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Transparent Monetary Policy: A History of Inflation Targeting in New Zealand

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Abstract

This paper describes the history of inflation targeting at the Reserve Bank of New Zealand and how transparency has shaped the Reserve Bank's approach to monetary policy. The story begins with how an inflation-targeting regime was adopted in 1989 to tame the high inflation of the time. The implementation of a forecasting and policy analysis system in 1997 provided the foundation for higher levels of transparency and the move to flexible inflation targeting. In 2019, the adoption of a dual mandate with an employment objective, the formalisation of a Monetary Policy Committee, and the publication of the Bank's Monetary Policy Handbook marked a new phase of transparency and public accountability.

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I. Introduction

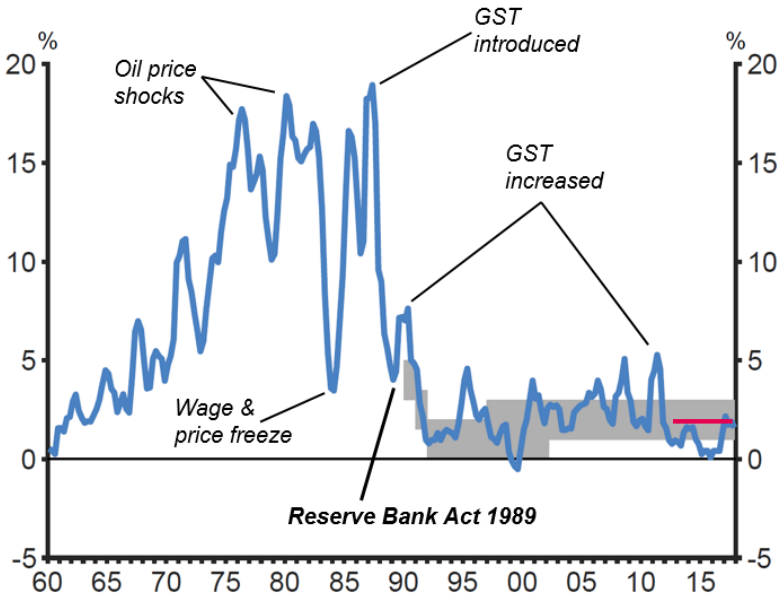
This paper is structured as follows. Sections II–VI examine the history of the Reserve Bank of New Zealand's inflation-targeting regime. Section VII pulls the story together by reporting estimates of the Central Bank Transparency index developed by Al-Mashat and others (2018a), and Section VIII concludes.

II. Taming inflation

In the 1970s and 1980s, New Zealand had a very poor track record of price stability. Annual inflation ranged between 10 to 20 percent, and was considerably higher than inflation in major trading partners.[1] A key driver of high inflation in New Zealand over this period was government spending, accommodated by generally loose monetary policy.[2]

The Reserve Bank of New Zealand (Reserve Bank) was not operationally independent from the government, and each government of the day exhibited a textbook case of time-inconsistent preferences with an inflation bias: low inflation was promised, but successive governments proved unwilling to face the short-term costs of disinflation. Monetary policy was thus kept excessively loose. There was no credibility in the promises of low inflation, and inflation expectations remained high—as did actual inflation.

Figure 1: Annual CPI Inflation (target range shaded, mid-point in red)



Source: Reserve Bank of New Zealand

Bringing inflation under control was a key priority for the Labour Government that came into power in 1984.[3] In 1986, the Minister of Finance Roger Douglas invited officials to explore

[1] Australian, British, and American inflation rates averaged 9.1%, 9.9%, and 6.4% respectively.
[2] See Evans (1996).
[3] Reserve Bank Governor Spencer Russell (1984) discussed the Government's commitment to tame inflation: "We have had periods of tight monetary policy in the past. But by backing off at the eleventh hour, money and credit growth rates have been allowed to expand excessively again and the benefits from the temporary period of tightness have been lost. The Government has made it clear this will not be the case again."

options for reforming the monetary policy framework. The aim was to reduce the scope for political influence that had seen past attempts to control inflation fail so badly (such as the wage and price freezes of the 1980s).

The framework that evolved over the next four years was the culmination of various strands of economic thought and the principles that were underpinning the wider reform of New Zealand's public sector at the time.[4] The framework that emerged was essentially the Barro-Gordon solution to the issue of inflation bias.[5] This involved hiring an inflation-averse central banker—one given operational independence and a mandate to drive inflation down to a manageable level in a transparent manner.

The Reserve Bank Act (1989) used four related ideas to support price stability. These ideas were: providing the Reserve Bank with *operational independence*; pursuing a *single objective* of price stability; giving the Governor authority to act as a *single decision maker*, and; ensuring the Reserve Bank provided *transparency* in its approach. This was the birth of inflation targeting—the start of a new era for monetary policy.[6]

Operational independence insulated the Reserve Bank from the political pressure of the government. This gave the Reserve Bank the means by which to build credibility for inflation targeting. With operational independence, the Reserve Bank had the mandate to create the conditions that would reduce inflation and anchor inflation expectations at low levels.

The 1989 Act indicated that price stability was the greatest contribution monetary policy could make to New Zealand's economic wellbeing. The single objective of price stability helped to focus monetary policy. Previously, production, trade, full employment and price stability had all been monetary policy objectives—stretching what was achievable with a single policy instrument, and complicating policy trade-offs. Focusing only on price stability increased the credibility that the Reserve Bank could actually achieve its mandate. Furthermore, the Policy Targets Agreement (PTA) defined price stability clearly, giving the Reserve Bank a numerical target range of 0 to 2 percent inflation, to be achieved by 1992. This provided a nominal anchor for inflation expectations to converge to, and against which the Governor's performance would be assessed.

However, the public was sceptical of the Reserve Bank's ability to lower inflation that had remained high during all previous efforts to lower it. For the Governor to successfully anchor long-term inflation expectations to the target they still needed to establish credibility for their intention to pursue disinflation.

The legislation made it clear that the Governor could lose his or her job for inadequate performance in meeting the inflation target agreed upon in the PTA signed by the Governor and Minister of Finance. This gave a strong incentive to the Governor to pursue disinflationary monetary policy. It also helped the Governor establish the previously-mentioned credibility of intentions—the public realised the Governor would *have to* reduce inflation in order to keep his or her job.

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[4] Grimes (1996) also provides a comprehensive summary of monetary policy developments within the wider reform environment.
[5] See Barro and Gordon (1983).
[6] See Irwin (2014), and Adrian, Obstfeld and Laxton (2018).

Underpinning all of these measures was transparency. To ensure that the Reserve Bank used operational independence appropriately, it would have to deliver a high degree of transparency in how it formulated policy. The Act required the Bank to publish regular statements on monetary policy decisions and for these to be laid before Parliament. These documents would later evolve into important quarterly updates of the economic outlook.

The inflation targeting range itself—0 to 2 percent—was very transparent for the times, anchoring expectations in the process. This could have damaged credibility if the target were not met. This was considered to be one of the many risks associated with the pioneering of inflation targeting.

The Board of Directors appointed by the Minister of Finance would also monitor and assess the Governor's explanations of their decisions. This Board would determine if the Governor was performing well by conducting ex-post reviews of policy decisions. For greater transparency, the Governor's deliberations and the Board's Annual Report on monetary policy decisions were published for public consumption. This allowed stakeholders to understand the rationale for the Governor's decisions.

Together, operational independence, a single objective, a single decision maker, and transparency gave the Reserve Bank the tools necessary to conduct credible disinflationary monetary policy. A campaign of aggressive monetary tightening followed, with 90-day rates rising to 15 percent in 1990. When the dust settled, the Reserve Bank had successfully brought inflation down from 19 percent in 1988, to 2 percent by 1991. The initial 0 to 2 percent target was met one year early. Inflation expectations rapidly adjusted as the public realised the seriousness of the Governor in achieving their mandate.

III. Costs of an Incomplete Inflation-Targeting Regime

The taming of inflation was not without costs. Tight monetary policy had significant short-term economic costs. Real GDP was stagnant between 1989 and 1994, and unemployment rose to double digits (see figure 3).[7]

The Reserve Bank's target for price stability was expressed in terms of the Consumer Price Index (CPI) inflation, which initially included house prices and mortgage-servicing costs. When high migration fuelled a housing boom in Auckland before the Asian Financial Crisis in 1997,[8] the Reserve Bank responded with further tightening to keep CPI inflation on target.[9]

[7] It is worth noting there were many factors influencing the New Zealand economy at this point; the reform of the Reserve Bank was one of many reforms taking place. See Svensson (2000).
[8] Quarterly house sales rose from 4,000 to nearly 12,000 between 1992 and 1996, with prices increasing from 3% to 13% quarter-on-quarter.
[9] The CPI was amended in 1993 and 1999 to reduce its housing and mortgage focus.

Figure 2: 90-day Interest Rate and Exchange Rate

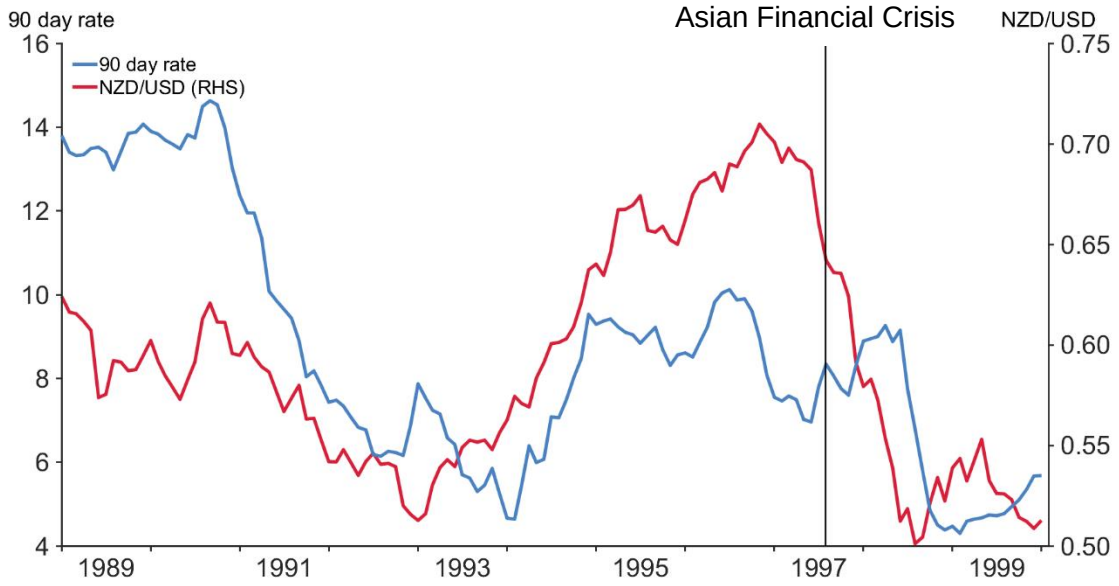
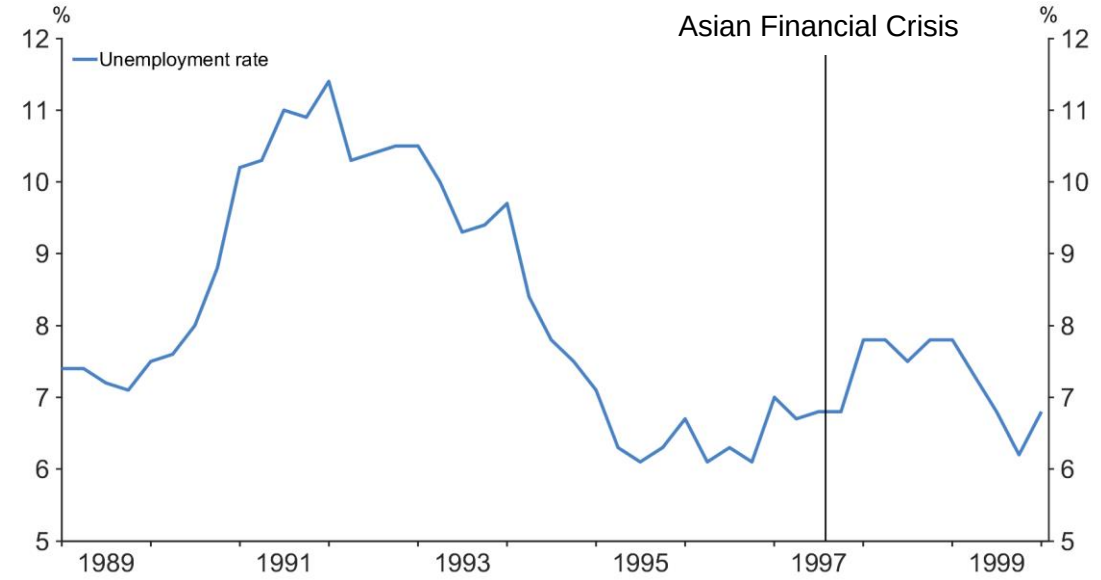


Figure 3: Unemployment Rate



Source: Reserve Bank, and Federal Reserve Economic Data (FRED).

The Reserve Bank also relied heavily on the exchange rate to transmit monetary policy. The exchange rate appreciated over 30% against the U.S. dollar between 1993 and 1997. Farmers bore the brunt of the tightening in monetary policy, creating political pressure as the "rising dollar was driving them into the ground."[10]

The Reserve Bank had established its credibility for fighting inflation. However, to create public support for low inflation, the Bank needed to improve its management of the short-run output-inflation trade-off. Reducing unnecessary volatility in the real economy became the new focus, while still maintaining price stability. Furthermore, the Reserve Bank would have

[10] See Brash (1998).

to be more transparent as to how any short-run trade-offs were being managed; the public needed convincing.

If setting monetary policy when inflation is at 20 percent is like swinging a hammer, then setting policy with an inflation rate at 2 percent is like using a scalpel. While aggressive tightening may have been suitable for bringing inflation down to manageable levels, it was clear that a more careful approach to monetary policy was needed to maintain price stability without unnecessarily disrupting the economy.

To improve the efficiency of monetary policy, the Reserve Bank began to develop a comprehensive Forecasting and Policy Analysis System (FPAS)[11]. This would not only improve their understanding of economic conditions, but also more accurately forecast the implications of policy on the real economy.

IV: Developing a Forecasting and Policy Analysis System

In 1995, work began on a new macroeconomic modelling framework, called the *Forecasting and Policy System* (*FPS*).[12] This was based on a model developed at the Bank of Canada, and the Reserve Bank called upon international experts such as Douglas Laxton and David Rose to help design and build the model.

FPS was developed as both a quarterly projection tool and a policy analysis tool. In the end, *FPS* was a system of models comprising of three components. This included a core macroeconomic model, satellite models that dealt in greater detail with specific components of the economy, and indicator models that were time-series based and designed to capture high-frequency information in the data.[13] Using the same model for projection and policy analysis allowed for consistency over time and reduced the risk of different models being used ala carte to fit prejudices.[14]

Improving the Bank's approach to modelling was one thing. Communication was another. A key attribute of the *FPS* was the ability to project how the (endogenous) policy rate would change over the forecast horizon. As soon as the model was finished, the Reserve Bank began publishing the forward path of the policy rate in every quarterly *Monetary Policy Statement* (*MPS*). This meant the Reserve Bank was not only making the present quarter's monetary policy decision, but also indicating the potential path of the policy rate over the next three years.

This was very much a real-time experiment. No other central bank had published forward paths for an endogenous policy rate before—let alone doing so with a brand new system. But the benefits of doing so were, and still are, broad.

Firstly, by informing the public on their thinking about the transmission of monetary policy and a possible path for short-term interest rates, the Reserve Bank helped individuals and businesses make more-informed decisions.[15] There are times when a central bank will know

[11] For a discussion of the role of the FPAS in inflation-forecast-targeting central banks, see Al-Mashat et. al., (2018b)
[12] See Hunt, Rose and Scott (2000).
[13] See Reserve Bank of New Zealand (1997).
[14] See Turner (2014).
[15] See Rudebusch and Williams (2008).

more about the economic situation and outlook than the public or financial market participants. Every so often, this will relate to some research or insight they have,[16] but more typically because the forecasters know what the Bank itself plans to do. By providing similar information to the public, the Bank can influence interest rate expectations and asset prices. This reduces uncertainty, and creates an environment where business investment is supported rather than put-off until a later date.[17]

Secondly, the forward path also increased the effectiveness of monetary policy by influencing the wider yield curve. Long-term interest rates are partly driven by the expected average of short-term rates. By publishing a forward track, the Reserve Bank influenced the expectations of future short-term rates, thereby influencing long-term rates as well.[18] Long-term interest rates can be more applicable to business investment and mortgages, and so having a larger impact on this end of the yield curve through the forward path boosted the effectiveness of monetary policy.

Thirdly, publishing the forward-path increased the transparency and accountability of the Reserve Bank. Projections of output, inflation, and other key variables were provided along with the forward-policy rate, indicating to the public how the Reserve Bank was managing policy trade-offs. The forward path was effectively a line in the sand, and significant deviations from this line might require explanation (but the Reserve Bank did not need to make any *commitment* to the path).

Detractors argued that the forward path might constrain the Reserve Bank to follow their projections and therefore be slow to adapt to changing conditions.[19] More recently, Gosselin, Lotz and Wyplosz (2008) argued that there could be a case against publishing the forward path if the precision of central bank information relative to the private sector is low. Neither of these issues have been problematic for the Reserve Bank. The public grasped the nature of the forward path in 1997 and the adjustment process was smooth.[20]

The increase in transparency from the *Forecasting and Policy System* was a major success. At the same time, another experiment, the use of a Monetary Conditions Index (MCI)[21] was less successful. The MCI weakened the Reserve Bank's reaction to the Asian financial crisis and exacerbated the recessionary forces.

The main issue with the MCI was its oversimplification. The MCI essentially treated all shocks as shocks to *country risk premium*, and so monetary policy ended up tightening amid the crisis—which was a shock to fundamentals—rather than loosening, as would have been

[16] See McDermott (2016).
[17] See Leahy and Whited (1995) and Melolinna, Miller, and Tatomir (2018) for analysis on the effects of uncertainty on business investment.
[18] See Al-Mashat et. al (2018c and 2018d).
[19] See, for example, Poloz (2014). In the past the Bank of Canada did not publish the path of the policy rate path, but used words to describe the policy assumptions in their output and inflation forecasts. For example, in April 2013 they described the policy assumptions as "This projection includes a gradual reduction in monetary stimulus over the projection horizon, consistent with achieving the inflation target."
[20] See Archer (2019) and Moessner and Nelson (2008).
[21] The MCI was a weighted summation of the exchange rate and short-term interest rate, with weights reflecting each variable's medium-term effect on aggregate demand and thus inflation. The MCI was used to identify the overall stance of monetary policy and to communicate the likely direction and extent of change in stance going forward.

appropriate. While interest rates and the exchange rate did eventually fall, the fall was far slower than what was appropriate, with the exchange rate taking over a year to adjust.

The Reserve Bank recognised the MCI's failure and replaced it with the Official Cash Rate (OCR) as the instrument of monetary policy in March 1999. In the words of former Assistant Governor John McDermott, "the MCI was a branch that we lopped off fairly quickly."[22]

Heading into the 21st century, the Reserve Bank had a fully functioning inflation-forecast-targeting regime with well-anchored inflation expectations. The development of the *FPS* with emphasis on the OCR as the instrument of monetary policy gave them a solid base for continuing to increase the flexibility of their inflation-targeting regime.

V. Evolution to Flexible Inflation Targeting

With inflation under control, the Reserve Bank began to increase their flexibility when it came to stabilising the real economy, allowing inflation to deviate from the target for short periods.

Table 1: The Evolution of the Reserve Bank's Policy Objective

	Early to mid-1990s	**Late 1990s & 2000s**	**2010–2018**	**2018–2019**
Time to target	**Initially:** target to be achieved by a set date. **Dec 1990:** Annual inflation to remain inside the target band, and the Bank to calculate and explain deviations due to shocks outside the Bank's control (explicit 'caveats').	Time to target implicitly lengthened; Bank to respond to general inflationary pressure. List of shocks that could result in deviation from target became illustrative, rather than exhaustive. **2002:** medium-term focus made explicit.	Explicit medium-term focus has remained.	
Secondary considerations		**1999:** Bank shall seek to avoid unnecessary instability in output, interest rates and the exchange rate.	**2012:** Bank to have regard to the efficiency and soundness of the financial system; Bank to monitor asset prices. Other secondary considerations (stability of output, interest rates and the exchange rate) have remained.	**2018:** Dual mandate: the Bank must support maximum sustainable employment. Inflation still a primary objective. Financial stability still a secondary concern. Unnecessary instability in output, interest rates and the exchange rates still to be avoided.
Target definition	**Initially:** 0-2 percent. **1996:** 0-3 percent.	**2002:** 1-3 percent.	**2012:** 1-3 percent, with a focus on the 2 percent target midpoint.	Inflation: 1-3 percent, with a focus on the 2 percent target midpoint. Employment: no numerical target.

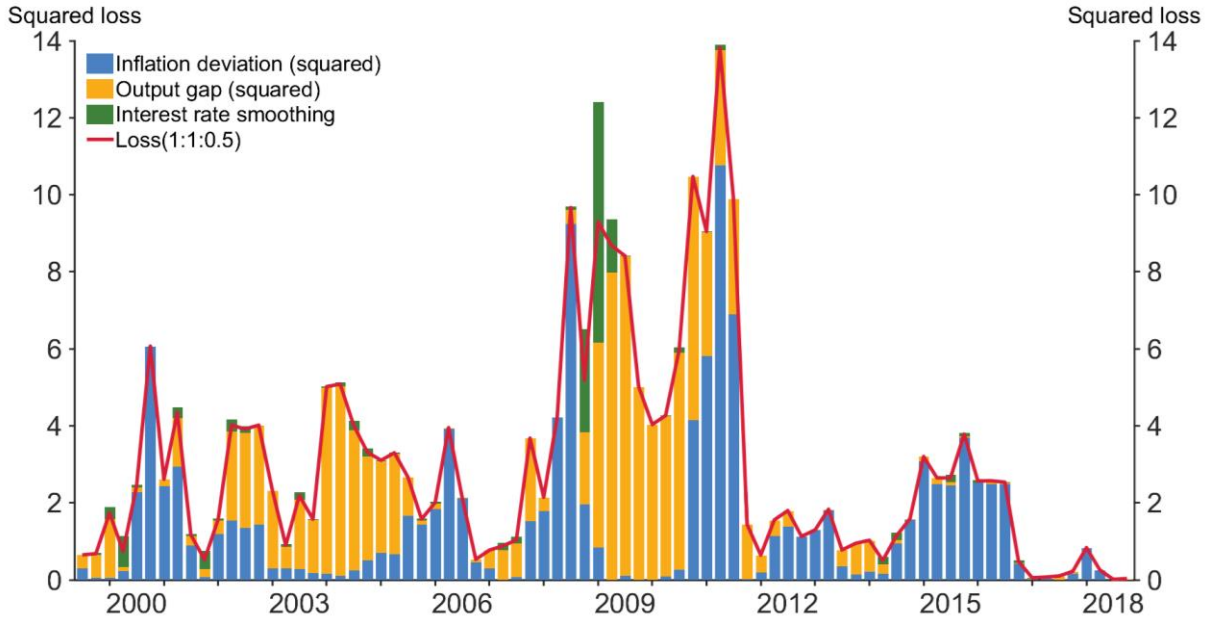
[22] See McDermott and Williams (2017).

The initial objective of keeping inflation at 0 to 2 percent was replaced with a goal of 0 to 3 percent inflation in 1996, allowing for more flexibility in managing trade-offs. In 2002, the target was narrowed to 1 to 3 percent inflation *over the medium term*. Finally, in 2012 an explicit focus was given to the 2% mid-point of the 1 to 3 percent range. This was important as it cemented the anchoring of inflation expectations to the 2 percent target—whereas with a target range, inflation expectations may float to either end of the range depending on the economic outlook and central bank behaviour. By enshrining the Reserve Bank's practice as point-targeting 2 percent inflation in the PTA, the Reserve Bank safeguarded against the risk of inflation expectations gravitating to 1 or 3 percent in the future.[23]

Throughout these changes, inflation was the primary objective in the PTA. However, it was far from the only economic variable of interest. Trade-offs had to be made.

A loss function quantifies the negative utility a central bank receives when deviating from its inflation target and equilibrium level of output.[24] The Reserve Bank's quadratic loss function can be estimated to distil the trade-offs made by the Bank since 1999 (see figure 4).

Figure 4: Estimated Loss Function, Reserve Bank of New Zealand, 1999–2018



Source: Reserve Bank of New Zealand, and author's estimates.

Inflation deviations from target have generally been small, with three notable exceptions: an oil shock at the onset of the GFC; an increase in the Goods and Services Tax (GST) in 2010; and an episode of pre-emptive tightening in 2014–2016 where inflation dropped below target before policy was loosened again.

At the onset of the GFC in 2008, the sharp increase in global oil prices saw New Zealand's annual inflation rate rise above the target, at 5.1 percent. However, the Reserve Bank cut

[23] Expectations had risen closer to 3 percent during the 2000–2012 era (Lewis, 2016).
[24] For discussion of issues related to measuring the output gap, see Laxton (2019) and Laxton and others (2019).

interest rates by 575 basis points between June 2008 and June 2009. This scenario illustrates that managing the downturn in the real economy was more important to the Reserve Bank than trying to bring down inflation that was temporarily high following an oil shock. The public understood the nature of the high inflation and the impact of a weakening economy on future demand-pull inflation, and so despite a loosening in policy, inflation expectations remained anchored. The Reserve Bank was able to 'look through' the temporary shock. The lower OCR contributed to the economic recovery, and inflation returned to target by 2012.[25]

The tightening exercise in 2014 provides for an interesting analysis of monetary policy transmission. Ex-ante, the decision to tighten by 100 basis points over a year was based on a number of business cycle factors, including high commodity prices, a significant rebuild of New Zealand's second largest city following an earthquake, and high net migration. When commodity prices fell, and the rebuild and migration proved far less inflationary than expected, and the global outlook deteriorated, the decision was made to ease policy again. During the tightening period, inflation went from 1.6% to 0%. During the loosening period, inflation rose back to up to 2%. Other factors contributed to this, but monetary policy had clear effects on inflation over these periods.

With monetary policy working flexibly to stabilise the economy, questions inevitably arose as to how effectively a single tool could juggle multiple objectives. Financial stability concerns related to an Auckland housing boom in 2013 gave the Reserve Bank more to think about. The Reserve Bank responded by expanding its toolkit with macroprudential measures to achieve its secondary goal of supporting financial stability.[26]

Loan-to-value ratio restrictions on mortgage lending were implemented in 2013; the first usage of macroprudential tools in New Zealand. A loan-to-value ratio (LVR) is a measure of how much a bank lends to a borrower relative to the value of the borrower's property. The more the banking system as a whole lends to high-LVR borrowers the greater the risk that the banking system will suffer large losses in a severe downturn—hence the restrictions.

Deputy Governor Grant Spencer made it clear that monetary policy would continue to treat price stability as a primary goal, and macroprudential tools would target financial stability:

> "We believe it is essential to retain clear primary objectives for both monetary and macro-prudential policy. These primary objectives are price stability and financial system stability respectively. However, there is an appropriate role for policy coordination in certain circumstances and with certain policy tools. The key in this respect, is to ensure that the primary aims of the two policy arms are not undermined by too heavily diverting the attention of those policies to secondary objectives."[27]

In 2019, a review of the LVR restrictions shows the policy made the financial system more resilient to a housing-led downturn by mitigating the scale of house price falls during a potential downturn, and limiting the indebtedness of households.[28] Thus, macroprudential

[25] See for example, Chetwin (2012).
[26] For a discussion for discussion of models designed for macroprudential policy analysis see Benes, Laxton and Mongardini (2016) and Benes, Kumhof and Laxton (2014, a,b)
[27] See Spencer (2014).
[28] See Lu (2019).

policy enabled the Bank to improve the resilience of the financial system without having to tighten monetary policy as much as otherwise might have been necessary.[29] At the time of the first LVR intervention, the Reserve Bank estimated that the reduction in house price inflation contributed to the Official Cash Rate being 25–50 basis points lower than it otherwise would have been. Recent evidence suggests that the relationship between house prices and consumption has weakened in recent years, and that the actual impact on the OCR setting has been smaller than initially estimated.[30]

Transparent communication on the role of monetary policy for pursuing price stability, and the framework developed for macroprudential tools,[31] enabled the Reserve Bank to achieve financial stability, without undermining the credibility of their inflation-targeting credibility regime.

Flexible inflation-targeting helped the Reserve Bank stabilise the New Zealand economy post-GFC, without jeopardising its credibility for maintaining price stability. After data revisions, the average rate of inflation in New Zealand between 2007 and 2018 was 2.0 percent. Two-year-ahead inflation expectations were also 2.0 percent.

During this time, the Reserve Bank's innovations in transparency came from areas outside of monetary policy, such as the world's first Bank Financial Strength Dashboard in 2018.[32] But within monetary policy, the next wave of evolution was on the way.

Box 1: Statistical interlude—the evolution of Reserve Bank forecasting systems

KITT, 2009–2010
In 2006, the Reserve Bank began to develop a dynamic stochastic general equilibrium (DSGE) model called the Kiwi Inflation Targeting Technology (KITT) model. KITT was a complex structural model (see Beneš, Binning, Fukač, Lees, and Matheson, 2009). Its complexity ultimately led to difficulties with the interpretation of scenarios, and the regular conduct of forecasting. This intractability of model led the forecasters to set aside the model for regular usage and to create the Reduced Form Model (RFM) model as a short-term solution.

RFM, 2011–2013
RFM was a gap model designed to be far simpler than KITT. No work on RFM was published by the Reserve Bank as it was seen as a temporary model while the New Zealand Structural Inflation Model (NZSIM), was being developed.

NZSIM, 2014–present
NZSIM was designed to be smaller and simpler than KITT to make the model outcomes easier to understand and to improve its ease of use in the policy process (see Kamber, McDonald, Sander, Theodoridis, 2015; and Austin and Reid, 2017). NZSIM uses KITT's DSGE core, augmented by several supplementary equations. This 'semi-structural' approach was chosen as a pragmatic solution to keep the model tractable, and improves the empirical fit. NZSIM has evolved substantially over time, and remains in use at the Reserve Bank at the time of this publication.

[29] Although an ex-post analysis suggest monetary policy was still overly tight over this period.
[30] See Wong (2017).
[31] See English and Wheeler (2013).
[32] The dashboard supports market discipline by providing transparent comparisons between banks for market participants to use (see Central Banking, 2019).

VI. Moving to a Dual Mandate and Monetary Policy Committee

Between 2018 and 2019, the Reserve Bank enacted significant changes to its monetary policy objectives, policy-setting process, and communication of policy.[33] A dual mandate was adopted, and a formal Monetary Policy Committee (MPC) was created. In a big move for transparency, a *Monetary Policy Handbook,* initially written to explain the Reserve Bank's way of doing things to external members of the MPC, was published and promoted for use by the general public.

As well as maintaining price stability, the Reserve Bank now has a second objective: to support maximum sustainable employment. In part, this enshrines the operational behaviour of the Reserve Bank—considering the impact of monetary policy on output and the labour market, and at times making trade-offs with inflation in order to stabilise the real economy. However, the dual mandate does more than this.

Firstly, the dual mandate has boosted the Reserve Bank's research into labour market dynamics. Research on the maximum sustainable level of employment, the drivers of low wage inflation, and the hiring incentives for businesses have been fuelled by the adoption of the dual mandate. This has improved both the Bank's forecasting tools, and the general understanding within the institution as to how New Zealand's labour market works.

Secondly, the dual mandate bas become an important part of the Reserve Bank's drive to renew its social legitimacy.[34] The change was fundamentally about providing a tangible measure of public wellbeing (employment) to be explicitly targeted.[35] While the Reserve Bank had previously targeted inflation with the long-term goal of improving public wellbeing, it can be hard to communicate this to the public when monetary policy is tightening. The dual mandate offers assurance to the public that such considerations are being made, and ensures the Reserve Bank is clear about their policy trade-offs—supporting the adoption of further transparency in the future. This additional transparency has already been seen in a speech by Assistant Governor Christian Hawkesby, breaking down the trade-offs the Reserve Bank considered in the May 2019 decision round, including alternative paths for the OCR.[36]

Aligning the Reserve Bank with the wants of the public and renewing social legitimacy is crucial at a time when central banks around the world are facing a renewed pressure on their operational independence.[37] Renewed social legitimacy can act as a buffer against potential infringements on operational independence, as the public are less likely to support the subordination of an institution they believe is already acting in their best interests.

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[33] These reforms were the called for by Finance Minister Grant Robertson under the Labour Government of 2017.
[34] See Orr and Aziz (2019).
[35] See Robertson (2018).
[36] See Hawkesby, Haworth, and Aziz (2019).
[37] Central banks in South Africa, the United States, Romania, Venezuela, Argentina, and Turkey have received political pressure that threatened or removed their independence between 2018 and 2019.

At a surface level, the adoption of a dual mandate could be interpreted as diluting the importance of inflation, and undermining inflation expectations. This has not happened. Since the adoption of the dual mandate, inflation expectations and the unemployment rate have both marginally fallen, with labour force participation rising. True, there was no conflict between the objectives at this time—and that will be where the real test arises—but the dual mandate has shown no signs of affecting the ability of the Reserve Bank to maintain price stability.

The second major change resulting from the review of the Reserve Bank Act (1989) has been the move from a single decision maker to a formal Monetary Policy Committee (MPC).

As with the dual mandate, the formal MPC enshrines previous Reserve Bank internal policy; an informal committee has long been in place to assist the Governor in decision-making. However, as with the dual mandate, the new MPC is more than just a formalisation of what came before it.

In 1989, New Zealand was prepared to accept a single expert—the Governor—making decisions about how to fight inflation. In 2019, the public expects that decision makers reflect wider society, and that unelected officials have a larger check on their power. Adopting a committee with diverse ideas and backgrounds, appointed by an elected official (the Minister of Finance), fulfils this expectation.

In addition, the new MPC has prompted research within the Reserve Bank on how to craft an optimal committee deliberation process for monetary policy. This is both broad and detailed, covering the principles of good governance down to the fine-tuning of daily activities in the lead-up to a monetary policy decision. In this regard, the adoption of a formal MPC has, as with the dual mandate, served as a trigger point for wider change in Reserve Bank operations. In this case, it has formalised and refined the effectiveness of the decision-making framework. The result is an efficient system promoting unbiased decision making, with the forecast week culminating in simultaneous publication of the OCR decision, a full monetary policy statement, and the summary record of meeting from the MPC (akin to minutes).

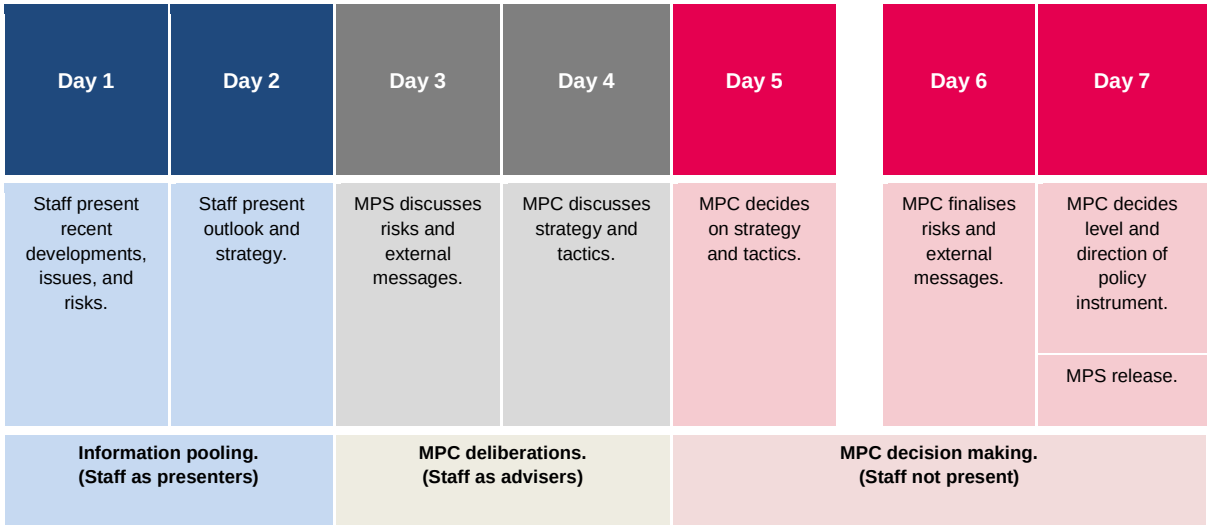
The Reserve Bank has also published a *Monetary Policy Handbook* (the Handbook) to summarise the new state of monetary policy, the Reserve Bank's approach to modelling the economy, and the desired functioning of the MPC.[38]

The Handbook is detailed enough to brief external MPC members on everything they need to know, but also accessible enough for school students. The Handbook provides a common reference point for all things about monetary policy, and answers many questions about the Reserve Bank's policy and the New Zealand economy.

For example, when discussing the decision making process, the Handbook breaks down the seven-day process that ends with the monetary policy decision (figure 5, overleaf).

[38] See Williams, et al. (2019).

Figure 5: The Structure of the Forecast Week for Quarterly Monetary Policy Statements



Source: Reserve Bank of New Zealand (Monetary Policy Handbook).

As you can see in figure 5, the policy-setting framework is highly collaborative and deliberate. Deliberate in the sense that the process inspires lively debate, giving MPC members every possible chance to challenge assumptions, critique policy judgements and assess a range of policy strategies to achieve the policy objectives. A crucial part of this is that the MPC members hold back their views on the decision until the final stages, rather than starting with them. This supports evidence-based decision-making and guards against confirmation bias.

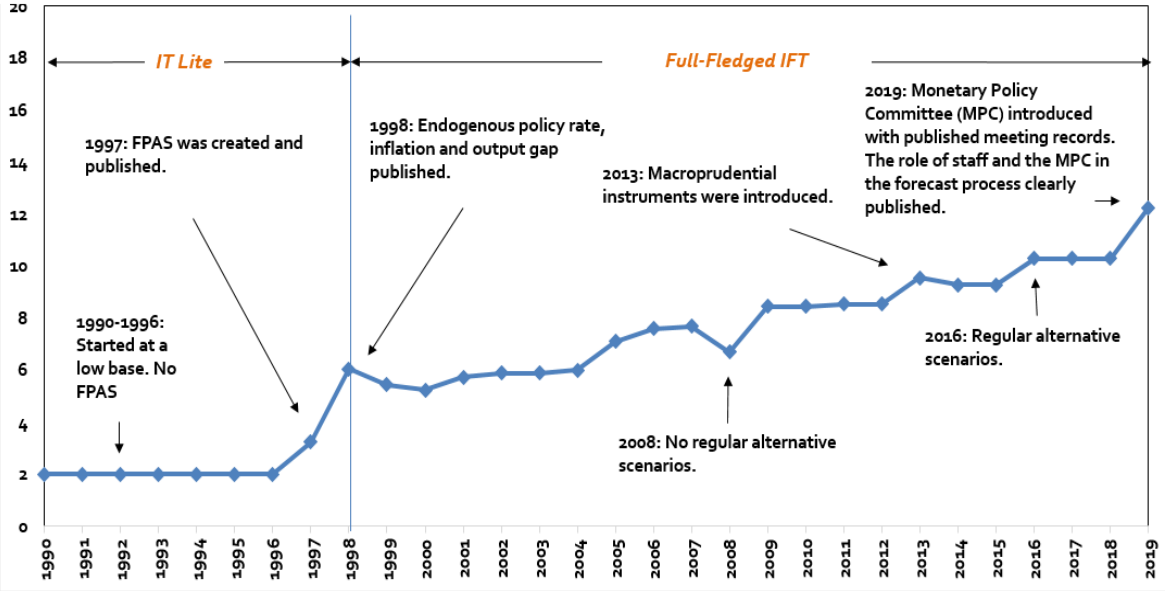
When the dust settled in May 2019, the Reserve Bank had revised much of its monetary policy framework, and optimised the process for monetary policy decision making. They were renewing their social legitimacy, and were satisfying both objectives in their dual mandate. But further improvements in transparency were still in their sights.

VII. The Evolution of Transparency and the Implications for Inflation Expectations

We now apply the Central Bank Transparency Inflation Targeting (CBT-IT) index, as developed in (Al-Mashat, 2018a) to examine how the Reserve Bank's monetary policy transparency has improved since 1989.

The CBT-IT index assesses the transparency of central bank objectives, forecasting and policy analysis systems, and communication.

Figure 6: Reserve Bank CBT-IT Index Transparency Rating Over Time

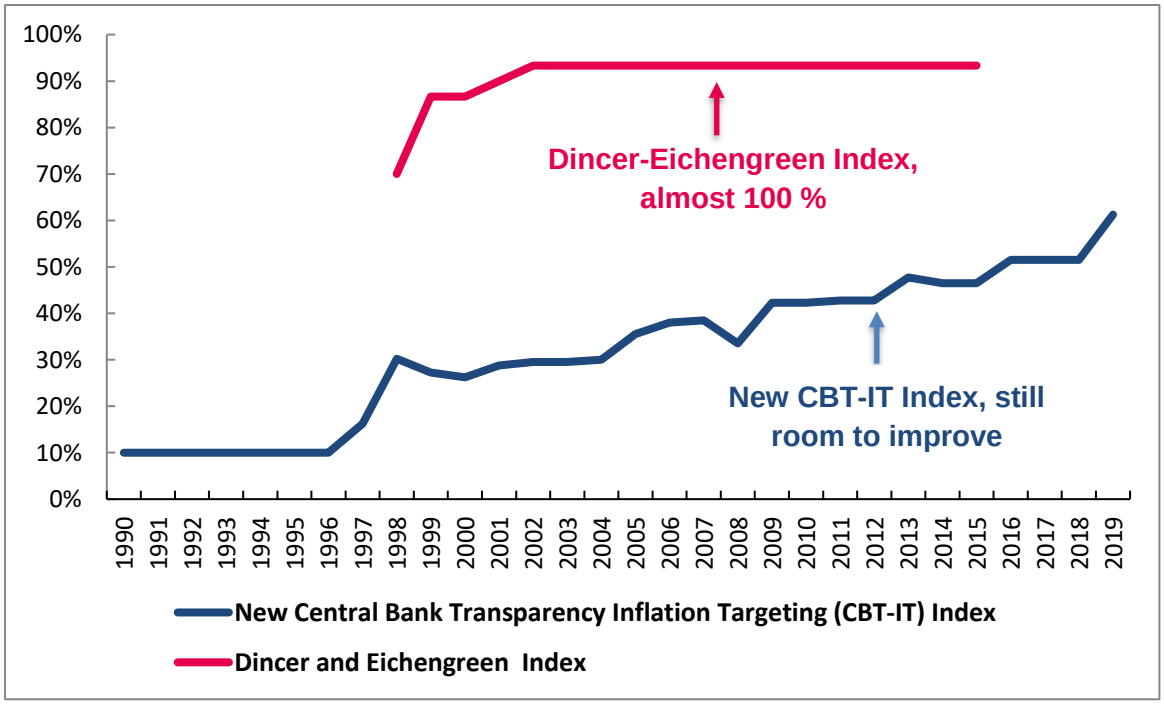


Source: Authors' calculations.

In figure 6, we see how the establishment of FPS in 1997 boosted the Reserve Bank's transparency and enabled a steady stream of additional improvements. This took a further lead forward in the adoption of the dual mandate and monetary policy committee in 2019, improving the clarity of the Reserve Bank's monetary policy objectives and communication.

How does the CBT-IT index assessment measure up against other transparency indices?

Figure 7: Reserve Bank Dincer-Eichengreen Index Transparency Rating Comparison

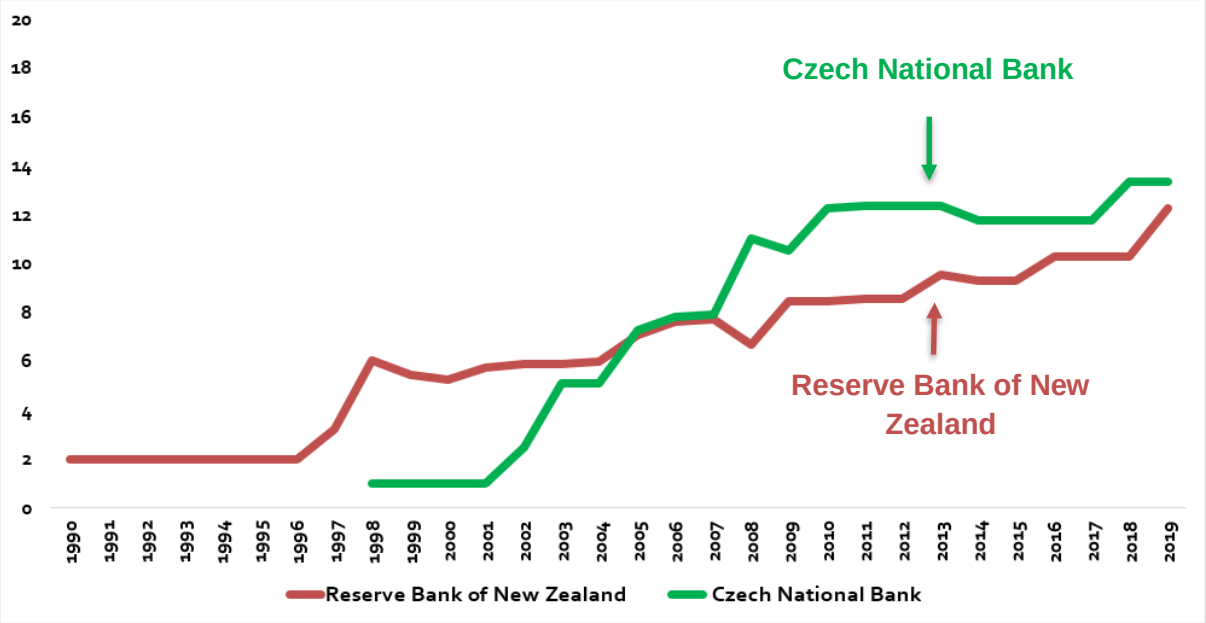


Source: Authors' calculations, and Dincer and Eichengreen (2015).

The well-known Dincer and Eichengreen (2015) index tells a similar, but less dramatic story, with the Reserve Bank moving to nearly maximum points on the index shortly after adopting the FPS, and maintaining this over time.[39]

How does the Reserve Bank compare with other central banks on transparency?

Figure 8: Reserve Bank and Czech National Bank (CNB) CBT-IT index comparison



Source: Authors' calculations.

The Reserve Bank ranks closely to the CNB on the CBT-IT index; these are the first two central banks to be assessed on this index. On the Dincer-Eichengreen index, the CNB and Reserve Bank are second and third in the world respectively, behind the Riksbank in first.

Why does transparency matter anyway?

There is a close link between monetary policy transparency, as conducted by inflation-forecast-targeting central banks, and the anchoring of inflation expectations.[40] Central banks who are more transparent have also been more successful in keeping inflation expectations close to their targets. This makes it easier for central banks to meet their inflation targets, as inflation expectations are a significant driver of inflation. Recent data outturns in table 2 support this relationship: inflation-forecast-targeting (IFT) central banks, who are broadly more transparent, have performed better on average.

[39] The main difference between the two indices is that the CBT-IT index has been designed to set high benchmarks for transparent central banks to for, whereas the Dincer-Eichengreen index is designed to give a rough comparison of many central banks without performing a detailed analysis.
[40] See Al-Mashat, et al., (2018) for a discussion on this point, and Cruijsen and Demertzis (2007) for empirical evidence.

Table 2: How Transparency Can Support Inflation Expectations

	2016	2017	2018	Cumulative Deviations from Inflation Objectives (2017–18) (Percentage points)	IFT Central Bank[1]
Canada	1.7	2.1 (0.1)	2.0 (0.0)	**0.1**	Yes (1994)
Czech Republic	0.6	1.7 (−0.3)	2.1 (0.1)	**−0.2**	Yes (2002)
New Zealand	0.7	1.7 (−0.3)	2.0 (0.0)	**−0.3**	Yes (1997)
Sweden	1.0	1.5 (−0.5)	2.2 (0.2)	**−0.3**	Yes (2007)
United States[2]	1.3	2.3 (0.0)	2.3 (0.0)	**0.0**	Yes (2012)
Euro Area	0.3	1.3 (−0.7)	1.5 (−0.5)	**−1.2**	No
Japan	−0.1	0.6 (−1.4)	0.9 (−1.1)	**−2.5**	No

Source: Consensus Economics.

What can the Reserve Bank do to improve transparency further?

According to the CBT-IT index, for the Reserve Bank to achieve a higher score, the following could be considered, after pros and cons are weighed up accordingly:

- Including fan charts with the forecasts of key variables
- Explicit use of loss functions for describing policy trade-offs
- Conducting regular external reviews of the forecasting and policy analysis systems
- Providing detailed explanations for how the TWI is constructed and forecast

There is also a question of how the Reserve Bank can become more accessible and transparent to the general public. A survey in 2014 indicated that the Reserve Bank was a highly trusted institution, but few people knew what they did.[41] To address this, the Reserve Bank is adjusting its communication and taking steps to improve financial literacy. Work is already underway with the *Monetary Policy Statement in Pictures* giving a simple summary of each *MPS*, and adjustments have been made to the *MPS* itself to, with the document now beginning with an accessible discussion, before then growing progressively more technical.

VIII. Conclusion

The Reserve Bank has come a long way since the high and volatile inflation of the 1970s and 80s. The benefits of the Reserve Bank's experimentation with inflation targeting have been broad: low and stable inflation, anchored inflation expectations, and employment near the maximum sustainable level. Transparency has been a major part of the Reserve Bank's inflation-targeting evolution into an effective dual-mandate central bank: transparency around objectives, around the forecasting and policy process, and in the communication of decisions. Transparency will continue to be an important part of the Reserve Bank's evolution, and the *Monetary Policy Handbook, Summary Record of Meeting* and *Monetary Policy Statements* will continue to offer a window into how the Reserve Bank forms policy.

[41] See Hannah (2015).

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