

MEMORANDUM FOR FSO
FROM Matthew Brunton
DATE 21 August 2018
SUBJECT Inclusion of leverage ratio requirements in Ratio Paper
FOR YOUR Decision

It is recommended that the Committee:

- **Note** that both Basel and APRA have implemented disclosure requirements for leverage ratios and are planning to impose a minimum leverage ratio requirements.
- **Note** that both the benefits and the costs of including leverage ratio requirements in the New Zealand framework appear to be low.
- **Agree** that as a part of the ratio consultation, we should consult on a preferred option of disclosure requirements and a minimum leverage ratio (the third option).

Introduction

1. Following the GFC, there was a shift in regulatory appetite internationally for minimum leverage ratio requirements. In particular, the Basel Committee implemented disclosure requirements for a leverage ratio in 2015 and implemented a minimum requirement of a 3% leverage ratio in 2018¹. Similarly, APRA is introducing a minimum leverage ratio requirement of 4% for IRB and 3% for standardised banks. This is based on an adjusted version of the Basel proposal, and includes a simplified calculation for standardised banks.
2. As part of the 'Ratio Paper' consultation for the Capital Review, Financial Policy would like to include the issue over whether leverage ratio requirements should make up part of the New Zealand regulatory framework.
3. There are three policy options available for the role of a leverage ratio in the regulatory framework:
 - Status quo (no leverage requirements)
 - Disclosure requirements (based on APRA methodology)
 - Disclosure and minimum requirements (based on APRA methodology)
4. Our preferred option is that we should have disclosure requirements and a minimum leverage ratio (the third option). This would align New Zealand's framework more closely with Basel and APRA and the costs of doing so are likely to be low in New Zealand. The final minimum requirement amount would depend on international standards, QIS feedback and final capital ratio calibration. Our preferred option would be stated in the consultation paper.
5. Appendix 1 has a summary of the arguments for and against including leverage ratio requirements in the capital framework.

¹ The Basel Committee is also planning to make changes to how this leverage ratio is determined in 2022, largely targeted at higher requirements for Global-Systemically Important Banks (GSIBs).

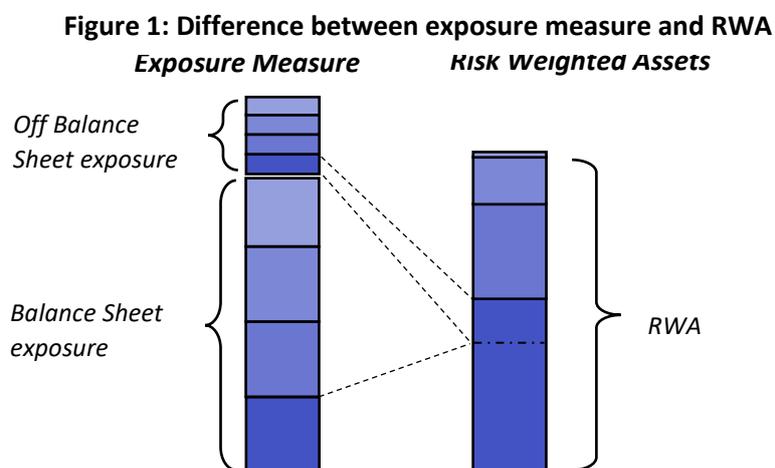
Background to a Leverage Ratio and Options

6. A leverage ratio is composed of two parts. The 'exposure measure' (the denominator) is the amount of on and off balance sheet assets², providing a non-risk measurement of exposure. The second part is Tier 1 Capital (the numerator). Below in Figure 1 is a stylised depiction of the relationship between the exposure measure and risk-weighted assets.

$$\text{Leverage Ratio} = \frac{\text{Tier 1 Capital}}{\text{Exposure Measure}}$$

$$\text{Tier 1 Capital Ratio} = \frac{\text{Tier 1 Capital}}{\text{RWA}}$$

7. Although similar in construction to a risk-based ratio, the leverage ratio has a different purpose in a regulatory framework. It focuses on limiting the overall leverage within the banking sector as a whole, rather than trying to ensure banks are individually adequately capitalised for their specific risk profile. It is also intended to act as a "backstop" for a risk-based framework in that its non-risk based measurement can counter regulatory arbitrage in capital models.
8. In assessing the potential role of a leverage ratio in the capital framework, we can relate it to the 'principles' of the Capital Review. In particular:
- 'capital requirements should be set in relation to the risk of bank exposures'
 - 'the capital framework should be practical to administer, minimise unnecessary complexity and compliance costs, and take into consideration relationships with home country regulators'
 - 'the capital framework should be transparent to enable effective market discipline'
9. As part of the Capital Review, we are also taking the general position that alignment with APRA and Basel standards is preferred unless there is a good reason not to.
10. In terms of the options available for leverage ratio requirements, a disclosure requirement could inform regulators and investors of the bank's leverage and implied solvency position. For the requirement to be effective however, this would likely depend heavily on moral suasion from bank supervisors and market discipline from investors. It would also be difficult for external stakeholders to distinguish regulatory arbitrage (falls in RWA from model changes) from shifts in bank's risk profile, potentially leading to mixed signals.



² Adjustments are made for Securities-Finance Trades (SFTs) and derivatives to use fair-value for IRB banks. Standardised banks simply use accounting values for all exposures. Off balance sheet calculations are made using Credit Conversion Factors of the *standardised* framework for *all* banks.

11. Alternatively, a minimum leverage ratio requirement would force banks to maintain their leverage below a certain point. This requirement would achieve the same outcome in capturing risks as a disclosure requirement, but with more certainty. However, a minimum requirement may result in a less risk-sensitive framework. A minimum requirement would also state an inferred level of 'unacceptable' leverage in the eyes of the regulator. Although at the proposed 3% this would be well below banks' current positions, the minimum requirement should remain within the risk-appetite of the Bank.
12. Also, given the in-principle decisions of the Capital Review are to make the capital framework more robust, the *benefits* of a leverage ratio as a backstop are likely to be *more subdued* in the New Zealand context than as stated by the Turner Review in 2009 and later by the Basel Committee.
13. Similarly. The *costs* of a leverage ratio appear to be *low* in the current New Zealand context. For a minimum requirement, all banks appear to be closer to having a binding risk-based ratio than a 3% leverage ratio, and this will likely be exacerbated by the outcome of the Capital Review. As such the risk of a loss of risk-sensitivity appears to be low.

Objective 1: Leveraging and Deleveraging

14. A key problem that emerged from the GFC was the impact of a deleveraging process which amplified the crisis. The Basel Committee states that a leverage ratio aims to

“restrict the build-up of leverage in the banking sector to avoid destabilising deleveraging processes that can damage the broader financial system and the economy” (BCBS, 2017)

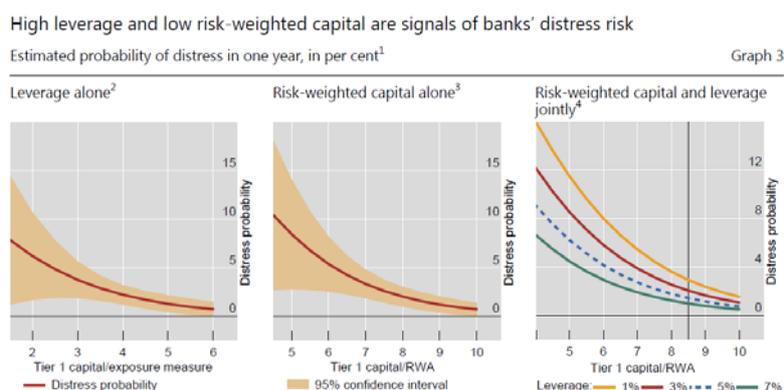
This argument centres around the idea that banks may be forced to de-lever in order to reduce their leverage ratio in a crisis, leading to supply-driven restrictions in credit or liquidation of assets. As such a leverage ratio can avoid or limit the process of deleveraging by imposing a ceiling of leverage in the banking sector.

15. This process can lead to banks attempting to quickly liquidate assets which were considered 'low-risk', particularly from the point of view of a single bank's balance sheet. However, when the crisis hit, the value of these 'low-risk' assets can fall from industry-wide shifts to sell them for bank deleveraging or liquidity. As such, assets that are 'low-risk' from a capital perspective can lead to significant losses during a crisis due to falling prices rather than from defaulting. As such the capital ratio may not always accommodate for this risk. During the GFC, this was seen in the Mortgage Backed Securities (MBS) that were largely used leading up to the subprime mortgage crisis.
16. Deleveraging can also occur through lending channels, where banks reduce the number of loans they write to consumers. This can exacerbate poor economic conditions when banks do so beyond any fall in consumer demand, i.e. they restrict supply in a credit crunch.
17. A leverage ratio is intended to account for these risks that may not be adequately captured within the risk-based framework. In treating exposures with the same risk, it acknowledges that risks from deleveraging can occur to all banks, regardless of risk profile, during a systemic crisis. As such it limits the leverage in the system to both avoid the deleveraging process occurring, and to mitigate the impact of deleveraging.

Objective 2: Backstop to the capital regime

18. The second key purpose of the leverage ratio to the Basel Committee, and also raised by the Turner Review, is to reinforce the risk-based capital requirements with a non-risk-based ‘back-stop’. “A back-stop against the impact of creeping regulatory concessions makes sense” (FSA, 2009). There is also a growing number of papers focusing on the incentives for banks to ‘game’ capital models³.
19. A minimum leverage ratio requirement would act as a backstop in that it effectively sets a minimum average risk weight for a bank’s whole portfolio. In theory, this means banks will act as if all their assets received this risk weight if their average RWA falls below this level (i.e. acts as a minimum average RWA floor on a bank’s portfolio).
20. For a leverage ratio of 3%, and a Tier 1 capital ratio of 7%, this would be a minimum average risk weight of roughly 42.85%⁴. As such this would only be effective as a backstop in unlikely, but plausible, cases of banks having very low RWA to exposure measure. It would also not address cases where banks have a very risky portfolio and still underestimate RWA, but not by enough to be caught by the leverage ratio.
21. As a “backstop” to the capital regime, in the BIS Quarterly Review of 2015, Fender and Lewrick (2015) shows that a leverage ratio reduces the probability of distress in a bank in addition to the impact of capital ratios (the difference between lines in Figure 3 below). This effect does, however, appear to diminish as capital ratios increase.
22. However, the recent Capital Review also addresses this through the capital framework. A robust output floor should provide a ‘backstop’ that may be more binding and effective than a minimum leverage ratio in this sense. Similarly, dual reporting will provide an insight into how much capital benefit IRB banks are receiving through internal models, as a disclosed leverage ratio may.

Figure 2: Table from 2015 BIS Quarterly Review



Interaction with the capital ratios

23. A concern that is not directly addressed by Basel papers is the impact, or distortion, a minimum leverage ratio may have on the risk-sensitivity of a capital framework. Hartmann-Wendels goes on to highlight that a leverage ratio will be binding for lower-

³ See Mariathan and Merrouche (2014) as an example of this.

⁴ This number is only an estimate as the exposure measure is not exactly equal to the exposure-at-default (EAD) amount used to determine risk-weights for IRB banks.

risk portfolios, encouraging risky lending behaviour. A key issue in this point is asking *when* a leverage ratio may be the more restrictive requirement.

24. A key driver of such an impact is whether the leverage ratio or capital ratio would be the dominant factor for a bank's portfolio decision. Fender and Lewrick (2015) use a framework that looks at which ratio is the most constraining to assess which one will be dominant in bank decision making. A leverage ratio can be thought of as more constraining when it is closer to being binding than the Tier 1 capital ratio.
25. Using this framework, Figure 4 below shows a first estimate of the current position of New Zealand Banks⁵. The black line dividing the blue and the orange areas is the point where banks are indifferent as to whether the Tier 1 capital or leverage ratio should dominate their portfolio choices⁶. That is, it is when both ratios are as equal as each other to being binding. All of New Zealand banks are in the 'Capital Ratio constraining area', meaning that the Tier 1 capital ratio should be the dominant force in bank portfolio decisions.



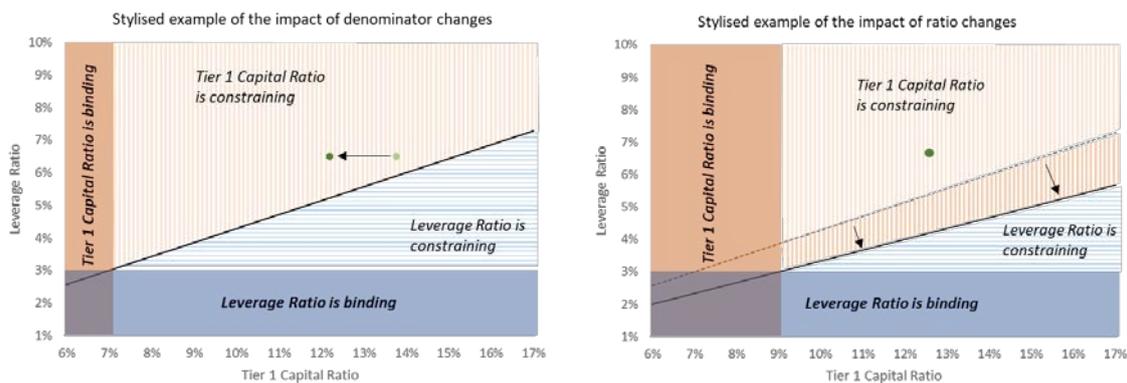
27. A key factor in calibrating a leverage ratio is the risk-appetite of the Bank (i.e. would we ever be comfortable with a leverage ratio below 3% regardless of risk profile) as well as the willingness to accept a constraining leverage ratio over a capital ratio (i.e. as only a rare 'special case' occurrence or more frequently).
28. We also need to take into account the impact of the capital review. Below is a stylised example of the impact of denominator and risk-weight changes (left graph) and an increase in the minimum Tier 1 Capital Ratio (right graph). Both will cause the Tier 1 Capital Ratio to be closer to binding.

⁵ FP will be able to provide more accurate estimates with the outcome of the QIS (end of September).

⁶ This can be derived as: $3\% * Exposure\ measure = Tier\ 1\ Capital = 7\% * RWA$

⁷ This is the 4.5% minimum CET1 + 2.5% Tier 1 Capital conservation buffer.

Figure 4: Likely impact of Capital Review



29. This framework shows foremost that any calibration decision of a minimum leverage ratio should be made with consideration to changes in capital ratios.
30. Another take-out is that in the New Zealand context the potential to lose risk-sensitivity from a minimum leverage ratio is low. The current positions of New Zealand banks is generally to have a constraining capital ratio and changes in the Capital Review will accentuate this.

International Alignment

31. As part of the Capital Review, the Bank has been looking at overseas developments in capital frameworks, particularly those set out in Basel and APRA. Our stated position had been that we would take a pragmatic approach, using Basel standards as a base and adding New Zealand-specific variations when warranted.
32. In the FSAP report of 2017, the IMF described the fact that NZ has not implemented the leverage ratio requirements as "The main conceptual divergence from the Basel framework" (p. 64, 2017).
33. The advantages to harmonisation highlighted by banks were the administrative efficiencies and potential for greater understanding of the NZ framework among external observers.
34. The proposed options are based on APRA methodology on the basis that it is more simplified, so more appropriate for the NZ context. Additionally our large banks are regulated by APRA, so their would be operational efficiencies over the Basel methodology.

Interactions with external stakeholders

35. Another aspect of the leverage ratio requirements is their interaction with external stakeholders, i.e. investors. A disclosure requirement would provide new information to the market which could either complement existing information (capital ratios) or supplement them.
36. A key concern here is that a leverage ratio may undermine the risk-sensitivity of the capital framework by focusing market discipline on a non-risk-based measurement.

37. First, it should be noted that there already exist market constructed leverage ratios⁸. As such there is little reason to believe that a leverage ratio can undermine capital ratios role in the market more than these current leverage ratios do.
38. Furthermore, in an IMF study, Demirguc-Kunt, Detragiache, and Merrouche (2010) find that for their sample of 391 banks from 2005 to 2009, it was only when it came to large banks who had the most “opaque” balance sheets, during the crisis that the leverage ratio only became significant in explaining stock prices. Demirguc-Kunt, Detragiache, and Merrouche (2010) hypothesise that due to regulatory arbitrage from large complicated banks, market participants became sceptical of Basel capital ratios during the GFC.
39. Similarly Haldane (2012) notes that for major global banks leverage ratios were significant in explaining bank failure, whereas risk-based capital ratios were not. However, for simpler FDIC-insured banks, it was the risk-based capital ratio, and not the leverage ratio, that was significant.
40. As such it is unclear that market discipline in a *robust* capital framework and in the simpler industry setting of New Zealand would be undermined by a disclosed regulatory leverage ratio.
41. There is also a clear advantage to having a disclosed regulatory leverage ratio: international alignment and comparability. A leverage ratio based on APRA methodology would align with the Australian market’s understanding and would be generally in line with Basel standards (only slight differences). This may partly aid banks’ ability to raise funding from overseas, and consequently market discipline.

Compliance costs

45. Compared to the status quo, compliance costs would be imposed by banks and the complexity of the framework would increase, imposing a burden on regulators and banks (e.g. would require additional handbook chapter). Adopting the APRA methodology also has two advantages for compliance costs: 1) the IRB bank calculations will be aligned with that of the home country regulators, and 2) the standardised calculation is much simpler than that proposed by Basel.
46. Dual reporting will also mean there will be some synergy in calculating parts of the exposure measure for the IRB banks.
47. However, it is not yet known whether it would be costly for banks as a condition of registration (due to assurance checks and auditing).

Key Points

48. The benefits of leverage ratio requirements in New Zealand banks appears to be relatively low given proposals in the Capital Review (output floor and dual reporting) will already create a more robust capital framework. However, there may be an advantage in creating such an internationally consistent measurement for market discipline. It would, however, align the NZ framework with international standards.

⁸ For example, debt-to-equity ratio or total assets-to-equity ratio.

49. The costs of leverage ratio requirements also appear low given the current position of banks and likely changes in capital ratios from the Capital Review. However, it is yet to be seen about the compliance costs. In terms of the Capital Review principles.
50. Any minimum leverage ratio requirement should be calibrated to reflect the Bank's risk-appetite and willingness to accept when a leverage ratio should be constraining. This will help maintain a risk-based relationship between capital and risk.

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Appendix 1: Summary of the key arguments for and against a leverage ratio		
	Supporting arguments	Opposing Arguments
Avoids and mitigates the costs of deleveraging	<ul style="list-style-type: none"> • A leverage ratio can capture systemic risks that are not reflected in risk-weights. • A leverage ratio places ceiling on leverage which can limit the severity of the deleveraging process during a crisis 	<ul style="list-style-type: none"> • These benefits could arguably be achieved by ensuring the risk-based framework adequately captures these risks. However, this would involve significant work in the market risk of the framework.
Acts as a backstop	<ul style="list-style-type: none"> • Can limit how much risk-weights may fall, relative to exposure, from regulatory arbitrage. 	<ul style="list-style-type: none"> • Only focuses on the portfolio level, and as such is not as effective for the very risky bank profiles. • The Capital Review will also include backstops (output floor, dual reporting).
Interaction with capital ratios	<ul style="list-style-type: none"> • Banks seem to be currently in the space of a constraining capital ratio rather than a leverage ratio, so risk-sensitivity will likely remain. • It is possible that a leverage ratio requirement can be calibrated to be only constraining in rare 'special-case' occurrences. • Any risk-taking behaviour occurring from a lack of risk-sensitivity would naturally result in a constraining capital ratio and return risk-sensitivity. 	<ul style="list-style-type: none"> • If a leverage ratio is constraining it could impact the risk sensitivity of bank portfolio decisions.
Interaction with market participants	<ul style="list-style-type: none"> • There already exists market constructed leverage ratios. • Market participants are likely to find a leverage ratio more informative for more complex banks than simpler models more akin to the NZ context. • A regulatory leverage ratio would be internationally aligned and comparable ratio, helping banks raise funding from overseas. 	<ul style="list-style-type: none"> • A regulatory leverage ratio may undermine market discipline associated with capital ratios. • Evidence suggests that capital ratios are more predictive of failure than leverage ratios for simpler banks in more robust capital frameworks.
Compliance costs	<ul style="list-style-type: none"> • Using the APRA methodology would lower compliance costs for IRB and standardised banks. • There may be some synergy with dual reporting in the exposure measure calculation for IRB. 	<ul style="list-style-type: none"> • There may be additional costs associated with assurance and auditing. • Compliance costs increase relative to the status quo. • Increases complexity of framework

International alignment	<ul style="list-style-type: none">• The NZ framework would be more conceptually aligned with international standards.	
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