Reserve Bank of New Zealand *Bulletin*

Monetary policy strategy in New Zealand

Julia Ratcliffe and Ross Kendall

A clear and effective strategy can play a significant role in helping monetary policy decision makers to achieve their objectives. This article outlines a framework for monetary policy strategy in New Zealand. It discusses the underlying principles of effective strategy in the context of a flexible inflation targeting regime and articulates the Reserve Bank of New Zealand's monetary policy strategy during the inflation targeting period.

On 1 April 2019, amendments to New Zealand's monetary policy framework came into effect. Changes to the Reserve Bank of New Zealand Act 1989 added an employment objective to the Reserve Bank's long-standing price stability objective, and created a formal Monetary Policy Committee with members internal and external to the Bank. Therefore, it is timely to take stock of the Bank's current monetary policy strategy, which will provide a platform from which the Monetary Policy Committee's strategy can be developed.

1 Introduction

Monetary policy is a crucial part of New Zealand's macroeconomic framework. Sound monetary policy can make a significant contribution to the wellbeing of New Zealanders by maintaining price stability and dampening cycles in output and employment. But achieving these outcomes 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 involve trade-offs between multiple objectives. Furthermore, such decisions must be made under uncertainty about the state and structure of the economy and the transmission of policy. A clear and effective strategy can help decision makers to connect appropriate policy actions to the state of the economy. In turn, providing a clear strategy promotes effective communication to the public, which increases the likelihood that the goals of monetary policy are achieved.

On 1 April 2019, amendments to the Reserve Bank of New Zealand Act 1989 (the Act) came into effect, establishing a formal Monetary

Policy Committee (MPC) in New Zealand.[1] The MPC has ownership over monetary policy strategy, which encompasses how the MPC plans to meet the objectives of monetary policy under different economic circumstances. The amendments also saw the addition of an employment objective to the Reserve Bank's long-standing price stability objective. Given these changes to the monetary policy framework, it is timely to take stock of how the Bank thinks about monetary policy strategy.

The analysis in this *Bulletin* has fed into the briefing materials prepared for the new MPC, in particular 'Chapter 7: Monetary policy strategy' in the *Monetary Policy Handbook* (RBNZ, 2019b). Chapter 7 of the handbook provides a framework for considering the components of effective strategy and discusses the Reserve Bank's strategy in terms of that framework. The framework is based on the literature on strategy and monetary policy, the Bank's experience of setting monetary policy, and the approach of other central banks, which are explored in more depth in this *Bulletin*.

Section 2 of this article sets out the components of an effective strategy. Sections 3 to 5 explore these components in detail in the context of monetary policy. Section 3 explains the objectives of monetary policy. Section 4 discusses how monetary policy strategy in New Zealand is conducted under different economic circumstances to achieve the policy objectives laid out in section 3. Section 5 describes 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. It also illustrates how the Reserve Bank has

implemented its strategy in practice using historical examples. Section 6 concludes.

2   Components of an effective strategy

The MPC is tasked with making monetary policy decisions to achieve a set of economic objectives. A critical part of making monetary policy decisions is deciding which strategy to follow.

The term 'strategy' is commonplace in economic theory. Mas-Colell, Whinston and Green (1995, p. 228) define a strategy to be "a *complete contingent plan*, or *decision rule* that specifies how a player [a decision maker] will act *in every possible distinguishable circumstance".* In dynamic macroeconomics, which concerns itself with decision making across time, these contingent plans are commonly called 'policy functions'.[2] In monetary economics, plans such as these are often referred to as 'reaction functions', since the decision maker chooses actions or policies in reaction to the economic environment and outlook that they confront.[3] Reaction functions can be described by 'policy rules', such as the eponymous rule of Taylor (1993), which describes how an interest rate should be set based on a limited set of macroeconomic variables. In practice, monetary policy strategies embody flexibility, since it can be difficult to anticipate all the circumstances that might be faced, and thus difficult to establish all the possible actions that might be taken.
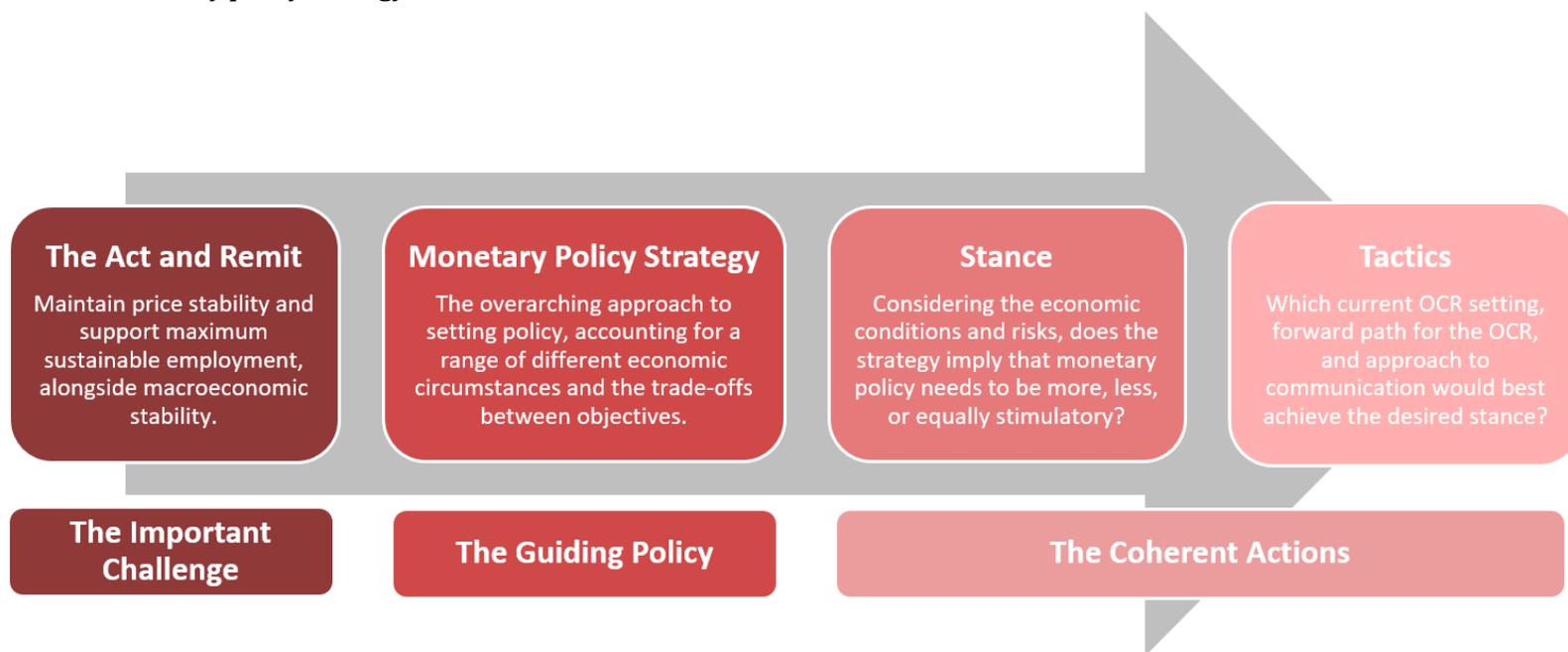
---

1   Before the amendments, the Governor of the Reserve Bank of New Zealand was legally the sole monetary policy decision maker, although in practice, the Bank has used committees to make important decisions for some time (Wheeler, 2013).

2   See, for example, Ljunqvist and Sargent (2004, p. 29), or McCandless (2008, p. 55).
3   See Walsh (1998, p. 32), or Romer (1996, p. 295).

Figure 1
A visual depiction of monetary policy strategy in New Zealand

The Act and Remit	Monetary Policy Strategy	Stance	Tactics
Maintain price stability and support maximum sustainable employment, alongside macroeconomic stability.	The overarching approach to setting policy, accounting for a range of different economic circumstances and the trade-offs between objectives.	Considering the economic conditions and risks, does the strategy imply that monetary policy needs to be more, less, or equally stimulatory?	Which current OCR setting, forward path for the OCR, and approach to communication would best achieve the desired stance?
The Important Challenge	**The Guiding Policy**	**The Coherent Actions**	

One framework that the Reserve Bank finds useful for thinking about monetary policy strategy is the broad strategic framework laid out by Rumelt (2011). Rumelt identifies strategy as "a cohesive response to an important challenge" (p. 6).

Rumelt argues that 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.

Figure 1 illustrates this layering of components applied to monetary policy strategy in New Zealand.

The Reserve Bank's **important challenge** (economic objectives) is legislated in the Act, and its secondary instruments – *The Remit for the Monetary Policy Committee (Remit)* and the *Monetary Policy Committee Charter (Charter)*. The *Remit* and the *Charter* replace the *Policy Targets Agreement (PTA)*.[4] The Reserve Bank's primary economic objectives

---

4   The *Charter* is a more comprehensive version of the *PTA*'s transparency and accountability section. It adds more detail around monetary policy decision making and communication requirements, to account for how the new MPC will operate. The most up-to-date versions of the *Remit* and *Charter* can be found at https://www.rbnz.govt.nz/monetary-policy/about-monetary-policy/monetary-policy-framework, and the new framework is discussed in detail in Chapter 1 of the *Monetary Policy Handbook* (RBNZ, 2019b).

– laid out in the Act and specified in more detail in the *Remit* – are price stability and supporting maximum sustainable employment. Once the important challenge is defined (the Bank's economic objectives are understood), a guiding policy and coherent actions are necessary to address the challenge.

The Reserve Bank has sometimes referred to the **guiding policy** for achieving its mandate as its 'monetary policy strategy'. Rumelt (2011) says:

> *"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" (p. 7).*

In the case of monetary policy, economic shocks that push either inflation or employment away from their targeted levels 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" (Rumelt, 2011, p. 7). In the context of monetary policy, coherent actions 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 Official Cash Rate (OCR) and forward guidance language).

3   The important challenge: monetary policy objectives

Before establishing a strategy to achieve a goal, it is important to define the goal. This is what Rumelt (2011) calls "the diagnosis" of an important challenge. Furthermore, "a good strategic diagnosis does more than explain a situation – it also defines a domain of action" (Rumelt, 2011, p. 81). The Reserve Bank's important challenge is set out in the Act and the *Remit*. The terms laid out in these documents require interpretation, and that interpretation has been influenced by the Bank's understanding of how the economy functions and what monetary policy can and cannot influence (the domain of action). This section discusses how the Reserve Bank has interpreted the terms in the *Remit* that also appeared in previous *PTAs*.[5]

The overall purpose of the Act is to promote the prosperity and wellbeing of New Zealanders, and contribute to a sustainable and productive economy. The Reserve Bank – through the MPC – is responsible for formulating monetary policy. The Act provides the MPC with its high-level economic objectives of:

- achieving and maintaining stability in the general level of prices over the medium term; and

- supporting maximum sustainable employment.

---

5   Much of the language used in the *Remit* is very similar to the *PTA*, so the Bank's historical interpretation of the *PTA* is still relevant to this framework.

These two objectives are commonly referred to as a dual mandate. The *Remit* provides the MPC with more detail about how these high-level objectives are to be defined or addressed – these are the "operational objectives". The *Remit* also provides the MPC with "secondary considerations" to take into account. The operational objectives and secondary considerations are explored below.

The Remit: *operational objectives*

Section 2(a) of the *Remit* (included in full in the appendix) states that the MPC's operational objectives are 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."

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 Bank has interpreted the medium term as the second half of a three-year forecast horizon (Bollard, 2008). This interpretation reflects that monetary policy affects the real economy and

inflation with a lag. The use of the phrase "medium term" rather than a defined period of time reflects that this lag can change over time, and that the appropriate time over which inflation should be returned to target can vary depending on the circumstances.

The Reserve Bank has recently defined maximum sustainable employment (MSE) as "the highest utilisation of labour resources that can be maintained without creating an acceleration in inflation" (RBNZ, 2019a, p. 31). Unlike inflation, MSE is unobservable. In addition, MSE is largely determined by factors other than monetary policy, such as demographics, the match between workers' skills and firms' needs, and labour market policy. 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 to take into account when pursuing the operational objectives described above, which we now discuss in turn.

(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.[6] It recognises that monetary policy decisions often have implications for financial stability. For example, very low interest rates that may be needed to lean against low inflation and employment can exacerbate credit and asset price imbalances. Or high interest rates aimed at countering inflation pressures

---

6   See Kendall and Ng (2013b) for more discussion.

may intensify a downturn in asset prices, possibly undermining financial stability.

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

Instability refers to the volatility of each factor listed in this clause. The extent to which instability 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 circumstances (Hunt, 2004).

Interest rates refer to both the OCR itself and to market interest rates that are influenced by the OCR. 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 clause to mean that monetary policy should 'look through' temporary shocks to inflation. Monetary policy operates with a lag, so it cannot affect the economy in a timely enough manner to offset short-term 'shocks' (such as a weather-induced increase in food prices). Even if a temporary inflation shock could be anticipated, reacting to it would increase volatility in the economy.

4 The guiding policy: monetary policy strategy

Monetary policy strategy is the guiding policy for how monetary policy will achieve its objectives, setting out how decision makers intend to factor in, or respond to, changes in the economy and outlook. Robust strategies should outline a consistent approach for making policy trade-offs and provide a consistent approach to weighing up the risks and uncertainty inherent in inflation and employment forecasts. A shared understanding and agreement between decision makers about monetary policy strategy can assist with monetary policy deliberation, communication, and credibility.[7]

The recent amendment to the Act means that the MPC has ownership over monetary policy strategy and its implementation. Although supporting maximum sustainable employment has been added only recently as an objective of monetary policy, the Reserve Bank has long had regard to the real economy, including employment (McDermott and Williams, 2018). Therefore, the Bank's existing approach to monetary policy strategy remains an informative starting point for the MPC in determining its own strategic approach. This section discusses the monetary policy strategy deployed by the Bank under a flexible inflation targeting regime. We begin with the core principles that underpinned this approach, before discussing the trade-offs between objectives, and how uncertainty can influence strategy.

---

7   Central banks in other advanced economies take a broadly similar approach to New Zealand in their monetary policy strategy. The approach of other central banks is discussed in Appendix A.

Core principles of flexible inflation targeting

We first explore some core principles that underlie the Bank's understanding of flexible inflation targeting in New Zealand. These principles have underpinned the Bank's approach to monetary policy strategy and provide the context for, and constraints faced in pursuing, the Reserve Bank's economic objectives.

Low and stable inflation is monetary policy's best long-run contribution

"It has long been recognised that the best contribution that monetary policy can make to strong and sustainable long-run growth is low and stable inflation" (McDermott, 2014).[8] This principle stems from the widely-held economic theory that in the long run, monetary policy can only affect the level of prices, and not real variables (such as employment). Facilitating clear and predictable price signals is the best long-run contribution the Reserve Bank can make to enable resources to be efficiently allocated in the economy and therefore to support employment and output.[9]

Monetary policy cannot materially influence the long-run (or trend) level of employment. Therefore, at long time horizons, there is no trade-off between employment and inflation. However, this is not true in the short-to-medium term, because prices are sticky – they take time to change in response to market forces. This stickiness allows monetary policy to influence the deviations of real variables from their trends, and hence the macroeconomic cycle.

The deviations from trend concept is important in understanding how the Reserve Bank supports maximum sustainable employment. The Bank can only influence cyclical employment or the deviations of employment from its long-run trend, as opposed to the long-run trend itself.[10] As mentioned in the previous section, the *Remit* explicitly recognises that MSE is largely determined by non-monetary factors.

Credibility of the policy targets is crucial

The effectiveness of monetary policy relies heavily on the credibility of the Bank's policy targets. Inflation expectations are an indicator of whether a central bank's inflation target is viewed as credible. People's expectations about future inflation influence how they set prices today. In particular, if people expect the Bank to achieve its inflation target, then they tend to set prices and wages today in line with the target, making it more likely that the target will be achieved. More generally, if people believe that the Reserve Bank 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.[11]

If long-term inflation expectations become unanchored from the inflation target, the implications for inflation and MSE can be considerable. There are historical examples of central banks losing credibility – for example, the German experience of hyperinflation in the early 1920s. Unanchored inflation expectations undermine the ability of the flexible inflation targeting regime to maintain price stability and support MSE, or to take into account the secondary considerations of the *Remit*.

---

8   See also 'Box B: The 2018 Policy Targets Agreement' (RBNZ, 2018).
9   See Smith (2004) for more discussion.

10   A possible exception to this is the hypothesis of 'hysteresis', which posits that very large and sustained negative output gaps may weigh on the economy's potential output and level of maximum sustainable employment for a prolonged period. See Blanchard (2018) for more discussion.
11   For more on inflation expectations and their role in monetary policy, see Ford, Kendall and Richardson (2015) and McDermott, Lewis and Richardson (2016).

The importance of well-anchored inflation expectations means that the Reserve Bank 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 anchoring of inflation expectations largely depends on the credibility of the Bank's monetary policy strategy and communications.

Having a clear and cohesive strategy promotes communication that is consistent with the actions of the Bank across time. Effective communication helps financial market participants, economic analysts, the government, and the public to understand how the central bank will respond to different forces that affect the economy. If the public understands the MPC's strategy and believes that it will be effective, then it will be easier for the MPC to achieve its goals.[12]

Key aspects of the Reserve Bank's monetary policy strategy

Inflation forecast targeting
Historically, the Bank'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 around two years. The time to target has been allowed to vary to reflect the balance of trade-offs with the Bank's other objectives.[13] The typical timing of around two years reflects the view that a monetary policy decision today is fully transmitted through the economy after about two years.[14]

This approach is referred to in the monetary policy literature as inflation forecast targeting – the central bank sets policy so that its inflation forecast is at target. This approach has a number of benefits over other ways of formulating monetary policy (such as 'instrument rules').[15] Svensson (1997) argues that:

> *"A good intermediate target for monetary policy is highly correlated with the goal, easier to control by the central bank than the goal, easier to observe by both the central bank and the public than the goal, and transparent so that central bank communication with the public and public understanding and prediction of monetary policy is facilitated... From this perspective, the central bank's inflation forecast appears to be an ideal intermediate target" (p.1126).*

Even though this forecast targeting approach is specified in terms of inflation, the Bank has viewed it as consistent with its objective of supporting MSE alongside price stability. Svensson (1997) also 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. Svensson's findings are consistent with the view that short-term trade-offs exist between inflation and employment (as discussed earlier in this section) and that allowing variation in the time for inflation to return to target may be an appropriate way to manage these trade-offs.

Symmetry of policy targets
In the past, the Reserve Bank has treated its policy targets (inflation, and more recently, maximum sustainable employment) as symmetric.

---

12   See Blinder (2009) and Bascand (2013) for discussions of central bank communication.

13   In other words, the timing is state dependent. The Bank's expected speed of return to the target mid-point has varied considerably over time (see for example figure 2, Ford, Kendall and Richardson, 2015, p. 8).

14   Time series evidence from Haug and Smith (2012) suggests that a monetary policy shock has a peak effect on prices after about seven quarters and that the effect dies out after about 11 quarters.

---

15   An instrument rule specifies exactly what the central bank should set its policy rate to as a function of some available indicators. For example, in the well-known Taylor rule, interest rates are set as a function of the current output gap and rate of inflation (Taylor, 1993).

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 *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 *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.[16]

The broad conclusion from the literature on asymmetric central bank behaviour is that a central bank that has a greater tolerance for labour market strength introduces an upward bias into inflation expectations.[17] In effect, households and firms observe asymmetric behaviour, realise it will lead to additional inflation over time, and build this into their inflation expectations and wage- and price-setting behaviour. As a result, such a strategy may be inconsistent with the Act and the *Remit's* focus on medium-term price stability. Such a policy may also introduce greater volatility in interest rates and other macro-variables. If the Bank accommodates strong employment today, it will eventually need to bring the market back to equilibrium, potentially resulting in the need for larger swings in interest rates – and greater volatility in other macro-variables.

Trade-offs under a flexible inflation targeting regime

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

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, but in the short-to-medium term, trade-offs can occur. Table 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 its maximum sustainable level 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.

16   Research by Karagedikli and Lees (2007) found that the Reserve Bank of New Zealand has historically responded symmetrically to positive and negative output gaps, which tend to co-move with employment gaps.

17   See Nobay and Peel (2003), Ruge-Murica (2004) and Surico (2007).

Table 1
Policy implications of trade-offs between operational objectives

	Inflation below target	Inflation above target
Employment below target	No trade-off – ease policy	Policy faces trade-offs
Employment above target	Policy faces trade-offs	No trade-off – tighten policy

When a trade-off occurs, decision makers need to consider how much they will tolerate one objective deviating from target relative to the other. Since MSE was introduced as a goal for monetary policy, the Reserve Bank has taken a 'balanced approach' to the two objectives.[18] This means the Bank has considered outcomes for both objectives when determining the appropriate stance of monetary policy. However, weighing up outcomes for inflation and employment is not straightforward, because they are fundamentally different concepts. Furthermore, 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.[19] 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 (have opposite signs) under the optimal policy path. That is, if inflation is deviating from target in one direction, then the 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 2. Policy A (which corresponds to a lower interest rate path) allows higher employment in order to achieve higher inflation, but both 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.
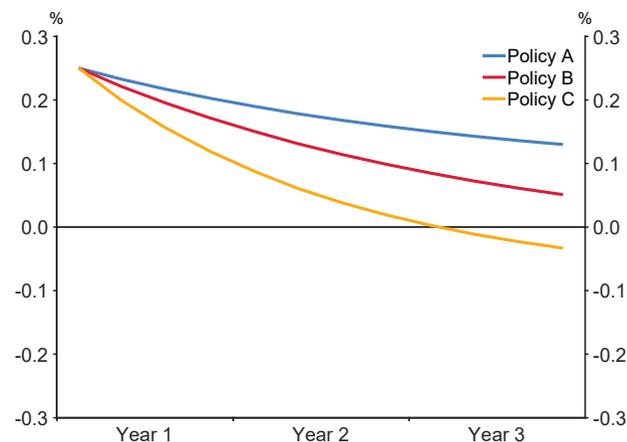
a) Have regard to the efficiency and soundness of the financial system

Financial system efficiency and soundness are the key objectives of the Reserve Bank's prudential regulation and supervision function. Monetary

---

18   This approach was discussed in 'Box B: A balanced approach to inflation and employment' (RBNZ, 2019a).

19   Svensson's framework builds on Qvigstad (2006).

**Figure 2
Stylised
example:
projected
inflation and
employment
outcomes
under
alternate
policy paths**

Inflation outcomes

Annual %
Annual %

Policy A
Policy B
Policy C

Year 1   Year 2   Year 3
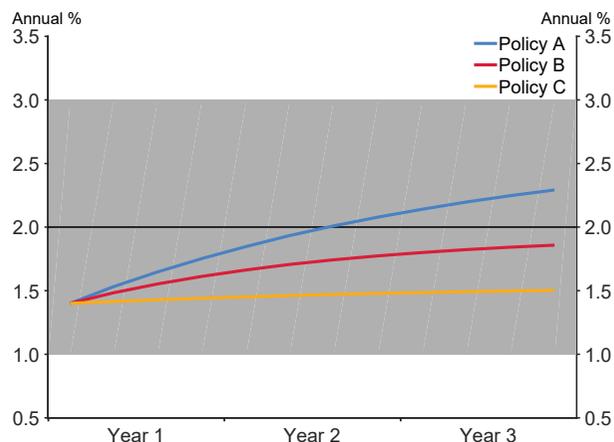
Employment gap outcomes

%
%

Policy A
Policy B
Policy C

Year 1   Year 2   Year 3

Note: The horizontal line represents the level of maximum sustainable employment, and the axis is percentage deviations from this level.

policy and prudential policy can interact, because they both have effects on the economy and the financial system. In particular, macro-prudential policies, which target systemic risks, can often interact with monetary policy, for instance via effects on the housing market.

The Bank's current approach is to use macro-prudential policies to lean against the build-up of risks in the financial system. But if macro-prudential policies are ineffective, the MPC may consider using monetary policy to help lean against risks to financial stability (for example, risks arising from rapid growth in credit and asset prices), as long as doing so does not compromise the operational objectives in the *Remit*.[20] The degree to which monetary policy should lean against financial risks, as

well as how it should coordinate with prudential policy, remain under debate around the world.[21]

b)   Avoiding unnecessary instability
Section 2(b)(ii) of the *Remit* requires the MPC to "seek to avoid unnecessary instability in output, interest rates, and the exchange rate".[22] The consideration for stability in economic output, interest rates, and the exchange rate 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, interest rates, and

---

20   See Dunstan (2014) for more discussion of the interaction between macro-prudential and monetary policy.

21   For example, see Bank for International Settlements (2016) and Svensson (2017).

22   Hunt (2004) discusses the interpretation of this language when it was introduced in a similar clause in the September 2002 *PTA*.

the exchange rate. 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 Bank's strategy of setting policy with the aim of returning inflation to the target mid-point in around two years, and allowing this time horizon to vary depending on the shocks hitting the economy.

If the MPC were to try to return both employment and inflation to their targets as quickly as possible, it 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 Bank has historically 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.[23]

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 MPC 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 could reduce the maximum level of employment that is sustainable.

Movements in interest rates can affect the exchange rate. Exchange rate movements are an intrinsic part of the monetary policy transmission mechanism, but monetary policy has limited ability to affect the real exchange rate beyond the near term. There can be significant costs in attempting to stabilise the exchange rate (Hargreaves, 2003). However, the Bank has considered the effects of the medium-term exchange rate cycle on the macroeconomy and has adjusted interest rates as necessary.[24] In addition to its interest rate policy tools, the Bank 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.[25]

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 Bank would typically estimate the current values of each key variable, including unobservable variables such as MSE.[26] In these estimates, the Bank makes judgements regarding the risks to the assumed current values of, and forecasts for, key variables in the economy. Consistent application of these judgements over time contributes to a coherent monetary policy strategy.

To communicate the uncertainty within these assessments, the Reserve Bank has historically incorporated a balance of risks into its forecasts and discussed those risks, and possible policy reactions to them, in the *Monetary Policy Statement* (*MPS*). In the past, the Bank has not typically changed the stance of monetary policy as 'insurance' against risks.

---

23 See Kendall and Ng (2013b) and Ford, Kendall and Richardson (2015).

24 For example, in the mid-2000s, the high level of the exchange rate was a factor in the Bank seeking to bring inflation back down to 2 percent quite gradually (Ford, Kendall and Richardson, 2015).

25 For more on the Reserve Bank's exchange rate intervention policy, see Eckhold and Hunt (2005).

26 Erceg *et al* (2018) find that policy should respond to estimates of the unemployment rate gap, even if that gap is mismeasured.

The Bank has 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 only exceed targets 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 decision makers 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.[27] This means that decision makers 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 results in policy rate changes having a stronger influence on long-term interest rates (Bernanke, 2004).

5 The coherent actions: stance and tactics

When decision makers have a clear vision of their 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 surrounding risks) to assess the trade-offs that exist. Decision makers can then deliberate about what these trade-offs and risks imply the appropriate stance of monetary policy is at each OCR decision, given their overarching strategy.

Monetary policy tactics are the use of monetary policy tools to achieve a desired monetary policy stance.[28] 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.

---

27   This concept is termed 'gradualism' and is attributed to the concepts discussed in Brainard (1967).

28   See chapter 6 of the *Monetary Policy Handbook* (RBNZ, 2019b) for more discussion.

Depending on the situation, the MPC may try to achieve the desired monetary policy stance using different combinations of the current OCR, the forward projection, and the surrounding communication. Publishing a credible set of projections in the *MPS* also helps market participants respond effectively to new information, as they build up an understanding of how the Bank's interest rate projections change in light of new economic developments.

Historical examples

This section discusses three historical examples to illustrate how the Reserve Bank has applied its monetary policy strategy to choosing an appropriate stance in practice, based on the concepts discussed in section 4. The first example demonstrates the importance of the credibility of policy targets, by showing the Bank's reaction to the risk of inflation expectations becoming unanchored. The second and third examples demonstrate how the Bank makes trade-offs when inflation and output/employment are pushed in opposite directions. Although these examples come from a period in which the Bank had a single legislated objective of price stability, the Bank has operated under a flexible inflation targeting regime for some time and the policy decisions below reflect that the Reserve Bank has long had regard for employment and macroeconomy stability.[29]

Example 1: Re-anchoring inflation expectations – early 2016
As discussed earlier, the Bank has tended to choose an interest rate path that would result in forecast inflation returning to target in about two years. The time to target can be extended if necessary to balance other objectives, as long as inflation expectations remain anchored near

2 percent. If expectations begin to move, it is beneficial to signal more strongly to the public that the Reserve Bank is committed to achieving its inflation target.

In early 2016, the Bank became constrained in its ability to lengthen the projected time to return inflation to target because of declining inflation expectations. The economic outlook at the time had many risks, both global and domestic, but one risk stood out: inflation expectations were below 2 percent and falling. Tradables inflation had surprised to the downside for some time, partly as the result of sharp falls in international commodity prices. The Bank was able to look through these temporary influences, until people's inflation expectations began to decline. CPI inflation had been below the 2 percent target mid-point for four years, and surveyed expectations of medium-term inflation were falling, which posed a risk of long-term inflation expectations becoming unanchored from 2 percent. In the March quarter of 2016, inflation expectations fell sharply across the curve (figure 3, blue line).

Figure 3 Annual inflation expectations curve by number of years ahead *(RBNZ, 2016a, p. 26, figure 4.20)*
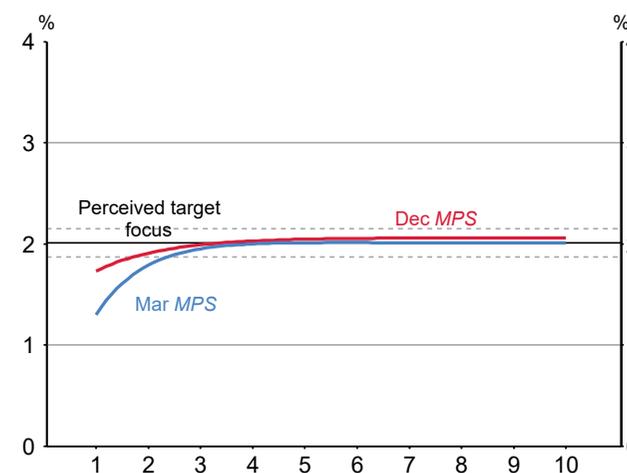
Source: ANZ Bank, Aon Consulting, Consensus Economics, RBNZ estimates.

The Bank chose to cut the OCR and shift the projected forward path downward over the entire horizon, as it judged that the potential for declines in inflation expectations to become self-fulfilling had become too strong. The lower OCR path meant that inflation would return more quickly to target, even though this resulted in slightly more instability in interest rates, and upward pressure on already-high house price inflation.

Example 2: Trading off high inflation and low output/employment – mid-2008

A negative supply shock puts upward pressure on inflation and downward pressure on employment and output, creating a policy trade-off. Attempting to restrain strong inflation with tighter monetary policy will put further downward pressure on employment and output. This is a case in which the Bank can adjust the projected time for inflation to reach target to consider the stability of both inflation and output/employment.

In the June 2008 *MPS*, CPI inflation was projected to peak at 4.7 percent in September 2008 – outside of the target range of 1 to 3 percent. Rising commodity prices, combined with slowing global growth and disruptions to global financial markets, resulted in weak domestic activity, but high domestic inflation. The OCR was at 8.25 percent. The Bank had to choose between pushing the OCR higher to reduce inflation more quickly, but weaken activity further, or allowing inflation to remain outside the target band for a period so it would not cause unnecessary instability in output and employment. In addition, the Bank had to judge whether to 'look through' high tradables inflation, based on how persistent it was likely to be. The Bank also had to determine whether inflation expectations would stay anchored through this period of volatility.

In the end, the Bank judged that it was appropriate to take longer than the usual two-to-three year period to return inflation to middle of the target range (figure 4). This reflected an assessment that although the effects of the negative supply shock (higher imported commodity prices) would increase inflation for several years, the effect would eventually dissipate. Downside risks to the employment and growth outlook were of greater concern and posed a larger threat to medium-term price stability.

**Figure 4
Annual CPI inflation, headline and ex-food and energy**
*(RBNZ, 2008, p. 3, figure 2.1)*
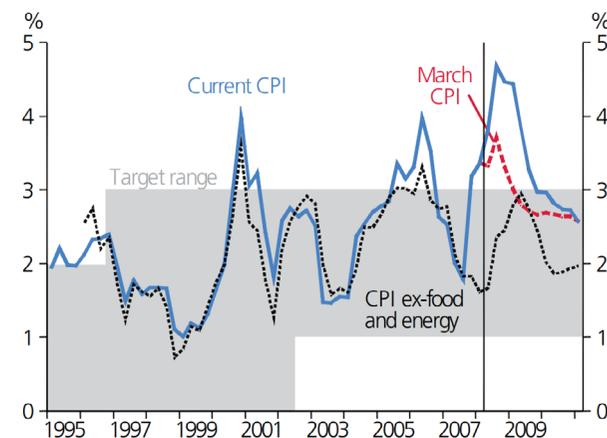
Source: Stats NZ, RBNZ estimates.

Example 3: Trading off low inflation and high output/employment – late 2016

A positive supply shock generates trade-offs in the opposite direction. The Reserve Bank's policy strategy has been to respond symmetrically to supply shocks that push inflation lower and shocks that push it higher. In the August 2016 *MPS,* the tradables inflation forecast was revised down significantly (figure 5). The *MPS* explained that:

"... given the outlook for global inflation and policy rates, low tradables inflation appears likely to continue for some time. This unusual persistence in tradables inflation has contributed to low headline CPI inflation, which is in turn seeping into inflation expectations, and

**Figure 5
Annual
tradables
inflation
projection**
*(RBNZ
2016b, p. 30,
figure 5.4)*
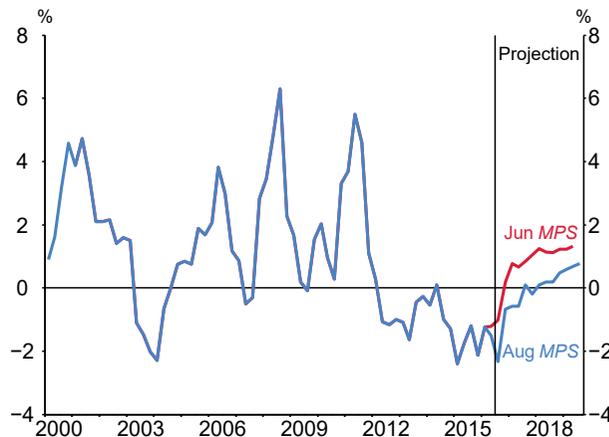
Source: Statistics New Zealand, RBNZ estimates.

presents an ongoing challenge for monetary policy" (RBNZ, 2016b, p. 5).

There was already a projected positive output gap, so the Bank had to decide whether to ease policy further to boost non-tradables inflation, with the downside of pushing the output gap further into positive territory. In the end, the projected path for the OCR was lowered to offset the persistent effects of weaker tradables inflation on pricing behaviour and inflation expectations. However, the policy stance did not attempt to offset the near-term negative price pressure. Doing so would have pushed output further away from trend than was necessary, and caused additional instability in the economy.

Conclusion

Sound and effective monetary policy strategy requires more than just deciding whether the OCR should go up or down on any given day. Monetary policy strategy encompasses a cohesive response to an important challenge and is a guiding policy that informs, but is separate from, the stance and tactics of monetary policy. It is an overarching plan of how monetary policy should be conducted under different economic circumstances. A clear and effective strategy will help the MPC communicate to market participants and the public, and increase the likelihood that the objectives in the Act and the *Remit* are achieved.

The 2018 amendment to the Reserve Bank of New Zealand Act introduced a Monetary Policy Committee responsible for formulation of monetary policy. The changes to the Act mean that the MPC has ownership over monetary policy strategy and its implementation. The amendment also specifies a dual mandate for monetary policy – price stability and maximum sustainable employment. This amendment represents an evolution in monetary policy objectives, reinforcing elements of New Zealand's flexible inflation targeting regime. Price stability and macroeconomic stabilisation remain at the core of the monetary policy framework in New Zealand. The Reserve Bank's existing monetary policy strategy provides a platform from which the MPC's strategy can develop.

Appendix A
The monetary policy strategy of other central banks

The Reserve Bank's monetary policy strategy has close parallels to strategies deployed by other advanced economy central banks. This section highlights some of the similarities between the approach to strategy detailed in this article, and other central banks' descriptions of their policy strategies. In general, monetary policy is conducted in a similar way across advanced economy central banks, despite a range of differences in how monetary policy frameworks are legislated and specified.[30]

Dual mandates and long-term trade-offs
Other central banks that have employment as a legislated goal of monetary policy – such as the US Federal Reserve and the Reserve Bank of Australia – also balance their inflation and employment goals over the short-to-medium term, while recognising that there is no long-term trade-off between inflation and employment. For instance, in the United States:

"The maximum level of employment is largely determined by nonmonetary factors that affect the structure and dynamics of the labor market. These factors may change over time and may not be directly measurable. Consequently, it would not be appropriate to

specify a fixed goal for employment; rather, the Committee's policy decisions must be informed by assessments of the maximum level of employment, recognizing that such assessments are necessarily uncertain and subject to revision. The Committee considers a wide range of indicators in making these assessments.

In setting monetary policy, the Committee seeks to mitigate deviations of inflation from its longer-run goal and deviations of employment from the Committee's assessments of its maximum level. These objectives are generally complementary. However, under circumstances in which the Committee judges that the objectives are not complementary, it follows a balanced approach in promoting them, taking into account the magnitude of the deviations and the potentially different time horizons over which employment and inflation are projected to return to levels judged consistent with its mandate." (Federal Open Market Committee, 2019)

And in Australia:

"These objectives allow the Reserve Bank [of Australia] Board to focus on price (currency) stability, which is a crucial precondition for long-term economic growth and employment, while taking account of the implications of monetary policy for activity and levels of employment in the short term." (The Treasurer and the Governor of the Reserve Bank of Australia, 2016)

Inflation forecast targeting
One of the features of the Reserve Bank's monetary policy strategy is that the policy stance is set such that inflation is forecast to return to the target mid-point in the medium term, rather than over a very short or very long time horizon. Other advanced economy central banks take a similar approach. For example, the Bank of Canada explains that:

---

30   See Kendall and Ng (2013a), Wood and Reddell (2014), Wadsworth (2017) and Jacob and Wadsworth (2018).

"Monetary policy actions take time – usually between six and eight quarters – to work their way through the economy and have their full effect on inflation. For this reason, monetary policy is always forward looking and the policy rate setting is based on the Bank's judgment of where inflation is likely to be in the future, not what it is today." (Bank of Canada, 2019a)

"Typically, the Bank seeks to return inflation to target over a horizon of six to eight quarters." (Bank of Canada, 2019b, p. 2)

And the European Central Bank notes that:

"An excessively aggressive policy response to restore price stability in a very short span of time may cause significant output and employment volatility which, over a longer horizon, could also affect price developments. In these cases, it is widely recognised that a gradual response of monetary policy is appropriate both to avoid unnecessarily high volatility in real activity and to maintain price stability over a longer horizon." (European Central Bank, 2019)

Flexibility

Inflation targeting central banks are flexible about the time horizon at which they aim to return inflation to target. The appropriate time to return inflation to target depends on factors such as whether the shocks hitting the economy create trade-offs with other considerations (such as employment, output, or financial stability), or if the balance of risks is skewed. For instance:

"… the most appropriate horizon for returning inflation to target will vary depending on the nature and persistence of the shocks buffeting the economy." (Bank of Canada, 2019b, p. 2)

"There has, however, been considerable variation in the horizon, from as short as two quarters to as long as 11 quarters, depending on the shock(s).

Broadly speaking, there are three sets of circumstances under which it may be desirable to return inflation to target over a somewhat longer-than-usual horizon.

First, the effects of a shock could be sufficiently large and persistent that a longer horizon may be needed to provide greater economic and financial stability …

Second, through a longer horizon, monetary policy can also promote adjustments to financial imbalances …

Third, the horizon may vary depending on whether the overall risks to the Bank's most likely outlook for inflation are seen to be on the downside or the upside and how much "risk management" the Bank deems appropriate to undertake." (Bank of Canada, 2012)

"The medium-term orientation reflects the fact that monetary policy cannot, and therefore should not, attempt to fine-tune developments in prices or inflation over a few weeks or months. Moreover, the medium-term orientation makes it possible for monetary policy to take into account concerns about output fluctuations, without putting price stability at risk." (European Central Bank, 2019)

Appendix B

The Remit for the Monetary Policy Committee, 14 February 2019

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

References

Bank for International Settlements (2016) *86th Annual Report*, https://www.bis.org/publ/arpdf/ar2016e.htm, accessed 27 February 2019.

Bank of Canada (2012) 'Monetary policy', https://www.bankofcanada.ca/wp-content/uploads/2010/11/monetary_policy.pdf, accessed 7 March 2019.

Bank of Canada (2019a) 'Monetary policy', https://www.bankofcanada.ca/core-functions/monetary-policy/, accessed 7 March 2019.

Bank of Canada (2019b) *Monetary Policy Report,* January, https://www.bankofcanada.ca/wp-content/uploads/2019/01/mpr-2019-01-09.pdf, accessed 7 March 2019.

Bascand, G (2013) 'Communication, understanding and credibility', speech to Admirals Breakfast Club, 6 December, https://www.rbnz.govt.nz/research-and-publications/speeches/2013/speech2013-12-06 , accessed 22 February 2019.

Bernanke, B (2004) 'Gradualism', Remarks to a luncheon co-sponsored by the Federal Reserve Bank of San Francisco and the University of Washington, 20 May, https://www.federalreserve.gov/boarddocs/speeches/2004/200405202/default.htm, accessed 7 March 2019.

Blanchard, O (2018) 'Should we reject the natural rate hypothesis?', *Journal of Economic Perspectives*, 32(1), pp 97-120.

Blinder, A (2009) 'Making monetary policy by committee', *International Finance*, 12(2), pp 171-194.

Bollard, A (2008) 'Flexibility and the limits of inflation targeting', speech delivered on 30 July, https://www.rbnz.govt.nz/research-and-publications/speeches/2008/speech2008-07-30, accessed 14 February 2019.

Brainard, W (1967) 'Uncertainty and the effectiveness of policy', *American Economic Review*, 57(2), pp 411-25.

Dunstan, A (2014) 'The interaction between monetary and macro-prudential policy', Reserve Bank of New Zealand *Bulletin*, 77(2), pp 15-25.

Eckhold, K and C Hunt (2005) 'The Reserve Bank's new foreign exchange intervention policy', Reserve Bank of New Zealand *Bulletin*, 68(1), pp 12-22.

Erceg, C, J Hebden, M Kiley, D López-Salido, and R Tetlow (2018) 'Some implications of uncertainty and misperception for monetary

policy', *Finance and Economics Discussion Series* 2018-059, Board of Governors of the Federal Reserve System.

European Central Bank (2019) 'Medium-term orientation', https://www.ecb.europa.eu/mopo/strategy/princ/html/orientation.en.html, accessed 7 March 2019.

Federal Open Market Committee (2019) 'Statement of longer-run goals and monetary policy strategy', https://www.federalreserve.gov/monetarypolicy/files/FOMC_LongerRunGoals.pdf, accessed 7 March 2019.

Ford, D, E Kendall and A Richardson (2015) 'Evaluating monetary policy', Reserve Bank of New Zealand *Bulletin,* 78(7).

Hargreaves, D (2003) 'Monetary policy and the volatility of real exchange rates in New Zealand', summary of a lecture by Ken West, Reserve Bank of New Zealand *Bulletin*, 66(3), pp 42-43.

Haug, A and C Smith (2012) 'Local linear impulse responses for a small open economy', *Oxford Bulletin of Economics and Statistics*, 74(3), pp 470-492.

Hunt, C (2004) 'Interpreting clause 4(b) of the Policy Targets Agreement: avoiding unnecessary instability in output, interest rates, and the exchange rate', Reserve Bank of New Zealand *Bulletin*, 67(2), pp 5-20.

Jacob, P and A Wadsworth (2018) 'Estimated policy rules for different monetary regimes: Flexible inflation targeting versus a dual mandate', Reserve Bank of New Zealand *Analytical Note*, November, AN2018/11.

Karagedikli, O and K Lees (2007) 'Do the central banks of Australia and New Zealand behave asymmetrically? Evidence from Monetary Policy Reaction Functions', *Economic Record*, 2007, 83(261), pp 131-142.

Kendall R and T Ng (2013a) 'Estimated Taylor rules updated for the post-crisis period', Reserve Bank of New Zealand *Analytical Note*, August, AN2013/04.

Kendall R and T Ng (2013b) 'The 2012 Policy Targets Agreement: An evolution in flexible inflation targeting in New Zealand', Reserve Bank of New Zealand *Bulletin*, 76(4).

Ljungqvist, L and T Sargent (2004) *Dynamic Macroeconomic Theory*, The MIT Press, Cambridge, MA.

Mas-Colell, A, M Whinston and J Green (1995) *Microeconomic Theory*, Oxford University Press, Oxford.

McCandless, G (2008) *The ABCs of RBCs: An Introduction to Dynamic Macroeconomic Models*, Harvard University Press, Cambridge, MA.

McDermott J (2014) 'Realising our potential: Potential output and the monetary policy framework', speech delivered on 9 July, https://www.rbnz.govt.nz/-/media/ReserveBank/Files/Publications/Speeches/2014/5786761.pdf, accessed 1 October 2018.

McDermott J, M Lewis, and A Richardson (2016) 'Inflation expectations and the conduct of monetary policy in New Zealand', Reserve Bank of New Zealand *Bulletin*, 79(4).

McDermott, J and R Williams (2018) 'Inflation targeting in New Zealand: An experience in evolution', *Central Bank Frameworks: Evolution or*

Revolution, pp 7-24, eds J Simon and M Sutton, Reserve Bank of Australia, Sydney.

Nobay, B and D Peel (2003) 'Optimal discretionary monetary policy in a model of asymmetric central bank preferences,' *Economic Journal*, 113(489), pp 657–665.

Qvigstad, J (2006) 'When does an interest rate path "look good"? Criteria for an appropriate future interest rate path', *Norges Bank Working Paper,* 2006/05.

RBNZ (2008) *Monetary Policy Statement*, Reserve Bank of New Zealand, June.

RBNZ (2016a) *Monetary Policy Statement*, Reserve Bank of New Zealand, March.

RBNZ (2016b) *Monetary Policy Statement*, Reserve Bank of New Zealand, August.

RBNZ (2018) *Monetary Policy Statement*, Reserve Bank of New Zealand, May.

RBNZ (2019a) *Monetary Policy Statement*, Reserve Bank of New Zealand, February.

RBNZ (2019b) *Monetary Policy Handbook*, Version 1, Reserve Bank of New Zealand, April 2019.

Romer, D (1996) *Advanced Macroeconomics,* The McGraw-Hill Companies, Inc, New York.

Ruge-Murica, F (2004) 'The inflation bias when the central bank targets the natural rate of unemployment', *European Economic Review*, 48(1), pp 91-107.

Rumelt, R (2011) *Good Strategy/Bad Strategy: The Difference and Why It Matters*, London: Profile Books.

Smith, C (2004) 'The long-run effects of monetary policy on output growth', Reserve Bank of New Zealand *Bulletin*, 67(3), pp 6-18.

Surico, P (2007) 'The Fed's monetary policy rule and U.S. inflation: The case of asymmetric preferences', *Journal of Economic Dynamics and Control,* 31(1), pp 305-324.

Svensson, L (1997) 'Inflation forecast targeting: Implementing and monitoring inflation targets', *European Economic Review*, 41(6), pp 1111-1146.

Svensson, L (2014) 'How to weigh unemployment relative to inflation in monetary policy', *Journal of Money, Credit and Banking*, 46(52), pp 183-188.

Svensson, L (2017) 'Cost-benefit analysis of leaning against the wind', Journal of Monetary Economics, 90(C), pp 193-213.

Taylor, J (1993) 'Discretion versus policy rules in practice', *Carnegie-Rochester Conference Series on Public Policy*, 39, pp 195-214.

The Treasurer and the Governor of the Reserve Bank of Australia (2016) 'Statement on the conduct of monetary policy', 19 September, https://www.rba.gov.au/monetary-policy/framework/stmt-conduct-mp-7-2016-09-19.html, accessed 7 March 2019.

Wadsworth, A (2017) 'An international comparison of inflation-targeting frameworks', Reserve Bank of New Zealand *Bulletin*, 79(8).

Walsh, C (1998) *Monetary Theory and Policy*, MIT Press, Cambridge, MA.

Wheeler, G (2013) 'Decision making in the Reserve Bank of New Zealand', speech delivered to the University of Auckland Business School in Auckland on 7 March, https://www.rbnz.govt.nz/research-and-publications/speeches/2013/speech2013-03-07, accessed 17 March 2019.

Williams, R (2017a) 'Business cycle review: 2008 to present day', *Reserve Bank of New Zealand Bulletin*, 80(2).

Williams, R (2017b) 'Characterising the current economic expansion: 2009 to present day', *Reserve Bank of New Zealand Bulletin*, 80(3).

Wood, A and M Reddell (2014) 'Documenting the goals for monetary policy: some cross-country comparisons', *Reserve Bank of New Zealand Bulletin*, 77(5).