RESERVE BANK
OF NEW ZEALAND
TE PŪTEA MATUA

Financial stability – risky, safe, or just right?

A speech delivered to UBS Australasia Conference 2018 Sydney, Australia

By Geoff Bascand, Deputy Governor and Head of Financial Stability
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2 The Terrace, PO Box 2498, Wellington 6140, New Zealand
Telephone 64 4 472 2029 Online at www.rbnz.govt.nz

Introduction[1]

Thank you for the opportunity to speak with you.

For the first time in 30 years, New Zealand is fundamentally reviewing the role and powers of the Reserve Bank as they relate to financial stability.

The Government's review is not in response to a crisis. The fact that it's 10 years since the Global Financial Crisis (GFC), 20 years since the Asian financial crisis, and 30 years since New Zealand's share-market crash and our own financial crisis is surely just a coincidence!

The aim of the review is to test whether our financial policy framework is fit for purpose and whether it needs modernising. It makes sense to test that the regime is well founded for the next 30 years. The financial system has grown in size, complexity and interconnectedness. It continues to change with institutional, technological and financial innovations generating new products, services, rewards – and risks.

The Reserve Bank, or Te Pūtea Matua, is the big tree, Tāne Mahuta, that sits at the centre of New Zealand's financial ecosystem.

Our challenge is to ensure that the various elements of this financial ecosystem work together to deliver a sound and efficient financial system for all New Zealanders. And that we deliver soundness, don't stifle desirable innovation and minimise unnecessary friction between borrowers, savers and investors. A thriving financial system provides huge benefits: enabling payments, financing investment, facilitating borrowing, and yielding returns to savers. When it falters or freezes up, costs are large and pain is felt throughout society.

In common with most central banks we are responsible for the stability of our financial system. Our role is to manage risks to New Zealand's stability and to mitigate the consequences if they are realised. Today I am going to focus on our risk tolerance and how we determine it.

I want to address two main topics:

- First, why financial stability matters and what threatens it?
- Second, and most importantly, how do we pursue our financial stability objective? This key point can be thought of in terms of three questions:
    - what is our risk tolerance; how safe do we think the financial system should be?;
    - how do we strike the right balance between soundness and efficiency?; and
    - how do we adapt as risks to financial stability emerge?

Why does financial stability matter for New Zealanders?

First, why does financial stability matter? The answer is that bank crises are frequent and bank crises hurt.

Since the mid-1970s there have been over 140 banking crises[2] around the world. And they have had large costs for the affected economies and societies.

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[1] I am very grateful to Piers Ovenden for considerable assistance in the preparation of this speech, along with valuable comments from other Reserve Bank colleagues.

[2] Laeven and Valencia define a banking crisis as systemic if two conditions are met: (1) significant signs of financial distress in the banking system (as indicated by significant bank runs, losses in the banking

On average a bank crisis costs a country 23% of its GDP, while public debt increases by around 12 percent.[3] The amounts are higher for advanced economies. And as a rule, the deeper the banking system, the larger the disruption and the higher the costs.[4] Recessions associated with financial crises are deeper than recessions that are not.

The consequences in terms of employment are also severe. After the GFC, Ireland's unemployment rate rose from 4.6 percent in 2006 to 15 per cent in 2012,[5] with youth unemployment even higher. In addition there can be broad welfare consequences in terms of declining physical and mental health, regardless of whether an individual is directly affected by job, income or housing loss.[6]

The impact of a crisis on the wider economy is also long lasting. Recovery can take a decade or more and is halting in nature.[7]

We have seen in the aftermath of the GFC, monetary and fiscal policy responses –bail-outs and quantitative easing – have important implications for transfers of wealth between the private and public sector, social inequality and inter-generational welfare.

So financial stability matters – and not just to the depositors, creditors and counter-parties of an affected institution. It matters to the economy and society as a whole.

This isn't something that we can count on observing from the global sidelines. New Zealand is clearly not immune to crises.

In the late 1980s the Bank of New Zealand had to be recapitalised twice by its government and private sector shareholders. More recently, between May 2006 and the end of 2012, we witnessed the collapse of finance companies.

As the GFC unfolded the New Zealand government introduced a guarantee scheme that covered up to $133 billion in deposits and investor funds. By the time the scheme was withdrawn, the Crown had paid out approximately $2 billion to depositors for losses from failed entities.[8]

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system, and/or bank liquidations); and (2) significant banking policy intervention measures in response to significant losses in the banking system. See 'Systemic Banking Crises Database: An Update', IMF Working Paper, by Laeven and Valencia, 2012.

[3] Output losses are calculated as deviations of actual GDP from its trend and increases in public debt is measured as the change in the public debt-to-GDP ratio over the four year period beginning with the crisis. See 'Systemic Banking Crises Database: An Update', IMF Working Paper, by Laeven and Valencia, 2012.

[4] The costs of banking crises can vary markedly. The gross fiscal cost of the crisis in Iceland – a small, open and financially integrated country like New Zealand – mainly in terms of bank recapitalisations and asset purchases, was 44% of GDP. In Ireland the pre-crisis boom in construction and subsequent collapse of the local banking system, resulted in a government bail-out amounting to approximately 40% of GDP. Iceland and Ireland also feature among the ten costliest banking crises in terms of overall increases in public debt – at more than 70% of GDP within four years. See 'Systemic Banking Crises Database: An Update', by Laeven and Valencia, 2012.

[5] See 'Seasonally Adjusted Standardised Unemployment Rates', Central Statistics Office at https://www.cso.ie/en/statistics/labourmarket/principalstatistics/seasonallyadjustedstandardisedunemploymentratessur/

[6] See 'Health Impacts of the Great Recession: A Critical Review', by Margerison-Zilko, et al., 2017.

[7] World Economic Outlook, IMF, October 2018; and 'Recovery from Financial Crises: Evidence from 100 Episodes' by Reinhart and Rogoff, American Economic Review, 2014.

[8] Office of the Auditor-General, 2011.

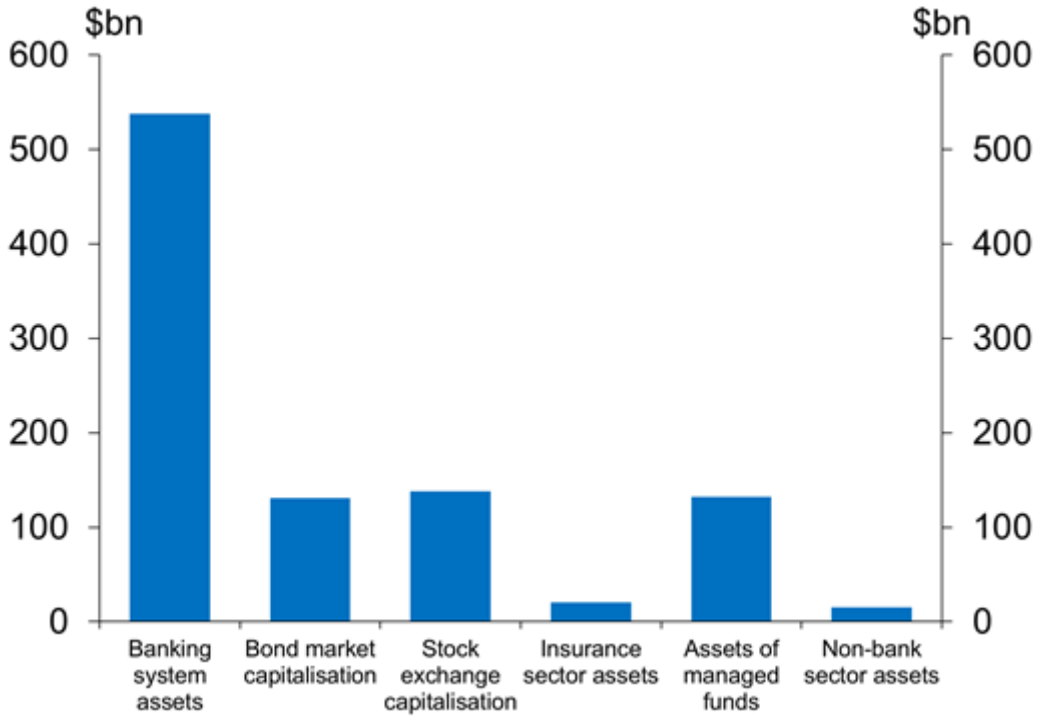
Serious incidents (that could have led to a crisis) are more common than people realise. Over the years various institutions have suffered significant losses and either had to raise additional funds from the market or be supported by the government.

The scale and impact of these events is much wider and greater than the immediate costs to the affected institution. When Development Finance Corporation (DFC) failed in 1989, it was the 7th largest financial institution in NZ, was not a settlement bank and had only a small amount of retail funding. Yet it turned into a major event that knocked confidence in the financial system and affected views of New Zealand held by international investors for some time.

Ultimately the risk of a crisis in New Zealand is determined by whether the many risks in the global ether are relevant to us. Snake bites are unpleasant but not very pertinent to most New Zealanders.

So what does New Zealand's financial ecosystem look like and what are its vulnerabilities?

Figure 1
Size of financial sectors in New Zealand



New Zealand's banking system is large relative to the size of our economy and our financial system, with banking system assets worth $527 billion, or 186 percent of GDP (figure 1).

It reaches almost all New Zealanders, with over 99 percent of us having bank accounts.

An important feature is that it is highly concentrated: of the 26 registered banks in New Zealand, four banks – all Australian owned – account for more than 85 percent of bank assets.

From one perspective we are well placed, compared to say, the Eurozone, where large banks operate across national boundaries as branches, under a single currency.

We have an effective home-host relationship with APRA and our four largest banks are all locally incorporated. Their size and dominance of our banking sector is an important consideration for our regulatory approach: they must be able to stand on their own in New Zealand.

Other parts of the ecosystem include insurers, payment and settlement systems, capital markets and non-bank lending institutions. Although these sectors are small in comparison to the banking sector, they play an important role in the financial system: ensuring that companies can operate with confidence and manage their risks, facilitating smooth and efficient payments within the economy, and providing capital to particular market segments.[9]

We have seen risks emerge from the "shadow banking" sector before and remain alert to developments in the wider financial sector.

What threatens our financial system?

New Zealand's financial system has two main vulnerabilities: our high levels of indebtedness (in the household and dairy sectors) and our reliance on foreign sources of funding.

Given the nature of the New Zealand economy and our financial system these risks are not going away. Our next assessment of them will be detailed in the *Financial Stability Report* to be published 28 November.

<u>High levels and concentrations of debt</u>

The majority of bank lending is to the household sector – at 58 percent – and secured against housing assets. Household sector indebtedness represents the New Zealand financial system's single largest vulnerability.

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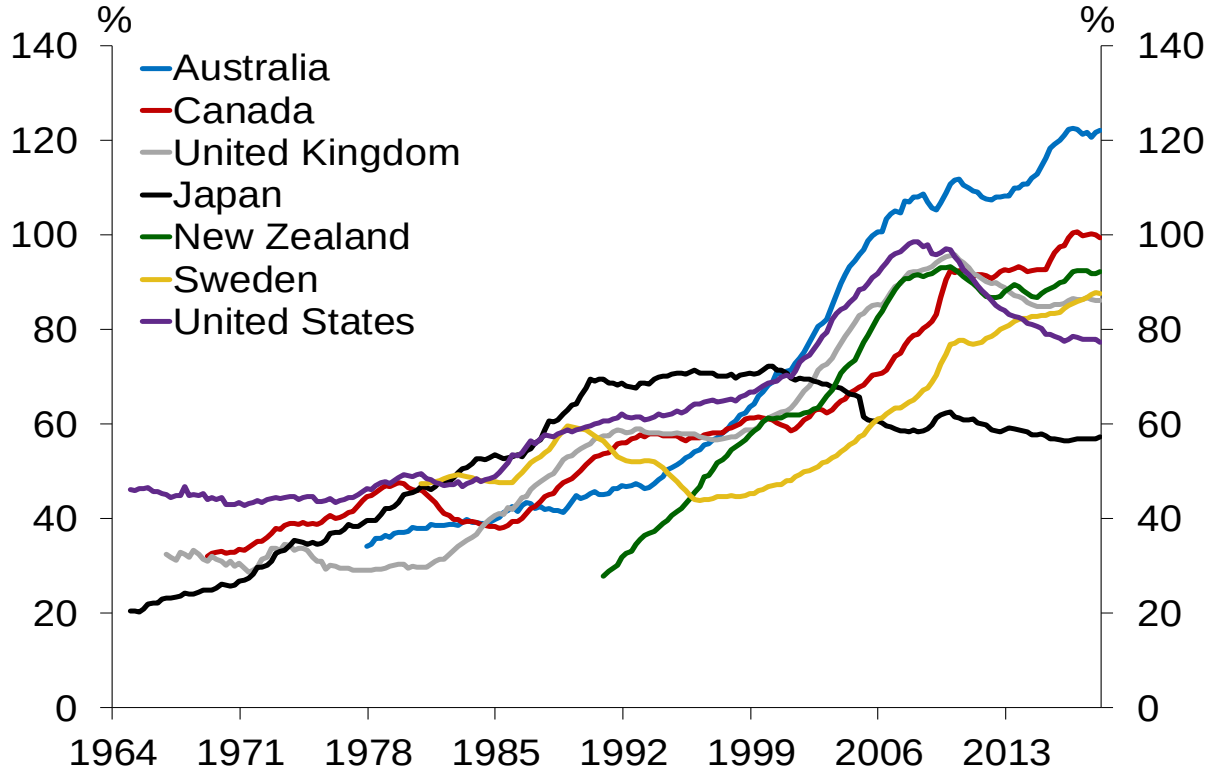
[9] The insurance sector has around $70 billion in total assets, equivalent to 25 percent of GDP. The unlicensed sector is made up of the government-owned Accident Compensation Corporation (ACC), the Earthquake Commission (EQC) and the Southern Response Earthquake Services – a government owned insurer resulting from the government bail-out of AMI following the Canterbury earthquakes – as well as some small private insurers.
NZX's market capitalisation is around $135 billion, while the total value of the domestic bond market is around $131 billion (excluding government debt). The fund management sector has around $125 billion of assets (both domestic and offshore) under management.
The Non-Bank Lending Institutions (NBLI) sector provides around a third of consumer lending to New Zealanders but it remains small relative to the rest of the financial system. Mortgage lending from NBLI is around 3 percent of the total across the financial system. Of the NBLI, 25 are licensed Non-Bank Deposit Takers (NBDTs) – financial firms that accept deposits but are not registered banks – with total assets worth $2.5 billion. Other lenders that do not take deposits, and therefore are neither banks nor NBDTs, have total assets of $9.7 billion.
The Reserve Bank operates the Exchange Settlement Account System (ESAS), which settles all interbank payments, and NZClear, which settles trades of securities.

Two thirds of systemic banking crises around the world have been preceded by a housing boom and bust.[10] Highly indebted households are vulnerable to shocks, such as higher interest rates or unemployment, that reduce their debt servicing capacity. This can lead to households cutting their consumption, selling their house or, if the shock is severe enough, defaulting on their loans.

Household indebtedness has increased dramatically in New Zealand in the last 30 years. In 1988, the average household owed around $16,000 in debt and had an income of around $35,000 – a debt-to-income ratio of 46 percent. By the end of 2017, this ratio had risen to 168 percent, following a ten-fold increase in average household debt to nearly $160,000, while average incomes had only slightly less than tripled to $95,000.

Credit extended to households in New Zealand as a percentage of GDP has risen from 27.9 percent in 1990 – relatively low compared to other countries – to 92.2 percent (figure 2).

Figure 2
Credit to Households as a percentage of GDP



Source: Bank for International Settlements.
Note: Credit to households and NPISHs from all sectors at market value.

Of course, systemic crises can emanate from different sectors. The level and concentration of dairy sector debt has increased significantly in recently decades, to become the next largest share of bank lending after housing. And a relatively large proportion of bank losses in past financial crises are estimated to have come from loans to the commercial property

[10] See 'How to deal with real estate booms: Lessons from country experiences' by Crowe, Dell'Ariccia, Denis, Rabanal, IMF Working Paper, 2011, referred to in 'Financial stability risks from housing market cycles' by Thornley, RBNZ Bulletin, July 2016.

sector.[11] Problems in these sectors would not threaten financial stability on their own,[12] but could significantly amplify losses to the banking system during a severe macroeconomic downturn.

Foreign funding

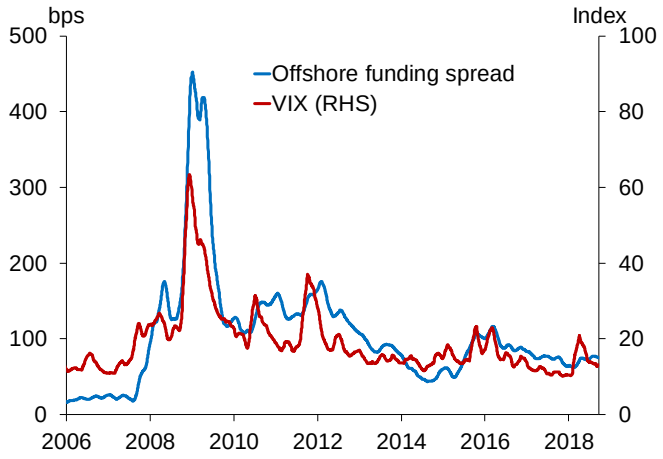
New Zealand's other main vulnerability is foreign funding. We rely on the willingness of foreigners to lend to us, and to continue to lend to us, in order to fund our homes and our businesses.

New Zealand's net foreign liabilities – the difference between what we owe the rest of the world (our liabilities) and what the rest of the world owes us (our assets) – are high relative to most other developed economies.

While most of our offshore funding is hedged we are vulnerable to disruptions in global financial markets.

An increase in interest rates overseas can rapidly flow through to retail rates in New Zealand if bank funding is rolled over at higher prices. These fluctuations in funding costs are illustrated in figure 3. Perhaps more worrying is the risk of a market seizure where rollover is simply not feasible in the necessary timeframe, and credit has to be severely curtailed to address liquidity constraints.

Figure 3
Offshore funding costs and market uncertainty



Source: Bloomberg.
Note: The offshore funding spread is the NZD cost of one of the largest four banks issuing a 5-year bond in the US relative to the 5-year NZ swap rate. The VIX index is an indicator of the market's expectation of the 30-day volatility in the S&P 500 equity index.

Banks have actively reduced their reliance on offshore funding since the GFC – particularly at short maturities – in order to reduce risk and respond to regulatory changes, such as our liquidity policy.[13] However our reliance on foreign funding remains a significant vulnerability and is not going to go away while New Zealand remains a net borrower from overseas.

[11] 'Financial stability risks from housing market cycles', Thornley, BRBNZ Bulletin, July 2016.
[12] Lending to the agriculture sector in New Zealand accounts for around 14 percent of total lending, of which the dairy sector accounts about for two-thirds. Loans to the commercial property sector comprise 8 percent of total bank lending in New Zealand.
[13] The Reserve Bank introduced a Core Funding Ratio requirement for banks in 2010 that required them to hold more long-term foreign funding plus retail deposits, a ratio that was then increased in 2013.

Soundness and efficiency; finding an appropriate standard of resilience for the financial system

Given the structure of our financial system, its vulnerabilities and risks, how safe should we aim to make it? If Goldilocks visited our ecosystem, what would be too risky, too safe and just right?

Our financial policy objective is to 'promote the maintenance of a sound and efficient financial system'.

The soundness goal means promoting the resilience of the financial system as a whole and intervening to mitigate risks to it.

The efficiency goal means different things in different contexts: we minimise compliance costs; we support innovation and operate a regime that is open to new entrants; we avoid creating unnecessary frictions in the supply of credit to the economy; and we ensure that financial resources are allocated in a productive (and not harmful) way to maximise long term economic growth.

A key goal of Phase 2 of the Government's review is to clarify the scope and meaning of 'sound' and 'efficient'; and whether these are still the right terms.

Taken together, soundness and efficiency are akin to the financial stability mandates of other central banks. They empower and obligate the Reserve Bank to ensure the financial system works effectively in support of the prosperity and wellbeing of New Zealanders and contribute to a productive and sustainable economy. Along with our price stability and maximum sustainable employment objectives, they empower the Bank to stabilise the financial cycle and to mitigate the booms and busts that are inefficient in terms of society's economic welfare.

The costs of banking crises mentioned earlier make it clear that financial stability is important; prevention is better than cure and we should err on the side of caution.

Our focus on achieving financial stability has been, and remains, primarily systemic rather than on individual institutions. We do not run a zero-failure regime (i.e. financial institutions can fail), and we expect all participants to do their part.

We pursue our financial stability goal by using the levers and tools that are available to us. Some of these are baseline standards, others are relevant as risks emerge or eventuate (figure 4). The key is that we don't think of each one in isolation and calibrate each one accordingly.

Figure 4

RBNZ tools		Self	Mkt	Reg	Permanent	Time varying	Event
Institutional rules	Governance						
	Risk management						
	Attestations						
	Licensing & NZ incorporation						
	Outsourcing						
Transparency	Disclosure						
Financial requirements	Minimum capital requirements/solvency standards						
	Conservation & counter cyclical buffers						
	Sectoral Capital Requirements						
	Core Funding Ratio						
	Loan to value restrictions						
Funding & liquidity	Liquidity standards						
	Collateral standards / RMOs						
	LoLR						
	Foreign exchange intervention						
Infrastructure	FMI rules and powers						
Monitoring	Financial Stability Report						
	Stress testing						
	Supervision & engagement						
	Thematic reviews						
Enforcement	Investigations						
	Directions						
Monetary policy	OCR						
Crisis management	OBR						
	Statutory management						

Our three pillar approach to supervision emphasises self and market discipline, alongside regulatory discipline. We place a strong emphasis on sound corporate governance, ensuring (where possible) that individual institutions have incentives to manage their own risks; and on disclosure[14] enabling investors to monitor risks to financial institutions.

The risk of market failure means we must also have a robust regulatory pillar. Given the externalities at play in the financial system, the systemic costs of financial instability will not be addressed through self and market discipline alone.

When an individual bank chooses to reduce its resilience, it will only face the private cost of its decision. The social cost will include, for example, the bank aggravating a boom-bust cycle by unduly relaxing lending standards. The perverse incentives are compounded if it is difficult for market participants to detect an increase in risk-taking (asymmetric information).

We agree with the IMF's FSAP report that the regulatory pillar should be stronger, and that we should adopt a more intensive approach to supervision.

We are strengthening our supervision of individual institutions. We are making more frequent use of thematic reviews on areas of heightened risk, and we continue to strengthen our collaboration with APRA. We recently released our joint report with the FMA on Bank Conduct and Culture.

As the IMF pointed out, increasing supervisory resources for all financial sectors is key to boosting effectiveness and responsiveness. We have sought additional resourcing to do this – a point that will be considered by the Government as part of Phase 2 of its review.

Within this framework the key question is how we establish a rigorous and fair baseline of resilience for prudential regulation. Again it's the goldilocks question, what is too risky, too safe, and just right? In the end it is a judgement based on experience, analysis and consultation.

For example, we require non-life insurers to hold sufficient capital reserves or reinsurance to cover liabilities for a 1 in 1,000 year catastrophe event. We have set the bar high relative to global insurance standards due to New Zealand's vulnerability to natural disasters and to promote public confidence in our insurers.[15]

Capital review

In the case of banks we are currently reviewing the capital adequacy framework.

The aim of the capital review is to identify the most appropriate framework for setting bank capital requirements – the amount of capital banks have to absorb losses – taking into account both how our current framework has operated and international developments.

There are several guiding principles. One is that capital requirements should be conservative, reflecting the importance to New Zealand of sound credit ratings, given our reliance on offshore borrowing and susceptibility to international shocks. Another is that capital requirements should be set in relation to the risk of bank exposures. This is particularly important for New Zealand, where banking sector assets account for the majority of total financial system assets and are concentrated in housing and agricultural lending.

[14] Earlier this year the Reserve Bank launched the Bank Financial Strength Dashboard. It allows financial information to be compared across banks. The aim is for the Dashboard to improve bank disclosure and public awareness and to make it easier for banks to benchmark themselves against each other.

[15] On the other hand, our monitoring and oversight of insurance company risk-taking and compliance is limited. We have only 10 supervisors and actuaries overseeing around 90 insurance companies.

Our aim in setting minimum capital ratios and buffers is to ensure that the banking sector can absorb shocks, maintain market confidence, and continue to supply credit during times of economic stress. In other words, we take a systemic and through-the-cycle view of prudential regulation. This reduces the risk of spillover from the financial sector to the real economy.

Soundness is not easily translated into a single, quantifiable benchmark against which performance can be monitored. The academic literature and various countries' prudential reforms since the GFC suggest there is a wide range of views on the optimal quantity and quality of capital for a banking system. Indeed, the literature generally suggests that 'optimal' capital is not only higher than regulatory minimums, but can also span quite a wide range. The literature is therefore helpful in pointing to the direction that regulatory capital should travel, but not the destination.

We are naturally cautious in how we think about risk to the banking sector. We operate in the uncertain: the origin of the next crisis is unknown. And as alluded to earlier, a banking crisis would have significant costs for ordinary New Zealanders that would persist for years, in terms of economic output, public debt, employment and welfare.

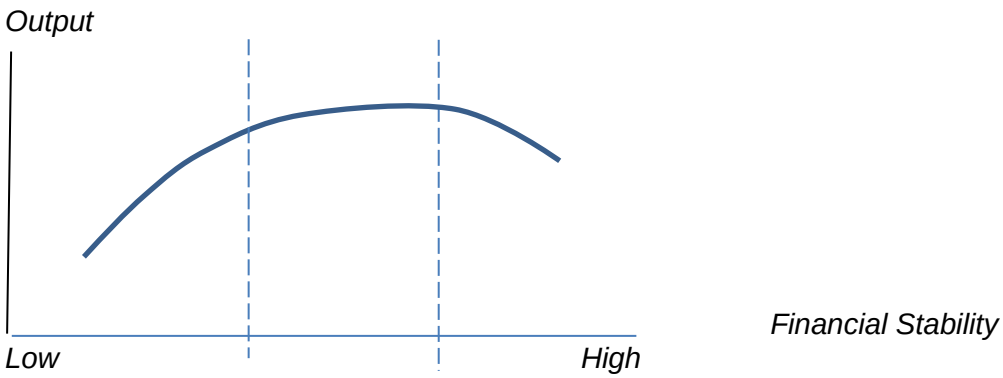
There is a good argument that there are soundness and efficiency gains to be made by requiring banks to hold more capital – within reason. More capital would help deliver both greater certainty, and higher expected output (before and after a crisis).

This is illustrated by figure 5, where the level of financial stability is measured on the X axis and the expected output is measured on the Y axis.

At some point more certainty comes at a cost, though this may be justifiable if we desire greater certainty. However based on the literature and the views of other regulators it would seem that we are a long way from that trade off.

Some will argue that certainty comes at a price – that share capital is a more expensive form of funding than debt. There is a debate as to how high that price really is. And we need to weigh those private costs against the social costs of a crisis.

Figure 5
A framework for thinking about our policy goal



The question remains, how much certainty do we want, how risky do we want our financial system to be in the long-term? Goldilocks returns with the same question what level of financial stability is too risky, too safe, or just right?

To answer this we need to think about our risk tolerance for crises.

Stress tests

One input into informing the Reserve Bank's risk tolerance is stress testing.

We ask banks to consider what would happen in the event of a severe but plausible hypothetical scenario, with macro-economic outcomes that are broadly similar to the financial crises discussed earlier.[16]

By quantifying the impact of this scenario on bank balance sheets and profitability, the stress tests help us to understand whether the amount of capital banks hold is enough to absorb losses under that scenario and to better understand risks to financial stability. They are also used to support banks in developing their own risk management practices.

Stress tests are an important lens on both the capital adequacy of banks and on our own risk tolerance. They can help us to explain to the public the sorts of tail events that we worry about, and assist participants and the public in understanding the resilience of individual institutions, and the financial system as a whole, to those risks.

That said, there is no direct link between stress tests and our banks' capital requirements. Interpreting their implications for system resilience requires many judgements, including on the levels of capital necessary for individual banks to maintain market confidence.

Stress tests can't cover all risks, or the right risks happening at the same time to all banks. It is just one scenario. And banks know how the stress scenario will play out in advance, which makes it more contained than it would be in practice.

The GFC taught us that a synchronised global downturn can happen very quickly and what was thought truly exceptional (ie the Great Depression) might not be so improbable. It is difficult to capture the real-world complexities of a financial crisis within formal modelling approaches used for stress testing.

Liquidity

The GFC also demonstrated that the dangers to our banks may not lie just in the quality of their asset portfolios but in their ability to roll-over their funding, and at what cost. In other words liquidity can be the catalyst for financial stability risk.

Our liquidity policy requires banks to maintain specified ratios of expected net cash inflow or outflow. It is intended to reduce the likelihood that an individual bank needs to call on us as the lender of last resort, and ultimately reduce the risk of a bank failure.

Our minimum standards for liquidity risk also reflect the highly concentrated nature of our banking system and its reliance on foreign funding. We intend to review our liquidity standards next year, in light of new Basel Committee liquidity requirements.

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[16] To date these exercises have centred on the four largest New Zealand banks – reflecting that they account for around 90% of banking system assets. The scenario we used for the stress test in 2017 set a high bar. It asked banks to consider how they would fare if there was a downturn in the Chinese economy, collapse in demand for commodity exports, a rapid increase in unemployment, a 35% fall in house prices, a two notch downgrade in their credit rating downgrade, a spike in funding costs, and a significant misconduct event related to residential mortgages. The results of the 2017 stress test suggest that the four main New Zealand banks could absorb material losses in a downturn while remaining solvent.

Adapting to emerging risks

Establishing a baseline standard of resilience is not a set-and-forget exercise. It needs to be re-visited from time to time to ensure it is still appropriate – as we are doing with our capital review and as we will with our liquidity review next year.

We also need to remain aware of changes in risks across the financial system – for example, when intense competition leads to dilution in lending standards, or irrational exuberance leads to credit and asset booms. We need a macro view of emerging risks that reinforces the baseline prudential settings.

Credit-fuelled housing booms are a good example of this elevation of risk. They have been common in the lead-up to financial crises in advanced economies in recent decades.[17]

The purpose of macro-prudential policy is to lean against these time-varying risks. Our objective is to address emerging systemic risks by increasing the resilience of the domestic financial system and countering instability that arises from credit, asset price or liquidity shocks.

As agreed with the Minister of Finance in the 2013 Memorandum of Understanding, we have four tools to implement macro-prudential policy: the countercyclical capital buffer, sectoral capital requirements, the core funding ratio and loan-to-value restrictions (LVRs) (see figure 4).

The first three tools increase the resilience of banks directly. Mortgage lending policies like LVRs – and Debt-to-Income (DTI) ratios, which are yet to be included in our toolkit – limit the amount of lending banks can do within defined parameters in order to promote soundness.

As for baseline standards, the use of macro-prudential tools may require trade-offs between soundness and efficiency,[18] between financial stability and output. And as for the baseline standards we operate in conditions of considerable uncertainty. During an economic boom, it is often hard to tell whether easing lending standards or rapid credit growth is justified by strong economic fundamentals and whether swings in capital allocation are efficient or not.

We aim to deploy and calibrate the right macro-prudential tool to address both the perceived risk and the efficiency implications, whether by changes to banks' capital requirements or influencing lending behaviour.

To date we have only deployed the LVR tool, in response to rapid house price growth and the sharp increase in the provision of high LVR loans – that is loans with relatively small deposits. The Reserve Bank's speed limit on high-LVR loans has been an important mitigant to the significant increase in financial system risks associated with mortgage loans over the past five years. By improving the resilience of household balance sheets, the policy is expected to lower the numbers of households that are forced to sell their house or significantly reduce expenditure in a severe downturn.

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[17] In the five years prior to the start of the GFC, house prices increased about 60 percent in the UK and 40 percent in the US. In the following five years, prices fell about 15 percent in the UK and 36 percent in the US.

[18] Measures may improve both efficiency and stability. In the case of 'irrational over-investment', externality costs exist with consumers and investors taking insufficient account of costs imposed on others from the increased risks of failure or recession, while capital misallocation also occurs. In this case stability and efficiency would both be increased through macro-prudential measures.

Our risk tolerance for the recent housing and credit boom is implied by our calibration of the LVR restrictions.[19] We keep these settings under review and will publish our next assessment of them in the upcoming FSR. The question we are assessing is whether the same restrictions are needed in the current environment where debt levels remain high but are not deteriorating, now that bank lending standards have tightened significantly and rapid growth in credit and house prices have stabilised. If these conditions continue, we expect to gradually ease the policy in coming years.

The other macro-prudential tools also have an important role to play. For example, a counter-cyclical capital buffer would increase bank capital, and thereby improve banks' resilience to a crisis when risks are heightened; and reduce the extent of deleveraging by banks in a downturn, thus improving efficiency by mitigating the effects of the boom-bust cycle on the wider economy. The role of counter-cyclical buffers in supporting our financial stability objective overlaps with, and is a part of, the work we are doing in our capital review, as it is important that the prudential and macro-prudential capital framework support each other and operate harmoniously.

Our thinking on these macro-prudential tools continues to evolve. We are also refreshing our macro-prudential strategy drawing on our experience since the MOU was put in place. The aim of this refresh is to clarify when and why we would use the different tools. We intend to communicate clearly and consistently on macro-prudential policy in order to improve people's understanding and expectations, and to support our accountability for the implementation of macro-prudential policy and its effects.

Emerging risks to financial stability

Unsurprisingly our focus in recent times has been on our main vulnerabilities: household indebtedness, the dairy sector and our foreign liabilities. But the financial system can become exposed to many other types of risks over time, in response to structural changes in regulation, technology, market structure or the physical environment. Some examples include conduct, cyber, climate change and FinTech.

As we have seen in the UK and the US in the wake of the GFC, conduct and operational risk can have significant prudential impacts. In New Zealand our 2017 stress test scenario demonstrated the potentially significant impact that a failure to comply with responsible lending obligations could have for local banks.

The reputational and financial impacts of misconduct are now playing out in Australia in the wake of the Australian Royal Commission into misconduct in the banking, superannuation and financial services industry. Our own Culture & Conduct Review, carried out jointly with the FMA, is an example of how we understand and manage these risks adequately.

Cyber attacks are another dimension of operational risk. They pose a significant threat to the global financial system, as shown by the 'WannaCry' ransom-ware attack, the 'Notpetya' attack and the cyber-heist of the Central Bank of Bangladesh. We continue to work with banks, whose interests in this area are aligned with our own. Given this, and the pace of change, we are not developing policy specifically for the control of cyber risk. Our focus is on

[19] At the time the LVR restrictions were introduced, high (>80%) LVR loans exceeded 20 percent of all outstanding loans, while nearly one in three new loans were high LVR loans. We consider those proportions implied excessive risk. We have slightly relaxed the rules such that they currently permit banks to make up to 15% of their new lending to owner occupiers with a deposit of 20% or less, and 5% to investors with a deposit of 35% or less.

the resilience and business continuity dimensions of bank operations, and the security of the payment and settlement systems that the Reserve Bank operates.

Climate change presents significant financial stability risks both through the direct implications of physical events for insurers, farmers and households, the indirect effects on insurance availability and property values, and through the potential social and economic disruption it promises.[20]

We are working on developing a climate change strategy, which will be informed by discussions with banks and insurers in due course. Our role as a regulator is to try to ensure that financial institutions are adequately managing these risks, even though the horizon for their realisation could be decades away.

FinTech presents opportunities for banks and consumers as well as for financial stability. We are engaging with industry and we are willing to help where we can. FinTech can contribute to both the soundness and efficiency of the financial system, whether through improved payment systems or a greater diversity of institutions, and by implication fewer systemically important entities. Consumer benefits could be substantial as a result of increased availability and speed of services, greater competition and reduced costs of payments.

However, initiatives like open banking also create risk – some financial institutions may not adapt to the new environment as quickly as others; and liquidity could become more volatile. We also need to be on guard against the emergence of a shadow banking sector, structured to sit outside our regulatory perimeter, and on the need to have the right powers and tools – an ongoing issue for financial market infrastructures.

As the regulator we need to remain aware of these risks, watch for those emerging, and react appropriately so as not to forestall desirable innovation.

Conclusion

Financial stability matters a lot. Crises have significant costs for the financial system, the wider economy and all New Zealanders. Small open economies can be overwhelmed by large and volatile capital flows and they can be stifled when markets freeze up.

New Zealand has fared better than most over the last thirty years and the Reserve Bank's independence and price and financial stability objectives have been a key contributor to that.

We believe our risks are manageable, should a downturn occur. But the risks to our financial system are none the less real.

We take a fairly cautious and long-term view to achieve both soundness and efficiency. In doing so, we do not want to stifle innovation or new entrants. And we do not operate a zero-failure regime.

We must remain alert to our structural vulnerabilities: our high levels of household indebtedness, our exposure to commodity prices and our banks' reliance on overseas funding. Our role and oversight of the financial system mean that we are well placed to do this.

Last year's FSAP endorsed much of what we do while also recommending we strengthen our supervisory approach – which we have started to do through thematic reviews. It

[20] A forthcoming RBNZ Bulletin article will survey these risks.

recommended bolstering our macro-prudential framework by including a debt-to-income (DTI) tool.

And Phase 2 of the Government's review is an opportunity for all New Zealanders to consider the Reserve Bank's mandate, its powers, governance and independence. The capital review gives us all an opportunity to think again about our risk tolerance – how safe we want our banking system to be; how we balance soundness and efficiency; what gains we can make, both in terms of financial stability and output; and how we allocate private and social costs.

It may be that the legislation underpinning our mandate can be enhanced, for example, by formal guidance from government or another governance body, on the level of risk of a financial crisis that society is willing to tolerate.

So what is too risky, too safe and just right?

Answering that question is undoubtedly challenging. It needs to be constantly considered. The costs of crises may seem theoretical while the benefits from stability accrue over the long-term and are not easily quantifiable. But it is important to address these challenges front on, openly and transparently to ensure we can fulfil our financial stability objective and all New Zealanders benefit from us getting the answer just right.

Thank you.

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