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An A to Z of loan-to-value ratio (LVR) restrictions

Lamorna Rogers¹

The Reserve Bank recently announced restrictions on high loan-to-value ratio (LVR) lending. The restrictions take the form of a 'speed limit' that requires banks to restrict new residential mortgage lending at LVRs of over 80 percent to no more than 10 percent of the dollar value of their new residential mortgage lending. The speed limit on high-LVR lending is designed to slow the growth in house prices and housing credit, and mitigate associated risks to the financial system and the broader economy. This article sets out the framework for LVR restrictions, and explores the Reserve Bank's early experience in operating them.

1 Introduction

In August 2013, the Reserve Bank announced that it would be restricting new high loan-to-value ratio (LVR) housing lending by registered banks.² LVR restrictions are one of the four tools that make up the Reserve Bank's new macro-prudential toolkit, and this was the Reserve Bank's first intervention under its macro-prudential policy framework. Borrowers with LVRs of more than 80 percent (less than 20 percent deposit) are often stretching their financial resources, and are more vulnerable to an economic or financial shock such as a recession or an increase in interest rates.³

The imposition of LVR restrictions was a significant development in the way the Reserve Bank applied its longstanding regulatory powers, and was driven by escalating concerns about the New Zealand housing market. Housing lending makes up more than half of all lending by New Zealand banks, and surging house price growth (particularly in Auckland) was judged to be contributing to an increasingly overvalued housing stock. This leaves borrowers and banks exposed should house prices suddenly fall. Given that well over half of New Zealand household wealth is held in the form of housing,⁴

and that household indebtedness was already running near record highs, the ability of an indebted household sector to withstand a major decline in house prices was a serious concern. Although the financial system is currently well positioned, a much-extended house price boom that ended in a severe housing downturn could cause substantial damage to the financial sector and the economy.

As the prudential regulator charged with maintaining the soundness of the New Zealand financial system, the Reserve Bank was faced with a difficult choice. Should the Reserve Bank intervene to take the heat out of the housing market, and if so, what would be the right form of intervention? With escalating house prices threatening financial stability but inflation running below the middle of the Reserve Bank's 1–3 percent inflation target, LVR restrictions were considered to offer the most appropriate response. This article provides a comprehensive introduction to LVR restrictions, the Reserve Bank's expectations around their deployment, and a discussion of those aspects that are still evolving.

2 Loan-to-value ratio restrictions

2.1 Background

The global financial crisis (GFC) prompted central banks and prudential regulators to reflect on the best way to safeguard financial stability. 'Macro-prudential policy' has since developed as a significant new policy function

and liabilities data. However these data overstate housing wealth as some household financial assets are excluded (such as equity in unincorporated business and shares in unlisted companies).

¹ The author is grateful to colleagues at the Reserve Bank for helpful comments and advice.

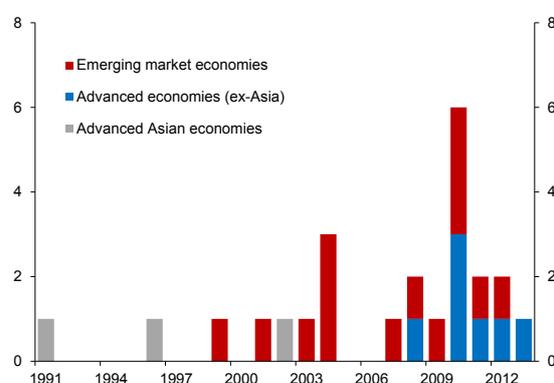
² The LVR of a loan is a measure of how much a bank lends against a residential property, compared to the value of that property.

³ Lamont and Stein (1999) analyse the housing markets of US cities, and find that cities with a higher share of high-LVR borrowers are more sensitive to city-specific changes in incomes. Almeida *et al* (2006) show that house prices and new household borrowing are more sensitive to income shocks in countries with higher LVRs.

⁴ Housing accounts for close to 75 percent of household assets as defined by the Reserve Bank's household asset

in many countries, with LVR restrictions being used in a growing number. Prior to the GFC, LVR restrictions were mainly used in emerging market countries and some Asian advanced economies. Since the GFC, LVR restrictions have spread beyond this group and are now being used in Canada, Sweden, Finland, Norway, Israel and, recently, New Zealand (figure 1).

Figure 1
Countries adopting LVR restrictions to address real estate booms⁵
(number of countries)



Source: IMF, RBNZ.

New Zealand's framework for macro-prudential policy was agreed in May 2013, with the Governor of the Reserve Bank and the Minister of Finance signing a Memorandum of Understanding (MoU) on the use of macro-prudential instruments (RBNZ, 2013a).⁶ Four macro-prudential instruments are currently available to help address systemic risks:

- i. adjustments to the core funding ratio (CFR);
- ii. the counter-cyclical capital buffer (CCB);
- iii. adjustments to sectoral capital requirements (SCR); and
- iv. quantitative restrictions on the share of high-LVR loans to the residential property sector.

Restrictions on high-LVR housing lending aim to improve the resilience of the financial system, primarily by slowing the rate of housing-related credit growth and house

price inflation, thereby reducing the risk of a substantial downward correction in house prices that would damage the financial sector and the broader economy. They work by constraining the supply of high-LVR housing lending by banks. Rationing of high-LVR lending by banks then means that some borrowers are unable to obtain a high-LVR housing loan.

LVR restrictions can also contribute to financial system resilience, by improving the ability of households to withstand financial shocks. The extra equity provides a cushion against falls in house prices, reducing the risk of borrowers falling into 'negative equity', where the borrower owes more than the property is worth. In itself, negative equity does not mean that borrowers will be unable to service their mortgage. Should, however, borrowers encounter financial problems – perhaps because of a change in personal circumstances, such as becoming unemployed, or because of rising interest rates – negative equity reduces their ability to manage their way out of stress. For example, a borrower might be able to draw down positive equity to buffer income losses, and the loan would be a better candidate for restructuring or refinancing. Greater equity, therefore, makes banks' balance sheets less risky, as it reduces the probability of default and potential loan losses on household lending, all other things being equal.

2.2 Base framework

In setting up the framework for restrictions on high-LVR lending, the Reserve Bank has followed the model for existing regulations. A new chapter, BS19, has been added to the *Banking Supervision Handbook* and LVR restrictions have been imposed in banks' conditions of registration. In addition to the main condition, which sets out the speed limit, four other conditions are aimed at preventing banks undermining the effectiveness of the primary condition (box A). While some countries have implemented LVR restrictions through regulatory 'guidance', the use of the conditions of registration framework reflects the seriousness with which the Reserve Bank views the restrictions, and the need to reduce avoidance risks.

⁵ See Nier and Osiński (2013) for details.

⁶ See Rogers (2013) for an outline of the macro-prudential policy framework.

Box A

Conditions of registration

LVR restrictions are imposed by adding five new standard conditions of registration to the existing conditions of all registered banks, including branches of overseas banks.

The primary new condition sets out the threshold(s) at which the restriction would apply, and permissible high-LVR lending shares. Three subsidiary conditions restrict a bank from providing a top-up loan secured by a second or lower-ranking mortgage to a borrower who has taken out a first-ranking mortgage. These conditions apply if the top-up would take the lending over the high-LVR threshold. The conditions also cover top-ups provided by other lenders.

The fifth condition aims to prevent a bank from circumventing the LVR restrictions by colluding with a part of its banking group that is outside the scope of conditions of registration.

The Reserve Bank was aware of existing industry practices that banks could use to deliberately avoid the impact of LVR restrictions, but which banks and their customers also use for legitimate business purposes (for example, parents providing collateral against housing loans to their children). Prohibiting all such activity would have adversely affected financial system efficiency, so rather than doing this, the Reserve Bank chose to call on banks to act in the 'spirit' of the regulation and not seek to avoid the impact of LVR restrictions. The Reserve Bank has operationalised this by setting out a non-exhaustive list of methods that banks might use to avoid the impact of LVR restrictions, its expectations that banks would not exploit or promote such arrangements to avoid LVR restrictions, and has detailed how it would respond should avoidance concerns arise. In particular, the Reserve Bank would consider the size, timing and marketing of such measures, in determining whether the bank was seeking to avoid LVR restrictions. Should a bank be judged to be avoiding the effect of LVR restrictions, the Reserve Bank would take action, which might include varying the

bank's standard LVR conditions, imposing an additional condition relating to LVRs, or taking some other action as appropriate (RBNZ, 2013b).

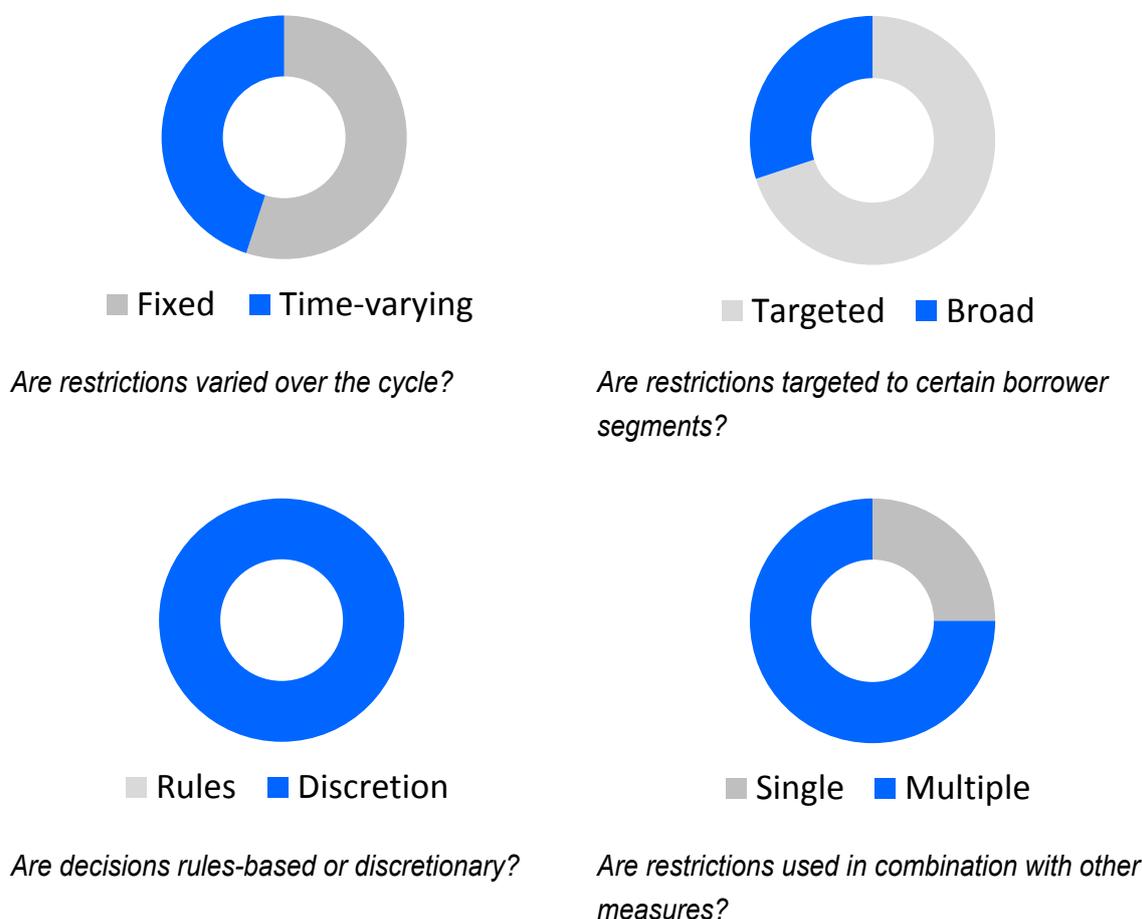
The Reserve Bank was also mindful of the risk of lending 'leaking' to non-bank entities. LVR restrictions apply only to registered banks: the Reserve Bank has no jurisdiction over non-deposit taking finance companies, offshore lenders or non-institutional lenders (e.g. family members), and more limited regulatory powers over non-bank deposit takers. This means that some borrowers might be able to avoid LVR restrictions by borrowing from these sources. Such borrowing would reduce the effectiveness of LVR restrictions in addressing excessive credit growth, but would present less risk to the resilience of the financial system, given that these lenders sit outside the 'core' system.

The Reserve Bank expects the risk of regulatory leakage to be mitigated by the temporary nature of the restrictions, and the 'speed limit' approach. Both of these raise the uncertainty around the payoffs to unregulated lenders entering the market, thus reducing the incentives for opportunistic behaviour. The current dominance of the banking sector in financial intermediation (relative to history) may further help to reduce the scope for lending by non-bank lenders. Nevertheless, the Reserve Bank is aware of the need to carefully monitor and report developments in the non-regulated finance sector, and would consider seeking to extend its regulatory perimeter to non-bank lending institutions should it prove necessary.

The LVR restrictions framework has been tailored to New Zealand's specific institutional context and circumstances. Whereas many countries apply LVR restrictions as a fixed part of their regulatory framework, in New Zealand they are intended to be used in a time-varying fashion (figure 2, overleaf, top LHS). LVR restrictions are to be used only occasionally, at those points in the financial cycle where there is a real danger of growing systemic risks leading to financial instability. The Reserve Bank does not intend to operate LVR restrictions in a continuous fashion to smooth the cycle, but rather aims to limit the extreme peaks in house price and housing credit cycles.

Figure 2⁷

How LVR restrictions are applied in New Zealand and other countries: share of countries



Source: Lim *et al* (2011), RBNZ.

The choice was also made to apply LVR restrictions in a broad-based fashion, rather than targeting them to particular borrower segments, such as investors, or regions such as Auckland (figure 2, top RHS). Targeting would risk significantly diluting the effectiveness of LVR restrictions. For example, the evidence suggested that first-home buyers were a key component of high-LVR housing lending, so exempting first-home buyers could have materially undermined the effectiveness of the policy. Moreover, targeting would raise the likelihood of circumvention, risk introducing other distortions into the housing market, and entail a number of practical difficulties, including how best to delineate and measure

the targeted segment.

Instead, the Reserve Bank took a 'speed limit' approach to LVR restrictions: banks can still do some high-LVR lending but they cannot exceed the nominated quantitative threshold: i.e. no more than 10 percent of new housing lending. This is expected to mitigate the effect on particular borrower segments, since banks can choose to direct this high-LVR lending capacity to first-home buyers, for example, should they so wish. More generally, the 'speed limit' approach was seen as having lower efficiency costs than an outright ban, as many high-LVR borrowers would still be able to obtain funds from banks.

The base framework for LVR restrictions did include several exemptions, which were designed to reduce the efficiency costs of imposing LVR restrictions without unduly undermining their effectiveness (RBNZ,

⁷ The doughnut charts show the proportion of countries that apply LVR restrictions in a particular way. For ease of presentation New Zealand's way of applying the instrument is coloured blue.

2013c). For example, refinancing of high-LVR loans (i.e. replacing the loan with a new loan offering better terms) is exempt, as long as the loan value does not increase, and Welcome Home Loans are exempt, on the grounds that they serve clear government housing policy objectives and present minimal risks to financial stability. The number of exemptions was deliberately kept small to limit the complexity of the framework and to reduce the risk of policy leakages.

In developing its macro-prudential framework, the Reserve Bank considered the case for rules-based decision-making (e.g. ex ante criteria and trigger points for intervention) but, as with other countries, opted for a discretionary approach (figure 2, bottom LHS). Given the broad range of factors shaping financial system risk, the Reserve Bank does not believe it is possible to publish simple thresholds or trigger points for decisions. The Reserve Bank is also aware that the capacity to pre-specify these matters is constrained by the dynamic and innovative nature of the financial system, and the limited state of knowledge on macro-prudential policy (both with respect to risk assessment and tool effectiveness). The chosen approach therefore is one of 'guided discretion', with the Reserve Bank publishing guidance on the indicators and judgements that underlie its macro-prudential policy decisions in its regular *Financial Stability Reports* (FSRs) and other publications.⁸

Country experiences show that multiple instruments are often used to address the same risk (figure 2, bottom RHS). Although the Reserve Bank does not have a fixed preference in this area, the decision framework (see below) does explicitly consider whether the risk is best addressed with macro-prudential tools, and what the optimum mix of tools should be. This is a decision that is heavily context-dependent: in the recent case of LVR restrictions, the rising risk in housing markets was addressed using multiple instruments. In addition to LVR restrictions, a prudential review of capital adequacy requirements led to higher capital requirements for high-

LVR housing lending, a follow-up paper on definition changes and internal model processes tightened valuation policies, among other things (RBNZ 2013d, 2013e; Wheeler, 2013).

The Reserve Bank is also aware that LVRs do not capture all forms of risk affecting housing loans. In particular, debt servicing ability has an important bearing on the default risk of mortgage lending and some countries have chosen to apply restrictions on debt servicing ratios in tandem with restrictions on high-LVR lending. While the Reserve Bank is not contemplating such measures at this time, our regular assessments of financial conditions monitor trends in the household sector's debt servicing burden as well as bank standards applying in this area.

In developing LVR restrictions, the Reserve Bank decided to restrict the 'flow' of high-LVR lending, rather than apply portfolio caps to the 'stock' of high-LVR lending. The application of speed limits to new high-LVR lending reflects the key objective of LVR restrictions, which is to mitigate extremes in credit and house price cycles.

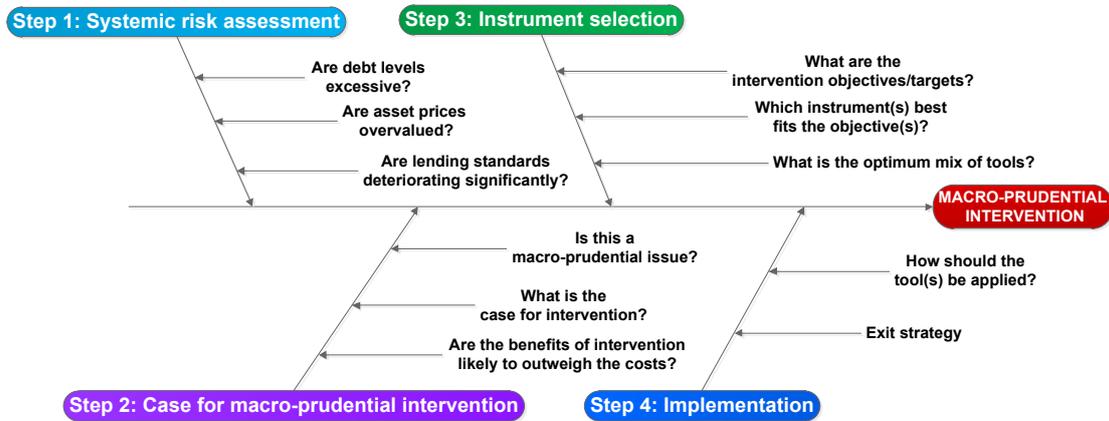
2.3 Implementation

The macro-prudential policy consultation set out the high-level framework for decision-making, starting with the systemic risk assessment process (figure 3, overleaf) (RBNZ, 2013f).

Leading up to the announcement of LVR restrictions, a series of papers were presented to the Reserve Bank's fortnightly Macro-Financial Committee meetings, which painted a picture of growing systemic risks in the housing sector. Household debt levels remained very high, notwithstanding the drop in the household debt-to-income ratio following the GFC, and house prices appeared increasingly overvalued. In the months leading up to LVR restrictions, the IMF, OECD, and the three major international rating agencies had all pointed to the economic and financial stability risks associated with New Zealand's inflated housing market. The IMF and the OECD suggested that New Zealand house prices were overvalued by around 25 percent (figure 4) (IMF, 2013b; OECD, 2013). Expectations that house prices would continue to rise also seemed to be becoming increasingly

⁸ See, for example, a Reserve Bank *Bulletin* article on the role of macro-prudential indicators in measuring systemic risk (Wolken, 2013).

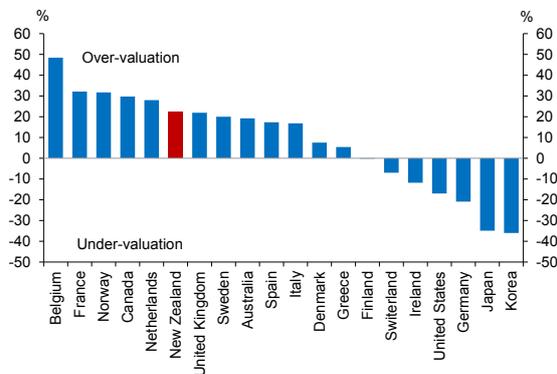
Figure 3
The macro-prudential decision framework



embedded, raising the risk of self-fuelling credit and house price rises.

The Reserve Bank identified a number of longer-

Figure 4
House price to income across OECD countries
(deviations from historical average)



Source: OECD.

term risks to the housing market that could cause a sharp decline in house prices, potentially destabilising the financial system. These included mortgage rates rising faster than expected, adverse labour market and migration developments, and mismatches between the construction of new housing and housing demand (RBNZ, 2013g).

The proportion of high-LVR lending was also worryingly high, at close to 30 percent for the banking system over the first half of 2013, as aggressive competition

between banks saw deposit requirements relaxed. The Reserve Bank became increasingly concerned about the risk of a hard landing in the property market, and the resilience of borrowers and ultimately the banking system, if these trends continued.

Although housing supply/demand imbalances were seen as key contributors to rising house prices, the Reserve Bank was aware that it could take some considerable time for supply-side measures to reduce the upward pressure on house prices. This led the Reserve Bank to focus on potential demand-side responses. The conventional mechanism to help restrain housing demand would be to raise the Official Cash Rate (OCR), which would feed through directly into higher mortgage rates. However, CPI inflation was sitting below the middle of the Reserve Bank's 1–3 percent inflation target, and was forecast to remain low. A premature OCR increase would have risked causing the New Zealand dollar to appreciate sharply, putting further pressure on New Zealand's export and import-competing industries. Importantly, risks were concentrated in the housing and construction sectors, but an interest rate increase would have affected all sectors of the economy. In the circumstances, where escalating house prices were threatening financial stability but not yet general inflation, macro-prudential policy offered the most appropriate response.

As noted earlier, the Reserve Bank considered adjustments to the base prudential framework, as well

as using macro-prudential tools. With regard to the base framework, the Reserve Bank analysed the housing capital risk weighting rules and determined that risk weights for high-LVR mortgages were undesirably low – this led to those risk weights being raised (RBNZ, 2013h). This improved the base level of bank resiliency, but the Reserve Bank considered that broader cyclical concerns about the housing cycle remained. Consideration was given to the options of the core funding ratio (CFR), a sectoral capital overlay, and LVR restrictions, with a key decision driver being the likely impact of the tool on housing credit and house prices. An adjustment to the CFR was eliminated relatively early, reflecting the blunt nature of such a tool, which would affect all bank lending, not just housing lending, and the likely lack of traction on the financial cycle. A very large increase would have been necessary to achieve the desired effect. A temporary increase in capital requirements for housing lending would have been better targeted, but was assessed to be lacking

in ‘bite’ compared to the Reserve Bank’s modelling of the likely impact of LVR restrictions on house price growth and credit growth (Bloor and MacDonald, 2013).

After testing a range of policy calibrations, the Reserve Bank settled on a speed limit approach, which limited banks’ new residential mortgage lending at LVRs over 80 percent (a deposit of less than 20 percent) to no more than 10 percent of the dollar value of their total new residential mortgage lending. It was estimated that the proposed calibration could result in 1-3 percentage points lower household credit growth for the first year that the restriction was in place, all else equal. This reduction was likely to come about through a combination of slower housing market turnover, reduced house prices and higher average deposits for house purchases (figure 5). The Reserve Bank’s modelling also suggested that house price inflation could be 1–4 percentage points lower over the first year, reflecting reduced competition for houses, a direct lowering of the price that some purchasers could

Figure 5
Projected impact of restrictions on high-LVR lending

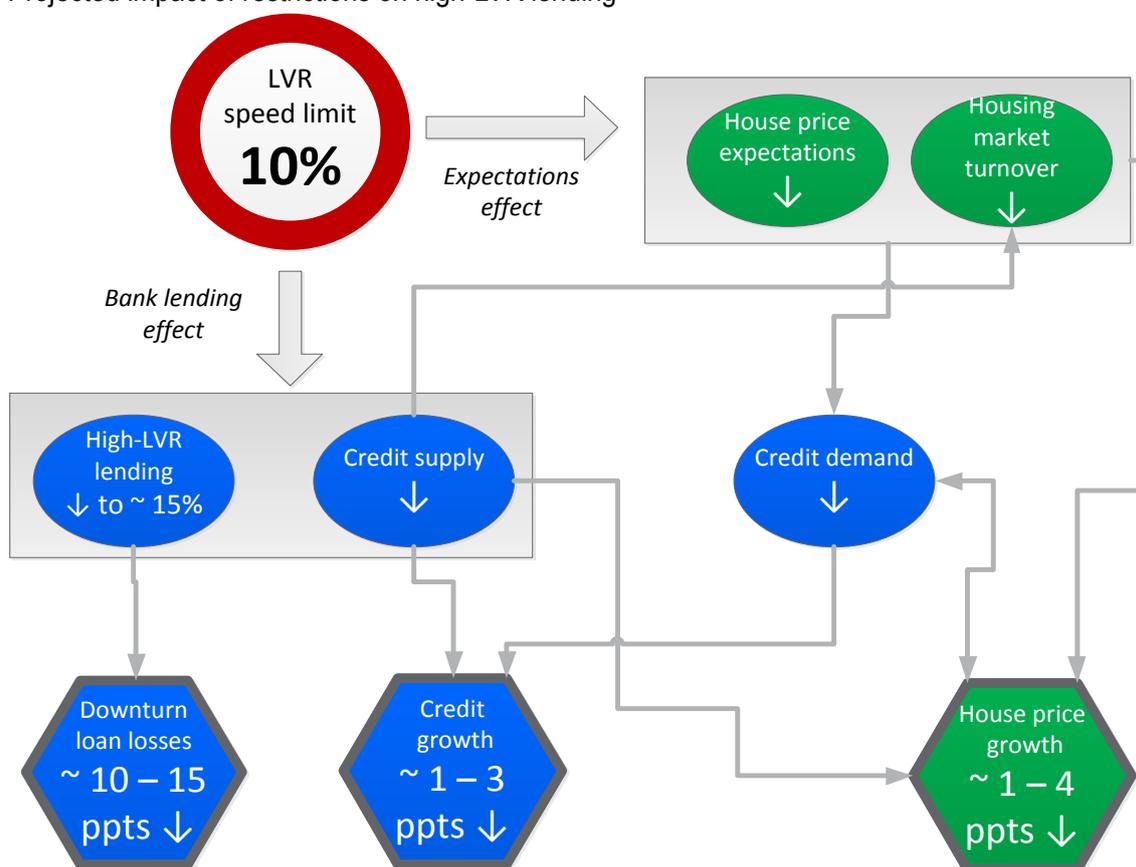


Table 1
Macro-prudential policy development: timeline

Date	Macro-prudential policy development
March 2013	Consultation on macro-prudential policy instruments and framework
May 2013	Finalisation of high-level macro-prudential policy framework
May 2013	Memorandum of Understanding signed
June to July 2013	Technical consultation on framework for restrictions on high-LVR residential mortgage lending
August 2013	Finalisation of framework for restrictions on high-LVR residential mortgage lending
August 2013	Announcement of intention to implement restrictions on high-LVR residential mortgage lending, and publication of <i>Regulatory Impact Assessment</i>
October 2013	LVR restrictions come into effect
December 2013	Consultation on proposed modifications to framework for restrictions on high-LVR residential mortgage lending, including exemption of construction lending

pay, and reduced house price expectations as a result of the restriction. The decision was made to focus on the use of LVR restrictions as a likely policy response, and to accelerate the technical analysis and design to accommodate this.

Technical enhancements to the regulations were led by the Reserve Bank's Prudential Supervision Department, in close collaboration with the Macro-Financial Department. As is standard, there was a public consultation on the draft changes to the *Banking Supervision Handbook* and conditions of registration, prior to the LVR framework being finalised. This resulted in some important modifications, particularly with regard to handling the existing pipelines of pre-approved housing loans, which were very large at some banks. To address the pre-approval pipeline, the framework was modified to allow for a one-off transition period, during which banks could smooth their high-LVR lending over a longer, rolling, six-month measurement period (rather than the normal three-month period).

In addition, the Reserve Bank had already been exploring ways to improve its systemic risk assessment capacity, by standardising the data collected from banks on high-LVR residential property lending. This work was accelerated, with an added focus on the information needed to monitor compliance and the effectiveness of LVR restrictions. The first data reporting began in July 2013, and aggregate data are now published by the

Reserve Bank at monthly intervals (RBNZ, 2013i).

2.4 Operation

'Speed limits' on high-LVR lending were announced in August 2013 and formally introduced on 1 October 2013 (table 1; RBNZ, 2013j).⁹ The announcement was accompanied by a *Regulatory Impact Assessment* (RIA), which provided an extensive review of the various policy options considered by the Reserve Bank, and the costs and benefits likely to be associated with LVR restrictions (RBNZ, 2013k).¹⁰

Following the implementation of LVR restrictions, the Reserve Bank's focus has shifted to monitoring bank compliance and the effectiveness of the restrictions. From a compliance point of view, banks in aggregate are meeting the speed limit requirement. Four months into the initial measurement period, the average share of banks' high-LVR lending has fallen to 6.7 percent (after exemptions), providing a buffer of a little over 3 percent

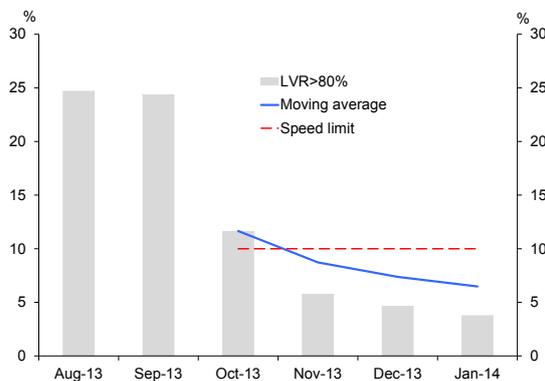
⁹ To account for the natural ebbs and flows of lending activity, the speed limit is measured at the end of each month on a rolling average basis; that is, measuring lending totals over a specified number of months up to each month-end. This measurement period is initially six months for all banks; from end-April 2013, it will be three months for the larger banks – ANZ, ASB, BNZ, Kiwibank and Westpac. The smaller banks will continue to comply over a six-month moving average, to help account for the greater volatility in their flows, and smaller total lending.

¹⁰ The RIA was prepared in accordance with section 162AB of the Reserve Bank of New Zealand Act 1989 (the Act), which requires the assessment of expected regulatory impacts of policies adopted under Part 5 of the Act.

to the 10 percent speed limit (figure 6). The share of high-LVR lending before exemptions is lower than expected, running at around 7.8 percent, compared to a projected 15 percent. This partly reflects lower than projected use of exemptions, which are averaging around 1 percent of total lending, compared to projections of 5 percent. It is possible that the share of high-LVR lending could modestly increase in coming months as banks adjust to the new framework.

It will be some months before the impact of LVR

Figure 6
New Zealand bank new high-LVR lending
(percent of lending)

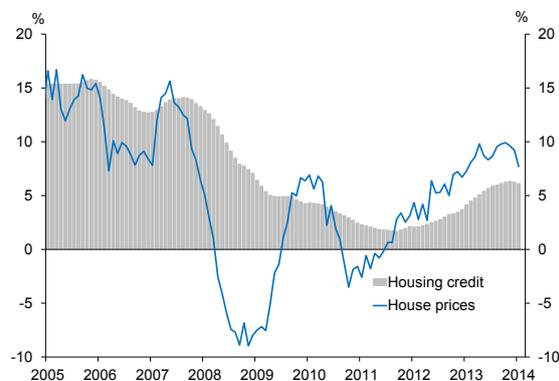


Source: RBNZ LVR New Commitments Survey.

restrictions can be reliably gauged. However, from an effectiveness point of view, the early evidence suggests that LVR restrictions are having the desired impact on house prices and credit growth. The housing market has weakened, with seasonally adjusted house sales down by around 13 percent over the five months to February, and nationwide house price growth easing to 8.2 percent over the year to February compared to 9.8 percent over the year to September (figure 7). Survey data also suggest that expectations of continuing house price increases are softening. After trending up since June 2011 (when the survey began), households' expectations of higher house prices appear to have stabilised (figure 8).

The weaker housing market is reflected in housing lending data. This is particularly evident in the first stage of the lending process, with the value of new housing

Figure 7
New Zealand house prices and housing credit
(annual percentage change)



Source: REINZ, RBNZ Standard Statistical Return.

Figure 8
Households expecting higher house prices
(net percent)



Source: RBNZ.

loans approvals falling by a seasonally adjusted 7 percent over the three months to February. Changes in housing credit are slower to come through, reflecting that net credit is also affected by drawdowns on existing loans, and changes in repayment behaviour. Housing credit growth does appear to be turning however, having slowed from its October 2013 peak of 6.4 percent annual growth to 6 percent in January 2013.

There have also been some marked changes in the pricing of housing lending, with banks now pricing for the higher risk and capital requirements associated with high-LVR lending. Banks have broadly increased the use and level of low equity premiums, and are offering

discount rates on low-LVR lending. This created an initial pricing wedge of up to 100 basis points between high-LVR and low-LVR loans.

In assessing the impact of LVR restrictions, the Reserve Bank considers both actual developments in house prices and credit growth (as outlined above), and counterfactual developments; e.g. what would the likely path of housing credit and house prices be in the absence of LVR restrictions? This counterfactual modelling accounts for changes in key factors such as interest rate movements and net migration, but given the many other moving parts that also make up the financial system and economy, it is not possible to be too definitive around the results. That being said, the Reserve Bank's counterfactual exercises suggest that house price inflation would have been around 2.5 percentage points higher in the year to February in the absence of LVR restrictions.

As discussed earlier, the boundaries of the regulation mean that it is possible that there could be policy leakages, whereby the effectiveness of the LVR restrictions is undermined by avoidance on the part of banks, increases in unsecured lending, or greater lending by non-regulated entities. The Reserve Bank is monitoring for such developments. However, to date, banks appear to be complying with the spirit of the LVR restrictions, and the data do not show any material increases in unsecured lending, or lending by non-regulated entities.

2.5 Framework enhancements

In assessing the effectiveness benefits of LVR restrictions, the Reserve Bank is also mindful of costs. As outlined in the macro-prudential and LVR consultations, macro-prudential interventions may also have a number of efficiency costs, and other unintended consequences. An example is the case of construction lending. The initial available information suggested that high-LVR lending made up a very small part of construction lending, and that the 10 percent speed limit would provide the banks with the capacity to continue such lending. Neither the banks nor the building sector raised concerns about construction lending in their submissions to the consultation on high-LVR lending. Following implementation, however, feedback

from the banks and building sector suggested that the proportion of high-LVR construction lending might be somewhat higher, and that the new policy could adversely affect new building. This was of concern, as improving the housing supply response is a key part of bringing a better balance to the housing market. After collecting and analysing supplementary data on construction lending and the housing construction market, the Reserve Bank decided to exempt construction lending (RBNZ, 2013l). The exemption is expected to support new building and therefore help to moderate house price pressures, thus helping to reduce systemic risk in the banking system.

Similarly, the Reserve Bank eventually decided not to include unsecured lending in the calculation of the loan-to-value ratio for capital purposes, as this would have modified the base prudential framework in a way that was not consistent with the temporary nature of LVR restrictions. From a macro-prudential perspective, excluding credit card and unsecured lending from the LVR calculation could adversely impact the effectiveness of an LVR restriction, particularly if borrowers became tempted to use their credit card facilities or personal loans to raise or increase the deposit needed to obtain a mortgage. However, from a capital point of view, including credit card and unsecured lending in the LVR calculation was unnecessary as credit card and personal loans were already treated as unsecured lending and risk-weighted accordingly. Their inclusion in the calculation of the LVR could therefore have led to a form of 'double counting', which would not reflect the way these loans are treated by banks, and could have resulted in significant unintended consequences to the housing lending market, such as a move away from 'all obligations mortgages', and from borrowers having all of their business with the same bank (RBNZ, 2013k). The potential costs were judged to outweigh the potential benefits of reduced avoidance risk and associated greater effectiveness of LVR restrictions.

While such decisions require a degree of discretion, the Reserve Bank is mindful of the need for consistency and even-handedness in its regulatory approach. To aid this, the Reserve Bank has identified a core set of principles for analysing framework issues:

- How does the modification affect the objectives of the LVR restrictions?
- Does it adhere to the existing LVR framework, or would the framework require substantive modifications?
- Is it supportive of the underlying prudential framework, or could it come into conflict with it?
- What are the likely effects on efficiency?
- Are there any distributional considerations?

3 Removal of LVR restrictions

In monitoring LVR restrictions, the Reserve Bank is also continuing to consider the conditions that would justify their removal. These would include evidence of a better balance in the housing market, with the Reserve Bank being confident that removal of LVR restrictions would not lead to a resurgence of housing credit and demand.

4 Conclusion

This article has provided an introduction to the LVR restrictions framework, and the Reserve Bank's initial experiences in deploying them. LVR restrictions are not a permanent tool, and the Reserve Bank is continuously monitoring their impact. Although some desirable adjustments to the framework have been identified, and are currently being drafted, LVR restrictions appear to be working well overall. The housing market seems to be slowing, and there is little evidence of material leakages around the edges of the restrictions. A better balance in the housing market will help reduce the risk of a severe housing downturn, and associated systemic risks to the financial sector and the economy.

The Reserve Bank recognises that the policy room provided by LVR restrictions can only be temporary. LVR restrictions provide a way of restraining housing demand while working on the supply response. But in the medium to longer term, imbalances will need to be resolved through appropriate longer run policy measures, including actions to improve the housing supply.

References

- Almeida, H, M Campello and C Liu (2006) 'The Financial Accelerator: Evidence from International Housing Markets', *Review of Finance*, 10.
- Bloor, C and C McDonald (2013) 'Estimating the impact of restrictions on high LVR lending', Reserve Bank of New Zealand Analytical Notes, (AN2013/05), October.
- Lim, C *et al* (2011) 'Macro-prudential policy: what instruments and how to use them? Lessons from country experience', IMF Working Paper 11/238.
- Nier, E and J Osiński (2013) 'Key aspects of macro-prudential policy', IMF Background Paper.
- IMF (2013), 'New Zealand – Staff Report for the 2013 Article IV Consultations', April.
- Lamont, O and J Stein (1999) 'Leverage and House Price Dynamics in US cities', *RAND Journal of Economics*, 30-3.
- OECD (2013) *OECD Economic Outlook*, May.
- RBNZ (2013a) 'Memorandum of Understanding on Macro-prudential policy and operating guidelines', May.
- RBNZ (2013b) 'Response to submissions received on the consultation on framework for restrictions on high? LVR residential mortgage lending', August.
- RBNZ (2013c) Consultation paper: 'Framework for restrictions on high-LVR residential mortgage lending', June.
- RBNZ (2013d) Consultation paper: 'Review of bank capital adequacy requirements for housing loans', March.
- RBNZ (2013e) Consultation paper: 'Review of bank capital adequacy requirements for housing loans and internal models processes', September.
- RBNZ (2013f) Consultation paper: 'Macro-prudential policy instruments and framework for New Zealand', March.
- RBNZ (2013g) 'Box C - Longer-term downside risks to the housing market', *Financial Stability Report*, May.
- RBNZ (2013h) 'Response to submissions received on review of bank capital adequacy requirements for housing loans' (stage one), April.
- RBNZ (2103i) 'New statistics show fall in high-LVR lending', news release, 28 November.

-
- RBNZ (2013j) 'Limits for high-LVR mortgage lending', news release, 20 August.
- RBNZ (2013k) 'Regulatory impact assessment: Restrictions on high-LVR residential mortgage lending', August.
- RBNZ (2013l) Consultation paper: 'Modifications to framework for restrictions on high-LVR residential mortgage lending', December.
- RBNZ (2013m) 'Summary of submissions and final policy decisions on the Consultation Paper: Review of bank capital', December.
- Rogers, L (2013) 'A new approach to macro-prudential policy for New Zealand', Reserve Bank *Bulletin*, 76(3), September, pp. 12-22.
- Wheeler, G (2013) 'The Introduction of Macro-prudential Policy', speech delivered at Otago University, Dunedin, 20 August.
- Volken, T (2013) 'Measuring systemic risk: the role of macro-prudential indicators', Reserve Bank *Bulletin*, 76(4), December, pp. 13-30.

Monetary policy decision-making and accountability structures: some cross-country comparisons¹

Tim Aldridge and Amy Wood

Monetary policy decisions are typically made by independent central banks. But the details of the monetary policy decision-making and accountability structures differ widely across countries. This article outlines the key features of monetary policy governance and accountability arrangements of a range of advanced and emerging countries with similar approaches to monetary policy to that used in New Zealand.

1 Introduction

Monetary policy decisions are now typically taken, and implemented, by independent central banks. Substantial operational independence, of the sort given to most central banks in recent decades, needs to be accompanied by good structures to provide effective governance and accountability. There is no agreement on a single best governance and accountability model, and the details of such systems differ quite widely across countries. There are common features across countries, but each country decides what is best for its own needs.

New Zealand's central banking legislation was rewritten when the Reserve Bank was given operational independence. The Reserve Bank of New Zealand Act 1989 was explicitly designed to balance considerable operational autonomy for the Reserve Bank with a high degree of formal accountability. In some other countries, changes were undertaken with little or no material change to existing legislation.

This article compares the key features of the monetary policy accountability and governance arrangements of New Zealand and a range of countries with similar approaches to monetary policy.² The focus of this article is on description, and it does not evaluate the relative merits of the different models.

2 Summary of monetary policy decision-making and governance features

Central bank functions

Central banks are responsible for the conduct of monetary policy (and for the closely associated liquidity management). However, countries differ widely as to what other responsibilities have been assigned to their central banks. These responsibilities have changed over time, in some cases quite recently (for example, the Bank of England only recently reassumed responsibility for prudential supervision).

Table 1, overleaf, outlines the functions that central banks are responsible for in a representative range of advanced and emerging economies for which information was readily accessible.³ In selecting countries, the focus was on operationally independent⁴ central banks that use something similar to the inflation targeting monetary policy undertaken in New Zealand.

The Reserve Bank of New Zealand, a "full service central bank", is among those with the widest range of responsibilities and powers. The overall governance arrangements for a central bank will, in part, reflect the range of responsibilities each institution has. In the interests of tractability this article focuses primarily on

¹ Information in this article is current to 19 March 2014.

² Readers interested in more detail on the New Zealand system itself are referred to the article on the new Policy Targets Agreement in the December 2013 issue of the *Bulletin*, and to "Monetary policy accountability and monitoring" available on the Bank's website at http://www.rbnz.govt.nz/monetary_policy/about_monetary_policy/2851362.pdf

³ Table 1 does not attempt to cover the reserve powers of ministers or Parliament (or equivalent) such as those in section 12 of the Reserve Bank of New Zealand Act.

⁴ Operational independence refers to the ability of the central bank itself to adjust key policy instruments, such as the OCR, without seeking the approval of a Minister of Finance. As discussed later in the article, in most advanced countries the government plays a significant role in determining the operational target that the central bank pursues.

Table 1
Functions of central banks⁴

	Monetary policy	Liquidity management	FX intervention	Lender of last resort	Inter-bank payment system [*]	Prudential policy ^{**}	Supervision of banks
New Zealand							
Australia							
Brazil							
Canada							
Chile							
Euro-area (ECB) ¹							
Israel							
Japan							
South Korea							
Mexico							
Norway							
Sweden							
Switzerland							
United Kingdom							
United States							

Key

	: No or minor involvement
	: Shared or partial responsibility
	: Full responsibility

Notes to Table 1:

- ^{*} This covers responsibility for regulatory policy around payments systems, not the operation of individual payments systems.
^{**} Central banks are generally involved in policy formulation for the financial system as a whole and often for banks and deposit-taking institutions, but generally not for other parts of the financial system (e.g. broker/dealers, securities markets, fund managers).

the monetary policy dimensions of governance and accountability.

Monetary policy decision-making frameworks

The overarching goal or goals for monetary policy are usually set out in legislation. The way these goals are articulated differs between countries. For example, in New

Zealand and Sweden, the statutory objective of monetary policy is maintaining price stability. However, some other central banks, such as the US, have multiple monetary policy objectives set out in statute. The responsibility for setting any operational targets, to achieve the statutory goals for monetary policy, also differs across countries. Sometimes this responsibility is set out as a statutory requirement, as in New Zealand where the monetary policy target and other explicit considerations are formally agreed to by the Minister of Finance and the Governor in the Policy Targets Agreement (PTA). In Canada and Australia, the Minister of Finance/Treasurer and the Governor have also agreed operational targets, but in neither case is

⁴ In most cases, the table has been compiled from direct correspondence with the relevant central bank. In other cases, information has been interpreted from the central bank's website.

⁵ Many of the ECB liquidity provision operations are conducted through national central banks. The other responsibilities of the national central banks are not considered here. The ECB is expected to assume greater prudential supervisory responsibilities later this year.

this a statutory arrangement. In the United Kingdom, the inflation target the Bank of England is required to pursue is set by the Chancellor of the Exchequer. In other central banks, such as the Federal Reserve and the ECB, the central bank itself determines any operational targets.

The body responsible for making monetary policy decisions differs across central banks (table 2, overleaf).⁶

Under the New Zealand and Canadian central bank legislation the Governor, as chief executive, is responsible for all the central bank's activities, including monetary policy decisions. In practice, Governors of each institution reach monetary policy decisions only after a full economic analysis and discussion of policy options with staff. In New Zealand, the Governor receives written advice on each forthcoming decision from members of the Monetary Policy Committee, which also includes two external members. This written advice is subsequently submitted to the Reserve Bank's Board and is reviewed by the Board as part of its formal monetary policy monitoring and review process. At the Bank of Canada, descriptions of the decision-making process emphasise 'consensus' within the Governing Council of senior bank management. In 2013, the Governor of the Reserve Bank of New Zealand further formalised the internal consultation process by introducing a Governing Committee, similar to the Bank of Canada's Governing Council.

In some other central banks, legislation sets out a formal mechanism for collective decision-making about monetary policy - often termed a committee. The committees differ widely in size and composition. In many of the countries (for example, Switzerland, the United Kingdom, Chile, Mexico, and Brazil) where decision-making is by committee, the members are mainly senior officials of the central bank. Conversely, in others (for example, Australia, Japan, South Korea, Norway and Sweden) the majority of committee members are from outside the central bank, often as a part-time responsibility. These external members are often drawn

from the business and academic communities.

In some central banks in the sample, a representative from the Treasury also participates in the deliberations of the decision-making committee. The role of this representative may differ. For example, in Australia the Secretary to the Treasury is a full voting member, while in the United Kingdom a Treasury representative attends Monetary Policy Committee (MPC) meetings but has no vote. There is also a range of appointment procedures, although the executive branch of government usually plays the predominant role.

Overall governance model

The overall governance models of central banks in our sample of countries also differ widely. Often there is a governance body, established by statute, which is responsible for things other than routine monetary policy decisions. This paper refers to such a body as a board. Table 3 summarises the role and functions of these boards.

In some countries (Australia, Mexico, Chile and Japan) the body that is responsible for monetary policy decisions is also responsible for all decision-making and the overall governance of the institution. Often these are wholly executive boards but the Reserve Bank of Australia's Board is more similar to the board of a public company: primarily comprised of non-executives, and with overall responsibility for all Bank policy (excluding payment system policy, which is handled by a separate board) and oversight.

In some central banks, like New Zealand, the boards have a governance/oversight function with respect to monetary policy. Other boards have overall responsibility for the operation and administration of central banks, but do not have any responsibility for overseeing the conduct of monetary policy. The Bank of Canada and the Norges Bank follow this approach. When boards have narrower responsibilities, the central bank's accountability for monetary policy conduct tends to be directly to the Parliament. Boards with oversight rather than executive responsibilities tend to be composed primarily of non-executive directors who are external to the central bank (for example in Canada, New Zealand, Norway, Sweden,

⁶ There is a growing literature on the design of monetary policy decision-making, for example, Vandenbussche (2006), Farvaque et al. (2009), Maurin and Vidal (2012), Morimoto (2010), Jung and Kiss (2001), Maier (2007), and Blinder (2004).

Table 2

Monetary policy formal decision-making frameworks

	Decision-making responsibility	Composition of formal decision-making body		Length of term	Reappointment allowed	Appointment	Decision-making process in practice
		No.	Positions				
New Zealand	Governor	1	Governor	5 years	Yes	Minister of Finance on recommendation of Reserve Bank Board	Governor's decision (in consultation with Governing Committee)
Australia	Board	9	Governor (as Chair) Deputy Governor Secretary to Treasury 6 external members	Governor/Deputy Governor: up to 7 years External members: up to 5 years	Yes	Governor appointed by Governor-General in Council Externals appointed by Treasurer	Vote (Governor has casting vote)
Brazil	Monetary Policy Committee	8	Board of Directors (Governor and Deputy Governors)	No fixed term	N/A	Governors appointed by President of the Republic (with approval by Senate)	Vote (Governor has casting vote)
Canada	Governor	1	Governor	7 years	Yes	Board of Directors (with approval of Cabinet)	Governor's decision (de facto, consensus among Governing Council)
Chile	Board	5	Governor Deputy Governor 3 other internal members	Deputy Governor/ internal members = 10 years (appointments made every 2 years) Governor appointed for lesser of 5 years or remainder of term	Once	Governor appointed by President from among Board members Board itself elects Deputy Governor Internal members appointed by President (with approval by Senate)	Vote (Governor has casting vote)
Euro area	Governing Council	23	President Vice-President 4 other Executive Board Members 17 National Central Bank (NCB) Governors	Executive Board = 8 years NCB Governors = minimum 5 years	Executive Board = No NCB Governors = in most cases renewable	Executive Board appointed by agreement of governments of Member States NCB Governors appointed by national authorities	Vote (in practice, largely by consensus)

	Decision-making responsibility	Composition of formal decision-making body		Length of term	Reappointment allowed	Appointment	Decision-making process in practice
		No.	Positions				
Israel	Monetary Committee	6	Governor (as Chair) Deputy Governor 1 other Bank of Israel employee 3 external members	Governor/Deputy = 5 years	Once	Governor and Deputy Governor appointed by the Government (in consultation with the Bank of Israel) Bank employee appointed by Governor External members appointed by the Government	Vote (Chair has casting vote)
Japan	Policy Board	9	Governor 2 Deputy Governors 6 full-time members drawn from outside the Bank of Japan	5 years (staggered terms)	Yes	All appointed by Cabinet	Vote
South Korea	Monetary Policy Committee	7	Governor (as Chair) Senior Deputy Governor 5 external members	Governor = 4 years Senior Deputy Governor = 3 years External members = 4 years	Governor and Senior Deputy Governor = once External members = unlimited number of terms	Governor and Senior Deputy Governor appointed by President An external member is recommended by each of: Governor Minister of Strategy and Finance Chairman of the Financial Services Commission - President of the Korea Chamber of Commerce and Industry Chairman of the Korea Federation of Banks	Vote

	Decision-making responsibility	Composition of formal decision-making body		Length of term	Reappointment allowed	Appointment	Decision-making process in practice
		No.	Positions				
Mexico	Board of Governors	5	Governor 4 Deputies	Governor = 6 years Other members = 8 years	Yes	All appointed by President of the Republic (confirmed by Senate or permanent commission)	Vote (Governor has casting vote)
Norway	Executive Board	7	Governor (as Chair) Deputy Governor 5 external members	Governor/Deputy = 6 years External members = 4 years	Governor/Deputy = once External members = total period of 12 years	All appointed by the King	By consensus
Sweden	Executive Board	6	Governor (as Chair) 5 Deputy Governors (fulltime, but non-executive)	5 years (rolling schedule)	Yes	All appointed by General Council (which is appointed by Parliament from among its own members)	Vote (Governor has casting vote)
Switzerland	Governing Board	3	Chair Vice-Chair 1 other member	6 years	Yes	All appointed by the Federal Council (on the recommendation of the Bank Council)	Vote
UK	Monetary Policy Committee	9	Governor (as Chair) 2 Deputy Governors Executive Director for monetary analysis (Chief Economist) Executive Director for markets 4 non-executive external members	Governor/Deputy = 5 years Chief Economist, Executive Director and external members = 3 years	Yes Chief Economist = can be renewed indefinitely External members = once	Governor, Deputy Governors and external members are appointed by Chancellor. The two Executive Directors are appointed by the Governor (under consultation with the Chancellor) ¹ External members appointed on basis of experience and expertise in monetary policy.	Vote (Governor has casting vote) Any member in minority is asked to say what level of policy settings he/she would have preferred

⁷ All new members are summoned to the Treasury Select Committee for an appointment hearing to satisfy the Committee that they meet the criteria of professional competence and independence. The Committee has no statutory power of veto on appointments, but it reports to Parliament on its assessment of appointees.

USA	Decision-making responsibility	Composition of formal decision-making body		Length of term	Reappointment allowed	Appointment	Decision-making process in practice
		No.	Positions				
	Federal Open Market Committee	12	<p>7 members of the Board of Governors</p> <p>President of the Federal Reserve Bank of New York</p> <p>4 of 11 remaining Federal Reserve Bank Presidents in rotations</p>	<p>Board members = 14 years, or (if replacing previous Board member) unexpired term plus 14 years</p> <p>President of the Federal Reserve Bank of New York = continuous basis</p> <p>Federal Reserve Board Presidents = one year rotations as a voting member</p>	<p>Board = No (unless originally appointed to complete an unexpired term)</p> <p>Presidents = Yes</p>	<p>Federal Reserve Board members appointed by President (and the Chair is appointed by the President from among the Governors) (all subject to Senate confirmation)</p> <p>Regional Federal Reserve Bank Presidents appointed by each Federal Reserve Bank's Board of Directors, with the approval of the Board of Governors of the Federal Reserve System</p>	<p>Vote</p>

Source: CCBS (2012), central bank websites.

Switzerland, and the United Kingdom). In Sweden's case, the General Council plays this oversight role, while the Executive Board is responsible for decision-making within the central bank.

The Reserve Bank of New Zealand Board of Directors has few formal decision-making powers. However, it has a strong statutory focus on monitoring and providing advice on the Governor's performance in all areas of the Bank's responsibility, but with some explicit requirements in respect of monetary policy oversight. If the Governor's performance is considered unsatisfactory the Board can recommend removal. By international standards, this is an unusually high degree of personal accountability (often monetary policy decision-makers can be removed only by the legislature, for demonstrated incapacity). The Reserve Bank Board plays a key role in the appointment of the Governor. The Board make a recommendation to the Minister of Finance and although any individual nominee can be rejected, a candidate not recommended by the Board can not be appointed as Governor.

Few other Boards play quite the sort of role New Zealand's does. The Oversight Committee of the Court of the Bank of England now plays a similar role monitoring the Bank's pursuit of its statutory objectives. The Oversight Committee has access to internal papers, can observe meetings of policy committees, and will have staff to support them in this role. Sweden's General Council is also similar in some respects, with powers to appoint members of the Executive Board, audit the policy-setting body's discharge of its duties and to report to Parliament on monetary policy performance, but the General Council is itself comprised of members of Parliament. The Chairman and Vice Chairman of the Swedish General Council have the right to attend and speak at Executive Board meetings, but may not vote.

3 Public accountability and transparency

Central banks have been given considerable authority and, accordingly, place a lot of emphasis on communication and transparency. All central banks in the

sample face scrutiny from their respective legislatures. The forms of communication used vary across central banks (Jeanneau (2009) and, for a recent New Zealand perspective, Bascand (2013)). Communication also serves some direct economic purposes, seeking to influence market and public expectations (see Blinder et al. (2008)). Possible links between monetary policy communication practices, decision-making structures and the effectiveness of communications are discussed in Ehrmann and Fratzscher (2007). The Reserve Bank of New Zealand's accountability and transparency practices and their purposes are documented in Jackman (2002) and Reddell (2006).

In a recent cross-country empirical study, Dincer and Eichengreen (2014) reported measures of transparency for 120 central banks. These measures are calculated over 15 different elements of transparency, around objectives, processes, and policy operations. The authors found that the Reserve Bank of New Zealand was second only to the Swedish Riksbank in its monetary policy transparency. Eight of the central banks in the sample considered in this article are in the top 10 most transparent central banks.

Scrutiny by legislators

Central banks are usually created by statute, and those statutes can be amended by Parliament.⁸ Either directly or indirectly, parliaments also fund the operation of central banks. Parliaments do not typically have the power to intervene in, or override, individual decisions of the central bank, but the power to call a central bank to account for its conduct and analysis is an important balancing element in the overall mix of operational independence and accountability.

Details of the scrutiny differ, but in complying with legal requirements or customary practice, all of the central banks examined here present monetary policy reports (table 4). In some cases, including New Zealand, these reports are a statutory requirement and are formally

⁸ The ECB differs from other central banks in the sample; it was established under an international treaty, rather than by national legislation (and that framework emphasised the independence of the ECB more than its accountability).

Table 3
Form and function of boards in central banks

	Board / Committee name	Composition	Role	Appointment
New Zealand	Board of Directors	Governor 5-7 non-executives	Constant review of Bank's performance in monetary policy (and other) functions. Appoints the Deputy Governors (on advice from the Governor). Can recommend removal of the Governor for non-performance relative to the PTA	Minister of Finance (members elect their own chair)
Australia	Board	Governor (as Chair) Deputy Governor Secretary to Treasury 6 external members	Responsible for all policy, other than payments system policy	All appointed by Treasurer
Brazil	Monetary Policy Committee	Board of Directors (Governor and Deputy Governors)	Responsible for all aspects of the central bank's responsibilities	Governors appointed by President of the Republic (with approval by Senate)
Canada	Board of Directors	13 Members Governor (Chairman) Senior Deputy Governor 11 external members; Deputy Minister of Finance (most senior civil servant in Ministry of Finance) (non-voting)	Ensures competent management of the Bank of Canada Does not review monetary policy Responsible for appointing Governing Council (Governor also subject to approval by Cabinet, and 5 Deputy Governors)	Appointed by Canada's Governor in Council
Chile	Board	Governor Deputy Governor 3 other internal members	Directing and managing the Bank	Governor appointed by President from among Board members Board itself elects Deputy Governor Internal members appointed by President (with approval by Senate)
Euro area	Governing Council	President Vice-President 4 other Executive Board Members 17 National Central Bank (NCB) Governors	All aspects of the Eurosystem	Executive Board appointed by agreement of governments of Member States NCB Governors appointed by national authorities

	Board / Committee name	Composition	Role	Appointment
Israel	Supervisory Council	2 Bank members, including the Governor Five representatives of the public (one of whom serves as chair)	Supervises the "orderly and efficient management of the Bank", but with no oversight of monetary policy	Representatives of the public appointed by government. Chair appointed by government, in consultation with Governor
Japan	Policy Board	Governor (as chair) 2 Deputy Governors 6 full-time members drawn from outside the Bank of Japan	Oversight of all areas of the Bank's responsibility	All appointed by Cabinet
South Korea	Monetary Policy Committee	Governor (as Chair) Senior Deputy Governor 5 external members	Oversight of all areas of the Bank	Governor and Senior Deputy Governor appointed by President An external member is recommended by each of: Governor Minister of Strategy and Finance Chairman of the Financial Services Commission President of the Korea Chamber of Commerce and Industry Chairman of the Korea Federation of Banks
Mexico	Board of Governors	Governor 4 Deputy Governors	Fundamental actions and administrative decisions including authorisation of bank note issuance and coin minting, adopting resolutions with respect to the provision of credit to the federal government, and determining the policies and criteria in order for the Bank to carry out its operations	President, confirmed by Senate or Permanent Commission
Norway	Supervisory Council	15 external members Governor and Deputy Governors not members, but must be present at meetings	Ensure that rules governing Bank's operations observed. Does not include supervising Executive Board's (monetary policy setting body) exercise of discretionary authority under Act	Parliament chooses all members and appoints Chair from among members

	Board / Committee name	Composition	Role	Appointment
Sweden	General Council	All external	Appoints Executive Board (which sets monetary policy and is responsible for running the Riksbank), adopts Rules of Procedure and decides on the design of bank notes and coins, contains an audit unit to examine how the Executive Board (policy setting body) discharges its duties, and may present proposals to Parliament.	Elected by Parliament from among its own members (for length of parliamentary terms); Chair and Vice Chair appointed by members of General Council
Switzerland	Bank Council	President and Vice-President of SNB 9 others	Supervises and monitors conduct of business by the SNB, and sets up Appointment Committee, Audit Committee, Risk Committee and Remuneration Committee.	6, including President and Vice President, elected by Swiss Federal Council and 5 by shareholders' meeting
UK	Court of Directors	Governor 3 Deputy Governors 9 non-executive directors	Manage the Bank's affairs other than monetary policy formulation. The Court delegates day-to-day management of BoE to Governor, and delegates certain of the Court's functions to the Committee of the Court.	All appointed by Crown; Chair selected from within group by Chancellor of the Exchequer
	Oversight Committee of Court	9 non-executive directors.	Responsible, under statute, for reviewing BoE performance including reviewing procedures of the MPC, setting strategy, and determining (on advice of the Remuneration Committee) the pay and terms of employment of the Governors, Executive Directors and external MPC members. Reviews Governor's performance.	As above.
US	Board of Governors (BoG) of the Federal Reserve System	7 permanent members of BoG, including Chair and Vice Chair. (All 7 members are also members of the Federal Open Market Committee.)	Supervises and regulates operations of the Federal Reserve Banks, exercises broad responsibility in nation's payments system, administers most of the nation's laws regarding consumer credit protection, sets reserve requirements and shares the responsibility with the Federal Reserve Banks for discount rate policy	President appoints members, including Chair and Vice Chair, subject to confirmation by the Senate.
	Board of Directors for each regional Federal Reserve Bank	3 directors representing members of commercial banks of the local Federal Reserve System; 6 represent the public. Chair is one of the 3 directors appointed by the Board of Governors	Closely akin to the responsibilities of a corporate Board of Directors (overall responsibility for the affairs of the bank).	3 representing member banks are elected by member (shareholder) banks; 3 of those representing the public are elected by member banks; and 3 of those representing borrowers are appointed by the Board of Governors of the Federal Reserve System.

Source: CCBBS (2012), Federal Reserve System (2005), central bank websites.

Table 4
Accountability to legislators (for monetary policy conduct)

	Scrutiny by Parliament	Frequency	Form
New Zealand	Yes	4x year	After release of <i>Monetary Policy Statement</i>
Australia	Yes	2x year	Governor gives briefing then answers questions, normally at a parliamentary committee.
Brazil	Yes	6x year	Inflation Report
Canada	Yes	4x year	After quarterly Monetary Policy Reports
Chile	Yes	4x year	One report to full senate, and other three usually with Finance Committee
Euro area	limited	4x year	ECB presents report to Euro bodies, must be annual but quarterly in practice. Other briefings when required.
Israel	Yes	2x year	Following publication of each bi-annual Monetary Policy Report
Japan	Yes	2x year (and on an ad-hoc basis on various issues)	Report to Diet regarding its decisions and conditions of its operations.
South Korea	Yes	At least 2x year	Provide a report. Governor attends National Assembly hearings
Mexico	Yes	1x year	Annual report including summary of past year activities and plans for conducting monetary policy, quarterly report on inflation and economic activity, and Congress can cite the Governor of the Board at any time, for an update on the Bank's activity.
Norway	Yes	1x year	Report submitted to Parliament
Sweden	Yes	2x year	Monetary Policy Report
Switzerland	Yes	regularly	Reports to the competent committees of the Federal Assembly
UK	Yes	At least 6x year	Inflation Report hearings by the House of Commons Treasury Committee, and through appointment hearings for new MPC members.
USA	Yes	2x year	Monetary Policy Report to the Congress Confirmation process for members of the Board of Governors

Source: CCBS Handbook No.29 (2012), Central bank websites and contacts.

referred to the relevant committee of Parliament (in New Zealand's case, the Finance and Expenditure Committee). Most central bank Governors appear before some parliamentary committee at least once a year.

Publication of minutes

All the central banks in the sample publish detailed reports on monetary policy that provide information on the considerations that shaped monetary policy decisions. In addition, around two-thirds of central banks in the sample

publish 'minutes' of monetary policy decision-making meetings. These can serve various roles, including assisting public understanding of the rationale for the decision, strengthening accountability, and providing a vehicle for recording dissenting views among the decision-makers. Publishing minutes has become more common over the last decade, and the time lag between the relevant meeting and the release of the minutes has tended to be shortened. However, the content that is published varies widely, ranging from a brief outline of

Table 5
Publication of monetary policy meeting “minutes” (narrowly defined)

	Publish	Delay	Identify votes	Comprehensiveness
New Zealand	No			
Australia	Yes	2 weeks	No	Short summary of briefings, discussion and considerations for monetary policy
Brazil	Yes	Up to 6 working days	Yes	Comprehensive economic overview and summary of briefings.
Canada	No			
Chile	Yes	2 weeks	Yes	Brief outline of proceedings with greater coverage of options and considerations
Euro area	No			
Israel	Yes	2 weeks	No	Detailed overview of briefings and proceedings.
Japan	Yes	4 weeks	Yes	Comprehensive summary of briefings on economic developments and the outlook and discussion among members. The attendees of the meeting are identified.
South Korea	Yes	2 weeks	No	Summary of briefings and discussion. Outline of decision and reasoning. The attendees of the meeting are identified.
Mexico	Yes	2 weeks	No	Comprehensive summary of briefings. Detailed outline of considerations and summary of decision and unanimity.
Norway	No			Minutes are only released after 12 years.
Sweden	Yes	2 weeks	Yes (dissenters' views are explained in the decision section of the minutes)	Short overview of briefings followed by very detailed coverage of proceedings including attributing comments, views, questions and answers to Board members.
Switzerland	No			Minutes available from archive after 30 years on request.
UK	Yes	2 weeks	Yes	Summary of briefings with coverage of discussion points. Outline of decision and reasoning, including areas where there were differences of opinion (without identification).
USA	Yes	3 weeks	Yes	Detailed summary of proceedings and briefings. Full transcripts available after 5 years.

Source: CCBS Handbook No.29 (2012), Central bank websites and contacts.

matters considered, to very detailed records of information presented and matters discussed, including the votes of members. Minutes of other governance bodies (the ‘boards’) that are not also responsible for monetary policy are not usually published.

Table 5 summarises practices in this area. Around half of those who publish minutes also identify the votes of individual committee members Sweden’s Riksbank is the only central bank in the sample where the minutes attribute comments and questions to individual committee members.

Table 6
Release of forecast material

	Publish	How often (usually quarterly)	Interest rate treatment (whether published or not) in forecast process	Press conferences around forecasts and monetary policy decisions
New Zealand	Yes	4x year	Endogenous forecast	Yes
Australia	Yes	4x year	Market or constant	No
Brazil	Yes	4x year	Market or constant (2 forecast scenarios based on differing interest rates are provided)	Yes
Canada	Yes	4x year	Endogenous forecast	Yes
Chile	Yes	4x year	A path consistent with meeting the inflation target	No
Euro Area	Yes	4x year	Market	Yes
Israel	Yes	4x year	Endogenous forecast	No
South Korea	Yes	4x year	Market or constant	Yes
Japan	Yes	2x year	Do not forecast interest rates (economic forecasts are the pooled individual forecasts of Policy Board members)	Yes
Mexico	Yes	4x year	Endogenous forecast (not published)	No
Norway	Yes	4x year	Endogenous forecast	Yes
Sweden	Yes	4x year	Endogenous forecast	Yes
Switzerland	Yes	4x year	Conditional forecast and shows how the SNB expects consumer prices to move in the event that the interest rate does not change	Yes
UK	Yes	4x year	Market	Yes
USA	Yes	4x year (and longer-term projections)	Distribution of FOMC members' federal funds target rate expectations	Yes

Source: CCBS Handbook No.29 (2012), Central bank websites.

Publication of economic forecasts

The publication of economic forecasts by a central bank is not typically a statutory requirement, but has become increasingly common as a way of providing better insight into the interest rate decisions made by the central bank. Nearly all central banks in the sample now publish economic forecasts once a quarter (table 6), a practice virtually unknown 30 years ago. These forecasts vary in their level of detail, frequency, and forecast horizon (see Nelson (2008) for a discussion of forecasting practices in central banks).

At some central banks, the economic forecasts are the responsibility of staff, as distinct from the monetary policy decision-makers themselves. In that sense, the forecasts serve as inputs to decision-making. In New Zealand, the forecasts are an integral part of the

communication of the monetary policy stance, and are as much the responsibility of the Governor as the rest of the *Monetary Policy Statement*. In the United States, the published forecasts are the pooled views of the individual members of the Federal Open Market Committee (FOMC), and the forecasts published by the Bank of Japan use a similar method.

In publishing forecasts a key choice facing central banks is around how to treat interest rate projections, given that short-term interest rates are directly set by the central bank. Around half of the sample employs market prices (usually based on overnight indexed swap (OIS) contracts) or constant interest rate assumptions, while the other half employs an endogenous interest rate assumption. The latter approach, pioneered in New Zealand, sets out the future path of interest rates that

the central bank considers is likely to be required, on the information at hand, to keep inflation near the target over the medium-term. The alternative approaches emphasise the inflation consequences of following the assumed interest rate path. Either approach can provide a basis for scrutiny and debate.

Informal communication and outreach

Communication with the wider public takes various forms. These include speeches, publications, press conferences, and less formal interaction with a wide range of organisations.

Most of the central banks in the sample hold press conferences, with the opportunity for questions, following the release of at least some of their monetary policy decisions or forecasts (table 6, opposite). The Reserve Bank of Australia is one of the exceptions.

Not all interest rate decisions are accompanied by the release of extensive forecast material. Press conferences are more commonly associated with the release of the fuller information in forecasts. Thus, in New Zealand, press conferences are held for the release of the *Monetary Policy Statements*, but not typically for the intra-quarter OCR reviews. Press conferences provide a means for monetary policy decision-makers to be questioned and challenged. On-the-record speeches are also used as a major part of the communications strategy by most central banks in the sample. Other speeches and briefings, and associated question and answer sessions can also allow audiences to engage with the central bank. In a small number of countries, speeches can be part of the open debate around contestable advice provided by individual MPC members. For instance, this has become a feature of monetary policy arrangements in Sweden, the United Kingdom and the United States where members of the monetary policy decision-making committee use speeches on occasion to articulate their personal views on monetary policy. Communication practices are also evolving with technological change. Sweden is notable for its open communication philosophy, and the Governor regularly answers questions in online chats with the public.

4 Conclusion

Monetary policy decision-making, governance and accountability arrangements differ widely across countries. Many of these differences appear to reflect historical features and different norms around how best to structure public sector governance more generally. However, in balancing central bank operational independence and effective accountability for the exercise of that authority, there has been considerable convergence in substance in this area over the past two decades. The economic substance of the policy targets of these central banks is now also very similar.

5 References

- Bascand, G (2013) 'Communication, understanding and credibility', Speech to Admirals Breakfast Club, Auckland, December 2013
- Blinder, A (2004) *The Quiet Revolution: Central Banking Goes Modern*, New Haven, Connecticut, USA, Yale University Press.
- Blinder, A, Ehrmann, M, Fratzscher, M, Den Haan, J., and D Jansen (2008) 'Central bank communication and monetary policy: A survey of theory and evidence', *Journal of Economic Literature*, 46(4), pp. 910-945.
- Dincer, N and B Eichengreen (2014) 'Central Bank Transparency and Independence: Updates and New Measures', *International Journal of Central Banking*, 10(1), March
- Ehrmann, M and Fratzscher, M (2007) 'Communication by central bank committee members: Different strategies, same effectiveness?', *Journal of Money, Credit and Banking*, 39(2-3), pp. 509-541.
- Farvaque, E, Matsueda, N, and P-G Méon (2009) 'How monetary policy committees impact the volatility of policy rates', *Journal of Macroeconomics*, 31(4), pp. 534-546
- Federal Reserve System (2005) *The Federal Reserve System – Purposes and Functions*, Board of Governors of the Federal Reserve System, Washington, DC.
- Hansen, S. E. and M McMahon (2010) 'What do outside experts bring to a committee? Evidence from the Bank of England', Universitat Pompeu Fabra Economics Working Papers 1238.

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- Jackman, P (2002) 'The Reserve Bank's external communications', Reserve Bank of New Zealand *Bulletin*, 65(1), pp. 28-33.
- Jeanneau, S (2009) 'Communication of monetary policy decisions by central banks: what is revealed and why', *BIS Papers*, 47.
- Jung, A. and G Kiss (2001) 'Voting by monetary policy committees: evidence from the CEE inflation-targeting countries', Magyar Nemzeti Bank Working Papers 2012/2.
- Maier, P (2007) 'Monetary Policy Committees in Action: Is There Room for Improvement?', Bank of Canada Working Papers 07-6.
- Maurin, V. and J-P Vidal (2012) 'Monetary Policy Deliberations: Committee Size and Voting Rules', ECB Working Paper No. 1434, May.
- Morimoto, K (2010) 'Coordination behavior and optimal committee size' Osaka University, Graduate School of Economics and Osaka School of International Public Policy (OSIPP).
- Nelson, W (2008) 'Monetary policy decisions: preparing the inputs and communicating the outcomes', *BIS Papers*, 37.
- Reddell, M (2006) 'Monetary policy accountability and monitoring', Reserve Bank of New Zealand, October, http://www.rbnz.govt.nz/monetary_policy/about_monetary_policy/2851362.pdf.
- Riboni, A, and F J Ruge-Murcia (2010) 'Monetary policy by committee: consensus, Chairman dominance or simple majority?', *Quarterly Journal of Economics*, 125(1), pp. 363-416.
- Stockton, D (2012) Review of the Monetary Policy Committee's forecasting capability, Report to the Court of the Bank of England, October.
- Svensson, L (2001) Independent Review of the Operation of Monetary Policy in New Zealand: Report to the Minister of Finance, February, http://www.rbnz.govt.nz/research_and_publications/reserve_bank_bulletin/2001/2001mar64_1Svensson.pdf.
- Vandenbussche, J (2006) Elements of optimal monetary policy committee design', International Monetary Fund Working Paper 06/277.

Exchange rate movements and consumer prices: some perspectives

Miles Parker

Economic developments in the rest of the world affect New Zealand consumer prices. This article traces the channels through which the consumers price index (CPI) is affected by the exchange rate. Changes in the exchange rate that result from changes in the prices of commodities New Zealand exports appear to have had materially different inflationary implications than other changes in the exchange rate.

1 Introduction

New Zealand is a small, open economy. Economic developments in the rest of the world affect domestic prices, including consumer prices, via a number of channels including through exchange rate changes.

There is a large literature on how exchange rate movements affect domestic prices. This literature poses two main questions: how are changes in foreign prices transmitted to domestic prices, and how do domestic prices adjust to movements in the exchange rate? It notes that any given percentage movement in the exchange rate typically results in much smaller percentage movements in tradables consumer prices, something described as 'incomplete' pass-through. This article looks at the issue in a New Zealand context, where fluctuations in export commodity prices have been an important influence. It presents some recent Reserve Bank research into the nature and extent of pass-through, and considers some of the lessons from research carried out elsewhere.

2 Differing exchange rate pass-through of products

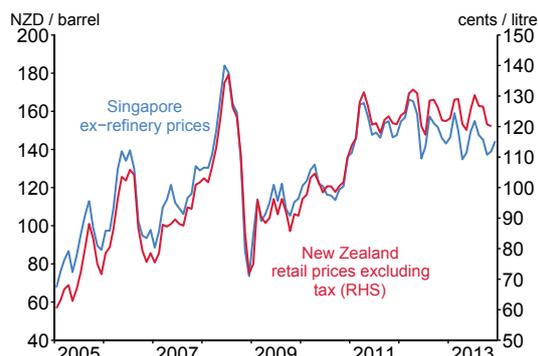
A 10 percent fall in the exchange rate typically does not raise aggregate domestic tradables prices by 10 percent. But that overall observation encompasses a wide range of individual product experiences.

To illustrate, compare the markets for petrol and for new cars. There are no domestic producers of cars, and almost all petrol consumed in New Zealand is imported.

Changes in international prices of petrol are typically passed through almost immediately and in full

to the price (excluding tax) paid by consumers in New Zealand (figure 1).

Figure 1
Singapore ex-refinery and New Zealand retail petrol prices

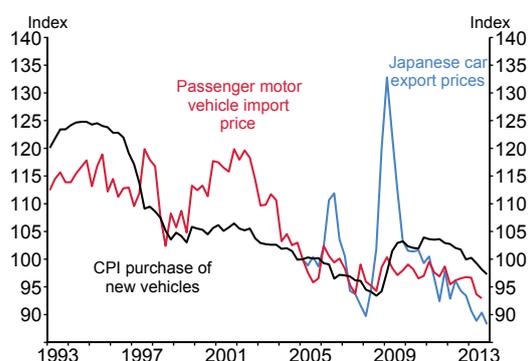


Source: Ministry of Business, Innovation and Employment; Reuters.

The pass-through of car prices is markedly different to that of petrol. The price paid for cars by New Zealand importers fluctuates much less than overall Japanese car export prices (figure 2, overleaf). The price paid by importers varies by less on average than the exchange rate. The final price paid by consumers also fluctuates much less than the import price of cars.

Aggregate measures of exchange rate pass-through – the focus of this article – encompass a wide variety of practices across different goods and sectors.

Figure 2
International and domestic car prices



Source: Bank of Japan, Statistics New Zealand.
Note: Series have been rebased to 2005 Q1 = 100 and are expressed in New Zealand dollar terms.

3 Tracing the economy-wide price response

Aggregate measures of exchange rate pass-through – the focus of this article – encompass a wide variety of practices across different goods and sectors.

Figure 3 shows a stylised representation of the channels through which pricing developments in the rest of the world affect New Zealand’s consumer prices. For analytical purposes, the consumers price index (CPI) is commonly decomposed into ‘tradable’ and ‘non-tradable’ components. The differing channels through which the international prices of New Zealand’s imports and export commodities affect these two components are shown separately in figure 3, opposite.

Pass-through can be split into two stages, which are described in more detail in the following sections. The first stage covers factors that change the prices paid by New Zealand importers to the foreign producers.

The second stage traces the change in import prices through into domestic costs of production and to prices that are eventually paid by consumers. The retail price of imported final consumer goods appears directly in the CPI. Raw materials, machinery and equipment indirectly affect the CPI via their impact on domestic production costs. Finally, initial movements in tradables prices can induce additional effects, such as changing inflation expectations and wage demands.

A further channel is via changes to the international prices of New Zealand exports, such as dairy and other commodities. Changes in these prices affect the terms of trade and hence domestic income.¹ This change in income will eventually affect inflationary pressures in New Zealand.

Figure 3 does not consider how monetary policy responds to any of these developments. How inflation expectations and wage demands change is likely to be influenced by a central bank’s track record in responding to incipient inflationary pressures.

4 Stage one pass-through: from world prices to the prices paid by New Zealand importers

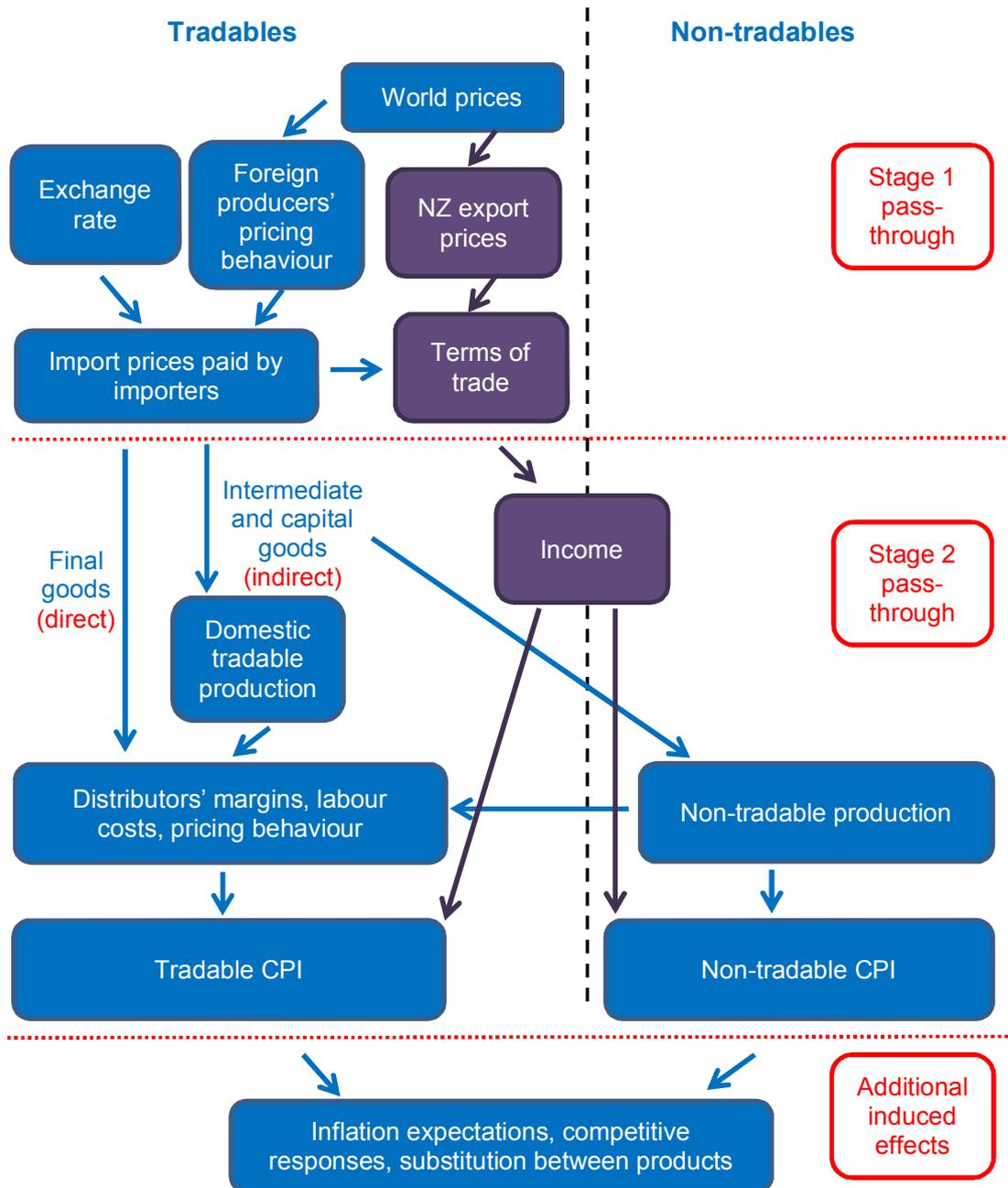
Changes in world economic conditions can translate into changes in the prices paid by New Zealand importers to foreign producers. Two main types are changes in the world prices of goods, including commodity prices, that result in changes in the terms of trade, and movements in the exchange rate that are not directly related to changes in world prices. Changes in trading partner activity are also likely to have some effect on New Zealand CPI, but are not considered in this article.

Higher general domestic inflation in New Zealand’s trading partners can result in higher prices of exports to New Zealand. The main focus here is on relative price changes; in particular changes in world commodity prices, such as oil prices that affect the price New Zealand has to pay when it imports those commodities. As shown in figure 2, the pass-through of commodity prices into import (and consumer) prices can, in some cases, be quick.

The second main factor determining New Zealand import prices is the exchange rate. There are a number of reasons why the exchange rate may move, including: changing world demand for the goods New Zealand

¹ For some products exported from New Zealand (notably meat and dairy) changes in international prices will also fairly directly affect the CPI, as the domestic prices of those items will be influenced by changes in the international New Zealand dollar returns the exporter can achieve. For example, the recent rise in world dairy prices has resulted in higher dairy prices for New Zealand consumers, albeit to a lesser extent than the transmission into domestic petrol prices shown in figure 2.

Figure 3
Impact of world economic developments on New Zealand's CPI



produces; changing relative prices between New Zealand and the rest of the world; changing relative interest rates; and, fluctuations in attitudes towards risk among international investors more generally (to which demand for New Zealand dollar denominated assets appears to be quite sensitive). A lower New Zealand dollar typically results in higher import prices.

Pricing of imports

The extent to which movements in the exchange rate quickly affect domestic prices in New Zealand depends crucially on how foreign sellers set the price of the products New Zealand imports. One option is for businesses to charge the same price for all customers, domestic and foreign (in the economics literature this is termed producer-currency pricing (PCP)). Bulk

Box A

How New Zealand's exports are priced

Recent research has improved our knowledge of how New Zealand businesses price exports in foreign markets. The 2010 Business Operations Survey of over five thousand businesses carried out by Statistics New Zealand asked businesses that self-identified as exporters whether the New Zealand dollar price for their exports was the same across destinations. Around half of exporters by number reported that the New Zealand dollar price varies across foreign markets.

The main reasons cited as being 'very important' for price differentiation between markets include: exchange rate movements (69 percent of exporters), market competition (57 percent) and transport costs (48 percent). When asked whether they increased their export prices in response to a New Zealand dollar appreciation, 45 percent of exporters said they had 'no scope to raise export prices', 30 percent kept the New Zealand dollar price the same and passed on the appreciation in full. The remainder required some amount of appreciation before export prices were changed.

Some caution is required when extrapolating these results to aggregate export prices. A small

number of large businesses account for a very large share of exports. The survey results suggest that larger companies tend to price differently across foreign markets.

However, there may also be under-reporting of firms that price on a PCP basis. Around a third of output from the restaurants and hotels sector is sold to tourists and therefore exported. Yet no business in this sector identified itself as an exporter. This suggests that these businesses mostly treat domestic and foreign customers identically and charge the same prices to both.

Fabling and Sanderson (2013) use customs data to study the reaction of export prices to exchange rate movements. They find that the pass-through into export prices is dependent on the currency of pricing. Those firms that invoice in New Zealand dollars passed on just 9 percent of the exchange rate movement in the long run (defined as at least 6 months, with a median value of two years). Those invoicing in the foreign currency absorbed 90 percent of the exchange rate movement in their own margins. In other words, prices expressed in the currency of invoice did not react much to currency movements.

commodities – such as coal and oil – will typically be priced in a PCP fashion with all countries importing at the same international price, even if transactions are typically denominated in, say, United States dollars.

Alternatively, foreign exporters could set prices independently in various different country markets, known as local-currency pricing (LCP) or pricing to market. For example, Japanese car exporters could set a price for cars exported to New Zealand tailored specifically for the New Zealand market conditions, and fix a different price (adjusting for exchange rates) for exports to the United States (and perhaps a different price again for sales in Japan).² This sort of approach to pricing appears to

be more common for products where brand loyalty is a significant factor in long-term profitability and where international businesses control distribution channels in ways that enable them to effectively maintain different prices across countries. Participants in the market presumably judge that they would be less profitable in the long-run, across all the markets they sell in, if pricing in each market adjusted fully and quickly to exchange rate movements. Final purchasers may be indifferent between various brands of petrol, but not between various makes of car.

² A third, possibility, less common in practice is that exporters set a price in one currency but invoice in another. In this case the implications for pass-through depend on the speed with which the invoiced price adjusts to reflect exchange rate movements. At one extreme, for example, Amazon quotes

its price in USD, but allows the New Zealand purchaser to pay in NZD, with the New Zealand dollar cost for a new transaction adjusting in near real-time to exchange rate movements.

Under PCP, the New Zealand price of imports is simply the common foreign price adjusted by the exchange rate. Exchange rate movements pass one-for-one into New Zealand dollar import prices. Under LCP, if the price of the import is directly set in New Zealand dollars, exchange rate movements should not have any immediate effect on import prices. Over time, persistent changes in exchange rates may cause foreign exporters to review their optimal price in New Zealand.

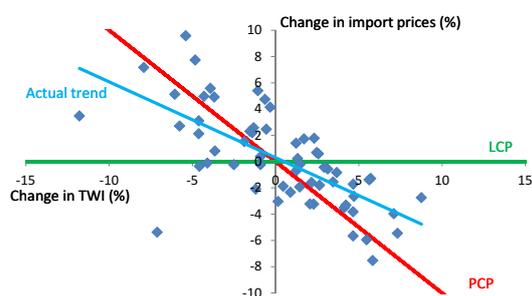
There is little formal or systematic evidence whether New Zealand imports are priced in local or producer currency, but some evidence exists for exports (see box A, overleaf). Survey evidence suggests that about half of New Zealand exporters price to market. Prices, as expressed in the currency of invoice, do not tend to react much to movements in exchange rates, even in the long run. In the case of commodity exporters this is probably not surprising – global dairy prices are largely set internationally, in response to world supply and demand pressures, and Fonterra's exports are probably largely denominated in foreign currency terms.

In the absence of detailed research into how New Zealand imports are priced, a rough approximation can be gleaned from aggregate data. Figure 4 is a scatter plot of contemporaneous quarterly changes in the Reserve Bank's New Zealand dollar TWI exchange rate index against import prices, expressed in New Zealand dollar terms, over the period 1998 Q1 to 2012 Q4.

If all imports were priced in New Zealand dollars then import prices would not move with the exchange rate and the points would lie very close to the x-axis, shown by the solid green line.³ Similarly, if all imports were priced in foreign currency terms then the points would lie very close to the 45° line, shown by the solid red line. There does appear to be a reasonably tight relationship between changes in the exchange rate and changes in import prices. Roughly speaking, around two thirds of New Zealand's imports (many of which are not direct consumer

products) appear to be priced to the importer in foreign currency terms, suggesting a significant amount of PCP. That this share is less than 100 percent provides one reason why pass-through is not complete.⁴

Figure 4
Contemporaneous movements in the trade-weighted exchange rate (TWI) and import prices



Source: RBNZ and Statistics New Zealand.
Note: New Zealand dollar import price for imports invoiced in foreign currency are calculated using the exchange rates specified by New Zealand Customs Service. These exchange rates are delayed 11-25 days relative to market rates.

5 Stage two pass-through: from prices paid by importers to consumer prices

This section discusses the domestic leg of pass-through – from changes in import prices through to consumer prices. The three principal channels in this stage of pass-through were shown in figure 3.

First, imported final consumer goods such as cars and televisions appear *directly* into the CPI. How much the retail price changes when the exchange rate changes depends on various factors including: the share of imported goods relative to domestically produced goods within total household consumption; the share of retailers' and wholesalers' margins in the final price paid by consumers for the imported goods; how sensitive demand is to changes in price, and the extent to which competitors alter

³ This assumes no overall trend in import prices over the period, which is supported by the data. The TWI used here is not import weighted, so will diverge somewhat from the exact exchange rate index required. Indications are that using import weights would not produce materially different results.

⁴ In addition, some businesses will have hedged the foreign exchange risk, resulting in effectively unchanged import prices for these businesses in the near term, despite measured changes. Over the long run, hedging will not protect businesses from persistent changes in the exchange rate.

their prices. In the case of cars, for example, the ability to substitute between new and existing used cars (the latter not directly affected by exchange rate movements) may be important.

Second, changes in the prices of imported raw materials, such as plastics and steel, machinery and equipment, affect the costs of domestic producers in both tradable and non-tradable sectors. These costs will, over time, be reflected in the domestic price of New Zealand-produced goods and services, including those classified as non-tradable, providing an *indirect* channel for import prices to affect consumer prices.

Finally, following a change to retail prices, consumers and businesses may change their inflation expectations or switch spending to other products, whether between foreign and domestic producers or even between tradable and non-tradable items. These actions can induce additional effects on consumer prices beyond those arising from the initial change to import prices. For example, employees could seek to bid up wages in response to a large increase in food and energy prices. If successful, this would affect the production costs of all businesses in the economy, both tradable and non-tradable. The past track record of inflation, and monetary policy responses, may influence the extent to which these later behavioural responses occur. A track record of low and stable inflation typically provides a good anchor to inflation and wage expectations.

Previous international research has highlighted surprisingly low pass through from exchange rate movements into domestic consumer prices. One strand of the literature explaining this low pass-through has focused on the domestic value-added component of traded goods; a Japanese-built television requires transport within New Zealand, and the final price paid by consumers also includes domestic taxes and the costs and margins of the retailer.

Goldberg and Campa (2010) find that distribution margins account for around 15-25 percent of the purchaser's price for traded goods, using input-output table data for a number of OECD economies, including New Zealand. Split by component of final demand, these

margins are noticeably higher for household consumption than for investment spending or exports. Their results are discussed in more detail in box B, opposite.

The importance of local costs for incomplete pass-through has also been found in studies of businesses. Hellerstein (2008) studies the pass-through from exchange rate movements into the retail price of imported beers in a sample of Chicago supermarkets. The pass-through is found to be small, about 11 percent of the exchange rate movement.

Hellerstein then determines the causes of the low pass-through. Following a US dollar depreciation, local costs associated with beer imports do not change, accounting for 45 percent of the price stickiness (note this number is in line with the aggregate local cost component for the US in table 1). Reductions in margins account for the remainder of the price stickiness, with the burden falling mostly on the manufacturer (47 percent), and some adjustment of the retailer's margin (8 percent).

6 Terms of trade effect

There is also an important indirect channel (illustrated with the purple boxes in figure 3) from commodity prices to domestic inflationary pressures via the terms of trade. Commodities account for a large share of New Zealand's exports. Higher international prices for these commodities boost income for the domestic producers, such as dairy farmers. This higher income results in greater consumption of both tradables and non-tradables items, increasing overall inflationary pressures within New Zealand.

This effect may be particularly important in New Zealand (as compared to, say, other advanced country commodity exporters such as Australia, Norway or Chile) since the commodity producing sector in New Zealand is both substantially domestically-owned, and mostly owned by relatively small-scale private sector operators. In other words, big swings in commodity prices, of the sort seen several times in the past decade, quickly affect household incomes and spending. Roughly speaking, a 3 percent lift in the terms of trade boosts national income and spending power by around 1 percent.

Box B Evidence on distribution margins from input-output tables

Goldberg and Campa (2010) investigate the share of the final price of tradable products that is accounted for by domestic distribution costs for a range of OECD countries. They use input-output tables, which detail for each industry the source of inputs and the destination of outputs. For example, the majority of the output of the sheep and beef cattle industry is used by the meat manufacturing industry. Similarly, petrol is a large input to the road transport industry.

Goldberg and Campa study 29 tradable industries – agriculture, oil and gas, mining and various types of manufacturing. For each industry they calculate the distribution margin by combining the use of transport with the margins of wholesalers and retailers. Their results are summarised in section A of table 1 and have been updated to show the most recent input-output table for New Zealand. The distribution margins vary between

sectors. For New Zealand, the margin ranges between 0 and 38.8 percent, averaging 15.5 percent.

It is also possible to determine how the distribution margins vary depending on the final use of these industries' output. We restrict the analysis here to how the output of these 29 industries is used for household consumption (section B in table 1), business investment (section C) and exports (section D). The distribution margins are much higher for consumption than for the other final uses. In part that reflects the fact that products used for investment are not typically bought from retailers, and exports are likely to have retailers' margins imposed in their country of destination.

The updated data for New Zealand show that the share of the final consumer price for tradable goods accounted for by distribution margins has increased over time, and is relatively high compared with the rest of the OECD. Nearly half (48.6 percent) of the price paid by New Zealand consumers for tradable goods is in fact accounted for by domestic components.

Table 1
Distribution margins by purchasers' prices and by sources of final demand

Country	Year	A			B			C			D		
		Distribution margins across sectors			Household consumption			Investment			Export		
		Avg.	Max	Min	Wholesale-retail	Transport	Total	W/R	Tran.	Tot.	W/R	Tran.	Tot.
France	2000	19.4	62.3	1.0	27.3	6.2	33.5	8.0	1.4	9.4	3.2	5.2	8.4
Germany	2000	15.1	42.4	3.6	33.0	7.3	40.3	5.6	2.2	7.8	5.3	4.2	9.5
Ireland	1998	9.5	27.0	0.0	26.3	8.3	34.6				5.1	1.5	6.6
Italy	2000	18.4	45.2	3.7	34.8	7.2	42.0	8.9	3.5	12.4	4.8	7.1	11.8
Norway	2002	16.6	4.6	3.2	29.3	11.9	41.2	9.6	2.9	12.5	4.6	17	21.6
Sweden	2001	15.4	35.8	1.0	32.3	2.9	25.3	10.7	0.2	10.9	1.3	4.5	5.8
UK	1995	20.7	46.1	0.0	40.9	7.8	48.7	5.8	1.4	7.2	8.5	5.2	13.7
US	1997	23.9	70.4	4.7	40.9	1.8	42.8	13.9	1.6	15.5	9.5	3.1	12.5
New Zealand	1995/6	13.9	32.3	0.0	31.2	9.8	41.0	14.9	0.0	14.9	5.5	11.7	17.2
New Zealand	2006/7	15.5	38.8	0.0	37.2	9.6	46.8	17.8	0.0	17.8	3.6	6.2	9.8

Source: Goldberg & Campa (2010), except for New Zealand 2006/7 which is calculated by the author.

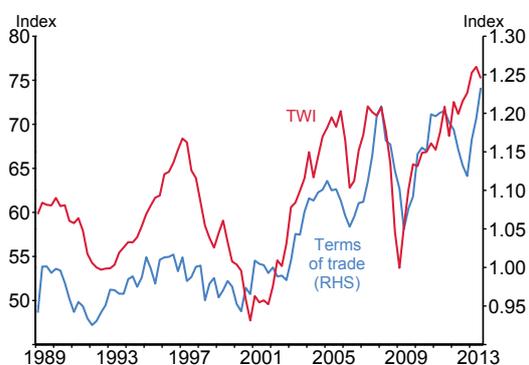
If the exchange rate rises in response to a lift in commodity prices, that lift in national income and purchasing power may accrue not to the commodity producers but to the household and business sector more generally (through a lower cost of imports). The overall boost to income is unchanged.

7 Empirical evidence for pass-through in New Zealand

There are few recent estimates for the extent of pass-through in New Zealand. In work that is now more than a decade old, Hampton (2001) studies the stage two pass-through of import prices to consumer prices for the period 1989-2001, using a stylised model of the economy with a tradable and non-tradable sector. Hampton finds that a 10 percent increase in import prices results in a 0.5 percent increase in consumer prices in the first quarter, rising to 1.5 percent over the long run.

More recently, Parker and Wong (2014) consider the impact on domestic prices of the international prices of the commodities New Zealand exports and exchange rate movements. There have been a number of exchange rate and terms of trade cycles over the past few decades. At times these cycles have coincided, at other times they have not (figure 5).

Figure 5
New Zealand dollar TWI and terms of trade



Source: RBNZ and Statistics New Zealand.

Parker and Wong use a Vector Autoregressive (VAR) model, which models prices as a function of past movements in the other prices. This allows for the complex,

dynamic interaction between the different prices over time. For example, import prices can affect both tradables and non-tradables consumer prices, and consumer prices are able to eventually affect the exchange rate. The domestic prices considered are: import prices in New Zealand dollar terms; producer output prices, real wages, tradables consumer prices and non-tradables consumer prices.

Parker and Wong use econometric techniques to separate movements in the exchange rate caused by changes in commodity prices from other underlying causes. Such causes could include a change in domestic or trading partner economic activity, changing foreign interest rates, or a change in the risk appetite of international investors.

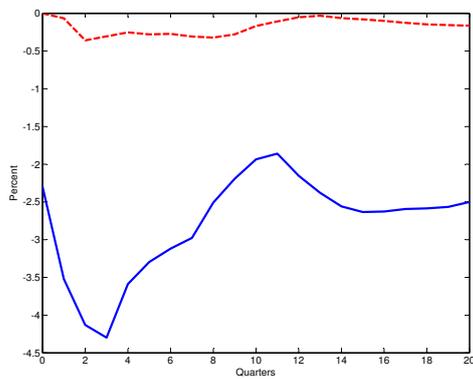
Figure 6 charts show the results for a 1 percent fall in the exchange rate that is caused by (a) lower international prices of the commodities New Zealand exports (shown in the blue line) and (b) by other causes (shown in the red line). These figures trace out how the various domestic prices evolved over time in response to the exchange rate depreciation. The responses shown are the average over the period 1989 Q2 to 2012 Q4. It is important to note that the results implicitly incorporate the average response over that period of other factors that are not explicitly modelled, including the monetary policy response.

In this model, an initial fall of around 2.5 percent in international prices for the commodities New Zealand exports (which itself might be caused by a variety of different factors) causes an initial 1 percent fall in the exchange rate. Perhaps somewhat surprisingly, there is no significant impact on import prices. Domestic producer output prices fall with the lower commodity prices. Part of this fall may be because falling commodity prices represent lower output prices for domestic commodity-producing sectors such as agriculture and primary food manufacturing (a large component of the Producers Price Index). Tradable consumer price inflation also falls, perhaps partly because some export commodities directly enter the CPI, but also because at times falls in New Zealand export commodity prices will be quite strongly correlated with falling prices for the commodities New

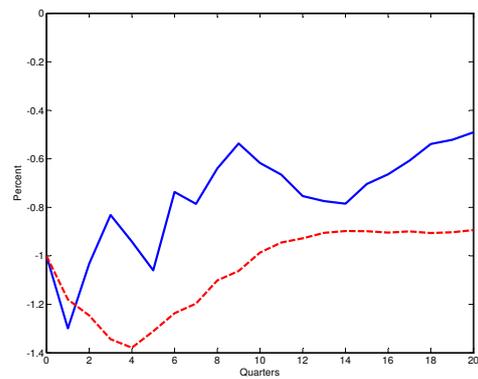
Figure 6
Effects of a 1 percent exchange rate depreciation, by cause

Commodity price cause of exchange rate movement in red, other causes in blue.

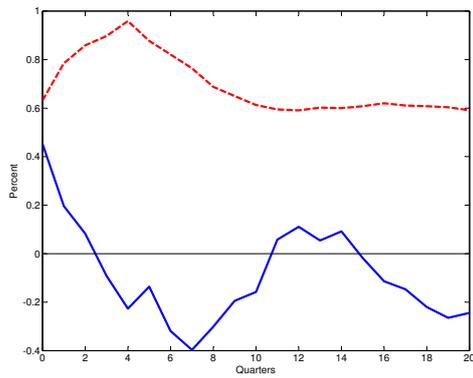
ANZ commodity prices (world terms)



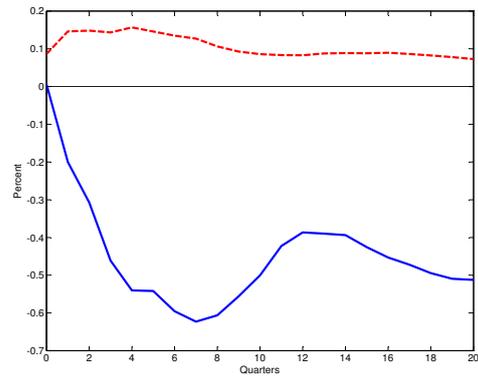
New Zealand dollar TWI



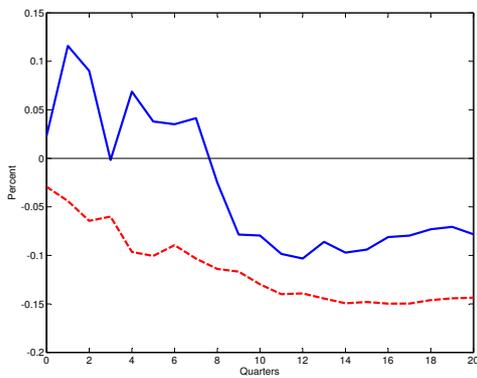
Import prices



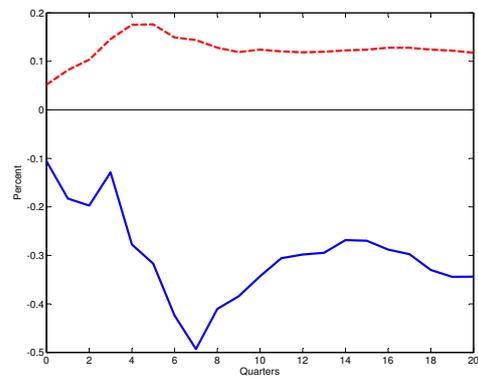
Producer output prices



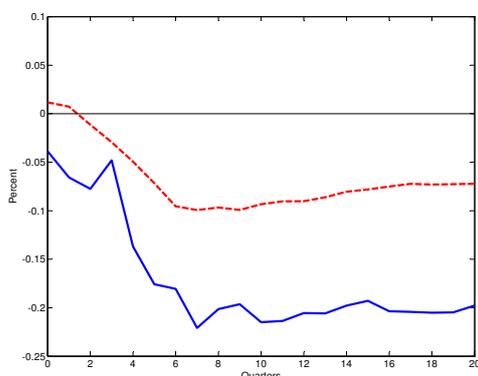
Real wages



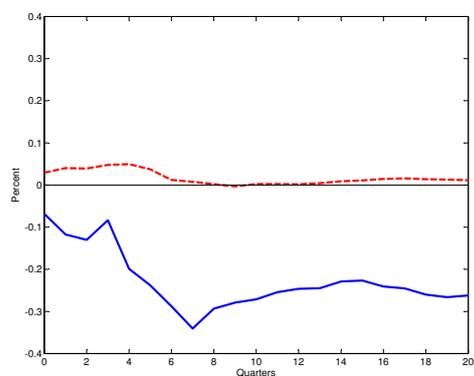
Tradables CPI



Non-tradables CPI



Constructed impact on headline CPI



Source: Parker and Wong (2014)

Zealand imports, such as petrol.

Non-tradable consumer prices also fall following a downward shock to commodity prices. The channel here is likely to be indirect – falling international prices for commodities New Zealand exports reduce New Zealand's terms of trade, lowering national income and spending power. This lower income puts downward pressure on the price of all goods and services bought by households, but particularly non-tradables. While headline CPI is not explicitly modelled, it is possible to construct an aggregate impact by combining the tradables and non-tradables using their current respective weights. The overall maximum impact on headline CPI is a 0.3 percent fall, which occurs around two years after the initial fall in the exchange rate (figure 6h).

The results for a 1 percent fall in the exchange rate caused by other factors are markedly different. Import prices and producer output prices increase; the peak response in these prices occurs just over a year after the original exchange rate shock. The response of consumer prices is also notably different, with tradables prices increasing. Non-tradables prices fall in this scenario, as under the commodity price scenario. Quite why, over the period studied here, is less clear. Overall there is little net effect on headline consumer prices in this case, contrasting with the fall in consumer prices witnessed following lower world commodity prices.

The magnitude of the effect of the exchange rate depreciation diminishes as it passes through the domestic

price channels. The original depreciation is around 1 percent in the first quarter, peaking around 1.4 percent after a year. The pass-through to import prices is lower, with the peak response less than 1 percent. The pass-through to tradable consumer prices is lower still, with the peak response around just 0.2 percent after a year.

Parker and Wong investigate the impact of exchange rate movements on the output prices of various industries and find effects on many, even those traditionally viewed as being non-tradable. In many cases, this is not too surprising given the important role that tradable inputs have in industries such as construction (steel and timber, for example), but it is a reminder that useful as the analytical distinction between tradables and non-tradables often is, the empirical boundaries can sometimes be fuzzy.

The starkly different responses of domestic prices, depending on whether the exchange rate changes results from export commodity price changes or other factors, highlights how important it is for forecasters and policymakers to understand the underlying cause of exchange rate movements in assessing the likely inflationary consequences. This can be challenging because the exchange rate is observed minute-by-minute, while hard data on many of the other factors that influence the exchange rate often emerge only with a lag.

8 Conclusion

Exchange rate changes and international price developments in the rest of the world affect prices in New Zealand through a number of channels. These channels include the prices paid by New Zealand consumers for final goods purchased from abroad, the costs of imported raw materials and machinery used by New Zealand businesses, and income and purchasing power effects caused by changes to the terms of trade.

How tradable product prices change following an exchange rate change differs widely. Petrol prices adjust substantially and quickly. But a significant share of New Zealand's imports appear to be priced for the local market and, however they are priced, there is a large domestic distribution component for most tradable goods. That means prices for traded goods in New Zealand will adjust by a smaller percentage than any given percentage movement in the exchange rate, and may diverge from those in the rest of the world for protracted periods.

Exchange rate movements are typically symptoms of other economic developments rather than being the originating source – the exchange rate does not move in a vacuum. So what causes the exchange rate to move can greatly affect how domestic prices change. In particular, changes in the exchange rate associated with changes in export commodity prices appear to have had quite different

inflationary implications, over the past 25 years, than other changes in the exchange rate. Changes in commodity prices appear to have become a more important factor in exchange rate fluctuations in New Zealand over the past decade or so. Understanding how different factors drive the exchange rate, and the implications of those for the wider economy and inflation pressures, is part of ongoing research at the Reserve Bank.

References

- Fabling, R, and Sanderson, L (2013) 'Export performance, invoice currency, and heterogeneous exchange rate pass-through' RBNZ Discussion Paper 2013/01.
- Goldberg, L and Campa, J (2010) 'The sensitivity of the CPI to exchange rates: distribution margins, imported inputs and trade exposure' *The Review of Economics and Statistics* 92(2): 392-407.
- Hampton, T (2001) 'How much do import price shocks matter for consumer prices?' RBNZ Discussion Paper 2001/06.
- Hellerstein, R (2008) 'Who bears the cost of a change in the exchange rate? Pass-through accounting for the case of beer' *Journal of International Economics* 76(1): 14-32.
- Parker, M and Wong, B (2014) 'Exchange-rate and commodity-price pass-through in New Zealand' RBNZ Analytical Note 2014/01

ANALYTICAL NOTES

AN2013/10

Migration and the housing market

Chris McDonald

Fluctuations in migration are a significant feature of New Zealand's economy. This note reports results of statistical modelling that analyses the relationship between permanent and long-term migration (and its components) and developments in the housing market.

AN2013/11

A closer look at some of the supply and demand factors influencing residential property markets

Elizabeth Watson

This note takes a closer look at some factors that influence demand and supply in residential property markets, and goes on to consider how such factors might be relevant in interpreting current New Zealand developments.

NEWS RELEASES

Reserve Bank *Bulletin* released

19 December 2013

The Reserve Bank today released the December 2013 edition of the Reserve Bank Bulletin.

The *Bulletin's* first article looks at the Policy Targets Agreement in light of the changes introduced in 2012. These changes continue an evolution in New Zealand's flexible approach to inflation targeting.

The *Bulletin's* second article covers the role of macro-prudential indicators in the measurement of systemic risk. The article outlines some of the key indicators the Reserve Bank uses to help inform macro-prudential policy decisions. These indicators help identify financial system risk and assist us to assess the banking system's capacity to weather periods of financial stress. The article includes an explanation of how macro-prudential indicators helped to frame the decision to impose residential mortgage loan-to-value (LVR) restrictions.

The *Bulletin's* third article examines recent trends in global and local foreign exchange markets. It looks at various factors that influence the volume, and location, of trading in particular currencies, including the New Zealand dollar. Foreign exchange turnover continued to increase in 2013, with the US dollar remaining the most-traded currency.

Reserve Bank consults further on definition of LVR restrictions

20 December 2013

The Reserve Bank today released a consultation paper on the previously-announced exemption of new residential construction lending from loan-to-value restrictions.

Loan-to-value restrictions were introduced in October, and take the form of a 'speed limit'. This means banks must restrict new mortgage lending at LVRs of over 80 percent (deposit of less than 20 percent) to no more than 10 percent of the dollar value of all their new residential mortgage lending.

Reserve Bank Deputy Governor Grant Spencer said the exemption, which was announced earlier this

month, will mean that low-deposit lending will fall outside the 10 percent speed limit if it is financing the construction of a new house or apartment.

"While high-LVR borrowers make up a relatively small portion of the new-build market, the exemption is expected to support new building and therefore help to moderate house price pressures. We are now consulting with banks on the operation of the exemption. No other exemptions are being considered."

The Reserve Bank has also released a draft revision of the chapter of the Banking Supervision Handbook (BS19) (PDF 301KB) that sets out the terms of the LVR restriction, including the proposed details of the exemption.

The Bank has also released the summary of submissions and policy response (PDF 99KB) for the second stage of its earlier review of housing capital. The finalised policy allows banks that provide unsecured loans to mortgage customers to exclude that lending when calculating a customer's loan value - except where the terms of the personal loan or credit card are directly linked to the mortgage.

Mr Spencer said: "The Reserve Bank has set strong expectations on banks regarding non-mortgage lending to mortgage customers. This will help to ensure banks are not allowing deposits to be funded through a credit card or unsecured lending. This approach is consistent with reducing systemic risk in the banking system."

Submissions on the proposed changes are sought by 14 February 2014.

Reserve Bank warns against scams

28 January 2014

The Reserve Bank is warning people to avoid fraudsters who use the Reserve Bank's name to try and make their scams appear genuine.

The scammers usually tell their victims that they need to make a small payment in order to get a large sum of money back from a tax refund, charity donation, inheritance, government bonus, or some type of unclaimed money. They ask for immediate payment by internet

money transfer, a remittance service, or by entering credit card details into a form on a website.

"If a total stranger contacts you and offers a large sum of money in return for paying a small fee, then they're most likely trying to rip you off," a Reserve Bank spokesperson said.

The scammers try to reassure their victims by claiming to be from the Reserve Bank, or saying that documents have been lodged with the Reserve Bank, or that the Reserve Bank can provide a "receipt number" or other proof that a "release payment" has been made.

"The scammers use our name in order to reassure victims that the scam is genuine - but the Reserve Bank is not involved with tax refunds, transfers of unclaimed money, verifying charity donations, paying inheritances, settling deceased estates or any of the other fake stories that scammers use to lure their victims."

The Reserve Bank strongly advises people to not transfer money or pay anyone in response to these phone calls and emails. Simply hang up the phone and do not respond to their emails.

The Ministry of Consumer Affairs publishes information about scams, including a good description of the upfront payment scam.

OCR unchanged at 2.5 percent

30 January 2014

Statement issued by Reserve Bank Governor Graeme Wheeler:

The Reserve Bank today left the Official Cash Rate unchanged at 2.5 percent.

New Zealand's economic expansion has considerable momentum. Prices for New Zealand's export commodities remain very high, especially for dairy products. Consumer and business confidence are strong and the rapid rise in net inward migration over the past year has added to consumption and housing demand. Construction activity is being lifted by the Canterbury rebuild and by work in Auckland to address the housing shortage. Continued fiscal consolidation will partly offset the strength in demand. GDP grew by 3.5 percent in the year to September, and growth is expected to continue

around this rate over the coming year.

While agricultural export prices are expected to come off their peak levels, overall export demand should benefit from improving growth in the global economy. However, improvements in the major economies have required exceptional monetary accommodation and there remains uncertainty about the timing of withdrawal of this stimulus and its effects, especially on emerging market economies.

Annual CPI inflation was 1.6 percent in 2013, and forward-looking measures of firms' pricing intentions have been rising. Construction costs are increasing and risk feeding through to broader costs in the economy. At the same time, there appears to have been some moderation in the housing market in recent months. The high exchange rate continues to dampen inflation in the traded goods sector, but the Bank does not believe the current level of the exchange rate is sustainable in the long run.

While headline inflation has been moderate, inflationary pressures are expected to increase over the next two years. In this environment, there is a need to return interest rates to more-normal levels. The Bank expects to start this adjustment soon.

The Bank remains committed to increasing the OCR as needed to keep future average inflation near the 2 percent target mid-point. The scale and speed of the rise in the OCR will depend on future economic indicators.

Price stability promotes a sustainable expansion

31 January 2014

New Zealand's economy has grown faster than comparable economies overseas over the last two years, and achieving price stability will help ensure that this expansion is sustainable, Reserve Bank Governor Graeme Wheeler said today.

In a speech to the Canterbury Employers' Chamber of Commerce in Christchurch, Mr Wheeler said that New Zealand's economy has grown at twice the average rate of the 35 advanced economies in the IMF's classification over the past two years.

"Most of our economic indicators are positive; with

the terms of trade at a 40-year high, business confidence is the strongest since 1993, and consumer confidence is at a seven-year peak," Mr Wheeler said. "Growth has been driven by expansionary monetary policy; high export prices for our major commodities; strong construction investment, particularly in Canterbury; and the increase in private consumption," Mr Wheeler said.

"The high exchange rate has been a headwind. The Bank would like to see a lower exchange rate and does not believe the exchange rate is sustainable in the long run."

He said that the Reserve Bank wants to see sustained expansion in the economy, and that inflation is an important risk to ongoing expansion.

"Some increase in inflation pressure is inevitable. Inflation pressures are increasing in the construction sector in particular, as resources are reallocated to Canterbury and Auckland from other regions and activities, and spare capacity in the economy is being absorbed at a rapid rate," he said.

"Stronger inflation pressures and the increase in interest rates that would accompany them could put pressure on New Zealand's real effective exchange rate and reduce the competitiveness of our export and import substitution industries," he said.

"The Reserve Bank's goal under the policy targets agreement is to keep future average inflation near the 2 percent target midpoint. Achieving this will help to ensure that economic activity is kept more in line with the potential growth of the economy, thereby promoting a more sustainable expansion."

A further risk to economic expansion is the level of house prices. "The risks that the housing market pose to financial stability and the broader economy were a major reason for introducing speed limits on high loan-to-value ratios for residential mortgages last year," Mr Wheeler said.

"We have supported the recovery through low policy rates. We recognise that the economy has been growing faster than potential output growth for some time. Although headline inflation has been moderate, inflationary pressures are building and are expected to increase over

the next two years. In such an environment, there is a need to return interest rates to more normal levels, and the Bank expects to begin this adjustment soon.

"Achieving this will help to ensure economic activity is kept more in line with the potential growth of the economy, thereby promoting a more sustainable expansion," Mr Wheeler said.

View the speech 'The building blocks of the economic expansion'.

Strong governance essential for insurance firms

19 February 2014

The Reserve Bank says strong boards and governance are critical to the success of the insurance industry.

"Responsibility and accountability for prudently running an insurance business rests primarily with the insurer's board and senior management," Peter Brady, Manager Insurance Oversight Policy, said in a speech to insurance company directors in Auckland this afternoon.

"The aim of our work regulating and supervising insurance firms is to deliver a soundly functioning insurance sector. We take a similar philosophical approach to regulating insurers that we've adopted for regulating banks, but modified to fit the insurance sector," Mr Brady said.

He said directors could expect the Reserve Bank to focus more on insurers that have the most impact on the economy, and on the risks that pose the greatest threat to the soundness and efficiency of the insurance sector.

"Insurers, and particularly directors and senior management, can expect that the Reserve Bank will hold them accountable for full compliance with the requirements of our regulations and the Insurance Prudential Supervision Act," Mr Brady said.

The text of the speech is available online: [Supervising insurers](#)

Reserve Bank raises OCR to 2.75 percent

13 March 2014

Statement issued by Reserve Bank Governor Graeme Wheeler:

The Reserve Bank today increased the OCR by 25 basis points to 2.75 percent.

New Zealand's economic expansion has considerable momentum, and growth is becoming more broad-based. GDP is estimated to have grown by 3.3 percent in the year to March. Growth is gradually increasing in New Zealand's trading partners. However, improvements in major economies have required exceptional support from monetary policy. Global financial conditions continue to be very accommodating, with bond yields in most advanced countries low and equity markets performing strongly.

Prices for New Zealand's export commodities remain very high, and especially for dairy. Domestically, the extended period of low interest rates and continued strong growth in construction sector activity have supported recovery. A rapid increase in net immigration over the past 18 months has also boosted housing and consumer demand. Confidence is very high among consumers and businesses, and hiring and investment intentions continue to increase.

Growth in demand has been absorbing spare capacity, and inflationary pressures are becoming apparent, especially in the non-tradables sector. In the tradables sector, weak import price inflation and the high exchange rate have held down inflation. The high exchange rate remains a headwind to the tradables sector. The Bank does not believe the current level of the exchange rate is sustainable in the long run.

There has been some moderation in the housing market. Restrictions on high loan-to-value ratio mortgage lending are starting to ease pressure, and rising interest rates will have a further moderating influence. However, the increase in net immigration flows will remain an offsetting influence.

While headline inflation has been moderate, inflationary pressures are increasing and are expected to continue doing so over the next two years. In this

environment it is important that inflation expectations remain contained. To achieve this it is necessary to raise interest rates towards a level at which they are no longer adding to demand. The Bank is commencing this adjustment today. The speed and extent to which the OCR will be raised will depend on economic data and our continuing assessment of emerging inflationary pressures.

By increasing the OCR as needed to keep future average inflation near the 2 percent target mid-point, the Bank is seeking to ensure that the economic expansion can be sustained.

View the *Monetary Policy Statement* at http://www.rbnz.govt.nz/monetary_policy/monetary_policy_statement/

PUBLICATIONS

Regular publications

<i>Annual Report</i>	Published in October each year.
<i>Financial Stability Report</i>	Published six-monthly. A statement from the Reserve Bank on the stability of the financial system.
<i>Monetary Policy Statement</i>	Published quarterly. A statement from the Reserve Bank on the conduct of monetary policy.
<i>Reserve Bank of New Zealand Statement of Intent, 2013-2016</i>	

Recent Reserve Bank Discussion Papers

2013

DP2013/01	Export performance, invoice currency, and heterogeneous exchange rate pass-through <i>Fabling, Richard and Sanderson, Lynda</i>
DP2013/02	A tractable framework for zero lower bound Gaussian term structure models <i>Krippner, Leo</i>
DP2013/03	Deep habits, price rigidities and the consumption response to Government spending <i>Jacob, Punnoose</i>
DP2013/04	Dissecting the dynamics of the US trade balance in an estimated equilibrium model <i>Jacob, Punnoose; Peersman, Gert</i>
DP2013/05	What happens when the Kiwi flies? Sectoral effects of the exchange rate shocks <i>Karagedikli, Özer; Ryan, Michael; Steenkamp, Daan; Vehbi, Tugrul</i>
DP2013/06	Financial exposure and the international transmission of financial shocks <i>Kamber, Gunes; Thoenissen, Christoph</i>

Analytical Notes

2013

AN 2013/01	Productivity and the New Zealand dollar - Balassa-Samuelson tests on sectoral data <i>Steenkamp, Daan</i>
AN 2013/02	Drying out: Investigating the economic effects of drought in New Zealand <i>Kamber, Gunes; McDonald, Chris; and Price, Gale</i>
AN 2013/03	New Zealand's short- and medium-term real exchange rate volatility: drivers and policy implications <i>Chetwin, Willy; Ng, Tim; and Steenkamp, Daan</i>
AN 2013/04	Estimated Taylor rules updated for the post-crisis period <i>Kendall, Ross and Ng, Tim</i>

AN2013/05	Estimating the impacts of restrictions on high LVR lending <i>Bloor, Chris; McDonald, Chris</i>
AN2013/06	Some revisions to the sectoral factor model of core inflation <i>Price, Gael</i>
AN2013/07	Neutral interest rates in the post-crisis period <i>Chetwin, Willy; Wood, Amy</i>
AN2013/08	What in the world moves New Zealand bond yields? <i>Lewis, Michelle; Rosborough, Lauren</i>
AN2013/09	Fresh perspectives on unobservable variables: Data decomposition of the Kalman smoother <i>Sander, Nicholas</i>
AN2013/10	Migration and the housing market <i>Chris McDonald</i>
AN2013/11	A closer look at some of the supply and demand factors influencing residential property markets <i>Elizabeth Watson</i>

Pamphlets

Explaining Currency

Explaining Monetary Policy

The Reserve Bank and New Zealand's Economic History

This is the Reserve Bank

Your Bank's Disclosure Statement – what's in it for you?

Upside, downside – a guide to risk for savers and investors, by Mary Holm

Supervision of the insurance industry: a quick reference guide

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Articles in recent issues of the Reserve Bank of New Zealand *Bulletin*

Vol. 76, No. 1, March 2013

Measures of New Zealand core inflation

Open Bank Resolution - the New Zealand response to a global challenge

Reserve Bank payment system operations: an update

Developments in New Zealand's overnight indexed swap market

Vol. 76, No. 2, June 2013

The last financial cycle and the case for macro-prudential intervention

Discovering covered bonds - the market, the challenges, and the Reserve Bank's response

Exchange rate fluctuations: how has the regime mattered?

Exchange rate policy forum: Bringing it all together, where does this leave us, and where to from here?

Updating the Reserve Bank Museum

Vol. 76, No. 3, September 2013

Why has inflation in New Zealand been low?

A new approach to macro-prudential policy for New Zealand

The Reserve Bank's capital adequacy framework

Vol. 76, No. 4, December 2013

The 2012 Policy Targets Agreement: an evolution in flexible inflation targeting in New Zealand

Measuring systemic risk: the role of macro-prudential indicators

Foreign exchange turnover: trends in New Zealand and abroad