NEW ZEALAND
BANKERS ASSOCIATION

Submission

to the

Reserve Bank of New Zealand

on the

Consultation Paper: Macro-prudential policy instruments and frameworks for New Zealand

16 April 2013

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Submission by the New Zealand Bankers Association to the Reserve Bank of New Zealand on the Consultation Paper: Macro-prudential policy instruments and frameworks for New Zealand

About NZBA

The New Zealand Bankers Association (NZBA) works on behalf of the New Zealand banking industry in conjunction with its member banks. NZBA develops and promotes policy outcomes which contribute to a safe and successful banking system that benefits New Zealanders and the New Zealand economy.

The following fourteen registered banks in New Zealand are members of NZBA:

- ANZ National Bank Limited
- ASB Bank Limited
- Bank of New Zealand
- Bank of Tokyo-Mitsubishi, UFJ
- Citibank, N.A.
- The Co-operative Bank Limited
- Heartland Bank Limited
- The Hongkong and Shanghai Banking Corporation Limited
- JPMorgan Chase Bank, N.A.
- Kiwibank Limited
- Rabobank New Zealand Limited
- SBS Bank
- TSB Bank Limited
- Westpac New Zealand Limited.

If you have any questions about this submission, or would like to discuss any aspect of it further, please contact me:

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General comments

The NZBA appreciates this opportunity to submit on the discussion paper. As an industry we have taken a keen interest in the development of the macro-prudential toolkit. This submission outlines the sentiment on behalf of the industry. Individual members will also be submitting on the specific tools proposed in the paper.

We are grateful for the engagement to date, and look forward to ongoing engagement with the RBNZ on this policy.

Background

The NZBA appreciates that in the aftermath of the GFC there is an international move towards the development and implementation of macroprudential tools ("MPT's") in advanced western economies and some developing economies for the purposes of maintaining financial stability. We also acknowledge that the Basel Committee on Banking Supervision ("BCBS"), the International Monetary Fund ("IMF") and others have undertaken considerable research and analysis on the types of tools which might be useful in assisting in the maintenance of financial stability.

The NZBA commends the work that the RBNZ has done in developing a set of policy proposals for MPT's that follow the international trend but which the RBNZ consider could be used in the New Zealand context.

Our focus in this submission is to provide an outline of issues which we consider are important for the RBNZ to further consider in the detailed development and design phase of MPT's, and cover three key areas:

(i) Clarity on the interaction between monetary policy and MPT's;
(ii) Discussion on the relative welfare effects of each of the MPT's outlined in the consultation document and NZBA's preference of MPT's;
(iii) Other matters the RBNZ should consider;

We have also attached as an Appendix – *PriceWaterhouseCoopers Report on the RBNZ's Consultation Document Macroprudential policy instruments and framework for New Zealand which* provides analysis on the macroeconomic impacts of the use of MPT's in a range of scenarios. The high-level analysis used in the report has indicated that:

i. The macro-prudential tools may be effective in improving the stability of the financial system in a time of stress, where issues are solely bank-related; but

ii. The instruments do not appear to be effective in removing wider economic factors that may cause stress to the financial system – a critical reason the RBNZ is investigating these tools.

iii. Bearing in mind that these tools may be deployed at a time when the financial system is under stress from wider pressures in the business cycle, it is critical for stakeholders to understand how the RBNZ will have regard to the wider economic impacts when considering the use of the tools. Given the high level modelling results suggest negligible changes to the economy as a result of these tools, it will also be important to understand what other tools the RBNZ may deploy if the macro-prudential tools are not effective in dealing with wider economic pressures that are causing stress to the financial system.

(i) Clarity on the interaction between monetary policy and MPT's

One of the most significant issues regarding the development and use of macro-prudential tools is how these tools are expected to operate in conjunction with monetary policy. Whilst the operation of monetary policy is relatively well understood, MPT's and their use is a relatively new field, and therefore caution in their development and implementation is urged.

In articulating the practical objectives of macroprudential policy, the Committee on the Global Financial System (CGFS 2010a) distinguishes two aims:

> *The first is to strengthen the resilience of the financial system to economic downturns and other adverse aggregate shocks. The second is to actively limit the build-up of financial risks.*
>
> *Such leaning against the financial cycle seeks to reduce the probability or magnitude of a financial bust. These aims are not mutually exclusive, and they both go beyond the purpose of microprudential policy with its focus on insuring that individual firms have sufficient capital and liquidity to absorb shocks.*
>
> *Between these two macroprudential aims, leaning against the financial cycle is the somewhat more ambitious target. Accountability measures appear to be more straightforward to construct for an objective of strengthening the resilience of the financial system, given the long experience gained with (micro-)prudential interventions aimed at maintaining the resilience of individual institutions. By contrast, the concept of the financial cycle and its sensitivity to macroprudential interventions remain less well understood – a fact that supports a careful approach until more practical experience has been gained.*[1]

[1] Bank for International Settlements - Committee on the Global Financial System-(2012) "Operationalising the Selection and Application of Macro-prudential Instruments" – CGFS Publications No 48 December, 2012, p.1

Aside from caution in the development and implementation of MPTs there is also still an ongoing debate about the nature of the interaction between monetary and macroprudential policy. For example Suh (2012) notes that:

> *Woodford (2012) and Svensson (2012) debate the roles of monetary and macroprudential policies in achieving financial stability. Their debate concerns whether financial stability is better achieved through monetary policy adjusting short-term interest rates or using macroprudential policy to control credit intermediation.*
>
> *Woodford argues that using interest rate policy to maintain financial stability can be justified even with macroprudential instruments, as long as the latter cannot provide a complete solution for financial stability. On the other hand, Svensson argues that it is more efficient to assign monetary policy to focus on inflation stability alone and use macroprudential policy for financial stability because the latter policy directly affects leverage.*[2]

Mishkin (2011) provides that there are dangers in using monetary policy to "lean" against credit bubbles, but that this may end up being the case if MPT's are inadequate, and that because of inherent weaknesses in MPT application this may be a very real possibility.

One of the biggest challenges for the RBNZ is its choice about when to implement a monetary policy solution as against an MPT solution if asset price bubbles are developing.

Mishkin considers that there are two types of asset price bubbles, "credit driven" asset price bubbles and "irrational exuberance" asset price bubbles. The former are described as dangerous and the latter more benign:

> *"Financial history and the financial crisis of 2007-2009 indicates that one Type of bubble, which is best referred to as a credit-driven bubble, can be highly dangerous. With this type of bubble, there is the following typical chain of events: Because of either exuberant expectations about economic prospects or structural changes in financial markets, a credit boom begins, increasing the demand for some assets and thereby raising their prices. The rise in asset values, in turn, encourages further lending against these assets, increasing demand, and hence*
> *their prices, even more. This feedback loop can generate a bubble, and the bubble can cause credit standards to ease as lenders become less concerned about the ability of the borrowers to repay loans and instead rely on further appreciation of the asset to shield themselves from losses.*

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[2] Suh, H. (2012) – "Evaluating Macroprudential Policy from Operational Perspectives" –Indiana University – Bloomington - Federal Reserve Bank of Philadelphia, 2012 p.3

At some point, however, the bubble bursts. The collapse in asset prices then leads to a reversal of the feedback loop in which loans go sour, lenders cut back on credit supply, the demand for the assets declines further, and prices drop even more. The resulting loan losses and declines in asset prices erode the balance sheets at financial institutions, further diminishing credit and investment across a broad range of assets. The decline in lending depresses business and household spending, which weakens economic activity and increases macroeconomic risk in credit markets. In the extreme, the interaction between asset prices and the health of financial institutions following the collapse of an asset price bubble can endanger the operation of the financial system as a whole.

However, there is a second type of bubble that is far less dangerous, which can be referred to as an irrational exuberance bubble. This type of bubble is driven solely by overly optimistic expectations and poses much less risk to the financial system than credit-driven bubbles. For example, the bubble in technology stocks in the late 1990s was not fueled by a feedback loop between bank lending and rising equity values and so the bursting of the techstock bubble was not accompanied by a marked deterioration in bank balance sheets. The bursting of the tech-stock bubble thus did not have a very severe impact on the economy and the `recession that followed was quite mild."[3]

Each asset price bubble requires a response, with a credit driven asset price bubble requiring the most significant response given the extensive and significant costs should the bubble burst.

What is less clear is what the policy response should be and whether it should take the form of monetary policy or MPT's. Thus, there are three significant problems for the relevant decision making authorities – in this case the RBNZ- in deciding to use MPT's .

The first is identifying that there is an asset price bubble developing, the second is identifying what type of asset price bubble it is - (credit driven, or irrational exuberance) if that is possible, and thirdly, what is the appropriate policy response – monetary policy or a mix of MPT's.

The nature of this debate signifies that there is still uncertainty in respect of the relative roles of monetary policy and MPT's. This debate also signifies that there is a lack of clarity between the boundaries for each policy instrument or set of instruments.

Whilst the CGFS has provided advice for the practical implementation of MPTs, and tools to assist with judgements about the circumstances in which they might be

[3] Mishkin, F.S. (2011) "Monetary Policy Strategy: Lessons from the Crisis" - Paper presented at ECB Central Banking Conference, Monetary Policy Revisited: Lessons from the Crisis, Frankfurt, November 18-19, 2010 p.38

applied, their application still comes down to a judgement about the developing circumstances and a determination about the appropriate response by the Reserve Bank.

The consultation document does not discuss this issue. Instead, there is an assumption that the boundaries and roles for each of monetary policy and MPT's are clear when this may not be the case. Decisions to implement MPT's will not be costless to the economy and must be taken with due caution.

The NZBA would have liked to see analysis from the RBNZ outlining the costs and benefits of a range of scenarios where MPT's might be employed. In the absence of any such analysis from the RBNZ, and in the short time allowed for consultation the NZBA has commissioned its own analysis from PriceWaterhouseCoopers detailing the impact on the New Zealand economy of the use of MPT's in a range of scenarios.

As noted above this analysis is provided as an **Appendix.**

(ii) Discussion on the relative welfare effects of each of the MPT's outlined in the consultation document and NZBA's preference of MPT's.

Recent research (Suh 2012) in this area compares and contrasts the relative merits of capital based MPT's and LVR's, and notes that while rule-based countercyclical macroprudential policy plays a stabilization role for business and credit cycles, LVR regulation, a household credit market specific instrument, increases the volatility of the business sector by generating regulatory arbitrage. In this case, regulatory arbitrage involves reallocating credit from the household sector to the business sector.

Suh finds that while macroprudential policy is welfare improving, welfare gains mostly come from the countercyclical capital requirement, but the gains from the LVR regulation are small.

Whilst members of the NZBA have concerns about the challenges of implementing MPT's (for the reasons outlined in section 1) we would note that, of all of the MPT's, LVR caps would be our least favoured. The reasons for this view are set out below.

LVR caps are not only a weak tool with low welfare gains from a policy perspective, but they are also difficult and costly to implement from a compliance perspective. A review of the institutional arrangements for LVR caps in the various countries which have introduced them also shows considerable variance in those arrangements.

In Canada, for example, the cap operates in a way which does not restrict access to credit. Rather it requires borrowers to obtain mortgage insurance if they lack the necessary equity. Borrowers can circumvent the need to fully insure the mortgage by borrowing from an unregulated (non-bank) lending institution for the required equity

portion of the loan. This has led to an increase in loans provided by the unregulated non-bank sector in Canada to help borrowers fulfil minimum equity requirements.

The Canadian Mortgage and Housing Corporation, a government owned corporation underwrites approximately two thirds of the mortgage insurance in Canada. The government also provides a guarantee for the private mortgage insurers.

In Hong Kong there are similar arrangements where the government are the mortgage insurance provider, and caps simply require borrowers who do not meet minimum equity rules to obtain mortgage insurance.

In Sweden an LVR cap of 85% is in place. However, the Swedish Financial Supervisory Authority, Finansinspektionen, in their annual mortgage survey note that most, but not all, of the banks offer unsecured loans for the portion of the loan-to-value ratio that exceeds 85 per cent. Further, the majority of the banks that offer unsecured financing for housing purposes state that it is somewhat more common to grant an unsecured loan today than it was before the mortgage cap.

This is confirmed by aggregate data, which shows that the share of unsecured loans that can be linked to lending for housing purposes has increased slightly in relation to new mortgages since the introduction of the mortgage cap.[4]

These examples are provided as a demonstration that not all LVR caps are not created equally and are heavily reliant on the specific institutional arrangements which underpin them.

LVR Caps - Practical Issues

If the RBNZ chooses to further develop an LVR cap the NZBA suggests that an implementation timeframe of two weeks is unrealistic. It would be impracticable for banks to undertake changes to their information technology systems and business processes, as well as meet minimum governance standards within a two week period.

The NZBA understands the RBNZ view that the suggested two week timeframe is necessary to avoid gaming, however aside from governance issues raised by this timeframe, defining new business processes to meet LVR requirements and training staff on these changes would take a minimum of three to six months. In our view this disparity between the short implementation time and the actual time banks will need to implement an LVR cap would be another reason to avoid using LVR caps as a tool.

[4] Swedish Financial Supervisory Authority – Finansinspektionen-(2013) "The Swedish Mortgage Market 2012" Report.

(iii) Other Matters that RBNZ should consider

As noted above in section one, whilst many economies are developing MPT's, there are still many questions that remain unanswered about the implementation of these tools. The NZBA suggests that if economic policy settings are right, the circumstances in which MPT's might be used would be rare. We would therefore like to see the RBNZ play a more visibly public role in the discourse on economic policy settings.

In particular the RBNZ has useful data in a range of key areas as well as considerable research resources. The NZBA would like to see the RBNZ place more primacy on the public communication of important research that it is undertaking on economic policy. We note the recent establishment of a Macroprudential Department within the RBNZ will assist in this regard.

One area which we have not had time to address in this submission, but which the RBNZ should undertake research and analysis on is the role of fiscal policy in the decision-making process for monetary policy and the use of MPT's.

Appendix – *PriceWaterhouseCoopers Report on the RBNZ's Consultation Document Macroprudential policy instruments and framework for New Zealand*

Report on the RBNZ's consultation document

New Zealand Bankers Association

Macro-prudential policy instruments and framework for New Zealand

April 2013

pwc

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Executive Summary

The New Zealand Bankers Association has asked PwC to undertake a short assignment looking at the possible wider effects of the suite of macro-prudential tools proposed by the Reserve Bank of New Zealand (RBNZ) in its consultation document: "Macro-prudential policy instruments and framework for New Zealand."

Method of analysis

Our analysis of the potential wider impacts on the economy was based upon the following approach:

- At their heart, each of the macro-prudential tools is designed to restrict the supply of credit to a number of sectors of the economy, but especially the housing market through mortgage availability. This restricting of the supply of mortgages will raise the price of borrowing (i.e. mortgage rates). We made an initial attempt to quantify what this change to mortgage rates might look like.
    - Critically, we have not modelled the deployment of individual tools, as the RBNZ has no present position on when each tool will be applied, to what degree and whether it would be combined with any other tool. Therefore the best approach available has been to model the impact of a generic restriction in supply which may be achieved by the deployment of any one of the tools (or a combination)
- Mortgage rates influence economic activity on a wider scale than just what happens in the housing market. We used RBNZ research into the impact of the Effective Mortgage Rate (EMR) on private consumption to arrive at the percentage impact on GDP via changes to consumption.
- This percentage GDP change was then used in Treasury's Long-Term Fiscal Model (LTFM) to determine the impact on the value of output and employment. We have used the Treasury's Long Term Fiscal Model for this assignment as it is a readily adaptable model that is used consistently to inform the Crown about changes to the economy and the government position.

There are other potential flow-on effects to GDP that could be attributed to changes in the EMR, such as the changes in investment (I) that may arise from induced impacts on residential building. Time constraints meant that these could not be modelled, further reinforcing the view that more discussion and analysis by the RBNZ would be beneficial for stakeholders.

Results

Table 1 summarises the results of our analysis following the methodology outlined above. It can be seen that the deployment of these tools is unlikely to have a significant economic impact, which makes them effective at dealing with bank-specific issues around the stability of the financial systems, but potentially not effective in dealing with wider economic pressures that may cause stress. A view from the RBNZ about the balance they would seek to strike between the stability of the financial system and the potential wider economic impacts, and any additional measures they may deploy to address wider economic pressures would be an important contribution to the consultation process.

Table 1 – Summarised results from the LTFM

Decrease annual mortgage availability by ...	1%	3%	5%	20%
Change to the EMR	+0.02%	+0.05%	+0.08%	+0.31%
% change in real GDP	-0.004%	-0.01%	-0.018%	-0.073%
Value of real GDP change	-$10.8m	-$32.5m	-$54.1m	-$216.6m
Employment change	-85	-254	-420	-1,700
Tax take change	n/a	n/a	n/a	n/a

The duration that the macro-prudential tools are deployed for would also have impacts on the economy. This implies that deploying the new suite of tools still requires judgement around the timing, size and duration of any intervention. The consultation papers put out by the RBNZ indicate that there is still much thinking to be done about how the macro-prudential tools will be used and what the size of potential impact is likely to be.

Other impacts

There are other potential impacts that would benefit from further analysis before the introduction of macro-prudential tools could be considered:

- Adverse impacts on residential building which run counter to resolving the supply issues with the housing market.
- Changing competitive conditions within the banking market.
- The disaggregated effects of the macro-prudential tools such as effects on small and medium sized enterprises (SMEs).

Some of these issues are referenced in the consultation documents but are not discussed with sufficient detail to fully understand the potential implications.

Background and purpose

The New Zealand Bankers Association (NZBA) has asked PwC to help it provide a response to the consultation document released by the Reserve Bank of New Zealand on the Macro-prudential policy instruments and framework for New Zealand.

This consultation paper covers the proposed introduction of new instruments that are aimed at controlling the availability of credit (and hence its price), which would provide the RBNZ with another means to potentially dampen the effects of strong economic activity, such as periods of rapid asset price growth. The ultimate aim of this is to promote financial stability and lessen the impacts of sharp downturns in asset prices.

The RBNZ has limited its focus at an aggregate level – changing the requirements for banks to hold capital on the balance sheet (as a way of restricting the supply of credit) which have flow on effects into the housing market.

The RBNZ's narrow focus is at the expense of disaggregated effects on the wider economy that would result from both a tightening of the supply of capital and the associated rise in its price (i.e. interest rates).

NZBA are requesting that we provide inputs to assist you with your response to the RBNZ, focussing in particular on the impacts of the LVR; counter cyclical buffer; and the core funding ratio. In the first instance, our assistance is limited to:

a. Focussing on, and quantifying the likely wider economic impacts of these proposals, particularly in this phase of the business cycle (recovery);
b. Providing more general commentary on the proposals in terms of their fit with overall government policy and good regulatory practice.

There may be more opportunity later to examine the disaggregated effects in more detail; however that is beyond the scope of this exercise given the short lead-in times for response in the consultation document.

Scope of this response report

Following our discussions with NZBA and based on our understanding of NZBA's requirements, the scope of services PwC provided covers:

a. A review of the consultation paper to better understand the mechanics of the proposed changes and develop the possible scenarios for the impacts these are likely to have;
b. Determination, in conjunction with NZBA, of the likely impacts on credit supply and therefore interest rates (time permitting);
c. A view on the likely effects this will have on the demand side (e.g. for home loans);
d. Use of scenarios of changes in the credit market to explore the flow through into the wider economy by using of the likes of the Treasury's long-term fiscal model. Cross check the validity

of these results by using other macroeconomic data sources and frameworks where relevant; and

e. A response document outlining the findings of our work.

Discussion of RBNZ paper

In *Macro-prudential policy instruments and framework for New Zealand,* the Reserve Bank of New Zealand outlines:

- the objectives of macro-prudential policy
- some of the tools and instruments that can be implemented
- a decision making framework for assessing the interventions
- a discussion of the costs and benefits of the proposed macro-prudential tools.

Macro-prudential policies are designed to improve the stability of the financial system by increasing the resilience in periods of high growth. These policies will have the effect of dampening the effect of boom-bust financial cycles and the harmful feedback loops of these policies.

The RBNZ paper discussed four different instruments, each with different uses and effects on the financial system. Table 2 summarises the four instruments proposed by the RBNZ.

Table 2 – outline of macro-prudential instruments

Instrument	Description	Effect
Countercyclical capital buffer	The countercyclical capital buffer (CCB) is a pre-emptive measure that requires banks to build up capital gradually as imbalances in the credit market develop.	• Increasing loss absorbing capability of banks • Increases cost of credit, slowing growth
Changing core funding ratio	The core funding ratio is the proportion of bank funding held from retail deposits, and longer term wholesale funding.	Increasing CFR requirements will increase resilience in the sector as banks will be required to hold more stable funding
Sector Capital Requirements	Similar to changing the CFR, sector capital requirements reflect additional capital requirements for banks based on risk-weighted exposure.	• Provides a temporary cushion in times of high volatility • Can change relative attractiveness of the sector.
Restrictions on high-LVR lending	Restricting high LVR lending will reduce the ability of banks to lend when the value of the mortgage exceeds a specified proportion of house value (e.g. 75%).	• Reduce aggregate borrowing capacity of potential borrowers • Increase collateral held against housing loans

The decision framework outlined in the paper includes an assessment of systematic risk, followed by the presentation of a case for macro-prudential intervention. Once this has been assessed, the instrument will be selected and then implemented.

Any macro-prudential intervention will have associated costs and benefits. The system wide effects are all likely to be related to an increase in the resilience in the financial system, and the ability for the system to withstand periods of high volatility. The costs and issues identified by the RBNZ include:

- Financial disintermediation as tools only apply to local banks
- Accurate monitoring of the effects of the interventions
- Reluctance of banks to implement buffers as this may be seen as a sign of weakness
- The impact of external market conditions on the effectiveness of the interventions.

The focus of the consultation document can be reduced to a case of microeconomics – that of controlling the quantity of funds available to mortgage markets (supply) thereby increasing the price attached to mortgages. The purpose is two-fold – to control demand for credit and thereby potentially reduce the amount of exuberant activity in the housing market; and increasing the stability of the financial system by improving resilience to housing market shocks (through higher capital thresholds on bank balance sheets). The analysis in this report is thus kept at a sufficiently high level with a microeconomics focus.

Methodology

Our analysis of the impacts of the deployment of the proposed macro-prudential tools outlined in the RBNZ's consultation papers consisted of three parts:

1. High-level estimates on the impacts on the mortgage market, especially the Effective Mortgage Rate (EMR);
2. What the feed-through into the wider economy would entail following changes to the EMR; and
3. Examining these effects through the Treasury's Long-Term Fiscal Model (LTFM) to gauge broader impacts.

Firstly, our primary assumption is that the deployment of macro-prudential tools is aimed at restricting the supply of funds available to the mortgage market, with a particular focus on mortgages with a high loan to value ratio (LVR). Restricting the quantity of funds available for mortgage lending results in higher borrowing rates for loans. We pursued this line of enquiry by estimating the relationship between the availability of mortgage funds and the EMR (the demand curve) by using inflation adjusted mortgage values and mortgage rates. This yielded an elasticity of EMR response to changes in the quantity of funds.

Ideally, it would have been better to estimate a model with more parameters (e.g. income), however time constraints and the need to gather a more comprehensive and reliable data set meant this would need to be left for future work. It would have also been beneficial to further calibrate the estimates with detailed analysis of bank balance sheets (both individually and in aggregate) to obtain some measure of the likely reduction in the availability of funds (via raising capital requirements) and the cost to the banks (of adding the extra capital).

Secondly, the changes in the EMR due to supply restrictions were converted into potential effects on the real economy. These effects were assessed by looking at the components of the standard economic accounting identity for calculating output (GDP):

$$Y = C + I + G + X - M$$

Where 'C' stands for consumption expenditure, 'I' stands for investment expenditure, 'G' stands for government expenditure and 'X-M' is net exports (exports minus imports). Changes to mortgage rates are more likely to be directly expressed through consumption and investment and indirectly through government expenditure (via changes to the tax take).

Once again, time constraints meant this could not be a broad look, so the focus was directed towards potential changes in consumption. Further analysis could be undertaken on the impact of raising the EMR on residential construction, which is a key component of investment and this would provide a wider view on impacts. Because time was of the essence, we relied on RBNZ research[1] into the relationships between the EMR and consumption to understand what would happen to consumption

[1] See Smith, Mark (2010). "Evaluating household expenditures and their relationship with house prices at a microeconomic level"; Discussion Paper Series DP2010/01, January. Reserve Bank of New Zealand, Wellington.

following an increase in the EMR. The RBNZ research estimates the elasticity between EMR and consumption based upon a composite set of Statistics New Zealand household expenditure data and other data series between 1984 and 2007.

Thirdly, we calculated the percentage change in real GDP based upon the share of consumption in final expenditure on output multiplied by the EMR induced percentage change in consumption. We then placed this percentage change in real GDP into Treasury's LTFM as a shock to calculate changes in GDP, employment and the government's tax take. Finally, this response paper concludes with a discussion of the results.

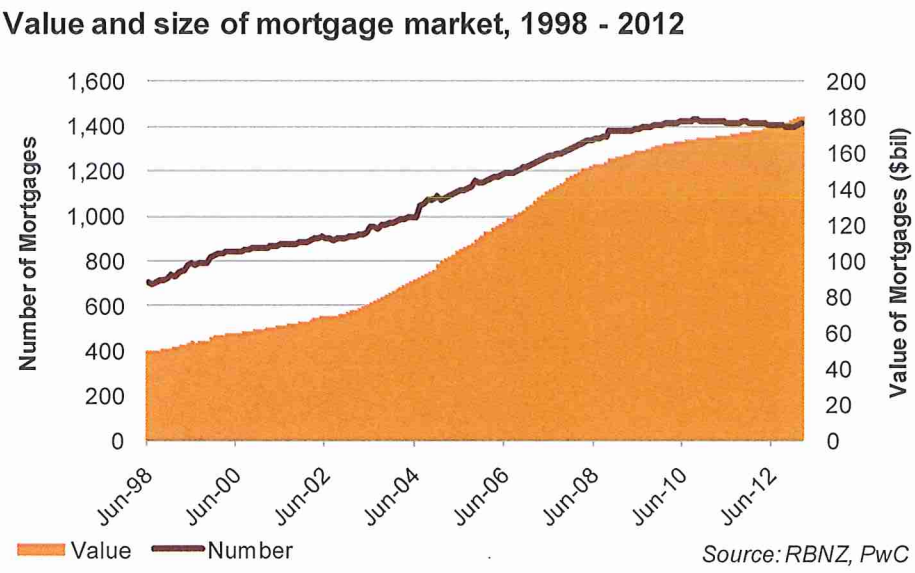
Analytical results

The results presented in this section are left at a high level and, given the length of time provided by the RBNZ to submit a response, could only be considered as a preliminary attempt to quantify the wider impacts associated with the macro-prudential tools.

The mortgage market

Figure 1 illustrates the historic growth in the mortgage market in New Zealand. The pre-GFC build up in mortgage debt can be seen, alongside the growth in the number of mortgages and the flattening off in the growth since the crisis broke in 2008. As at February 2013, floating mortgages made up 53% of the market by value, with the balance in fixed mortgages; however floating and fixed with durations under 1 year combined comprise around 75% of the market. Comparisons with 1998 when the market share of floating mortgages by value was 38% indicate the sizeable shift over this period into floating mortgages.

Figure 1 – mortgage market size



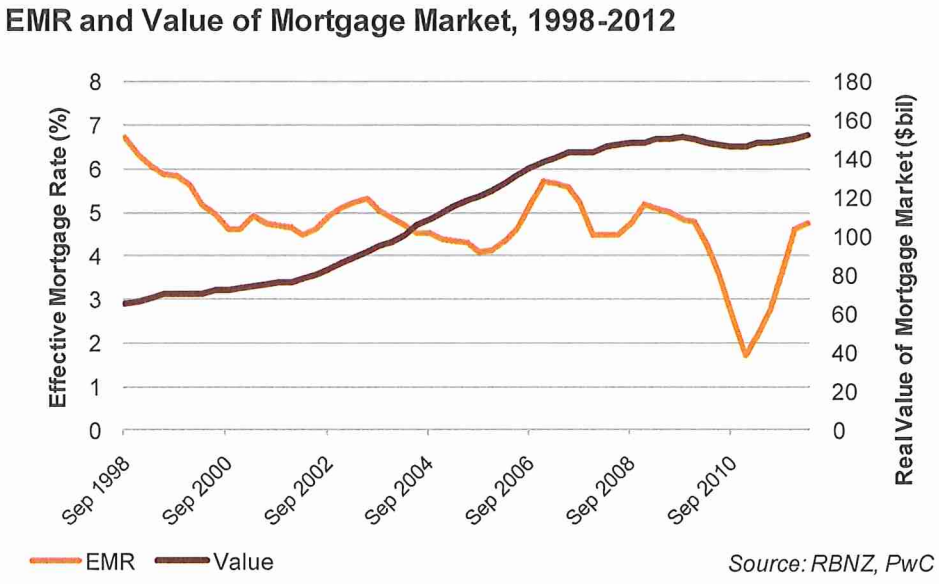
Of relevance to this analysis, is the increasing proportion of high loan to value ratio (LVR) loans now being written (high LVRs involve debt levels that are over 80% of the property value); the RBNZ thinks that around 30% of new lending is undertaken on a high LVR basis, having increased from around 25% a year earlier[2].

By contrast, Figure 2 shows the inflation adjusted (real) values of the EMR and the total amount of loans over the period 1998 to 2012. The chart suggests two things about the relationship between EMR and mortgage values. Firstly, there was some relationship pre 2005/06 between a falling EMR and the uptake of loans. Secondly, this relationship appears to have moderated since 2008 and in

[2] See http://www.nzherald.co.nz/property/news/article.cfm?c_id=8&objectid=10876259 accessed 9 April 2013

particular falling real values of EMR (around 2009/10) do not seem to have had the same stimulatory response as previously. These factors will influence the degree of strength in the relationship as tested through regression analysis and highlights the potential impact of, as yet, unidentified factors.

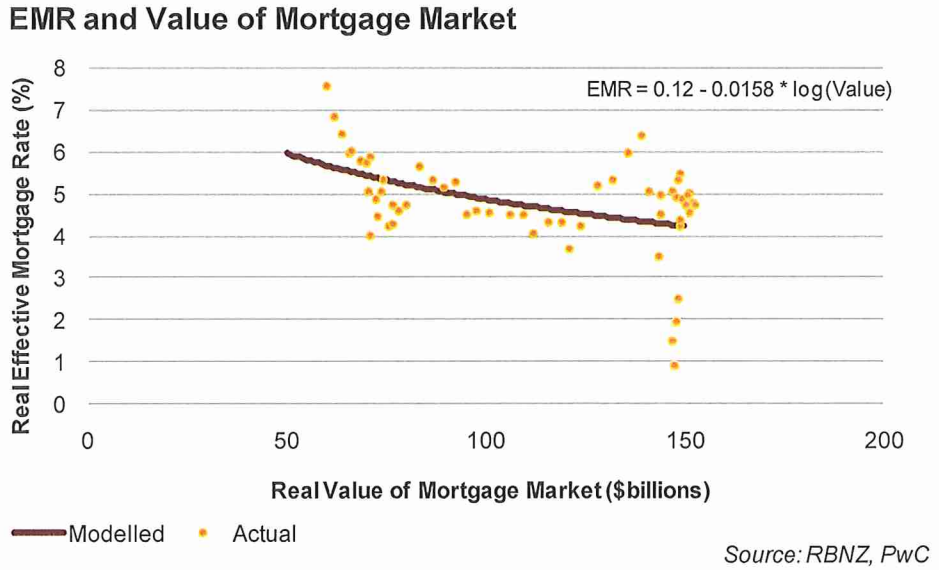
Figure 2 – real EMR and total mortgage values



Source: RBNZ, PwC

This is borne out in Figure 3, which shows the outcome of the regression analysis.

Figure 3 – scatter plot of regression results



Source: RBNZ, PwC

The full outcome from the regression analysis is included in the appendix attached to this report. The r-squared value for the equation is 0.2 which implies that change in mortgage values explain about 20% of the variation in the EMR. This and a visual scan of the displacement of actual data in Figure 3 shows that a more comprehensive (and time consuming) analysis of the data would be beneficial to any further work on this issue, and at the very least the RBNZ should look to provide their assessment of this issue to stakeholders. The estimation of the relationship between EMR and loan values was

undertaken in log form, which implies that the coefficient on the loan value is the elasticity. This can be interpreted as a 1% increase in the value of loans leading to a 0.016% decrease in the EMR (as in this is an approximation for the mortgage market demand curve). This implies the size of the mortgage market is relatively inelastic to changes in the EMR, but conversely, the EMR is relatively elastic to changes in the size of the mortgage market. However, for this relationship to hold more robust analysis is required as there are likely other contributing factors to the size of the mortgage market.

Consumption effects

Based upon the above, if the deployment of the macro-prudential tools leads to a contraction in the supply of funds available to the loan market, then this is equivalent to a decrease in the demand for funds due to an increase in the EMR. This may seem counter-intuitive but a -x% (minus x%) move in the value of loans leads to an increase in the EMR (by –x% times -0.016).

This increase in the EMR from a reduction in funds available for mortgages has a direct impact on aggregate consumption. As discussed in the previous section, RBNZ research indicates that the elasticity of changes in the EMR to changes in consumption is -0.38. This implies that a 1% increase in the EMR leads to a 0.38% decrease in consumption. Given consumption comprises around 60% of GDP it is possible to calculate the weighted change that EMR induced changes in consumption will have on total output.

LTFM impacts

To assess this overall impact on total output we used the calculations above to modify the real GDP growth rates in the LTFM. This should let us see the impacts upon the value of GDP, employment and taxation from the possible decrease in the availability of funds on the mortgage market due to the deployment of macro-prudential tools. Table 3 summarises our results across a range of scenarios for different degrees of shock to the mortgage market, assuming the macro-prudential tools are deployed between 2013 and 2014.

Table 3 – LTFM results from macro-prudential tool deployment 2013 to 2014

Decrease annual mortgage availability by ...	**1%**	**3%**	**5%**	**20%**
Change to the EMR	+0.02%	+0.05%	+0.08%	+0.31%
% change in real GDP	-0.004%	-0.01%	-0.018%	-0.073%
Value of real GDP change	-$10.8m	-$32.5m	-$54.1m	-$216.6m
Employment change	-85	-254	-420	-1,700
Tax take change	n/a	n/a	n/a	n/a

The change to the government's tax take for the smaller changes in the availability of mortgage funds is marginal and not reported.

Discussion

The RBNZ's submission[3] to the Productivity Commission's inquiry on housing affordability is revealing for the analysis of macro-prudential tools proposed in the consultation papers. Some of the insights include:

- In the previous business cycle monetary policy may have been too slow to tighten;
- Housing market dynamics, particularly around supply pose significant issues in terms of increasing prices and therefore leverage in the financial sector;
- Unwinding of rapid house price growth could cause financial system instability (dependent on the severity of the move);
- Macro-prudential tools have the objective of promoting financial system stability in the face of credit cycles, but more ambitiously, may be deployed to counteract the cycle; and
- The influence of macro-prudential tools may be 'at the margin' of mortgage market operations but the scope and impact remain untested.

The issues raised in that submission paper remain relevant to the consultation documents around the introduction of macro-prudential tools. The first bullet highlights that the application of monetary policy requires judgement around the timing and size of the intervention and that this has not always been "perfect" in the past. What is to say that the application of the new tools will fare any better as they still rely upon judgement? How would these tools be applied in the current economic environment, where the housing market is advancing (in certain areas) but the wider economy is not exhibiting robust growth? What would the effects be on GDP and employment from deploying macro-prudential tools now (lowering real annual growth by a negligible amount based on today's growth rates)?

The rest of the points noted above raise questions about whether the focus should be on resolving issues in the housing market, pertaining to supply and the manner in which macro-prudential tools should be deployed. The consultation paper put out by the RBNZ indicate that there is still much thinking to be done about how the macro-prudential tools will be used, and what the size of potential impact is likely to be.

Without this thinking, and a clear intervention logic from the RBNZ about when they would apply the tools, the mix of tools and the degree to which each is used it is extremely difficult for stakeholders to position their response around anything other than hypothetical scenarios.

The high-level analysis used in our report has indicated that:

- The macro-prudential tools may be effective in improving the stability of the financial system in a time of stress, where issues are solely bank-related; but

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[3] Reserve Bank of New Zealand, "Submission to the Productivity Commission Inquiry on Housing Affordability"; August 2011

- The instruments do not appear to be effective in removing wider economic factors that may cause stress to the financial system – a critical reason the RBNZ is investigating these tools.

Bearing in mind that these tools may be deployed at a time when the financial system is under stress from wider pressures in the business cycle, it is critical for stakeholders to understand how the RBNZ will have regard to the wider economic impacts when considering the use of the tools. Given the high level modelling results suggest negligible changes to the economy as a result of these tools, it will also be important to understand what other tools the RBNZ may deploy if the macro-prudential tools are not effective in dealing with wider economic pressures that are causing stress to the financial system.

Other impacts

There are other potential impacts that would benefit from further analysis before the introduction of macro-prudential tools including:

- Adverse impacts on residential building. The deployment of macro-prudential tools may create negative feedback loops in the residential building market – reducing residential building may hurt the supply side of the housing market, which ultimately, is the market the RBNZ is trying to influence.
- Competition effects within the banking market. Introducing the macro-prudential tools may change the competitive nature of the banking market, including market shares. The ability of banks to raise additional capital and at what cost, could confer a short-term competitive advantage to those banks with better access to capital and lower cost of capital structures. This may lead to a smaller number of banks having increased market dominance at the expense of other banks and potential entry into the market.
- The disaggregated effects of the macro-prudential tools. Over-reliance on aggregation and a narrow focus on one aspect of the economic system implies these disaggregated effects may not have been fully investigated. A prime example of these disaggregated effects is the reliance of small and medium sized enterprises (SMEs) on home equity of the owner-managers to fund their businesses; restricting capital availability and increasing its cost would place both operating and growth restrictions on these SMEs.

Some of these issues are referenced in the consultation document but are not discussed with sufficient detail to fully understand the potential implications. The implications of these issues, along with the analysis on consumption impacts highlighted above, suggest a case for more detailed modelling and analysis to be done by the RBNZ.

Appendix

Regression results

Use used the econometric software GRETL to estimate the relationships used in the analysis of the mortgage market.

Model: OLS, using observations 1998:3-2012:4 (T = 58)
Dependent variable: EMR

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	0.1214	0.019519	6.2201	<0.00001	***
ValMort	-0.0157618	0.00417735	-3.7732	0.00039	***

Mean dependent var	4.793661	S.D. dependent var	1.137057
Sum squared resid	58.75753	S.E. of regression	1.024325
R-squared	0.202696	Adjusted R-squared	0.188459
F(1, 56)	14.23671	P-value(F)	0.000391
Log-likelihood	-82.67475	Akaike criterion	169.3495
Schwarz criterion	173.4704	Hannan-Quinn	170.9547
rho	0.696242	Durbin-Watson	0.546740

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We reserve the right, but are under no obligation, to revise or amend our report if any additional information (particularly as regards the assumptions we have relied upon) which exists at the date of our report, but was not drawn to our attention during its preparation, subsequently comes to light.

This report is issued pursuant to the terms and conditions set out in our engagement letter dated 5 April 2013.

For more information go to pwc.co.nz

References

Bank for International Settlements - Committee on the Global Financial System-(2012) "Operationalising the Selection and Application of Macro-prudential Instruments" – CGFS Publications No 48 December, 2012

Mishkin, F.S. (2011) "Monetary Policy Strategy: Lessons from the Crisis" - Paper presented at ECB Central Banking Conference, Monetary Policy Revisited: Lessons from the Crisis, Frankfurt, November 18-19, 2010

Suh, H. (2012) – "Evaluating Macroprudential Policy from Operational Perspectives" -Indiana University – Bloomington Federal Reserve Bank of Philadelphia, 2012

Svensson, L. E. (2012): "Comment on Michael Woodford, 'Inflation Targeting and Financial Stability'," Sveriges Riksbank Economic Review, 2012:1.

Swedish Financial Supervisory Authority – Finansinspektionen-(2013) "The Swedish Mortgage Market 2012" Report

Woodford, M. (2012): "Inflation Targeting and Financial Stability," Sveriges Riksbank Economic Review, 2012:1.