

Bulletin

How risk weights affect bank lending

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Key points

- Risk weights help determine the amount of capital a bank is required to have. Banks are required to have more capital, such as equity, for riskier loans to provide a larger buffer to absorb losses. Setting risk weights accurately is important for ensuring banks have sufficient capital in relation to the riskiness of their lending, reducing the likelihood of failure. By reflecting the risks of underlying lending, risk weights also minimise any distortions capital requirements might have on the allocation of lending across different sectors.
- Our framework for calculating risk weights is based on the internationally developed Basel framework. Under this framework, there are two approaches used for calculating risk weights. Under the Standardised approach, risk weights are set based on the broad characteristics of loans, such as loan-to-value ratios. Under the Internal Ratings-based (IRB) approach banks are allowed to calculate risk weights at the individual loan level using internal risk models, providing a more precise measure of the riskiness of each loan.
- The Standardised approach is simple to implement but is less accurate at measuring the riskiness of a bank's lending. The IRB approach is granular and aims to more accurately assess risk, but requires significantly more modelling capability, data and resources. In New Zealand, the four largest banks are accredited by the Reserve Bank to use the IRB approach for some of their lending. The Reserve Bank must approve the models used by IRB banks. We use a range of data sources and approaches, such as stress testing, to validate these banks' internal models.
- Risk weights calculated using the IRB approach are on average lower than those using the Standardised approach. Our framework includes several features to ensure any potential competitive advantages the IRB approach could create are minimised. For example, as part of the Capital Review we put a floor on outcomes from the IRB approach of at least 85 percent of the equivalent from the Standardised approach.
- Risk weights may potentially affect the supply of credit provided by banks and the interest rate charged to customers for different types of loans, e.g. mortgages or business lending. However, domestic and international evidence suggests that the impact of risk weights on credit supply and pricing is low compared to other factors.
- Lowering risk weights to promote lending in particular sectors would likely only have minor effects on loan pricing and the supply of credit. At the same time, such changes could undermine financial system resilience. Alternative policy initiatives such as government guarantees can reduce the amount of capital needed for certain loan types by reducing the underlying risk faced by the lender. This has the effect of reducing risk weights without undermining bank resilience.

1. Introduction

The banking system plays a key role in supporting economic activity by allowing households and business to make payments, save and obtain credit. Bank failures can cause significant disruption to the financial system and the wider economy. International evidence indicates that banking crises can have significant and long-lasting impacts, both in terms of lost economic output and fiscal cost.¹

The Reserve Bank's prudential objective is to protect and promote the stability of New Zealand's financial system, to ensure that New Zealanders can have confidence in making payments, saving and having access to credit. We do this through our role as the prudential regulator and supervisor of banks and other deposit takers.²

A key requirement for banks is minimum capital requirements. A bank's capital is the buffer that allows it to absorb losses while still being able to repay its debt and deposits in full. In the absence of minimum capital requirements, the levels of capital held by banks may be lower than is socially optimal. Creditors including depositors would be insufficiently protected, potentially undermining confidence in the banking system.

We require banks to apply risk weights to their lending to determine the amount of capital they need for those exposures. Lending with higher risk characteristics attracts higher risk weights, increasing the capital buffer a bank has for potential losses they could make on that lending. Having risk weights that accurately capture the relative riskiness of different types of lending is an important part of promoting the resilience of banks and the financial system as a whole.

By reflecting the risks of underlying lending, risk weights reduce any distortions capital requirements might have on the allocation of lending across different sectors of the economy.

It is sometimes suggested that differences in risk weights act as a barrier to some types of lending, or that they bias bank lending towards particular sectors. For example, business lending attracts higher risk weights than residential mortgage lending, which may disincentivise business lending for a bank with constrained capital resources.

This *Bulletin* examines the role and purpose of risk weights, how we assess their calibration, the extent to which they impact banks' lending decisions, and the possible effects on financial stability of adjusting risk weights to achieve broader economic or social objectives. It concludes that any such changes would be inconsistent with the legal underpinnings of the capital framework, would only lead to marginal if any benefits, and could undermine financial stability.

2. What are capital requirements and risk weights?

Bank capital is a key prudential requirement that promotes financial resilience

Capital is a key financial buffer that allows banks to absorb unexpected losses on their lending, allowing them to continue to repay their debts and depositors.

¹ See, for example, Brooke et al (2015).

² Under the Deposit Takers Act 2023, we are moving to a single regulatory regime for bank and non-bank deposit takers.

In New Zealand, banks are subject to minimum capital requirements set by the Reserve Bank. Shareholders' equity in the bank is the main source of bank capital, which can be supplemented with certain other types of equity and debt instruments. A bank's capital is a key metric of its financial health, as capital stands first in line to absorb any financial losses the bank makes, ahead of other creditors such as depositors. It is a common misconception that capital is money that banks "set aside" and which cannot be used to lend to customers. However, capital is part of a bank's funding.

Even in the absence of regulatory requirements banks would choose to operate with some level of capital, for example to obtain a favourable credit rating, maintain access to funding markets, and to withstand unexpected losses. However, the quantity of capital a banks' management and shareholders would choose to operate with may be lower than is socially optimal. This can be because the costs of a bank failure are borne by others (for example, if deposits are protected by a compensation scheme). The failure of large banks can also have negative effects on the wider economy through a reduction in the availability of credit. Regulators impose minimum capital requirements so that banks have a level of capital that reduces their likelihood of failure to a level that minimises risks to financial stability, while not creating excessive costs to financial intermediation in the economy.

The amount of capital we require is set as a ratio of a bank's risk-weighted assets (RWA), which is a measure of the risk the bank faces across three categories:

- **Credit risk** – the risk of loss arising from a borrower defaulting on their loan.
- **Market risk** – the risk of loss a bank faces due to movements in market prices, such as interest rates, exchange rates, and equity values.³
- **Operational risk** – the risk of loss resulting from inadequate or failed internal processes, people, and systems, or from external events such as cyber attacks.

Minimum capital ratios are expressed as the amount of capital a bank has as a percentage of its RWA. A higher capital ratio means that a bank is more resilient against a given level of risk, as measured by its RWA. New Zealand banks' capital ratios are increasing as part of our 2019 Capital Review, which is increasing the level of resilience of the banking system.⁴

Our capital requirements are based on the internationally developed Basel Framework

International standards for bank capital requirements are set by the Basel Committee on Banking Supervision (BCBS), which is comprised of 45 central banks and prudential regulators from around the world. The standards for determining RWA are incorporated into the Basel Framework, which has been continuously developed since the 1980s. Basel III was introduced in 2010, incorporating lessons from the GFC.⁵ The most recent revisions were finalised in 2019 and are being implemented by regulators currently.⁶

³ There are some differences between the market risk policy applied by the RBNZ and the Basel III approach to market risk used in many other countries. The Basel III framework only covers market risk caused by interest rate volatility on the trading book part of banks' balance sheets. In New Zealand and Australia, market risk-weighted assets are calculated to measure the risk exposure on banks' entire balance sheet including interest rate risk in the banking book.

⁴ [Capital Review - Reserve Bank of New Zealand - Te Pūtea Matua \(rbnz.govt.nz\)](https://www.rbnz.govt.nz/capital-review)

⁵ See Barker (2015) and Hunt (2016) for a description of the RBNZ's implementation of the Basel III capital requirements.

⁶ See <https://www.bis.org/bcbs/basel3.htm?m=76>

The Basel Framework is not a set of prescriptive rules, and there is flexibility for regulators to adapt the rules to the specific structure of their financial system.⁷ We are not a member of the BCBS, but our capital adequacy framework is influenced by the Basel Framework. This reflects that:

- the Basel Framework incorporates technical expertise from a range of leading regulators;
- consistency with the Basel Framework supports international understanding of the financial position of New Zealand's banks, for example by rating agencies and wholesale markets; and
- many New Zealand banks are part of international banking groups that operate under the Basel rules implemented by their home country regulator.

The framework applies risk weights to recognise credit risks on different types of lending

Under the Basel Framework there are two approaches to calculating risk weights for credit risk. These are:

- **Standardised approach** – Under the Standardised approach risk weights for different categories of lending are set by the regulator. For example, for a standard residential mortgage loan, we require banks to use risk weights varying from 35 to 100 percent, depending on factors including whether or not the loan is for property investment, and the loan-to-value ratio (LVR) on the loan. For most business and personal loans, a uniform 100 percent risk weight is applied. A key feature of the Standardised approach is its simplicity, which makes it easy and less costly to implement for smaller banks. However, it may not precisely reflect the risk characteristics of a bank's lending portfolio.
- **Internal ratings-based (IRB) approach** – Given that Standardised risk weights vary according to a limited range of factors, they are limited in how accurately they can reflect the true risk of a bank's lending. Banks accredited to use the internal ratings-based (IRB) approach use internal models to calculate risk weights for individual loans, based on that loan's risk characteristics.⁸ A key aim of the IRB approach is to allow for greater granularity in banks' capital adequacy calculations (see Box 1 for more details on how banks calculate RWA under the IRB approach). This granularity means that risk weights better reflect the risk characteristics of a bank's lending portfolio. However, the IRB approach is significantly more resource intensive, with more data and credit risk modelling required, which makes it more costly to implement than the Standardised approach.

Our prudential framework sets out the requirements for banks to be accredited to use the IRB approach. This includes both modelling requirements, such as data quality and modelling resources, and non-modelling requirements, including frameworks for modelling governance and validation.⁹

⁷ For BCBS committee members, implementation of the Accords is reviewed through its Regulatory Consistency Assessment Programme (RCAP). As New Zealand is not a committee member, it is not subject to these reviews.

⁸ This can also be expressed as a risk weight by dividing RWA by the bank's estimate of the size of the credit exposure it has to that borrower.

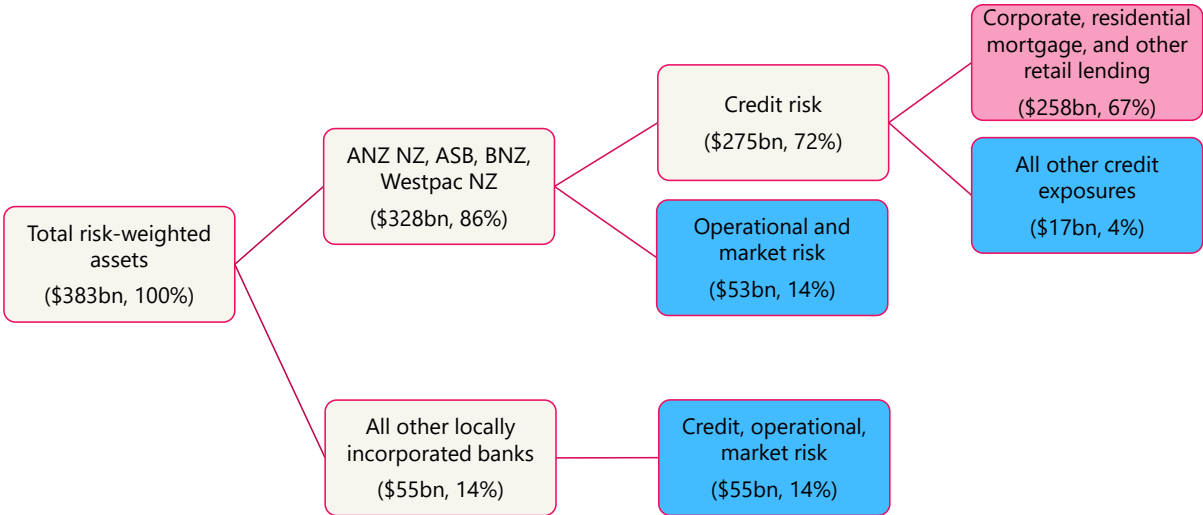
⁹ More details on the minimum prudential requirements for implementing the IRB approach are in BPR133 ([IRB credit risk RWAs](#)) and BPR 134 ([IRB minimum system requirements](#)).

In addition to using internal models to calculate their regulatory capital requirements, accredited banks also need to demonstrate the use of their credit risk models in their broader risk management, loan approval and corporate governance processes.¹⁰

In New Zealand the four largest banks (ANZ New Zealand, ASB, BNZ and Westpac New Zealand) have been accredited to calculate RWA for credit risk using the IRB approach for corporate, residential mortgage and other retail lending such as credit cards. This represents around 67 percent of total RWA in the New Zealand banking system (figure 1). For other types of lending, these four banks use the Standardised approach.

Other locally incorporated banks use the Standardised approach to calculate their RWA for credit risk. For all banks, a Standardised approach is used to determine RWA for operational and market risk.

Figure 1: Components of risk-weighted assets in the New Zealand banking system (June 2024)



: determined using banks' approved internal models

: determined using the Standardised approach

Source: RBNZ Capital Satellite Survey

Note: Percentages are the proportion of total RWA across all banks.

¹⁰ For example, IRB credit risk models feed into approval decisions and loan pricing for non-retail lending. The purpose of this "use test" is to ensure that a bank's internal models form an integral part of the bank's credit risk management, as opposed to simply being a tool for calculating regulatory capital requirements.

Box 1: Components of the IRB approach

Banks accredited to use the IRB approach use several outputs from their internal models to determine their RWA. These are:

- **Probability of Default (PD)**
 - PD is the likelihood that a borrower will default on their loan, which is defined as being more than 90 days in arrears and/or where the bank considers it unlikely the borrower will pay their obligations in full. For the purposes of regulatory capital requirements, PD is measured as a “through the cycle” probability, i.e. based on the likelihood of default across a range of economic circumstances, not only the probability at the current point in time. This means that a bank needs to maintain capital for its lending during favourable conditions, avoiding the need to quickly raise capital in an unexpected period of stress.
 - PDs for retail portfolios, such as residential mortgages and credit cards, are based mainly on statistical models, given the typically large number of customers and data points available. PDs for non-retail lending, such as corporate and commercial property loans, will augment statistical analysis with expert judgement based on the bank’s experience with lending to that portfolio, given the smaller numbers of borrowers and therefore more limited data samples. In both types of models, estimates of a borrower’s PD depend on a range of factors, such as:
 - **Financial factors** – The financial position of a borrower is strongly linked to their likelihood of default. For example, the ratio of a borrower’s debt servicing costs to their income indicates how well they would be able to cope with either a decline in income or higher interest rates. The loan-to-value ratio can also indicate how much capacity a borrower would have to restructure their lending and avoid a default if they encounter financial difficulties.
 - **Behavioural factors** – A borrower’s previous behaviour may give insights into their probability of defaulting in the future. For example, the usage of overdraft facilities or the number of times they have applied for credit limit increases.
 - **Judgemental factors** – Banks may use subjective or judgement-based factors into their assessment of the probability of a loan defaulting. For example, for a business loan they may include a qualitative assessment of management quality.
 - In practice, banks’ models commonly assign PDs to loans based on an internal credit rating scale. For example, a bank may have a rating model for its farm lending portfolio which uses the risk factors described above to assign a customer a rating grade on a scale between 1 to 9. Each of these internal rating grades has a corresponding PD estimate which is used in the RWA calculation. The internal rating grade will also be used by the bank for credit risk management purposes, including portfolio monitoring and making credit decisions (e.g. a bank may set a policy of only granting new credit to customers rated 5 or better on the rating scale).

- **Loss given default (LGD)**

- LGD is the proportion of a loan that the bank would be unable to recover if a borrower defaults. The LGD for secured loans such as mortgages is usually lower than for unsecured borrowing, such as credit card lending, since the bank can recover some of the funds by selling the borrower's collateral (e.g. through a mortgagee sale). Like PD, LGD will likely vary over economic and asset price cycles. For determining regulatory capital requirements LGD is estimated for an economic downturn period, a period when asset prices and therefore loan recovery rates are likely to be lower. Estimates of LGD are usually based on statistical models that use historical losses for different loan and collateral types. In some cases, banks may not have enough historical data on loss rates during some types of economic downturns to rely on statistical models, so they need to apply judgemental overlays on their loss estimates.

- **Exposure at Default (EAD)**

- EAD estimates how much debt will be outstanding when a borrower defaults. For term loans, EAD will be closely related to the current balance and any scheduled repayments. For revolving credit facilities, such as an overdraft or a credit card, the exposure will be how much of the facility is used up when a borrower defaults, which depends on both the amount currently drawn by a borrower plus an estimate of how much of any undrawn amounts will be drawn down at the point of default. Banks use a credit conversion factor (CCF) to estimate how much of the undrawn amount will be used. For example, a borrower has a \$1000 overdraft, of which \$400 has been drawn down. If the bank uses a 50% credit conversion factor, the estimated exposure at default will be $\$400 + 0.5 \times \$600 = \$700$.

Taking these components together, banks distinguish between expected and unexpected credit losses:

- Expected loss can be calculated as $PD \times LGD \times EAD$.¹¹ Expected losses are what a bank will predictably lose on its lending on average over time and are therefore typically accounted for in a bank's loan pricing and provisions on an ongoing basis.
- Unexpected loss refers to the losses a bank could potentially make in excess of expected losses, due to unforeseen or extreme events such as a severe economic downturn. Unexpected losses represent the most extreme outcomes and, as they are not predictable, are covered by a bank's capital resources.

In the IRB approach banks use formulas specified by the regulator, along with their PD, LGD and EAD estimates, to determine an RWA value that will ensure the bank has sufficient capital to withstand unexpected losses up to a specified confidence level.¹² Under the IRB approach, the risk weight is equal to RWA divided by EAD.

¹¹ Expected Loss is $PD \times \text{Loss in the event of default} + (1-PD) \times \text{Loss if no default}$. We assume there is no loss if a borrower does not default, so Expected Loss becomes $PD \times (LGD \times EAD)$.

¹² For further details of the IRB formulas, see "An Explanatory Note on the Basel II IRB Risk Weight Functions", July 2005, <https://www.bis.org/bcbs/irbriskweight.pdf>.

The IRB approach increases the granularity and accuracy of risk weights

Since IRB banks model the risk characteristics of each loan they can produce risk weights that more accurately reflect a borrower’s individualised credit risk.

Figure 2 shows the risk weights for the four IRB banks’ residential mortgage portfolios, split across the owner-occupier/investor and loan-to-value ratio (LVR) dimensions, as well as a comparison to the Standardised approach

Loans with LVRs below 60 percent are well secured and will tend to be older and therefore have stronger debt servicing ratios, for example due to borrower income growth and principal repayments since they took out the loan. Average risk weights for this category are in the 10 to 15 percent range. This compares to higher LVR loans, which on average receive IRB risk weights in the 60 to 90 percent range. The relationship between LVR and risk weights is stronger in the IRB approach than the Standardised approach.

At any given LVR investor loans have higher risk weights. This partly comes about because of changes we made to calibration of the IRB framework in 2015, aiming to ensure that investor-related risks were being appropriately captured in our capital requirements.¹³

Figure 3 plots the range of IRB banks’ farm lending models, across four LVR bands, and a comparison to the Standardised approach (which applies a 100 percent risk weight). Similarly to residential mortgages, risk weights rise as borrowers’ LVRs increase. The average risk weight for a farm loan with an LVR below 40 percent is 28 percent, which compares to an average risk weight of 109 percent for loans with LVRs above 60 percent.

Figure 2: Average risk weights for residential mortgages, by loan-to-value ratio and borrower category (June 2024), IRB and Standardised

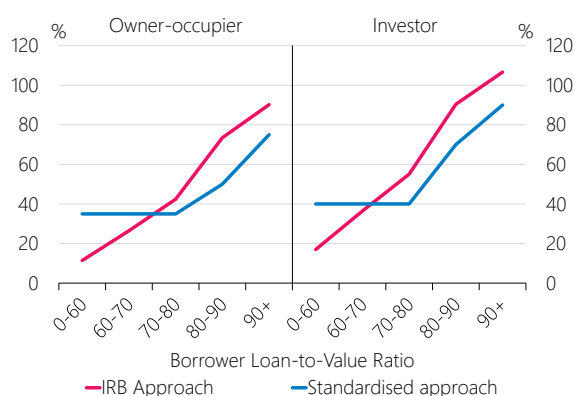
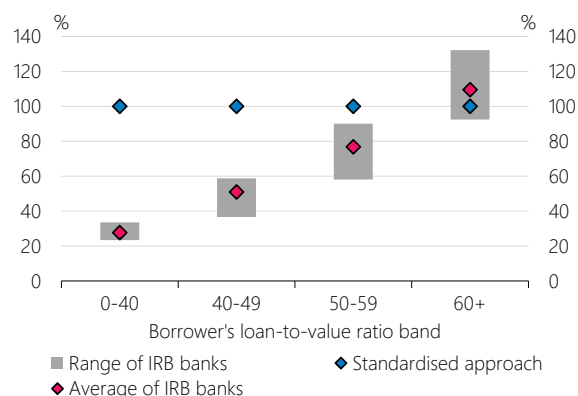


Figure 3: Average risk weights for farm lending exposures, by loan-to-value ratio (June 2024), IRB and Standardised



Source: RBNZ analysis of RBNZ *Capital Satellite Survey* returns.

¹³ See <https://www.rbnz.govt.nz/hub/news/2015/03/bank-consulting-on-property-investor-loans>

Risk weights differ between the IRB and Standardised approaches

RWA outcomes under the IRB approach on average have tended to be lower than those under the Standardised approach, reflecting several factors:

- The Basel Committee's initial calibration of the IRB approach incorporated a small discount in RWA on average, compared to the Standardised approach.¹⁴ The Standardised approach is less precise at measuring credit risk and needs to accommodate a wide range of institutions of varying complexity. This justifies having more of a safety margin built into RWA outcomes than the IRB approach, where risks are modelled at a more detailed level, using more extensive data.
- IRB outcomes can vary over a macroeconomic cycle, with risk weights tending to be lower in benign conditions. Though the components of the IRB calculation (PD, LGD and EAD) are intended to capture a long-run view of a portfolio's riskiness, it is difficult in practice to remove all influences of current economic conditions. For example, rising house prices and declining interest rates over the 2010s in New Zealand contributed to declining mortgage lending risk weights.

Other technical factors mean that risk weights are not directly comparable between the IRB and Standardised approaches. Standardised risk weights reflect a total loss concept, whereas IRB risk weights reflect only unexpected losses, with expected losses instead deducted from an IRB bank's capital. In addition, the credit exposure amount, i.e. the denominator of the risk weight, is calculated differently under the two approaches.¹⁵

Our capital framework aims to mitigate excessive differences between the two approaches

Several features of our capital framework aim to reduce excessive or unjustified differences in RWA outcomes between IRB banks and to Standardised banks:

- **Oversight** - All changes to IRB models, including the introduction of new models, and changes to how existing models are applied, must be approved by us before they can be implemented. We assess model changes against criteria including conservativeness, appropriateness of data, methodological sophistication and meaningfulness of risk differentiation (i.e. the model includes variables that identify the relative risk of different borrowers). Model reviews also compare proposed outcomes to peer bank models and the Standardised approach, where relevant.
- **Floor on IRB outcome** - Since January 2022 we have imposed a floor on the IRB approach that means that total RWA calculated using IRB models can be no less than 85 percent of the equivalent RWA that the bank would calculate using the Standardised approach. The floor is calculated at an aggregate level across all of a bank's modelled loan portfolios. We calibrated the floor at a higher level than that in the Basel Framework (72.5 percent).
- **Scaling IRB risk-weighted assets** - As part of our Capital Review changes, a scaling factor applied to IRB RWAs has increased from 1.06 to 1.2 since October 2022. This has the effect of uniformly increasing IRB risk weights while preserving their risk differentiation across different

¹⁴ See <https://www.bis.org/press/p060524.htm>.

¹⁵ For more information on the difference between standardised and IRB risk weights, see pg.22 of https://www.apra.gov.au/sites/default/files/response_to_submissions_-_revisions_to_the_capital_framework_for_adis_0.pdf.

credit exposures. The aim of the increased scalar was to further reduce aggregate differences between the two approaches.

- **Disclosure** - Starting from July 2024 we have required IRB banks to publish 'dual reporting' of outcomes under both IRB and Standardised approaches. This helps to improve the transparency of the IRB approach.¹⁶

These mitigants aim to ensure that the IRB approach delivers risk-sensitive capital requirements for accredited banks while reducing potential competitive advantages the IRB approach could create compared to the Standardised approach.

3. Are risk weights consistent with banks' actual credit risk?

Historical data are not available for periods of severe credit losses in New Zealand

Risk weights should reflect the degree of credit risk a bank is exposed to across different borrowers and portfolios. A challenge with validating the accuracy of risk weights and capital settings more generally is that economic and credit cycles tend to be infrequent. This means there is only limited relevant data on credit losses for the types of very severe downturn events that banks' regulatory capital is intended to provide a buffer against.

Detailed data on credit losses in the New Zealand banks are generally only available from the early 2000s onwards, and so do not capture periods of elevated stress such as the early 1990s recession. The Global Financial Crisis in New Zealand is a relevant benchmark for IRB modelling, however actual credit losses were tempered by significant falls in interest rates (which eased debt servicing burdens), and a recovery in asset prices by 2010. As such, New Zealand's GFC experience was not the type of "perfect storm" of increased debt servicing stress and declining loan collateral values that is useful for accurate credit loss modelling.

We use a range of approaches to validate our risk-weight settings

With that said, there are several methods and benchmarks we can use to assess the appropriateness of risk weights, including:

- International comparisons to risk weights (and model inputs, i.e. PD and LGD) used by banks in other countries where we consider the portfolios, lending standards, and other factors are broadly comparable to New Zealand.
- Validation of banks' PD and LGD estimates against the milder stress events that banks have good data for, such as the GFC, the 2015-2016 downturn in the dairy industry, and the initial impact of the COVID-19 pandemic in 2020. These more moderate episodes can still be useful for identifying the relevancy of different risk drivers for different credit portfolios. For example, some banks revised their farm lending models based on lessons from how different types of dairy farms handled the 2015-2016 downturn. At a portfolio level, data such as non-performing loan ratios can also provide insights into whether the relative risk weights for different portfolios are consistent with their observed credit performance.

¹⁶ [Capital Review dual reporting and other changes to bank disclosure statements](https://www.rbnz.govt.nz/capital-review/dual-reporting-and-other-changes-to-bank-disclosure-statements) - Reserve Bank of New Zealand - Te Pūtea Matua ([rbnz.govt.nz](https://www.rbnz.govt.nz))

- Comparisons of IRB model estimates to stress test outcomes and other types of simulations. New Zealand banks have developed their stress testing capabilities over the past two decades and now regularly run tests to see how their credit portfolios would perform across a wide range of scenarios. Stress testing models typically employ different methodologies to IRB models but can serve as a useful benchmark.

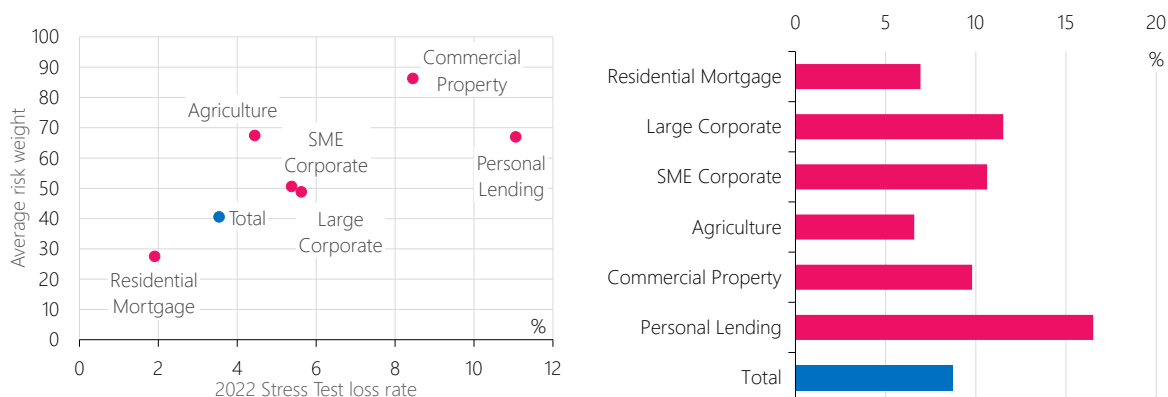
Stress test modelling provides useful insights into the relative risk weights on different types of lending

A key question is whether the risk weights on different credit portfolios reflect the *relative* riskiness of that type of lending. If so, the capital framework will be minimising any distortive impacts it may have on banks' lending decisions and credit allocation.

Using data from our 2022 Solvency Stress Test, [figure 4](#) plots the average risk weight reported by IRB banks for their various lending portfolios at the start of the scenario against the cumulative credit losses reported by banks in the scenario. A positive relationship is observed: riskier portfolios that experience higher credit loss rates have higher average risk weights at the beginning of the scenario.

[Figure 5](#) shows the cumulative credit losses by portfolio as a percent of the portfolio's RWA. In aggregate, credit losses were 8.7 percent of RWA at the start of the exercise, with this being slightly lower for residential mortgage (6.9) and agriculture (6.6), and slightly higher for corporate (11) and commercial property (9.8). This result suggests that the risk weights for residential mortgages and agriculture may be relatively over-calibrated (i.e. overstating these portfolios' riskiness, compared to the average), and vice versa for corporate and commercial property¹⁷. This conclusion can be sensitive to the design of the stress test scenario and methodology and will vary across each stress test exercise. However, the narrow range of outcomes by portfolio using this metric indicates that current risk weight settings are performing well at distinguishing the relative riskiness of the different credit portfolios.

Figure 4: Average risk weights by portfolio and credit losses in 2022 Solvency Stress Test **Figure 5: Cumulative credit losses in 2022 Solvency Stress Test as % of RWA**



Source: RBNZ.

¹⁷ The relatively high loss rate reported for Personal Lending reflects both the losses that occur due to the stress scenario as well as the high baseline credit losses typically experienced for this type of lending, outside of stress periods.

We actively monitor risk weight outcomes and adjust when needed

Through our oversight of IRB models, we identify and investigate situations where a bank's outcomes have diverged from those of peers. Differences can be due to genuine changes in the underlying credit risk of that portfolio (in which case, no further actions may be necessary), or due to a model performing in an unexpected way which may need a correction. In many cases issues are identified by banks themselves through their own validation processes. We work with IRB banks to remediate issues with models as they arise, and in some cases, will apply "overlays" or require a bank to adjust a model's calibration to address issues, particularly if an issue is causing outcomes to be less conservative.

Though the Standardised approach is by design less prone to these issues, we periodically review the appropriateness of different risk weight categories and have adjusted the framework where it has been clear that underlying risks are not being accurately captured. For example, in 2023 we reduced the Standardised risk weight for lending under the Kāinga Ora First Home Loan scheme, as the previous settings overestimated the actual risks lenders face.¹⁸

4. How could risk weights impact banks' lending strategies?

Risk weights could potentially affect the supply of credit provided by banks and the interest rate charged to customers for some types of loans more than others.

Under certain assumptions, changes in the composition of a bank's liabilities, such as higher capital requirements or equivalently, changes in risk weights on lending should not affect the cost of funding or supply of credit.¹⁹ This is because higher risk weights and capital requirements increase the equity buffer that banks are required to maintain, reducing the risk that the bank becomes insolvent (i.e. the value of its assets falls below the value of its liabilities). If this relationship holds, the higher share of equity funding is completely offset by a lower return required by equity investors, leaving the overall cost of funding unchanged.

However, there is widespread evidence that suggests that this relationship does not fully hold in practice for banks. As a result, higher capital requirements and a higher share of equity funding increase bank funding costs. Our 2019 Capital Review assumed around half of the increase in a bank's average funding cost implied by a higher share of capital funding would be offset by a lower required return on capital and non-capital funding.²⁰

Risk weights can impact banks' lending strategies

If a bank's cost of funding is affected by the composition of its liabilities, some possible channels of risk weights impacting on the supply of lending are:

- **Hurdle rate / Cost of capital channel** – Higher risk weights for certain sectors could raise the cost of capital for lending to a sector, increasing hurdle rates and the return required from

¹⁸ See <https://www.rbnz.govt.nz/-/media/project/sites/rbnz/files/consultations/banks/risk-weights/risk-weights-omnibus-response-to-submissions.pdf>.

¹⁹ This is known as the Miller-Modigliani theorem (Modigliani and Miller (1958)) See also Bridges et al (2014) for further discussion of the relationship between bank capital requirements and lending. ([link](#))

²⁰ See, for example, [Capital Review consultation - How much capital is enough \(rbnz.govt.nz\)](#). The Capital Review cost-benefit analysis showed that capital creates benefits in terms of increasing resilience of output to financial crises but can also increase costs in terms of lowering output by raising the cost of capital. The Review found a wide range of calibrations of the key inputs had benefits exceeding costs. See [Capital Review – Regulatory Impact Assessment and Cost-Benefit Analysis \(rbnz.govt.nz\)](#).

lending to the sector. If achieving this rate of return requires more risk than the bank's risk appetite, it may reduce lending to the sector.

- **Balance sheet channel** – Higher risk weights would increase capital requirements. However, in the short run, the extent to which banks can increase their capital is likely to be constrained.²¹ A bank would allocate capital to where there is the highest return per unit of capital, so increased risk weights on a particular sector could cause them to rebalance their lending portfolio towards other sectors. In the longer term, when capital is less constrained, this channel is likely to weaken.

Risk weights could also be adjusted as a macroprudential tool to reduce lending that is seen as systemically risky. Changes in risk weights on specific types of lending would impact the risk weighted *stock* of lending and raise capital requirements.²² As highlighted above, in 2015 we adjusted the calibration of mortgage risk weights to increase the relative risk weight applying to investor loans, to ensure that banks' capital requirements were appropriately reflecting our concerns about the elevated risk profile of this type of borrower.²³

Overseas evidence

Overseas evidence suggests reductions in risk weights or capital requirements have only limited impact on lending. For example, Bridges et al (2014) found increased capital ratios in the UK reduce sectoral lending to commercial real estate, corporate lending and household secured lending temporarily, but loan growth had recovered within 3 years.

Similarly, in 2014 the European Union introduced a 'Supporting Factor' to support the flow of lending to small and medium sized enterprises (SMEs). The supporting factor reduced the capital that banks have to hold against their risk weighted lending to SMEs. This is equivalent to reducing the risk weights for lending to SMEs. Studies have found little evidence that the Supporting Factor increased SMEs' access to credit relative to larger firms.²⁴

New Zealand evidence

Increasing capital requirements for farm lending

In 2011 we made changes to the IRB framework that increased risk weights for farm lending.²⁵ These changes reflected concerns that existing model outcomes underestimated the level of credit risk faced by banks, due to the concentrated nature of the sector. As first implemented in New Zealand, the IRB approach did not separate farm lending from other types of business lending. In some cases, banks were using estimates of LGD based on lending by their Australian parent bank to corporate customers. The risk profile of these corporate customers was likely to be different from the risk characteristics of farm lending in New Zealand. For example, most farm borrowers would likely be exposed to commodity price volatility in a similar way, and selling large numbers of farms in a highly concentrated rural land market would likely be difficult, resulting in larger losses. In contrast, the Australian corporate sector would have a more diversified risk exposure, limiting

²¹ For example, it would take time to sell additional capital instruments, such as equities, to investors through capital markets, or to generate capital through retained earnings.

²² In contrast, borrower-based macroprudential tools, such as loan-to-value ratio restrictions, target the *flow* of new lending.

²³ An advantage of using risk weights as a macroprudential tool is that they can be precisely targeted at specific types of lending. However, they may also transfer risky lending to other parts of the financial system. Sectoral risks weights are included in our Memorandum of Understanding on macroprudential policy with the Minister of Finance as a potential policy tool but have not yet been used in a time-varying manner, as envisaged in the Memorandum.

²⁴ See European Banking Authority (2016) ([link](#)).

²⁵ See Harrison and Hoskin (2011).

losses during a downturn. The share of bank lending allocated to farm loans remained broadly stable after the changes were introduced.

Separating owner-occupier and investor residential mortgages

Prior to 2015 the residential mortgage loan categories in the IRB and Standardised approaches did not distinguish between loans to owner-occupiers and loans to investors. Due to concerns that the relative riskiness of investor lending was not being accurately captured in capital requirements, we required banks to separate the two categories and increased risk weights on investor lending.²⁶ On a like-for-like basis, capital requirements for investor loans increased by around 20 percent.

These changes had little impact on the quantity of banks' lending to investors at the time of their introduction. Since then, we have not observed a pricing differential for investor loans emerge in the market, suggesting that the risk weight changes had only modest effects on banks' lending strategies.

Risk weights can impact interest rates on loans

If a bank's cost of funding is affected by the composition of its liabilities, then changes in risks weights could also impact lending rates charged to borrowers. Lending rates charged to customers by banks are typically calculated as a spread above the internal 'transfer pricing' rate.²⁷ The transfer price represents the cost of funding for the loan that the bank faces, taking into account factors such as relevant wholesale interest rates (variable or fixed rate), and the liquidity benefits/costs of holding the loan on the bank's balance sheet. The spread on top of this charged to the customer reflects.²⁸

- **Expected loss** – This reflects the expected credit risk on each form of lending. Expected loss is a key driver of differences in lending rates charged on different types of loans. As a result, unsecured lending, such as credit cards, which are likely to have higher expected losses than secured lending, such as mortgages, are charged a higher lending rate.
- **Unexpected Loss / Capital charge** – This reflects the capital allocated to the lending activity and compensates the bank for the capital needed to absorb potential unexpected losses.
- **Operating costs** – This includes staff salaries and other costs required to process a loan. Loan products that are relatively simple or standardised, such as residential mortgages, are typically less costly to process than more complex products, such as business loans, that require more a detailed assessment of an individual borrower's financial position.
- **Profit mark-up** – This includes any additional return to shareholders beyond what is required to compensate for the cost of capital (reflected in the capital charge) and may vary depending on the banks' growth strategy. For example, a bank may decide to tolerate a lower markup to grow lending faster than its competitors in a particular area.

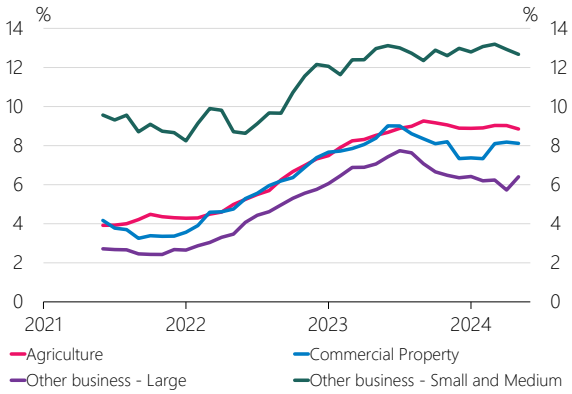
The interest rate differential customers face can vary substantially (figure 6), although only a small component of this reflects the capital charge.

²⁶ See section 6.1 of the November 2015 *Financial Stability Report*, <https://www.rbnz.govt.nz/hub/publications/financial-stability-report/financial-stability-report-for-november-2015>.

²⁷ See Button et al (2010) and BIS (2011) <https://www.bis.org/fsi/fsipapers10.htm>.

²⁸ See Cadamagnani et al (2015).

Figure 6: Average contracted interest rate on new business lending
(variable rate lending, 3-month moving average)



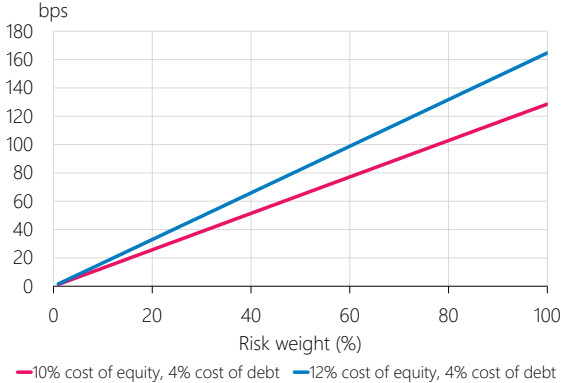
Source: RBNZ *New Credit Flows* survey.

We can approximate the magnitude of the capital charge in relation to risk weights using the following equation:

$$Capital\ charge = \left(\frac{Cost\ of\ CET1\ capital}{1 - Corporate\ tax\ rate} - Cost\ of\ debt \right) \times Risk\ weight \times CET1\ ratio$$

Using this equation and assuming a CET1 ratio of 13 percent, [figure 7](#) plots how the capital charge varies over different risk weights for two different calibrations. Using these two calibrations, in [Table 1](#) we compare the actual lending rates contracted for different types of lending and the resulting estimate of the capital charge for that type of loan, based on current IRB risk weights.

Figure 7: Estimated capital charge (in basis points), by risk weight



Source: RBNZ.

Note: Assumes a CET1 ratio of 13 percent and a corporate tax rate of 28 percent. Methodology assumes that the cost of equity and debt are unchanged for different capital ratios (i.e. the Miller-Modigliani theorem does not hold).

Table 1: Contracted interest rates by type of loan, and impact of risk weights

| Category | Average IRB risk weight (June 2024, %) | Weighted average contracted interest rate (June 2024, %) | Capital charge (%) |
|----------------------|---|--|--------------------|
| Residential mortgage | 30 | 6.93 | 0.38 - 0.49 |
| Large Corporate | 57 | 6.50 | 0.73 - 0.94 |
| Commercial property | 104 | 8.59 | 1.34 - 1.71 |
| Farm lending | 71 | 8.71 | 0.91 - 1.17 |
| SME | 55 | 12.19 | 0.70 - 0.90 |

Source: RBNZ *New Credit Flows survey*, *Capital Satellite Survey*, RBNZ analysis.

Note: 1-year fixed rate for residential mortgage, variable rate for other categories.

Table 1 demonstrates a wide range of lending rate outcomes across different loan types, which can only partly be accounted for by the cost of capital to banks funding that lending. For instance, on average lending to large corporates and to small and medium enterprises (SMEs) have similar risk weights, but interest rates for SME lending are 5.7 percentage points higher. This reflects that SME lending tends to be riskier and have higher expected losses, and higher operating costs in proportion to the value of the lending. Similarly, of the 5 percentage point difference between mortgage and SME lending rates, we estimate that less than 0.4 percentage points is explained by differences in risk weights.

5. What are the implications of changing risk weights?

It is sometimes argued that we could lower risk weights to achieve wider economic and social objectives, such as incentivising lending targeted at reducing carbon emissions, increasing the supply of community housing, or tilting banks' lending decisions towards more business credit and away from housing credit.²⁹

Changes in risk weight settings are determined by our legal framework for prudential regulation of banks

The current legal framework for setting risk weights (either Standardised or IRB) is based on the Banking (Prudential Supervision) Act (BPSA) 1989. Under BPSA, risk weighting requirements are imposed through banks' Conditions of Registration (CoRs).

Under BPSA, there are two main constraints on the RBNZ's power to impose CoRs:

- CoRs must be for the purposes in s68: (i) promoting a sound and efficient financial system; and (ii) avoiding significant damage to the financial system from failure of a bank; and
- CoRs must relate to the matters referred to in s74(4). The matter most relevant to setting risk weight requirements is "the ability of the applicant to carry on its business...in a prudent manner".

²⁹ For further discussion of adjusting risk weights to achieve climate-related objectives, see [King, Leaney and Downing \(2024\)](#).

When setting CoRs relating to risk weights, the requirements must relate to the Reserve Bank's prudential objectives or related to a bank running its business in a prudent manner (i.e. its financial risk).

Under the current legislation, we could not set risk weight requirements to achieve social objectives such as supporting lending to green investment projects or community housing unless it related to the prudential objectives or a bank's financial risk.

Going forward, the legal framework for prudential requirements on banks and other deposit takers, including for setting risk weights, will be replaced by the Deposit Takers Act 2023 (DTA) and standards issued under the DTA. The standards will be secondary legislation that set the rules that deposit takers must meet.

We can issue standards if we are satisfied they are necessary or desirable to achieve one or more of the purposes of the DTA. The main purpose of the DTA is to promote the prosperity and well-being of New Zealanders and contribute to a sustainable and productive economy by promoting the stability of the financial system. There are also four additional purposes of the DTA:

- to promote the safety and soundness of each deposit taker;
- to promote public confidence in the financial system;
- to the extent not inconsistent with the main purpose or the other three additional purposes, to support New Zealanders having reasonable access to financial products and services provided by the deposit-taking sector; and
- to avoid or mitigate adverse effects of the risks to the stability of the financial system and risks from the financial system that may damage the broader economy.

In addition to the purposes we are acting for, when issuing DTA standards we must also have regard to:³⁰

- **Deposit Takers Act Principles** - Under the DTA, we must take into account certain principles where they are relevant to the performance of or exercising of our powers under the Act (DTA Section 4).³¹
- **Proportionality Framework** - The proportionality framework sets out how the Bank takes the proportionality principle into account when it is developing standards (DTA Section 77).³²
- **Financial Policy Remit** - The Minister of Finance must, after consulting the Reserve Bank, issue a Financial Policy Remit.³³ The Reserve Bank Board must have regard to the Remit when it is acting in relation to its prudential strategic intentions and prudential standards.³⁴

³⁰ In addition to the statutory considerations for issuing DTA standards, the Reserve Bank Board has a general obligation to ensure that the Bank acts in a manner consistent with the Statement of Intent (SoI). As part of its Statement of Intent, we recently published its strategic themes for the period 2024-2028. These themes set out our direction and will drive our decision-making for enhancing the well-being and prosperity of New Zealanders. <https://www.rbnz.govt.nz/hub/publications/corporate-publications/statements-of-intent/statement-of-intent-2024---2028>

³¹ <https://www.legislation.govt.nz/act/public/2023/0035/latest/LMS469454.html>

³² <https://www.rbnz.govt.nz/hub/news/2024/03/a-proportionality-framework-allows-for-diversity-while-promoting-financial-stability>

³³ https://www.legislation.govt.nz/act/public/2021/0031/latest/LMS287177.html?search=sw_096be8ed81ded39f_remit_25_se&p=1

³⁴ For the current Financial Policy Remit, see <https://www.rbnz.govt.nz/about-us/responsibility-and-accountability/our-financial-policy-remit>

The framework for setting risk weights is covered in the Capital Standard and the Risk Management Standard. We consulted on prudential standards during 2024, and it is planned that they will come into force in July 2028.

Changes in risk weights can potentially impact financial stability

The impact on financial stability of lowering risk weights in order to increase the supply of credit to specific sectors depends on the reason for the change and the extent to which banks’ exposure to credit risks on the loans has declined. Reducing the risk weights without a reduction in the underlying credit risk is likely to reduce financial stability. Reducing the underlying credit risk allows for reducing risk weights without a corresponding reduction in financial stability. Recent policies that reduce the underlying credit risk on loans include:

- **Government guarantees / underwriting** – in this case some of the credit risk exposure if a borrower defaults is transferred, from the bank making the loan, to the government, or
- **Diversification** – in this case the credit risk exposure on loans is diversified across a larger number of loans or spread across more than a single bank.

If lower risk weights are matched by lower credit risk exposure faced by banks through either of these methods, then supporting credit flow to sectors would not impact financial stability risks (figure 8). Some recent examples of policy initiatives that have lowered banks’ credit risk exposure and risk weights on particular types of loans are presented in Table 2.

Table 2 - Recent policy initiatives to lower risk weights and support sectoral credit supply

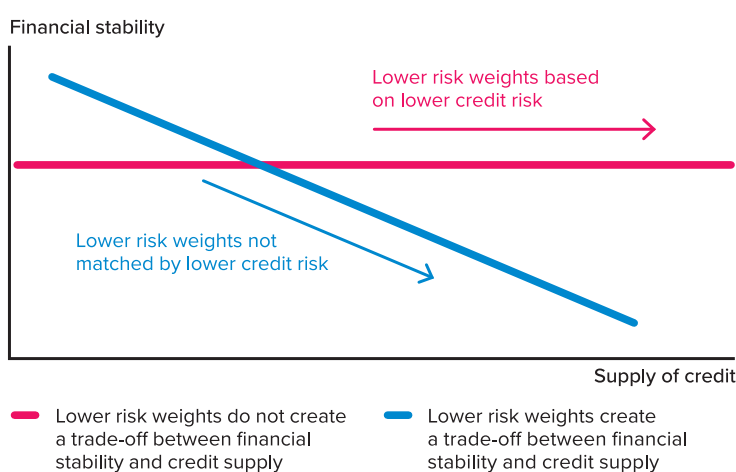
| Scheme | Details |
|---|--|
| Government takes on credit risk exposure from banks | |
| COVID-19 Business Finance Guarantee Scheme (BFGS) | The Government took on 80 percent of the credit risk on eligible loans to businesses affected by COVID-19 lockdowns, with the other 20 percent remaining with the banks. |
| North Island weather events (NIWE) support Loan Guarantee Scheme | Similar structure to the BFGS, applied to businesses affected by the North Island extreme weather events in January-February 2023. |
| First Home Loans | Eligible first homebuyer loans with low deposits are underwritten by Kāinga Ora as a form of lenders’ mortgage insurance receive a reduced risk weight of 20 percent. |
| Credit risk is diversified across a number of banks or investments | |
| Business Growth Fund (BGF) | Banks buying minority equity capital stakes in SMEs through the BGF allows them to diversify their risk exposure. The risk weight on BGF exposures is reduced to 250 percent, from 400 percent for investments in unlisted equities. |

Source: RBNZ.

On the other hand, if risk weights are lowered without other initiatives to reduce the underlying credit risk faced by banks, then financial stability risks will increase. In this scenario, there is a trade-off between financial stability and credit supply (figure 8).

For example, unlike the schemes in Table 2, the Covid mortgage deferrals scheme was a form of regulatory forbearance which did not reduce the credit risk exposure faced by banks. Under the scheme we provided guidance that allowed banks to treat loans on six-month repayment holidays as performing rather than in arrears for capital purposes. In this case, we allowed a reduction in the risk weights despite no reduction in banks' credit risk exposure as it was viewed as being under exceptional circumstances that would only impact lending and financial stability risks temporarily.

Figure 8: Lower risk weights impact on financial stability and credit supply



Source: RBNZ.

6. Conclusion

Risk weights play a key role in the protecting the resilience of the financial system and reducing the likelihood of financial crises. Banks use risk weights to determine the size of the capital buffers they hold to absorb losses and remain solvent, enabling them to repay their debts and deposits. The riskier a loan, the more capital a bank needs to hold to absorb unexpected losses that may occur. Our prudential requirements, including minimum capital requirements for banks and risk weight settings, support our objective to protect and promote the stability of New Zealand's financial system.

Risk weights may potentially affect the supply of credit provided by banks and the interest rate charged to customers for different types of loans. However, by being designed to reflect underlying risk, risk weights seek to minimise distortions in asset allocation. Domestic and international evidence suggests that the impact of risk weights on credit supply and pricing is low compared to other factors. For example, of the 5 percentage point difference between mortgage and SME lending rates, we estimate that less than 0.4 percentage points is explained by differences in risk weights. Therefore, lowering risk weights to promote lending in particular sectors would likely only have minor effects on loan pricing and the supply of credit. At the same time, such changes could undermine financial system resilience.

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