stability and employment

Post-war macroeconomic policy objectives were firmly focused on macro-stabilisation, with a greater emphasis on full-employment. Mandates for a number of central banks around the world were renewed reflecting this emphasis. Macroeconomic policies aimed to ensure that service personnel were absorbed back into the peacetime economy more effectively than had occurred following the Great War. The origins of World War II were linked to both reparations following World War I and the Great Depression, and forestalling such conflict was another major motivator for employment policies and reconstruction.

Employment objectives were an important feature of discussions regarding the architecture of the international financial system. In 1944, Allied and independent countries – including Australia, New Zealand, the United Kingdom, and the United States – established the Bretton Woods system of fixed exchange rates together with the World Bank and the International Monetary Fund. The opening address by Henry Morgenthau, the Secretary of the US Treasury and president of the conference, makes clear that the objective of the conference was to bring about an “expansion of production, employment, and trade”. [Emphasis added]

A dual mandate of price stability and low unemployment was evident in the objectives assigned to the Reserve Bank of Australia (RBA) by the Reserve Bank Act 1959. The RBA was to direct monetary and banking policy “to the greatest advantage of the people of Australia”, and the board of the Bank was to exercise the Bank’s powers to “best contribute to –

(a) the stability of the currency of Australia;
(b) the maintenance of full employment in Australia; and
(c) the economic prosperity and welfare of the people of Australia.”

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36 Graham and Smith (2012) discuss the evolution of the Reserve Bank of New Zealand’s objectives since 1934.
37 Public commitments to fixed exchange rates constrained the use of monetary policy to stabilise domestic macroeconomic conditions. Consequently, capital controls were instituted in many countries – including New Zealand – to extend the array of policy instruments that could be deployed to foster macroeconomic stability.
38 See United Nations (1944, p 8).
39 In 1959, the Reserve Bank of Australia was legislated to carry out central banking functions previously assigned to the Commonwealth Bank, which had operated as a body corporate.
These objectives were repeated verbatim from the Commonwealth Bank Act 1946, which was specified within a decade of Keynes’s *General Theory* and at the immediate conclusion of World War II.\textsuperscript{40}

In the United States, the dual mandate of the Federal Reserve System was formally instituted in 1977. The *Federal Reserve Reform Act of 1977*, states the following:

“The Board of Governors of the Federal Reserve System and the Federal Open Market Committee shall maintain long run growth of the monetary and credit aggregates commensurate with the economy’s long run potential to increase production to promote effectively the goals of maximum employment, stable prices, and moderate long term interest rates”.

The objectives in this 1977 Act are similar to those of the US Employment Act 1946, which was also concerned with the desirability of using public policy to support employment and other macroeconomic objectives, including price stability (Steelman, 2011).

Central banking objectives evolved further in the 1980s. The high inflation of the 1970s, and the theoretical explanations for high inflation developed in the early 1980s, set the stage for New Zealand’s current monetary policy regime – inflation targeting.\textsuperscript{41} The experience of the 1970s generated strong distaste for high inflation rates, which were regarded as a pressing macroeconomic issue that needed to be resolved with public policy. This evolution in objectives was another example where monetary policy was directed towards a ‘pressing policy issue of the day’.\textsuperscript{42}

Practical experience, in the United States and elsewhere, showed that conventional monetary policy could restore and maintain low rates of inflation. Former Chairman of the Federal Reserve, Paul Volcker, was instrumental in lowering US inflation in the early 1980s, and thereafter it was clear that direct controls on wages and prices or tax policies to influence price adjustments – so-called ‘incomes policies’ – were not necessary to achieve price stability.\textsuperscript{43} New Zealand nevertheless experimented with such policies in 1982-84, instituting a wage and price freeze. However, inflation reverted to high levels once restrictions were removed.

In the 1980s, an important objective for monetary economics was to explain why inflation had become so high in the 1970s. One strand of the monetary policy literature argued that the government was innately predisposed to have an inflationary bias; it would ‘cheat’ on ex ante commitments to maintain stable monetary policy to boost economic activity in the short term. Rational private agents would anticipate such cheating, and the upshot would be higher inflation with little tangible, real gain. Several solutions were proposed for this problem, chief among them an independent central bank tasked with price stability. Walsh (1995) provided a solution that involved assigning a contract to the governor of the central bank with payoffs that depended on the realised rate of inflation. To some extent, Walsh’s research provided an ex post justification for New Zealand’s inflation targeting framework with a single decision-maker.

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\textsuperscript{40} Schedvin (1992) discusses the history of the Reserve Bank of Australia in depth.

\textsuperscript{41} Wadsworth (2017) provides an international comparison of inflation-targeting frameworks.

\textsuperscript{42} Wood and Reddell (2014).

\textsuperscript{43} Buckle (2018) also points to the ‘practical experience’ of the Bundesbank in using monetary policy to achieve ‘low inflation in post-war Germany’.
4.3.3 **Inflation targeting**

One conclusion from studies of optimal policy is that the objectives assigned to a central bank need not perfectly coincide with the preferences of the ‘representative agent’ of society. Rogoff (1985), for example, suggests appointing an inflation-averse (so-called ‘conservative’) central banker to offset a political bias in favour of expansionary policy which tends to result in inflation. Rogoff (1985) and Walsh (1995) both show that skewing the incentives or objectives of the central bank relative to the general populace’s preferences may enhance welfare.

Central banking objectives evolved further during the 1990s. Following the introduction of inflation targeting in New Zealand in 1990, most developed countries also adopted explicit inflation-targeting regimes.44

Once inflation stability was broadly achieved and expectations of continued low inflation became embedded in the public psyche, the emphasis gradually shifted towards ‘flexible inflation targeting’, with greater emphasis on secondary objectives, such as stabilisation of the real economy, exchange rate and interest rate stability, and financial stability.

In New Zealand, this shift towards flexible inflation targeting started in the mid-1990s, as the band for the inflation target was relaxed from 0-2 percent to 0-3 percent in 1996, and then shifted again to 1-3 percent in 2002. In 2012, the inflation target was retained at 1-3 percent but with a focus on a 2 percent target midpoint.45

The Policy Target Agreements (PTA) of the late 1990s and early 2000s also placed greater emphasis on secondary considerations. In the 1999 PTA, for instance, the Bank was expected to “seek to avoid unnecessary instability in output, interest rates and the exchange rate”. And the 2012 PTA instructed the Bank to have “regard to the efficiency and soundness of the financial system” and to “monitor prices, including asset prices”.46

The PTA of 2017 introduced maximum sustainable employment as a higher-order objective by the Minister of Finance. Later, an amendment to the Reserve Bank Act in 2018 gave maximum sustainable employment equal status as a primary objective with price stability, thereby formally giving monetary policy in New Zealand a dual mandate.47,48

4.4 **Policy trade-offs**

4.4.1 **The costs of inflation**

The economic and social costs of inflation have been subject to considerable academic debate. Barro and Gordon (1983) noted that “[a]lthough people generally regard inflation as very costly, economists have not presented very convincing arguments to explain these costs”. Through time, efforts have been made to resolve this inconsistency.

Prices are a central allocation mechanism in market economies. Distorting prices may thus have adverse effects for resource allocation and growth. Khan and Senhadji (2001) and

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44 See Irwin (2014).
45 See Buckle (2018) for an overview of the origins and evolution of New Zealand’s inflation targeting regime.
46 McDermott and Williams (2018).
47 See Woodford (2003) for a discussion of the analytical basis for an inflation-targeting regime.
48 See Debortoli et al (2017) for a perspective on why a dual-mandate serves as an approximation for a social welfare function.
Kremer, Bick, and Nautz (2013), among others, have examined threshold models to see if inflation rates above certain levels adversely affect long-term economic growth. For developed countries, they suggest that inflation rates above 2-3 percent adversely affect growth, lending support to the inflation targets of many central banks.\(^{49, 50}\)

In a market economy, inflation is distortionary if it affects the relative prices that determine the allocation of goods and services and labour. The consequences of inflation include:

- **Relative price distortions**, which degrade welfare by:
  - Distorting consumption and production of different varieties of goods, when the prices of some goods adjust more frequently than others;
  - Distorting labour effort, because of interactions with the nominal tax system; and
  - Distorting capital allocations, e.g. people may invest in housing because the return on owner-occupied housing is not taxed.

- **Arbitrary redistributions**
  - Inflation reduces the purchasing power of people with fixed nominal incomes.
  - Variable/unanticipated inflation can arbitrarily raise or lower the real cost of borrowing, redistributing wealth between borrowers and lenders.

- **Cognitive costs**
  - Figuring out resource allocations may take more time and effort when inflation is higher.

- **Menu costs**
  - Businesses may incur costs from adjusting ‘menus’ more frequently. (Likely to be small, but Akerlof, Dickens, and Perry (1996) argue that small costs discouraging wage adjustment can magnify into macroeconomic significance.)

- **Shoe leather costs**
  - Inflation may create costs associated with managing money balances, though these are also likely to be small.

### 4.4.2 The benefits of macroeconomic stabilisation

The costs of macro volatility, and the benefits that arise from using monetary policy to stabilise the economy, are complex to evaluate. The welfare costs depend on the extent of volatility, people’s aversion to such volatility, their ability to access financial markets and/or accumulate savings to cope with volatility, and their preferences for smoothing consumption and work effort through time and circumstance. For example, volatile employment patterns may not matter to a person if he or she is exceptionally well-paid when working, enabling saving for periods when the person is out of work. Lucas (1987) examined these issues in a representative agent model and concluded that the benefits of moderating business cycle fluctuations were small. Nevertheless, it seems clear that Lucas’s conclusion does not accord with general public sentiment, and other researchers have examined reasons why the costs may be higher than Lucas estimates.\(^{51}\)

The relative importance of macro stability and price stability is subject to debate. Svensson (2014) suggests that stabilising employment and inflation around their ‘natural’ or target

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\(^{49}\) For a survey of the literature, see Brook, Karagedikli, and Scrimgeour (2002).

\(^{50}\) For developing countries, thresholds are identified at much higher inflation rates.

\(^{51}\) See, for example, Atkeson and Phelan (1994) and Barlevy (2005), among others.
rates should receive roughly equal prominence. The Federal Open Market Committee of the Federal Reserve noted in 2012 that it followed a ‘balanced approach’ in promoting these dual inflation and employment objectives.\footnote{\textit{See FOMC (2018)}.}

### 4.5 Concluding remarks

Historically, monetary policy objectives have been directed to the most pressing macroeconomic issues of the day, be that the provision of currency for transacting, war-financing, financial stability, exchange rate stability, unemployment/real-economy stabilisation, or more recently, stabilising inflation.

The origins of dual mandates are closely allied to high rates of unemployment, such as those first experienced during the Great Depression and then again in the 1970s. We have also noted that there are likely to be limitations in monetary policy’s ability to stabilise the unemployment rate. While monetary authorities can change interest rates, these are only one of many influences on the decisions of firms and consumers. There is no guarantee that firms and consumers will choose to respond to these price signals exactly as policy makers might intend, since other considerations may influence and can dominate private decision making. This is especially so if there is uncertainty about the current economic environment and future prospects.

We also discussed the costs of inflation and the economic rationale for stabilisation policy. The welfare benefits of stabilising business cycles is somewhat controversial, though policymakers’ and politicians’ revealed beliefs suggest that the benefits are higher than some academic research suggests. Nonetheless, in recent decades, monetary targets have converged on annual inflation rates around 2 percent.
Chapter 5: The New Zealand economy

5.1 Introduction

To conduct monetary policy effectively, the RBNZ needs a sound understanding of the macroeconomic environment we operate in, and the data we have to help us understand it. This chapter introduces the key features of the New Zealand economy from a monetary policy perspective, and characterises the data we use to inform our economic assessment and forecasts. It also discusses some of the techniques RBNZ staff use to understand the economy, particularly parts of the economy that we cannot directly observe or cannot observe in real time.\(^{53}\)

The chapter also introduces our forecasting framework and core macroeconomic model, NZSIM.\(^{54}\) These are important tools that both reflect and help shape our understanding of the economy.

5.2 Our place in the world

New Zealand is a small, open economy, and our links to the global economy through trade, people, capital flows, and international financial markets continue to strengthen. As a result, global economic, political, and financial market developments can have a considerable impact on domestic economic conditions. International developments that are particularly relevant for the domestic economy include:

- Changes in commodity prices, particularly the prices for oil and dairy products;
- Structural and cyclical changes in global labour markets;
- Changes in global risk sentiment and global uncertainty;
- Expansions and downturns in major trading partners; and
- Monetary policy settings in major trading partners and large foreign economies.

Although the RBNZ can do little to influence international conditions, it is important that we take them into consideration as international conditions often have implications for domestic inflation and employment, and therefore monetary policy.\(^{55}\)

5.3 New Zealand GDP

Gross domestic product (GDP) is a measure of economic activity, equal to the total output produced within an economy over a given period of time. It is an essential piece of information for understanding and predicting inflation and employment. As of 2018, New Zealand’s total nominal GDP is approaching NZD 300 billion per year.

\(^{53}\) Throughout the chapter, links and references to published RBNZ research are provided for those who wish to explore the topics covered in more depth.

\(^{54}\) Austin and Reid (2017) provide a high-level description of NZSIM and its key features, while Kamber, McDonald, Sander, and Theodoridis (2015) offer a more technical description.

\(^{55}\) (Callaghan, Cassino, Vehbi, Wong, and van Florenstein Mulder, forthcoming)
Stats NZ produces two quarterly GDP measures: *production GDP*, based on industry-by-industry value-add estimates (production value minus input costs), and *expenditure GDP*, based on the total spending in the economy. These two measures should be equal in theory, but practical measurement issues tend to produce slightly different numbers. While we favour the production measure for its accuracy and stability at an aggregate level, the expenditure measure breakdown is more useful for macroeconomic modelling. Figure 5.1 shows the breakdown of GDP into its expenditure components.

*Figure 5.1: Components of New Zealand expenditure GDP*

GDP data are produced quarterly but only available with a four-month lag, making it necessary for the Bank to ‘nowcast’ both the current quarter and the previous quarter’s GDP. More-timely indicators are available to help inform the Bank’s nowcasts for aggregate GDP, including ‘hard’ data from Stats NZ that include activity indicators, and ‘soft’ data from surveys. For example, regular business surveys from ANZ Bank and NZIER provide useful information about firms’ expectations of their own activity levels in the coming months, as well as information about business confidence, capacity pressures, and employment. Many of the questions are forward-looking, providing some insight into firms’ expectations about the economy in the near future. In addition to these high-level soft-data indicators, the RBNZ has access to a large set of industry-specific activity indicators, such as monthly concrete sales, livestock slaughter, and hydroelectricity production.

The Bank supplements these data with information gathered directly from businesses through our business visits programme. These visits are often targeted towards understanding specific industries, but might also include discussions with broader entities such as local councils and iwi.

The following sections describe the various components of expenditure GDP, their key economic drivers, and some of the data that help us understand these variables. Chapter 6 covers in more detail how these components are affected by monetary policy.

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56 There are three ways that GDP is commonly measured internationally; the production approach (sometimes called the value-add approach), the expenditure approach, and the income approach. Stats NZ does not currently produce a quarterly GDP estimate using the income approach for New Zealand, although it does produce an annual income GDP series.

57 Stylised chart represents expenditure components as approximate percentage shares of nominal GDP for the year to September 2018.
5.3.1 Consumption

Consumption is the largest component of GDP, accounting for about 60 percent of output. Consumption includes all household spending on final goods and services (goods and services that are not inputs into the production of other goods and services).

The Bank uses a range of data to help us understand consumption. At a high level, monthly data on electronic cards transactions can help nowcast current consumption. To understand consumption more fully and to develop a forecast, we look to the key economic drivers of consumption, as outlined in table 5.1.

Table 5.1: Drivers of consumption

<table>
<thead>
<tr>
<th>Driver</th>
<th>Channel</th>
<th>Indicators58</th>
</tr>
</thead>
</table>
| Labour incomes          | Higher incomes provide households with greater capacity for expenditure on consumption. | • Quarterly wage inflation  
                          |                                                                        | • Total salary and wage earnings                                           |
| House prices and sales  | High house prices may encourage people to spend by increasing household wealth. Increased housing market activity is likely to support activity and consumption through increased construction and spending on furnishing and refurbishment. House price inflation in New Zealand is highly correlated with consumption growth. | • REINZ monthly housing indicators, including house price inflation and housing turnover  
                          |                                                                        | • CoreLogic quarterly house price inflation                               |
| Monetary policy and interest rates | Consumption is responsive to interest rates. The channels through which this relationship operates are described in detail in chapter 6. | • Weekly fixed and floating mortgage rates and deposit rates from the 5 largest banks in NZ |
| Population growth       | Aggregate consumption increases in line with the total number of people consuming goods and services. Immigration could provide an additional boost to spending due to the fixed costs incurred when immigrating, such as furnishing a house. | • Monthly migration statistics  
                          |                                                                        | • Quarterly population estimates                                           |
| Import and export prices | Export revenue affects domestic incomes, while import prices affect consumers’ purchasing power. | • Monthly and quarterly trade statistics                                       |
| Consumer confidence     | Consumers who are more confident about the outlook for the economy save less and consume more. | • Westpac McDermott Miller monthly consumer confidence survey                   |

5.3.2 Private investment

Private sector investment includes all fixed capital formation by private businesses (i.e not central government and its agencies). It includes both investment in tangible assets, such as

58 Unless otherwise stated, indicator data are produced by Stats NZ.
buildings, desks and computers, and intangible assets, such as software and research. Total private investment constitutes about 20 percent of GDP.

When we talk about the drivers of private investment, we often divide it into three sub-categories: residential construction (about 7 percent of GDP), commercial and other construction (2 percent of GDP), and business investment (14 percent of GDP). These three categories of investment can respond to different drivers, and so are not always synchronised.

**Table 5.2: Drivers of private investment**

<table>
<thead>
<tr>
<th>Driver</th>
<th>Channel</th>
<th>Indicators</th>
</tr>
</thead>
</table>
| Capacity pressure                           | When demand for a firm’s goods or services increases above the firm’s capacity to supply them, the firm might choose to invest in order to increase production capacity. | • QSBO and ANZBO business surveys – factors constraining growth, investment intentions, difficulty finding labour  
• RBNZ business visits                                          |
| Business confidence and uncertainty         | Firms with a positive outlook about the future economy expect stronger demand in the future, and are therefore more likely to invest. | • QSBO and ANZBO business surveys – confidence  
• Forecast dispersion – the variation between forecasts for the same variables by different forecasters  
• News media-based indicators of global uncertainty |
| Export demand                               | Exporting firms experience greater capacity pressure when export demand is strong. More money available for investment as export earnings increase. | • Bloomberg commodity price data                                                                 |
| House prices and sales                      | High house prices incentivise residential construction.                  | • REINZ monthly housing indicators, including house price inflation and housing turnover  
• CoreLogic quarterly house price inflation                     |
| Cost of capital                             | Many investment goods are imported, so the exchange rate and global prices for our imports affect business investment. | • Import prices  
• Exchange rates  
• Producer price index                                           |

5.3.3 **Government spending**

Government spending consists of government consumption, such as spending on ministries, defence, and public healthcare, and government investment, such as infrastructure building
and maintenance. On average, government spending accounts for about 25 percent of GDP in any given year.

Government spending is naturally less responsive to monetary policy than other sectors of the economy. However, governments must take the likely response of monetary policy into account when making spending decisions (as per the Public Finance Act (1989)), and the RBNZ takes government spending into account when assessing the economic outlook.

When government spending increases, GDP is not expected to increase by the same amount. Government spending can support economic activity by boosting income and employment, which flows through to the rest of the economy. However, increases in government spending may also crowd out other private spending, either by driving up prices for scarce inputs, or by diverting expenditure from consumers through current or expected taxation. In addition, a proportion of government spending is on imports, which subtract from GDP. Higher government spending would likely also result in a tightening in monetary policy (all else equal), which would then dampen consumption and investment.

The RBNZ does not produce its own independent forecasts for government spending. Instead, we incorporate forecasts from the New Zealand Treasury directly into our model with minimal adjustment. One exception is when a major domestic or international event disrupts the New Zealand economy between Treasury forecast rounds. For example, after the Christchurch and Kaikoura earthquakes, we incorporated some judgements about the likely implications of these into our forecasts, based on consultation with relevant government entities.

5.3.4 Trade
Trade is a significant part of the New Zealand economy. Imports and exports fluctuate over time, but trade has been broadly balanced in recent years, with imports and exports each representing about 30 percent of GDP.

New Zealand’s key trading partners are China and Australia, with New Zealand typically exporting more than it imports from these countries, while the European Union is the largest source of New Zealand’s imports (table 5.3).

59 The New Zealand Treasury produces a full set of macroeconomic projections twice per year, for the annual Budget Economic Fiscal Update and Half-Yearly Economic and Fiscal Update.
Table 5.3: Trade with New Zealand’s major trading partners

<table>
<thead>
<tr>
<th>Country</th>
<th>Import Share</th>
<th>Export Share</th>
<th>Share of Total Trade</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>16%</td>
<td>21%</td>
<td>19%</td>
</tr>
<tr>
<td>Australia</td>
<td>16%</td>
<td>17%</td>
<td>16%</td>
</tr>
<tr>
<td>European Union</td>
<td>17%</td>
<td>11%</td>
<td>14%</td>
</tr>
<tr>
<td>U.S.A.</td>
<td>12%</td>
<td>11%</td>
<td>11%</td>
</tr>
<tr>
<td>Japan</td>
<td>5%</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>Singapore</td>
<td>4%</td>
<td>2%</td>
<td>3%</td>
</tr>
<tr>
<td>South Korea</td>
<td>4%</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>All others</td>
<td>33%</td>
<td>30%</td>
<td>28%</td>
</tr>
</tbody>
</table>

Detailed trade data are published in the Stats NZ quarterly overseas merchandise trade statistics. This information provides a more detailed view of the import and export data recorded in the national accounts, but excludes trade in services.

**Exports**

New Zealand is primarily a soft-commodity exporter, with agriculture, fishing, and forestry comprising more than 40 percent of total exports in the year to September 2018. Dairy is the largest agricultural component, accounting for 18 percent of all exports. New Zealand’s dairy export prices and New Zealand dollar (NZD) incomes are subject to considerable swings due to variable global demand and production, the impact of weather on production, and exchange rate volatility.

Tourism and travel is another major export, accounting for roughly 23 percent of total exports. Because these services are generally priced domestically, New Zealand dollar prices tend to be more stable. However, the volume of tourism and travel services consumed varies considerably with the exchange rate and with global economic cycles. Table 5.4 provides a summary of the drivers of New Zealand’s exports, and the data available to assess these.

**Table 5.4: Drivers of exports**

<table>
<thead>
<tr>
<th>Driver</th>
<th>Channel</th>
<th>Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic export sector supply</td>
<td>In the short run, export volumes are largely determined by exporters’ supply capacity. This can be affected by domestic conditions such as drought and the availability of labour.</td>
<td>• Broad range of indicators that help us understand domestic supply conditions. See section 5.4 for more detail</td>
</tr>
<tr>
<td>conditions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foreign demand</td>
<td>Exporters also respond to foreign demand through investment. Commodity export prices are generally determined in global markets, and are affected by global demand and supply capability of foreign competitors.</td>
<td>• Daily global commodity price measures from Bloomberg</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Fortnightly Global Dairy Trade auction prices and volumes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Quarterly Stats NZ</td>
</tr>
</tbody>
</table>

---

60 Source: Stats NZ. Evaluated as at year end December 2018. Components may not sum to 100 percent due to rounding
Some proportion of what is consumed and invested comes from imports. In particular, New Zealand imports a majority of the manufactured durable goods it consumes, such as cars, electronics and machinery. Oil is another key import for New Zealand and, like dairy, it can have a volatile price. Oil is unique in that changes in the global price tend to be passed on to consumers almost immediately. While retailers of other imports tend to pass-through price increases and decreases gradually over time, petrol retailers tend to move their prices daily or weekly in line with the global price of oil. Table 5.5 provides a summary of the drivers of New Zealand’s imports, and the data available to assess these.

### Table 5.5: Drivers of imports

<table>
<thead>
<tr>
<th>Driver</th>
<th>Channel</th>
<th>Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic spending</td>
<td>Some proportion of all that is consumed and invested in New Zealand comes from imports.</td>
<td>• Consumption and investment are used to understand demand for imports</td>
</tr>
</tbody>
</table>
| Foreign prices and the terms of trade | The proportion of spending that goes towards imports depends on the relative prices for imported goods. Because New Zealand is so small, it has little impact on the price of the goods it imports. Instead, these prices are determined by global supply and demand forces. | • Daily global commodity price measures from Bloomberg  
• Quarterly Stats NZ overseas trade index statistics |
| Exchange rate                      | A higher exchange rate decreases the price of imports (in NZD terms) relative to the price of domestically produced goods. | • Daily TWI and individual cross rates                                   |

5.4 Potential output

Potential output is defined as the total output (usually measured as GDP) an economy can produce using labour and capital at their maximum sustainable levels, given existing technology and the institutional features of the economy. It is an important input into the forecasting and modelling of generalised inflationary pressure, as will be discussed further in...
section 5.6. Conceptually, potential output depends on the size and skills of the labour force, available capital, and the level of technology or productivity.\textsuperscript{61}

5.4.1 Labour
Labour is the largest input into production in New Zealand. Stats NZ provide a quarterly estimate of the labour force as part of the Household Labour Force Survey (HLFS). Consistent with international standards, the measured labour force includes all people over the age of 15 currently resident in New Zealand who are either working (employed) or available and actively seeking work (unemployed). The two factors that contribute to changes in labour availability are changes in the working age population and changes in the labour force participation rate.

5.4.2 Capital
Capital inputs are combined with labour inputs to produce the goods and services we measure as GDP. Capital goods range from tangible assets such as buildings, roads, and machinery, to intangible items such as software and exploration rights. Stats NZ produces an estimate of the stock of capital once per year as part of the annual national accounts, and this is the estimate we use for modelling purposes.

Measuring an economy’s capital stock presents considerable challenges. Unlike GDP, which is a flow concept and is contained within a given measurement year, total capital is a stock estimate that accounts for all of the capital accumulated in years before the measurement period. It must also account for the depreciation of that stock over time, which depends on the type of capital and the intensity of usage.

Capital stock can be increased or decreased in response to changes in demand. When firms are experiencing high demand and increased capacity pressure, they are encouraged to invest in more capital. Similarly, when demand is weak, incomes are lower and pressure on resources is low, firms may choose to hold back on investment and allow existing assets to depreciate. However, the rate at which the capital stock can adjust is fairly slow.

5.4.3 Productivity
Total factor productivity is the efficiency with which capital and labour inputs are combined to produce goods and services. It is sometimes thought of as technology, but this is a simplification. While technological progress might be the predominant driver of increases in productivity over time, productivity might also be affected by other factors, such as the matching of the right workers to the right jobs, or the efficient allocation of resources to the highest-value production.

Productivity is not observable and it is difficult to define and measure. Therefore, productivity estimates are calculated as a residual from other measurements. Once labour and capital inputs, and aggregate outputs are measured, productivity can be calculated as output divided by inputs (Stats NZ, 2014). Stats NZ provides official productivity estimates only once a year. Given we need timely estimates, we construct our own productivity figures for forecasting purposes using statistical filters and internally estimated measures of capital and labour inputs.

\textsuperscript{61} Leinert and Gillmore (2015) provide an overview of statistical methods the Reserve Bank uses to estimate potential output
5.4.4 **Supply shocks**
When we talk about potential output, we often think about long-term trends and gradual changes, such as the accumulation of capital over time, natural population growth, or the long-term trend of increasing participation of women in the labour market. These factors lend themselves to a smooth and slow-moving concept of potential output and supply. However, various economic ‘shocks’ can disrupt an economy’s supply capacity quite suddenly, and may have a temporary or lasting impact. Examples of such shocks include:

- Drought
- Infrastructure damage due to natural disaster
- Spikes and slumps in the global price of oil
- Large swings in net immigration.

Our modelling framework captures these shocks as they occur. We also apply expert judgement and model overlays to our forecasts to incorporate information about supply shocks in the forecast.

5.5 **New Zealand’s labour market**
Understanding the labour market is crucial for meeting both of our primary monetary policy objectives; labour market outcomes determine whether the economy is at maximum sustainable employment (MSE), and also contribute to CPI inflation. We look at the labour market from four important perspectives: labour supply, labour demand, labour market tightness, and wage growth.

5.5.1 **Labour supply and the labour force**
The labour force is a key indicator of labour supply. As noted in section 5.4.1, the labour force is measured as the share of the population over the age of 15 that is either employed or available and actively seeking work. New Zealand’s labour force growth has been almost twice the OECD average in the period from 2000 to 2018. This reflects both growth in the working age population, and an increase in the labour force participation rate.

Population increases can be due to both natural increase (births minus deaths) and net immigration. Natural increase tends to be relatively stable and predictable, whereas net immigration can lead to more rapid and often unanticipated growth in the labour supply, with implications for monetary policy. Similarly, a significant outflow of workers could also cause the labour force to contract, although such outflows have been far less common throughout recent history.\(^\text{62}\)

New Zealand’s labour force participation rate reached 71.1 percent in September 2018 (figure 5.2), making it one of the highest in the OECD, trailing only Switzerland and Iceland (OECD, 2018). This was supported by increasing participation of women and older cohorts (Culling and Skilling, 2018). Because older cohorts tend to work less than younger cohorts, all else equal, population ageing would have been expected to reduce labour force participation considerably over the past 20 years. Instead, this trend has been more than offset by increases in participation by women and older workers.

\(^\text{62}\) Bascand (2016).
Labour supply is a broader concept than the measured labour force. A more complete concept of labour supply might also include the ‘marginal labour force’ – those who are not participating in the labour market but could be induced to participate under tighter labour market conditions. The HLFS provides information about both underemployment – the share of part-time workers wishing to work more hours, and the ‘potential labour force’ – those who are either seeking or available for work, but not both (recall that a person must be both available and actively seeking work to be defined as unemployed and therefore included in the labour force).

However, it does not capture those who are not available or seeking work, but would make themselves available under certain conditions. For example, a stay-at-home parent might be encouraged to enter the labour force if they observed fast growing wages and a large number of high-quality available jobs. People outside of New Zealand might also be enticed to immigrate and join the labour force if offered sufficiently desirable job prospects. It is extremely difficult to measure or anticipate the impact of potential migrants on the labour market.

5.5.2 Labour demand and employment

Employment is a key indicator of labour demand. Employment in New Zealand is measured in the Stats NZ Household Labour Force Survey (HLFS) as the total number of people in New Zealand over the age of 15 who are in paid employment, including those who are self-employed.\(^{64}\) Growth in employment is highly correlated with growth in GDP, as labour is the largest input to the productive capacity of the economy. We often think of employment in terms of the employment rate, which is the number of people employed as a share of the working age population. New Zealand’s employment rate has been affected by both cyclical

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\(^{63}\) Source: Stats NZ Household Labour Force Survey.

\(^{64}\) Alternative measures of employment and various other labour market variables are available from the Stats NZ Quarterly Employment Survey (QES). The QES is a survey of employers, whereas the HLFS is a survey of households. The QES does not capture self-employed workers, and double-counts workers with more than one employer. Therefore, the HLFS measure of employment is more suitable for monetary policy purposes.
and structural factors. It has been climbing rapidly since 2013 (figure 5.2), and is currently one of the highest in the OECD.

Labour demand is a broader concept than that implied by employment alone. Firms may try to extract more labour from a given number of employees by increasing the number of hours offered to each employee, although there are limits to how many hours a single person can provide. Firms might also demand labour but fail to find suitable workers. Job vacancies provide some indication of excess labour demand, but the scope and quality of data on job vacancies are limited. In particular, vacancies advertised through the internet and social media are difficult to keep track of because some vacancies may be published through a number of different media platforms, while others may only be advertised within private networks.

5.5.3 Labour market tightness and maximum sustainable employment

The Remit directs the MPC to stabilise employment around its maximum sustainable level. This maximum level is not defined in the legislation. The RBNZ currently defines maximum sustainable employment (MSE) as the highest utilisation of labour resources that can be maintained over time without generating an acceleration in inflation.\(^65\) Many factors can affect the level of maximum sustainable employment. These factors are largely structural, including:

- The efficiency with which employers and job seekers can find one another;
- The skill composition of the labour force;
- Incentives to work, including after-tax wages; and
- Job mobility, among others.

The level of MSE is unobservable, and we have little information to guide us as to what the level of MSE is. Rather than attempt to estimate MSE directly along any measurable dimension, we judge whether employment is at, above, or below its maximum sustainable level by looking at labour market tightness.

Labour market tightness reflects the balance of labour demand and labour supply. When labour demand is growing faster than labour supply, and more work is becoming available than workers are willing to provide, we say that the labour market is tightening. There are several indicators of labour market tightness. The most widely used official measure is the unemployment rate, which is the percentage of the labour force that is not employed.\(^66\) However, a wide range of variables inform our understanding of labour market tightness and employment relative to MSE. We currently use a suite of more than 40 measures (though some measures are very similar, and some are subsets of others). These measures reflect a range of measures of unemployment, underutilisation, job vacancies, and job-to-job transitions (the rate at which employed people move to new, presumably more desirable jobs), as well as survey information about firms’ difficulty finding labour. The concept of MSE

\(^{65}\) November 2018 MPS. In the August 2018 MPS, we described MSE as being “the highest utilisation of labour resources that can be maintained over time”.

\(^{66}\) This is the internationally consistent unemployment measure, but other data can also provide information on unemployment in New Zealand. Stats NZ produces a guide to unemployment statistics, available here. A more detailed account of the Household Labour Force Survey is available here.
was introduced to our mandate in March 2018, and our understanding and techniques for evaluating MSE continue to develop.\textsuperscript{67}

### 5.5.4 Wages and inflation

Labour market variables are relevant to monetary policy not only because of our interest in MSE, but also because labour market conditions have implications for CPI inflation through wages and capacity pressure. Labour market tightness leads to higher wage growth, which flows through to CPI inflation, particularly in the non-tradable sector. There are two main sources of information about wage growth in New Zealand: average hourly earnings from the QES, and the Labour Cost Index (LCI). When measuring wage growth, we tend to focus on the ‘adjusted’ LCI, which controls for the quality and quantity of work. However, as an index, the LCI does not provide a dollar measure of wages and salaries, so we supplement it with the QES, which is measured directly in New Zealand dollars.

Furthermore, labour market tightness is very highly correlated with overall capacity pressure, one of the main drivers of CPI inflation. This is discussed further in chapter 6.

### 5.6 Capacity pressure

Capacity pressure is the balance between demand for goods and services, and the economy’s ability to supply that quantity of goods and services. It is a key driver of inflation over the business cycle. At the Reserve Bank, we tend to think of capacity pressure most commonly in terms of the ‘output gap’ – the difference between GDP and potential output. When GDP is greater than potential output, we say that there are capacity pressures, and the output gap is positive. When GDP is less than potential output, we say that there is spare capacity, and the output gap is negative.

Potential output and the output gap are not measurable, so they need to be estimated to forecast inflation. Because GDP is measured by Stats NZ, we need to estimate only either potential GDP or the output gap, since one implies the other. There are three main ways in which we can estimate potential output and the output gap:

i) To estimate potential output directly, we aggregate data on capital, labour, and productivity in a production function that is derived from economic theory. To achieve a smooth and slow-moving estimate, we use time series techniques to derive trend estimates for each of the production inputs.

ii) To estimate the output gap directly, we combine information from a wide range of indicators of capacity pressure. These include measures of unemployment and underutilisation of labour, measures of capacity pressure from business surveys, and models based on other factors that are theoretically linked to capacity pressure, such as inflation and core business investment. We call this set of capacity pressure measures and indicators our ‘output gap indicator suite’.\textsuperscript{68}

\textsuperscript{67} Forthcoming work from Price, Robinson, and Culling will present some of our earlier ideas about evaluating maximum sustainable employment.

\textsuperscript{68} See Armstrong (2015) and Jacob and Robinson (forthcoming) for a discussion of the indicators in this suite.
iii) To estimate potential output and the output gap simultaneously, we use a range of time series filtering techniques on GDP data. These methods mathematically decompose GDP into its ‘trend’ and ‘cycle’ components. The ‘trend’ component is potential output, and the ‘cycle’ component – the fluctuations in GDP around that trend – is the output gap.

Each of these techniques has strengths and weaknesses. In practice, we tend to use a combination of all three approaches to form our estimate of capacity pressure.

5.7 Inflation and core inflation

The Reserve Bank’s mandate directs the MPC to target inflation as measured by the All Groups Consumer Price Index (CPI). This index measures the change in prices for a representative basket of goods and services purchased by New Zealand households. The basket is updated over time to represent changes in consumer behaviour. It includes about 700 goods and services, such as apples, petrol, haircuts, university fees, life insurance, rent, and the purchase of new housing. It does not directly measure changes in asset prices, such as company shares or house prices, because these are for investment purposes rather than consumption.

5.7.1 Measuring inflation

CPI inflation is published by Stats NZ at a quarterly frequency. In most advanced economies, inflation data are produced monthly. Between quarterly publications, we have some high frequency price data to inform inflation nowcasts. The monthly food price index from Stats NZ and daily indicators of fuel prices are two key higher-frequency sources of information. However, these give only a very partial picture of inflation.

The RBNZ often splits the CPI basket into tradable and non-tradable components (figure 5.3). Tradables are goods and services that are imported or that are in competition with foreign goods and services, either in domestic or foreign markets. These include fuel, food, and electronics. Non-tradables are goods and services that do not face foreign competition, such as public transport, dental services, and electricity. We use this distinction because tradables and non-tradables respond to different macroeconomic drivers. In particular, monetary policy works mostly through the non-tradables category, although by influencing the exchange rate, monetary policy also has some influence on the tradables category.

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69 Further information about the CPI and its components is available from the Stats NZ [website](https://www.stats.govt.nz).
5.7.2 Drivers of inflation

The RBNZ uses a ‘Phillips Curve’ relationship (introduced in chapter 4) to model inflation. In this model, capacity pressure and inflation expectations are the two main drivers of inflation. Increasing capacity pressures are associated with higher inflation because when firms compete for scarce inputs, they are forced to offer higher prices, and these input prices are then passed through to consumer prices.

Inflation expectations also play an important role in determining inflation. When firms set prices, they either consciously or unconsciously factor in their expectations about future inflation (Armstrong and Parker, 2016). Because most firms do not update prices every day (Parker, 2014) they try to set prices such that they will be optimal for the whole period from now until the next price revision, which will depend on the changes in other prices in the economy.

Inflation expectations cannot be measured directly, but there are a number of ways they can be estimated. Estimates of inflation expectations in New Zealand generally fall into three categories: survey-based measures; market-based measures; and model-based measures. Overall, we monitor about 20 measures across various horizons. Sometimes, different measures tell different stories, and each has their own benefits and drawbacks. Lewis, McDermott, and Richardson (2016) provide a summary of the measures we use and illustrate how the measures can be collated.

5.7.3 Core inflation

Inflation can be affected by factors other than capacity pressure and inflation expectations. For example, swings in the prices of imported consumer goods can affect inflation independently of changes in capacity pressure. Tax changes, such as changes to Goods and Services Tax, or excise taxes on tobacco, alcohol, or petrol, also have a direct and sometimes large impact on inflation. These factors are often transitory in nature and do not

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70 Though Phillips initially proposed his theory in terms of the relationship between inflation and unemployment, it can be generalised to inflation and broader capacity pressure to provide a more complete representation of what determines inflation.
necessarily require a monetary policy response. The RBNZ looks at a set of measures that use various techniques to strip out the more volatile component of inflation to provide estimates of ‘core inflation’. These measures help us look past some idiosyncratic price movements.\textsuperscript{71}

**Figure 5.4: Core inflation measures\textsuperscript{72}**

![Core inflation measures graph]

Source: Statistics NZ.

### 5.8 Meet the models

The RBNZ uses economic models to pull together and interpret the wide range of data and economic concepts. These models can help predict, simplify, and explain the way the economy works, and the likely impact of monetary policy decisions. They are also used to generate counterfactuals and alternative scenarios for predicting possible outcomes in an uncertain world.

Choosing an economic model involves trade-offs in terms of detail, simplicity, precision, forecast performance, the reflection of beliefs about how the economy works, and practical workability. When selecting models to support our analysis, we need to choose models that are fit for purpose. In our case, that means choosing a core model that can be used to communicate our understanding of the economy, and flexible enough to incorporate off-model information. We augment the core model with other models, some of which provide depth and detail to the core projections, while others are used for cross-validation and testing.

NZSIM is the Reserve Bank’s core monetary policy model. We use NZSIM to produce most of the macroeconomic projections published in the *MPS*, as well as the forecasts that provide a baseline for our own internal analysis and discussion. NZSIM is a structural model,\textsuperscript{72}

\textsuperscript{71} Last updated November 2018. Ranchhod (2013) provides a more detailed description of the different types of core inflation measures used at the RBNZ, and Kamber and Wong (2016) evaluate the various measures.
which means that the relationships between different parts of the economy are based on what we think are practical and reasonable assumptions about the way firms and households interact. It is more 'theory driven' than 'data driven'. Data are used to calibrate and estimate the model, but the mechanics are underpinned by economic theory, which we determine subject to practical considerations.

We use a structural model to support our forecasts because it helps us understand and explain why we expect certain outcomes to occur, and specifies the assumptions that those expectations are based on. Choosing to have one 'core' model, and using the same model from round to round helps promote discipline and consistency in how we build and communicate our projections. That said, producing a set of forecasts with NZSIM is not a mechanical process; we rely on expert judgement and a range of other analysis to account for preferences and information not already contained within the core model.

The Bank also has a suite of about 50 statistical models that rely primarily on the correlations in New Zealand data and are estimated without overriding judgement from analysts. One of the main shortcomings of these models is that they provide numbers without context; they don't provide insight into the underlying economic drivers. However, this shortcoming is also a key strength. With less reliance on economic theory, the statistical forecasts can be seen as slightly more objective than our judgement-dependent central projections. Because these projections are independent from our main forecasts and not influenced from round to round by analyst judgement, they are a useful cross-check for our main forecasts. On average, these statistical models have performed slightly worse than our published *MPS* projections in predicting inflation, and were comparable to our *MPS* projections in terms of forecasting other key variables (Reid, 2016).

All economic models are necessarily a simplification of real-world relationships. For practical purposes, our models contain some relationships that do not perfectly capture real-world dynamics, but are nevertheless useful. The following chapter describes our core assumptions about how monetary policy affects the New Zealand economy.
Chapter 6: Monetary policy transmission in New Zealand

6.1 Introduction

Monetary policy operates through a simple principle: higher interest rates tend to lead to lower employment and inflation than would otherwise be the case; for lower interest rates, the opposite is true. However, underlying this simple relationship is a complex transmission mechanism, whereby interest rates influence aggregate demand through different channels and across varying time periods, with broader economic consequences. This chapter describes some of the key channels through which monetary policy operates. In doing so, it characterises some of the core beliefs that underlie the Bank’s existing monetary policy analysis and projections, and the evidence that supports these beliefs.

6.2 Monetary policy transmission in a nutshell

We implement monetary policy by setting the level of the Official Cash Rate (OCR), a daily benchmark interest rate that applies to lending and borrowing between the Reserve Bank and commercial banks. The OCR influences interest rates faced by households and businesses in the economy, which in turn influence their behaviour. As discussed in chapter 5, the response of households and businesses determines activity, capacity pressure, and ultimately inflation and employment. Figure 6.1 is a stylised representation of this process.

Figure 6.1: The monetary transmission mechanism

Changes in the OCR take a significant and variable amount of time to have their full effect on employment and inflation. Figure 6.2 provides a more detailed illustration of how a change in the OCR (in this case an increase, as indicated by the upwards-facing arrow in the OCR box) flows through some key parts of the economy.
Even figure 6.2 is an extreme simplification of the monetary policy transmission mechanism. In particular, it does not describe feedback loops and secondary effects. The remainder of this chapter describes the channels in more detail, providing some insight into the key areas of uncertainty, and putting the channels into the context of our internal forecasting framework and models.
6.3 The key channels of monetary policy transmission

Underlying the simple representations in figures 6.1 and 6.2 are several distinct channels through which monetary policy influences employment and inflation. As figure 6.2 suggests, these channels operate simultaneously and have many interdependencies. Monetary policy affects inflation and employment through five key channels:

1. Savings and investment
2. Cash flow
3. House prices and housing wealth
4. The exchange rate
5. Inflation expectations.

In normal times, monetary policy is implemented through the OCR, with forward guidance used to influence longer-term interest rates.\(^{73}\) The pass-through from the OCR to market rates is an important part of monetary transmission. It is particularly relevant for the savings and investment, cash flow, and wealth channels. To influence activity, changes to the OCR need to pass through to the market interest rates faced by households and businesses, such as mortgage and deposit rates.

The OCR is an overnight interest rate, but many of the interest rates faced by households and businesses are longer term, such as fixed mortgage rates, or corporate bonds. As a result, activity, employment, and inflation are influenced by the set of interest rates across all maturity horizons, known as the yield curve.

The yield curve, in turn, is influenced by the expected future path of short-term interest rates. Broadly speaking, an investor should be indifferent between earning a given interest rate on a two-year bond and earning the same return from a sequence of overnight investments over the same period. In this way, longer-term rates can loosely be thought of as a summation of all expected overnight rates for the term of the loan. The RBNZ can affect market interest rates by changing the OCR today, or by changing expectations about the future path of the OCR using forward guidance (Detmers et al., 2018).

Expectations about future interest rates develop in response to all kinds of economic news, and not only in response to monetary policy announcements. People's expectations about future interest rates already include expectations about future monetary policy. For this reason, a change in the OCR will not necessarily be matched by moves in interest rates across the yield curve on the day of announcement. In fact, market interest rates might not move at all if market participants have already perfectly predicted the move. In some circumstances, the market rates might move in the opposite direction of the rate change if it is interpreted as being accompanied by sufficiently strong and credible communication to that effect. This is why the RBNZ's forward guidance about intentions for the future path of the OCR, and the economic assumptions that this expectation is based on, are a key element of monetary policy.

There are two factors other than monetary policy that influence market interest rates: term premia and international funding conditions. The term premium is the compensation investors require to hold a bond of longer maturity, rather than a series of shorter maturity bonds. It is sometimes described as a 'risk premium' because it compensates investors for

\(^{73}\) See Box 6.4.A for a description of monetary policy tools.
the risk they face over the life of the bond. Term premia can vary over time as risk appetite and uncertainty change, affecting the shape of the yield curve. International funding conditions reflect overseas interest rates and access to funding, which respond to developments in foreign monetary policy, risk sentiment, and regulatory conditions (Cook and Steenkamp, 2018). The RBNZ does not have direct control over term premia or international funding conditions, but must consider these when setting policy.

**Box 6.3.A: The range of monetary policy tools in New Zealand**

This box offers a short introduction to the policy tools available to implement monetary policy in New Zealand. In conventional times, these tools include the Official Cash Rate and forward guidance for longer-term interest rate expectations. A range of tools, untested in New Zealand, are available if the RBNZ was to run out of conventional policy space.

**The Official Cash Rate**

The OCR is the primary tool through which the RBNZ implements monetary policy. The OCR is a reference rate, to which the RBNZ’s short-term liquidity operations are benchmarked. The Market Operations Team at the RBNZ is charged with ensuring that overnight interest rates in wholesale markets trade close to the OCR. This strong influence over short-term interest rates enables the RBNZ to have some influence over the entire yield curve of wholesale and retail interest rates.

**Forward guidance**

When firms and households make financial decisions, expectations of what interest rates will do matter as much as today’s short-term rate. Therefore, the RBNZ can influence consumer and firm behaviour by influencing the outlook for the OCR.

One key way we implement this forward guidance is by publishing an expected OCR track in each MPS. This gives the public and market participants an idea of how policy settings will evolve, conditional on the current set of assumptions. The way we characterise the risks to these assumptions, and outline our general thinking in the MPS will also affect expectations of the OCR.

A credible set of projections in the MPS can influence longer-term interest rates, as they help people form expectations of what the OCR will do. Publishing an OCR track also helps market participants respond effectively to new information, as they build up an understanding of how our interest rate projections change in light of new economic developments. This understanding helps interest rates adjust to levels consistent with medium-term price stability, without the need for constant comment and intervention from the RBNZ.

**Unconventional policy tools**

During the financial crisis, a number of economies saw the need for significant monetary policy stimulus, and their policy interest rates were cut to zero. To provide further stimulus, these economies adopted a number of unconventional policy options. These policies included quantitative easing (also known as large-scale asset purchases), negative policy rates and exchange rate intervention. These policies were not needed in New Zealand. However, we have explored their potential use – the detail of which can be found in Drought, Perry and Richardson (2018).

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74 For more about how Market Operations influences overnight interest rates see Parekh (2016).

75 More on forward guidance and understanding the Bank’s ‘reaction function’ can be found in McDermott (2016).
The final factor that influences how a given OCR path affects household and business behaviour is the 'neutral interest rate.' The neutral interest rate is conceptually the rate that, on average over time, would be consistent with no over- or under-utilisation of resources and stable inflation (Chetwin and Wood, 2013). When the OCR is above the neutral interest rate, monetary policy is said to be contractionary, leaning against inflationary pressure. When the OCR is below the neutral interest rate, monetary policy is said to be stimulatory, supporting economic growth and employment.

The neutral interest rate is unobservable and subject to change over time. It depends on a set of other unobservable variables, such as expectations about economic growth and the discount rate (the factor by which people prefer consumption now to consumption in the future). We use a range of techniques for estimating the neutral interest rate, but these estimates are surrounded by considerable uncertainty. We tend to assume that the neutral interest rate evolves only gradually, but over periods of years movements in neutral rates can be significant – we estimate that the neutral OCR in New Zealand has declined by more than 200 basis points since 2008 (Richardson and Williams, 2015).

6.3.1 The saving and investment channel
Changes in interest rates impact the incentives for firms and households to consume, save, and invest. When households and businesses see interest rates that vary over time, they respond by varying their consumption and investment behaviours to take advantage of low borrowing rates and high deposit rates. We call this effect 'intertemporal substitution.' When the OCR increases, households and businesses are encouraged to save, and discouraged from borrowing. This reduces the total amount of activity in the economy, reducing capacity pressures, and therefore employment and inflation (figure 6.3).

Figure 6.3: The saving and investment channel

The initial increase in saving and reduction in investment has compounding effects. Because consumers are spending less, businesses face lower demand and weaker profits. Subsequently, their appetite to employ labour is reduced, suppressing overall income across the economy and further reducing spending and activity. Weaker demand and higher borrowing costs discourage firms from investing too, further reducing aggregate spending in the economy.

It takes some time for these impacts to take full effect, as some factors slow the pass-through from higher interest rates to activity. For example, in the short term, a firm is unlikely to pull back on long-term investment projects that have already been started in response to a change in interest rates, but they may pull back on smaller near-term investment purchases.

The intertemporal substitution effect is a powerful channel in NZSIM. Our model assumes that consumers do indeed adjust their consumption in response to cyclical fluctuations in
interest rates – an assumption that fits the New Zealand economic data relatively well. However, it takes some time for this channel to work its way through the economy. In our model, and consistent with our assessment of past experiences, it take up to two years for the peak impact of a change in the OCR on inflation to be reached.

6.3.2 The cash flow channel

The impact of interest rates on cash flow can also affect the transmission of monetary policy. Some households and businesses respond to changes in interest rates beyond the saving and investment channel, particularly if their access to credit is constrained. For example, a household with relatively high debt and relatively little disposable income would find that an increase in interest rates increases their weekly debt repayment obligations and might force them to reduce their spending. For these households, the higher debt repayments could force a greater response to a change in interest rates than intertemporal substitution alone.

The opposite effect would be true of net savers, whose interest income is boosted by higher interest rates. In this case the cash flow channel works in the opposite direction to the saving and investment channel. However, because New Zealand is a net debtor nation, the aggregate effect of the cash flow channel is likely to be negative for inflation and employment when interest rates increase (figure 6.4).

Figure 6.4: The cash flow channel

Our core model does not differentiate between net savers and net borrowers, or households and businesses that are or are not credit constrained. This means that the cash flow channel is not explicitly captured in our model, but rather is accounted for by a large intertemporal substitution effect, calibrated to New Zealand data.

6.3.3 The house price channel

Changes in interest rates can have a direct effect on household wealth. For New Zealand, housing represents more than two-thirds of households’ total wealth. Higher interest rates discourage households from entering the housing market, reducing overall activity and constraining house price inflation. When house price inflation slows, people may revise lower their perceived wealth and, as a result, decrease their consumption. This is known as a ‘wealth effect.’ The wealth effect is also supported by a ‘collateral effect’ whereby smaller increases in housing equity from capital gains limit how much households can borrow against their homes to finance consumption. RBNZ research (Wong, 2017) found that households in New Zealand do indeed vary their consumption in response to changes in

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76 Hughson, La Cava, Ryan and Smith (2016) discuss this channel in more detail, and utilise household-level data in Australia to estimate the strength of the cash flow channel.
housing wealth. However, this work suggests that the propensity of households to consume out of housing wealth has been lower in the most recent cycle than in the pre-GFC period.

In NZSIM the correlation between changes in house prices and changes in consumer spending is incorporated into the model’s consumption function. As a result, all else equal, higher interest rates slow house price growth, thereby slowing growth in consumption (figure 6.5).

**Figure 6.5: The house price channel**

6.3.4 **The exchange rate channel**

Higher domestic interest rates relative to foreign rates cause the New Zealand dollar exchange rate to appreciate and thereby lower inflation and employment. This condition holds for any NZD cross-rate, but we generally discuss the exchange rate in terms of the New Zealand Dollar trade weighted index (TWI). RBNZ research (Wong and Cook, 2012) shows that both actual and expected changes in the OCR have a statistically significant impact on the TWI. In one study, changes in the OCR accounted for about 30 percent of the variation in the exchange rate for a short sample period, suggesting that overseas developments were a greater source of volatility in the exchange rate during that time.

When the New Zealand dollar exchange rate rises, the cost of imports falls in New Zealand dollar terms. These lower prices feed through directly to lower tradables inflation. Further, lower import prices encourage domestic spending on imports relative to spending on domestic goods, dampening economic activity and inflation (figure 6.6).

**Figure 6.6: The exchange rate channel**
A higher exchange rate also reduces export incomes, though the driver of this effect differs depending on whether an export good or service is priced in New Zealand dollars or foreign currency. When exports are priced in foreign currency, such as dairy exports priced in US dollars, incomes will be lower in New Zealand dollar terms (assuming export volumes remain roughly the same). On the other hand, when prices are set in New Zealand dollars, they become less competitive internationally, and the quantity demanded will fall, also reducing incomes.

The response of the exchange rate to monetary policy surprises is more or less immediate, and some prices, such as petrol prices, may respond very quickly (as discussed in chapter 5). However, it takes some time for the effect of exchange rate movements to trickle through to domestic retail prices and activity due to fixed contracts, hedging, planned investment, and the delay between wholesale import and retail sales. In NZSIM, it takes more than a year for the full impact of a change in the exchange rate to pass through to the import and export sectors.

Exchange rates are notoriously difficult to forecast, in part due to the important influence of international factors. But exchange rates are also a very important factor for inflation. Unexpected developments in the exchange rate are a common reason why tradables inflation evolves differently than forecast, and so we believe that it is important for us to be explicit about the exchange rate on which our economic projections are predicated. However, we tend to think of and communicate our projection for the TWI as an ‘assumption’ rather than a ‘forecast’ to acknowledge the uncertainty inherent to the exchange rate outlook.

6.3.5 The inflation expectations channel

Inflation expectations affect the transmission of monetary policy because near-term inflation expectations (up to two years ahead) directly impact actual inflation by altering businesses’ price-setting behaviour. Most businesses understand that higher interest rates generally lead to lower inflation, therefore, when the RBNZ changes monetary policy, price-setting firms are able to adjust their inflation expectations immediately in response. Section 5.7.2 explains this process in more detail.

Beyond its direct role in monetary policy transmission, longer-term inflation expectations indicate whether the RBNZ’s target is viewed as credible (as mentioned in section 1.3.2). Exchange rates are notoriously difficult to forecast, in part due to the important influence of international factors. But exchange rates are also a very important factor for inflation. Unexpected developments in the exchange rate are a common reason why tradables inflation evolves differently than forecast, and so we believe that it is important for us to be explicit about the exchange rate on which our economic projections are predicated. However, we tend to think of and communicate our projection for the TWI as an ‘assumption’ rather than a ‘forecast’ to acknowledge the uncertainty inherent to the exchange rate outlook.

6.4 Risks and uncertainty

One caveat for this chapter is that the effects we describe should always be accompanied by “all else equal”. Many uncertain economic factors may alter or override the transmission of monetary policy.

Monetary policy works principally by influencing demand, but inflation and the deviation of employment from MSE are determined by the balance of demand and supply. As described

77 Lewis et al (2016).
in chapter 5, supply capacity in the economy is constantly evolving and difficult to assess. As a result, supply developments can generate unexpected outcomes in inflation and employment, even when monetary policy is working exactly as anticipated.

Similarly, the demand side of the economy is continually subject to new developments or 'shocks.' Shocks are often unpredictable, and extremely difficult to capture in economic models. They can be generated domestically or be transmitted from abroad, and may work with or against monetary policy in terms of their impact on employment and inflation.

Finally, there is significant uncertainty surrounding the transmission of monetary policy itself. Monetary policy’s transmission through the economy is far more complex than our models can capture. Because we assess the economy and the monetary transmission mechanism mainly through aggregate data, small shifts in the composition of key economic variables can have unanticipated consequences.

Risk and uncertainty are unavoidable. The consequence of uncertainty is that outcomes for activity, employment, and inflation in the economy are never exactly as predicted. For this reason, uncertainty and any key identifiable sources of risk are factored into monetary policy strategy. Chapter 7 discusses more fully the importance of monetary policy strategy in an uncertain environment.
Chapter 7: Monetary policy strategy

7.1 Introduction

Sound monetary policy can make a significant contribution to the well-being of New Zealanders by maintaining price stability and dampening cycles in output and employment. But achieving these objectives is not straightforward. Economic conditions are constantly evolving, and monetary policy decision makers must make complex choices in a timely and consistent manner. These decisions need to account for trade-offs between objectives, uncertainty about the state and structure of the economy, and the transmission of policy. Given these difficulties, having a clear and effective strategy can help to promote sound decision making and communication, and increase the likelihood that the important goals of monetary policy are achieved.

This chapter provides a framework for considering the components of effective strategy in the context of a flexible inflation targeting regime, and discusses the RBNZ’s historical strategic approach. The framework is based on the RBNZ’s experience of setting monetary policy, the approach of other central banks, and the literature on strategy and monetary policy.

Section 7.2 sets out components of an effective strategy. Sections 7.3 to 7.5 discuss these components in the context of monetary policy. In particular, section 7.3 defines New Zealand’s monetary policy strategy as a guiding policy for dealing with the important challenges of price stability and supporting MSE. Section 7.4 details the context in which this strategy is implemented and describes some policy trade-offs that might arise. To conclude, section 7.5 discusses how a monetary policy strategy is implemented in practice, in terms of judging the appropriate stance of monetary policy and deciding on tactical options for achieving that stance.

7.2 Components of an effective strategy

As referenced in chapter 2, the MPC is tasked with making monetary policy decisions to achieve a set of economic objectives. We have found the summary of strategy provided by Rumelt (2011) to be particularly helpful in characterising various elements of the monetary policy decision. Using this summary, the three parts of an effective strategy are:

1. the careful diagnosis of an important challenge;
2. a guiding policy for dealing with the challenge; and
3. a set of coherent actions to carry out this guiding policy.79

Chapters 1 and 4 set out the important challenge of maintaining price stability and supporting MSE. This chapter focuses on setting a guiding policy for dealing with this

78 For example, see FOMC (2019).
79 Rumelt (2011).
challenge and briefly introduces some coherent actions to carry out the guiding policy. Figure 7.1 illustrates this layering of strategy decisions in monetary policy.

**Figure 7.1: A visual depiction of monetary policy strategy**

The RBNZ has sometimes referred to the guiding policy for achieving its mandate as its ‘monetary policy strategy’. Rumelt (2011) comments: “The guiding policy specifies the approach to dealing with the obstacles called out in the diagnosis [of the challenge]. It is like a sign-post, marking the direction forward but not defining the details of the trip.” In the case of monetary policy, economic shocks that push either inflation or employment away from targeted levels\(^{80}\) can be thought of as ‘obstacles’. The trade-offs that arise between achieving the operational objectives and secondary considerations in the Remit are another obstacle. Therefore, monetary policy strategy can be thought of as an overarching approach that guides policy setting across the range of economic circumstances and trade-offs that are likely to arise.

Coherent actions are “feasible coordinated policies… and actions designed to carry out the guiding policy”.\(^ {81}\) In the context of monetary policy, coherent actions can refer to specific decisions on the stance of monetary policy (that is, how stimulatory or contractionary policy should be) and the tactical approaches used to implement the strategy at each decision meeting (for example, movements of the OCR and forward guidance language).

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\(^{80}\) It is worth reiterating that there is currently no numerical target for maximum sustainable employment, for a variety of reasons specified in chapters 1 and 4.

\(^{81}\) Rumelt (2011).
7.3 Guiding policy: monetary policy strategy

Monetary policy strategy is the MPC’s guiding policy for how monetary policy will achieve its objectives, setting out how the MPC intends to factor in, or respond to, changes in the economy and outlook. A robust strategy should outline a consistent approach for making policy trade-offs, as well as provide a consistent approach to weighing up the risks and uncertainty inherent in inflation and employment forecasts. A shared understanding and agreement between the MPC members about monetary policy strategy can assist with monetary policy deliberation, communication, and credibility.

This section discusses the RBNZ’s historical approach to monetary policy strategy. We begin with the core principles that underpinned this approach, before discussing the trade-offs between objectives, and how uncertainty can influence strategy. Although the objective of supporting maximum sustainable employment has only recently been added as an objective of monetary policy, this is an evolution of New Zealand’s flexible inflation targeting framework, reinforcing the flexibility with which the RBNZ has acted in the past. Therefore, RBNZ’s historical approach to monetary policy strategy is likely to remain informative for the MPC in determining its own strategic approach. While the MPC will continue to develop and improve its monetary policy strategy, this is likely to be an evolution, not a revolution, of the RBNZ’s existing strategy.

7.3.1 Core principles of flexible inflation targeting

We first summarise two of the core principles that underlie the RBNZ’s understanding of flexible inflation targeting in New Zealand:

1. Low and stable inflation is monetary policy’s best long-run contribution; and
2. Credibility of the policy targets is crucial.

The principle that monetary policy’s best contribution to sustainable long-run growth and economic welfare, stems from the widely-held economic theory that in the long run, monetary policy can only affect the level of prices (see chapter 4 for further discussion). Facilitating clear and predictable price signals can enable resources to be efficiently allocated in the economy and therefore support employment and output. Monetary policy cannot materially influence the long-run (or trend) level of employment, and therefore there is no trade-off between employment and inflation at long time horizons. However, monetary policy can influence cyclical movements in employment in the short-to-medium term.

The effectiveness of monetary policy relies heavily on the credibility of the RBNZ’s policy targets. If the public believe that the RBNZ has the will and the capability to manage inflation over the medium term, then they are more likely to behave in a way that helps to stabilise the economy (as explained in chapter 6). The importance of expectations means that the RBNZ needs to act and communicate in such a way that the public believes it has the will and capacity to achieve its mandated objectives. In turn, the public’s expectations largely depend on the credibility of the RBNZ’s monetary policy strategy and communications.

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82 The RBNZ has long had regard to the real economy, including employment (McDermott and Williams, 2018).
7.3.2 Key aspects of the RBNZ’s historical monetary policy strategy

**Inflation forecast targeting**

Historically, the RBNZ’s monetary policy strategy has generally been to choose a policy stance that is expected to result in inflation reaching the target mid-point after about two years. The time to target has been allowed to vary to reflect the balance of trade-offs with the RBNZ’s other objectives. The typical timing of about two years reflects the view that a monetary policy decision today is fully transmitted through the economy after about two years. This approach is referred to in the monetary policy literature as inflation forecast targeting – the central bank sets policy so its inflation forecast is at target.

Even though this forecast targeting approach is specified in terms of inflation, the RBNZ has viewed it as consistent with its objective of supporting MSE alongside price stability. Svensson (1997) shows that if the central bank cares about stabilising output, then it is optimal for it to allow its inflation forecast to temporarily deviate from the long-run target to help smooth output fluctuations. This approach can be applied to employment in the same way. The specification is consistent with the view that short-term trade-offs exist between inflation and employment (as discussed in chapter 4) and that allowing the time for inflation to return to target to vary may be an appropriate way to manage these trade-offs.

**Symmetry of policy targets**

In the past, the RBNZ has treated its policy targets (inflation, and more recently, maximum sustainable employment) as symmetric. In other words, deviations above and below target have been treated, and responded to, in the same way. The specification of the inflation target (in the current Remit and the previous PTA), in terms of a target range with a focus on the mid-point, implies a symmetric approach. A symmetric approach to inflation helps to anchor inflation expectations at the target mid-point, improving the effectiveness of policy. In terms of supporting maximum sustainable employment, the current Remit says that “monetary policy contributes to public welfare by reducing cyclical variations in employment and economic activity whilst maintaining price stability over the medium term”. Stabilising cyclical variations implies that monetary policy should react to positive deviations of employment from its maximum sustainable level as well as to negative ones. Responding asymmetrically to employment deviations could have adverse effects on inflation expectations and interest rate stability, and may result in more volatility in employment over time.

7.3.3 Flexible inflation targeting trade-offs

In some economic circumstances, trade-offs can occur between the two operational objectives (inflation and employment), or between the operational objectives and secondary considerations. Specifically, to achieve the objectives in the Remit, the MPC must consider the following when setting monetary policy:

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83 Research by Karagedikli and Lees (2007) found that the RBNZ has historically operated symmetrically when regarding output gaps, which tend to co-move with employment gaps.

84 In the long run, this could make price stability more difficult to achieve. Additionally, higher macroeconomic volatility could reduce the maximum sustainable level of employment.
1. How the operational objectives should be traded off against one another when a change in the monetary policy stance would improve outcomes for one objective but worsen outcomes for the other; and
2. How secondary considerations should be traded off against operational objectives when a change in the monetary policy stance would improve outcomes for the operational objectives, but worsen outcomes for the secondary considerations (or vice versa).

Trade-off between inflation and employment

The first potential trade-off to be considered is between price stability and MSE. In the long run, no trade-off exists between inflation and employment because monetary policy can only affect the price level, not real variables. But in the short to medium term, trade-offs can occur.

Table 7.1 summarises when a policy trade-off might arise. If both variables are away from their targets in the same direction, there is no trade-off, because the deviations imply the same stance of policy. This is the case for many types of shocks hitting the economy – for example, weaker demand would tend to reduce both inflation and employment. But a trade-off can arise when inflation and employment are (or are expected to be) moving in opposite directions, for example, if employment is below MSE but inflation is above 2 percent. In this scenario, tighter monetary policy could control inflationary pressure, but it may put further downward pressure on employment.

Table 7.1: Policy implications and trade-offs

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<th>Inflation below target</th>
<th>Inflation above target</th>
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<tr>
<td>Employment below target</td>
<td>No trade-off – ease policy</td>
<td>Policy faces trade-offs</td>
</tr>
<tr>
<td>Employment above target</td>
<td>Policy faces trade-offs</td>
<td>No trade-off – tighten policy</td>
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When a trade-off occurs, the MPC needs to consider how much it will tolerate one objective deviating from target relative to the other. Since MSE was introduced as a goal for monetary policy, the RBNZ has taken a ‘balanced approach’ to the two objectives. This means we consider outcomes for both objectives when determining the appropriate stance of monetary policy. However, weighing up outcomes for inflation and employment are not straightforward because they are fundamentally different concepts. Further, assessing MSE involves many judgements.

Svensson’s (2014) framework for balancing dual mandates approaches the challenge of balancing an inflation target with an employment mandate. According to Svensson, a balanced approach implies that the central bank’s projection for the inflation gap (inflation minus the 2 percent target mid-point) and the employment gap (employment minus an estimate of its maximum sustainable level) should be away from target in opposite directions.

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85 The RBNZ has externally communicated these ideas in Box B of the February 2019 Monetary Policy Statement.
(have opposite signs) under the optimal policy path. That is, if inflation is deviating from target in one direction, then the central bank should be willing to allow employment to deviate from its maximum sustainable level in the opposite direction (or vice versa).

In summary, under this approach a central bank should:

- Let inflation overshoot the target mid-point for a time when employment is projected to be below its long-run sustainable level; or
- Let inflation undershoot the mid-point for a time when employment is projected to be above its sustainable level.

A stylised example of this balanced approach is shown in figure 7.2. Policy A (which corresponds to a lower interest rate path) allows higher employment to achieve higher inflation, but both target variables end up above their targets, implying that policy is too loose. Policy C (which corresponds to a higher interest rate path) is also suboptimal, because although employment is returned to target, inflation is well below target, and a lower interest rate path could better balance outcomes across the two goals. Policy B shows a balanced approach, with inflation and employment expected to deviate from target in opposite directions – one variable is not returned to target at the expense of the other.

Figure 7.2: Stylised example: projected inflation and employment outcomes under alternate policy paths

A stylised example of this balanced approach is shown in figure 7.2. Policy A (which corresponds to a lower interest rate path) allows higher employment to achieve higher inflation, but both target variables end up above their targets, implying that policy is too loose. Policy C (which corresponds to a higher interest rate path) is also suboptimal, because although employment is returned to target, inflation is well below target, and a lower interest rate path could better balance outcomes across the two goals. Policy B shows a balanced approach, with inflation and employment expected to deviate from target in opposite directions – one variable is not returned to target at the expense of the other.

Trade-offs between operational objectives and secondary considerations

The trade-off between inflation and employment is not the only trade-off that needs to be considered. The Remit also requires the MPC to take into account several secondary considerations. This section will explain the trade-offs that may occur in the pursuit of these secondary considerations.
(i) Have regard to the efficiency and soundness of the financial system
As discussed in chapter 1, monetary policy and macro-prudential policy have separate objectives but can interact because they are both time varying and work through the macro-economy. Macro-prudential policy has the objective of promoting the soundness and efficiency of the financial system and is the primary tool to lean against the build-up of risks in the financial system. There may be exceptional circumstances when macro-prudential policies become ineffective, where the MPC may consider using monetary policy to help lean against risks to financial stability (for example, arising from rapid growth in credit and asset prices), as long as doing so does not compromise the operational objectives in the Remit.  

(ii) Avoiding unnecessary instability
Section 2(b)(ii) of the Remit also requires the MPC to “seek to avoid unnecessary instability in output, interest rates, and the exchange rate”. The consideration for stability in economic output, interest rates and exchange rates is fundamentally about how quickly the MPC intends to meet its inflation and employment objectives. There are several trade-offs in this decision, and these trade-offs are likely to differ depending on economic circumstances. The MPC could meet its targets faster at the cost of creating more volatility in the economy and interest rates. Or the MPC could meet its targets more slowly, with the cost of more-prolonged deviations from target and the risk of inflation expectations becoming unanchored. The requirement to avoid unnecessary instability in the macroeconomy has been a key consideration behind the RBNZ’s strategy of setting policy with the aim of returning inflation to the target mid-point in about two years, and allowing this time horizon to vary depending on the shocks hitting the economy.

If the MPC tried to return both employment and inflation to their targets as quickly as possible, then this would result in higher economic volatility and large interest rate adjustments. As discussed in Hunt (2004), interest rate changes take time to have their full effect, so larger changes in interest rates would be required to return employment and inflation to target more quickly. Increased volatility in interest rates would result in undesirable volatility in output and the exchange rate.  Therefore, the RBNZ has previously interpreted this clause to mean that monetary policy should be formulated such that there is no alternative interest rate path that could improve stability, subject to the operational objectives being met.

Conversely, if the MPC maximised interest rate stability and chose an interest rate path such that it took, say, five years to return inflation and employment to target, it would also face costs. Firstly, the operational objectives would be deviating from their targets for longer. Secondly, the longer that the RBNZ allowed inflation to deviate from target (and didn’t show a credible plan to return it to target), the more likely it is that inflation expectations would become unanchored. If inflation expectations became unanchored, it would make it harder to meet the inflation target, and the changes in interest rates required to re-anchor expectations would likely have large effects on the wider economy.

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86 See Dunstan (2014) for more discussion of the interaction between macro-prudential and monetary policy.
87 See chapter 6 for more on how the interest rate affects output and the exchange rate.
88 See Ford, Kendall and Richardson (2015) and Kendall and Ng (2013).
With regards to exchange rate stability, movements in interest rates have an effect on the exchange rate. Monetary policy has limited ability to affect the real exchange rate beyond the near term, and there can be significant costs in attempting to stabilise the exchange rate. However, the RBNZ has considered the effects of the medium-term exchange rate cycle on the macro-economy and adjusted interest rates as necessary. In addition to its interest rate policy tools, the RBNZ also has an exchange rate intervention policy that is used in exceptional circumstances to lean against the peaks and troughs of the exchange rate cycle.\(^{89}\)

### 7.3.4 Strategy under uncertainty

Assessments of the current and future state of the economy are inherently uncertain, but they must be made for the MPC to decide on a policy stance. For example, the RBNZ would typically estimate the current values of each key variable, including unobservable variables such as MSE. In these estimates, the RBNZ makes judgements regarding the risks to the assumed current values and forecasts of key variables in the economy.\(^{90}\) Consistent application of these judgements over time contributes to a coherent monetary policy strategy.

To communicate the uncertainty within these assessments, the RBNZ has historically incorporated a balance of risks into its forecasts and discussed those risks, and possible policy reactions to them, in the MPS. In the past, the RBNZ has not typically changed the stance of monetary policy as ‘insurance’ against risks. The RBNZ has previously tended to wait for evidence that lower-probability risks are eventuating before reacting to them. If risks are perceived to be of high probability, they have usually been reflected (and reacted to) in the central forecasts. However, the MPC may choose to adjust the stance of monetary policy to account for risks under some circumstances. For example, if the risks were viewed as skewed heavily to the downside, the MPC could choose a lower interest rate path than otherwise, resulting in inflation and employment forecasts slightly exceeding their targets. Realised inflation and employment would exceed targets only if the risks did not materialise.

Given the uncertainty involved in assessing the economy and the effects of monetary policy, it is usually appropriate to have a smoother and slower-moving OCR track compared to what the ‘optimal’ rate path might be if the MPC were certain about the outlook and transmission mechanism of monetary policy. Economic movements implied by the forecasts may not eventuate, and the effects of policy actions are uncertain, so it is usually prudent to move interest rates in small increments.\(^{91}\) This means that the MPC can build up a policy stance gradually, responding to unexpected developments in the economy as they occur. Former US Federal Reserve Chair Ben Bernanke posited that moving interest rates in small increments resulted in policy rate changes having a stronger influence on long-term interest rates (Bernanke, 2004).

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\(^{89}\) For more on the RBNZ’s exchange rate intervention policy, see Eckhold and Hunt (2005).

\(^{90}\) Recent research by the Federal Reserve finds that policy should respond to estimates of the unemployment rate gap, even if that gap is mismeasured (Erceg et al., 2018).

\(^{91}\) The idea of ‘gradualism’ is attributed to the concepts discussed in Brainard (1967).
7.4 Coherent actions: stance and tactics

When the MPC has a clear vision of its strategy (or guiding policy), implementing that strategy at each policy decision requires judgements about:

1. Stance – how much monetary stimulus the economy requires.
2. Tactics – the current OCR setting, the published forward path for the OCR, and communication about the stance and risks.

The stance of monetary policy is defined here as the amount of monetary stimulus, or the degree to which monetary policy is supporting or restraining inflation and employment. Deciding on the appropriate stance requires an assessment of the current economic conditions, and the risks to that assessment, to determine the trade-offs that exist. Decision makers can then deliberate about what these trade-offs and risks imply for the appropriate stance of monetary policy at each decision, given their overarching strategy.

Monetary policy tactics are the use of monetary policy tools (discussed in chapter 6) to achieve a desired monetary policy stance. The tactics of a monetary policy decision are separate from the stance, because there are multiple ways to achieve any given stance. Monetary policy delivers stimulus to the economy by influencing market interest rates. Therefore, whether the desired monetary policy stance is achieved depends on the reaction of financial markets to the decision, not just the current setting of the OCR.

In 'normal' times, the MPC would likely try to achieve the desired monetary policy stance by deciding on the level of the OCR and providing forward guidance about the expected path of the OCR. The latter is an integral part of monetary policy, as such guidance – when believed – affects expectations of the future and hence private decisions to consume, invest, and employ labour. These longer-run beliefs are integral to successful monetary policy.
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Appendix: Secondary instruments

A.1 The Remit

The remit for the Monetary Policy Committee
Reserve Bank of New Zealand

The Government’s Economic Objective

The Government’s economic objective is to improve the wellbeing and living standards of New Zealanders through a sustainable, productive and inclusive economy. Our priority is to move towards a low carbon economy, with a strong diversified export base, that delivers decent jobs with higher wages and reduces inequality and poverty.

Context

Monetary policy plays an important role in supporting the Government’s economic objective. The Reserve Bank of New Zealand Act 1989 (the Act) requires that monetary policy promote the prosperity and wellbeing of New Zealanders, and contribute to a sustainable and productive economy. Monetary policy contributes to public welfare by reducing cyclical variations in employment and economic activity whilst maintaining price stability over the medium term.

This remit is issued by the Minister of Finance to the Monetary Policy Committee (MPC) under Clause 3, Schedule 1 of the Act.

1) Monetary Policy Objectives

a) Under Section 8 of the Act the Reserve Bank, acting through the MPC, is required to formulate monetary policy with the goals of maintaining a stable general level of prices over the medium term and supporting maximum sustainable employment.

2) Operational Objectives

a) For the purpose of this remit the MPC’s operational objectives shall be to:

i. 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. This target will be defined in terms of the All Groups Consumers Price Index, as published by Statistics New Zealand; and

ii. support maximum sustainable employment. The MPC should consider a broad range of labour market indicators to form a view of where employment is relative to its maximum sustainable level, taking into account that the level of maximum sustainable employment is largely
determined by non-monetary factors that affect the structure and
dynamics of the labour market and is not directly measurable.

b) In pursuing the operational objectives, the MPC shall:

i. have regard to the efficiency and soundness of the financial system;

ii. seek to avoid unnecessary instability in output, interest rates, and the exchange rate; and

iii. discount events that have only transitory effects on inflation, setting policy with a medium-term orientation.

Agreed by:

Hon Grant Robertson; Minister of Finance
Adrian Orr; Governor of the Reserve Bank of New Zealand
A.2 The Charter

Monetary Policy Committee Charter
Reserve Bank of New Zealand

The Monetary Policy Committee (MPC) is responsible for formulating monetary policy directed at achieving the economic objectives of price stability and support of maximum sustainable employment, as set out in section 8 of the Reserve Bank of New Zealand Act (1989) ("the Act") and in accordance with the remit. This charter aims to facilitate effective decision making by the MPC and ensure transparency of these decisions and the decision-making process, in order to aid the effectiveness of monetary policy and hold the MPC accountable.

1) Decision making

a) MPC members are tasked to abide by the code of conduct, and engage constructively with each other to achieve informed and timely monetary policy decisions. The MPC's decision making is enhanced by embracing diverse opinions that reflect, for example, members' unique personal and professional experiences and educational backgrounds. Members will respect each other's contributions and embrace any difference in view as a benefit of a diverse committee.

b) The MPC will seek consensus in decision making. This is to ensure that the MPC engages in in-depth discussions and a true exchange of perspectives regarding monetary policy strategy – including consideration of the expected time taken to achieve operational objectives, any trade-offs that arise, and communication of this strategy – before specific decisions are taken.

c) When consensus cannot be reached, specific policy decisions will be determined by a simple majority vote as per clause 44 of schedule 2 of the Act (which includes that the Governor, as chairperson, has a casting vote if required).

2) Transparency and accountability

a) The MPC will publish each monetary policy decision promptly on the Bank's website. The announced decision of the MPC will include a summary record of the MPC meeting that includes an overview of the economic outlook, the risks and policy options discussed, any material differences of view or judgement, and an unattributed record of any vote taken.

b) On a quarterly basis, the announced decision will also be accompanied by a Monetary Policy Statement that will, in addition to the requirements set out in section 15C of the Act:

(i) Explain how the MPC has sought to meet the requirements of section 2b in the remit; and

(ii) When inflation outcomes, and/or expected inflation outcomes, are outside of the target range explain the reasons for this; and
(iii) Explain how the current monetary policy decisions contribute to supporting maximum sustainable employment within the economy.

c) If the MPC decides that the Bank should intervene in financial markets, it shall also consider whether prompt publication of details of the decision would impede the achievement of the intervention's purpose. If so, the MPC may withhold such details until it deems that publishing them is no longer likely to create such impediment.

3) External communication

a) The MPC's communications – both collective and individual – should contribute to the overall effectiveness of the monetary policy decision, the public's understanding of monetary policy, and the accountability of the MPC.

b) The Governor (or another member of the MPC with the Governor's permission) will be the sole spokesperson for the official announcement of the decision.

c) In any public remarks regarding the MPC's policy strategy and decision, members are to draw on the MPC's official communications and on the Governor's media conference remarks where appropriate. Any non-public remarks on monetary policy or the economic outlook must be consistent with the MPC's official communications, to avoid providing, or appear to be providing, new information to a subset of individuals. A MPC member who wishes to publicly express his or her view around the balance of risks and/or economic outlook may, but should do so with respect for other members and the MPC as a whole. Members are to consult with the MPC within a reasonable timeframe in advance of any public communication, refrain from characterising the individual views of other MPC members, and ensure such communication is publicly advised in advance and on the record (on the Bank's website) in real-time.

d) Given financial market sensitivities, MPC members must refrain from any public communications relevant to monetary policy following receipt of MPC briefing papers and prior to the decision being announced.

Agreed by:
Hon Grant Robertson; Minister of Finance
Adrian Orr; Governor of the Reserve Bank of New Zealand.
A.3  The Code of Conduct

Monetary Policy Committee Code of Conduct
Reserve Bank of New Zealand

Effective from 1st April 2019
Approved by the Board of Directors 19th February 2019

Application

This code applies to all members of the Monetary Policy Committee (MPC), that is, both internal and external members.

Purpose

The code of conduct of the MPC sets out minimum standards of ethical and professional conduct that must be adhered to by members of the MPC.

Standards of Conduct

Members must formulate monetary policy consistent with the economic and operational objectives set out in the Reserve Bank of New Zealand Act (1989) (“the Act”) and the remit respectively, and consistent with the charter.

This code meets the requirements of the Act and is to be read subject to the MPC charter, which also includes expectations of members’ conduct, particularly placing constraints on members speaking in the public domain about the MPC’s activities.

Members must at all times act with honesty and integrity, in good faith, with respect for their colleagues and staff, and with reasonable care, diligence, and skill, having regard to the functions of the MPC.

Promoting participation and preparation

Members have an obligation to the MPC to:

- Carry out their responsibilities in an efficient and competent manner and to a high standard of performance.
- Contribute actively to and participate in MPC meetings, treating others’ contributions with respect at all times, and exchange ideas freely to promote excellence in the MPC’s deliberations.
- Develop, enhance and maintain expertise in the subject matter of the MPC.
- Continually seek to improve the effectiveness of their contribution.
- Attend all meetings, except where absence is unavoidable and approved by the chairperson of the MPC.
Be adequately prepared to participate in meetings, including by reading any meeting papers supplied.

Conflict of Interest

Each member must:

- Act in the interests of the Bank, and not pursue his or her own interests at the expense of the Bank.
- Declare relevant interests through disclosure to the chairperson. The interests will be recorded in a register that will be shared with each member and administered by the MPC secretary.

There is a conflict of interest whenever a member’s duty or responsibility to the Bank could be affected by some other duty or loyalty (i.e. the member’s “interest”) that the member may have. Perception of a potential conflict of interest is as important a consideration as an actual conflict of interest.

In determining whether a conflict of interest exists, members should ask themselves: does their other interest or loyalty create an actual or perceived incentive for them to act in a way that may not be in the best interests of the Bank? Could it undermine public trust and confidence in a member or in the Bank? Would a reasonable outside observer conclude that a conflict of interest existed?

Members should err on the side of caution and treat the interest as a potential conflict of interest situation.

Disclosure of interests

If a member has an interest, they must disclose the nature of the interest, and the monetary value of the interest (if the monetary value of the interest cannot be quantified, a member must disclose the nature and extent of the interest) in the Interests Register, and to:

a) the MPC chairperson (i.e. the Governor, or Deputy Governor if the Governor is unavailable) or

b) the chairperson of the Board, if the MPC chairperson is unavailable, as soon as practicable after the member becomes aware that he or she is interested.

A member may make a standing disclosure (i.e. a disclosure of an interest with ongoing effect). A standing disclosure will continue in effect until the nature of the interest materially alters or the extent of the interest materially decreases.

A member is deemed to have an interest that must be disclosed if the member:

a) has a personal financial exposure to interest rate movements or foreign exchange trading, and may derive a financial benefit by changing that exposure from information being considered by the MPC ahead of a monetary policy decision ("monetary policy information");
b) is the spouse, civil union partner, de facto partner, or is responsible for managing the affairs of a person who may derive a financial benefit from the monetary policy information;

c) is engaged in an employment, professional or consultancy capacity in a role for which monetary policy information is relevant (e.g. a treasury role, an FX trading role, or a role responsible for decisions about matters such as hedging interest rates).

Mortgages or other significant indebtedness

Members who have a financial exposure to interest rate movements, for example through home loans or other indebtedness influenced by decisions of the MPC, must record the exposure as an interest on the register. This includes the credit provider and the size of the indebtedness.

Members whose home loans (or other indebtedness influenced by the decisions of the MPC) are subject to fixed interest rates must record the term of the rate, i.e. when the fixed rate is scheduled to expire.

Consequences of failing to disclose an interest

The MPC chairperson must notify the Board of any failure by a member to disclose an interest, and of the actions affected, as soon as practicable after becoming aware of the failure. Failure by a member to disclose an interest does not affect the validity of any decision taken by the MPC.

Management of conflict of interest

Having identified and disclosed an interest, the next step is to determine how it can be managed to avoid a conflict of interest. The management of some specific situations of conflict of interest are outlined below. Other situations of conflict of interest are managed as agreed with the chairperson.

Regular financial markets trading restricted

Members must not be personally or professionally involved, directly or indirectly, in regular trading in financial markets in which the Bank has, or might have, a significant influence. This includes domestic wholesale money, bond and foreign exchange markets, interest and exchange rate futures, options and swaps markets, instruments linked to such markets, equities listed on New Zealand exchanges, and prediction markets related to those issues in which the Bank might have a significant influence.

If prohibited interests are held by trusts in which the member has a beneficial interest, rather than by the member directly, the code will be breached if the member has material influence over the trust, such as ability to instruct the trustee as to investment choices. Where the trustee acts independently from the member, there is likely to be no conflict.
Fixed interest rates

A member must inform the chairperson if the fixed interest rate on his or her indebtedness is due to expire close to the time the MPC is scheduled to make a decision. The chairperson may exclude that member from the decision making at that time, or may, before the scheduled decision, require the member to satisfy the chairperson as to how his or her decision making on the fixed rate will not be influenced by monetary policy information.

'Blackout' periods

A member must not place any trade in a FX instrument, purchase foreign exchange in an amount of $10,000 or more, fix an interest rate on any indebtedness, place or renew a term deposit in an amount of over $25,000, or purchase or sell any equity or debt instrument listed on a New Zealand exchange following receipt of MPC briefing papers and prior to the decision being announced, without first informing the chairperson. The chairperson may prohibit such a transaction until after the MPC meeting.

Consequences of a conflict of interest for MPC meetings

A member who has a conflict of interest must not, unless otherwise agreed by the chairperson:

a) vote or participate in any discussion or decision of the MPC in relation to the matter;

b) be regarded for the purpose of forming a quorum for the part of any meeting of the MPC during which a discussion or decision relating to the matter occurs or is made.

Confidentiality of information and prohibition on use of inside information

In the course of discharging their responsibilities as members of the MPC, members will have access to confidential Bank information on economic and financial market conditions, and monetary policy assessments. All such information must be kept confidential and may not be disclosed, or made use of, or acted upon, except:

a) in the performance of the MPC's functions;

b) as required or permitted by law; or

c) to the Chair of the Board, if necessary to comply with the requirement to disclose interests under this code;

d) as agreed by the MPC (if the disclosure, use, or act will be unlikely to prejudice the MPC).

Members must never act or enable others to act on private information acquired in the course of their work.
Members may act on information in the public arena that may result in a gain or avoid a loss to them or any other person, but it will be their responsibility, if challenged, to demonstrate that their action was not motivated by information acquired in the course of their duties. Perceptions of conflicts are also to be avoided and, if there is a circumstance where there could be a perception of conflict because of the information in the public arena and information acquired in the course of their duties, members should seek advice from the chairperson before acting.

Other ethical standards

A member must not use his or her position for personal gain. He or she must not solicit or accept gifts, rewards, or benefits which might compromise, or be seen to compromise, his or her integrity or that of the Bank, or be seen by others as either an inducement or a reward that might place the member under an obligation to a third party.

Breaches of the code

[To be read in conjunction with RBNZ Act Schedule 3, Part 2, clause 19]

Failure to adhere to the code of conduct is grounds for removal as a member. The Board may investigate any allegation of failure to adhere to this code and may recommend removal to the Minister.

Acknowledgement

I acknowledge that I have read, understood and agree to adhere to the contents of this code.

Member name, signature and date

Approved, chairperson name and date

Policy distributed to: The Reserve Bank of New Zealand's Board of Directors