

A Report on the Reserve Bank's Capital Review

Commissioned by the Reserve Bank of New Zealand

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Executive Summary

1. This “External Experts” Report provides an assessment of the analyses underpinning the Reserve Bank of New Zealand’s (RBNZ) proposals on bank capital regulatory requirements.
2. This Report was commissioned by the RBNZ as a part of its review of the capital adequacy of locally incorporated registered banks. The RBNZ requested external reviewers to assess whether the RBNZ adopted an appropriate framework for assessing bank capital regulatory requirements, used appropriate data, methods, and evidence in conducting its analyses, considered relevant issues and risks concerning capital regulatory reforms in New Zealand, and addressed appropriately the concerns raised in submissions to the RBNZ about its analyses.
3. The views expressed in this Report reflect my independent evaluation of the RBNZ’s analyses. In conducting this study, I used several sources of information, including (i) the RBNZ’s four consultation papers, (ii) more than 50 background papers, (iii) submissions by banks and others concerning the four consultation papers, (iv) the formal responses by the RBNZ to submissions on the first three consultation papers, (v) a meeting with officials from the NZ Bankers Association and Westpac, (vi) multiple discussions with members of the RBNZ, including discussions regarding submissions on the fourth consultation paper.
4. With a few exceptions, the RBNZ conducted a sound analysis of bank regulatory capital requirements in New Zealand, employed appropriate data, methods, and evidence, considered a broad and proper array of factors, addressed submissions by banks and others regarding the RBNZ’s analyses and proposals, and focused on the New Zealand-specific features of capital regulatory reform. More generally, I found the RBNZ team working on the capital review first-rate analytically, dedicated to improving the banking system in New Zealand, and ready to discuss and provide information on any consideration that I had.
5. The first exception is that the RBNZ focuses too little on incentives, which limits the analyses of how capital requirements influence bank stability and efficiency.
6. Consider first the incentive-stability connection. The RBNZ stresses the loss-absorbing role of capital: it assesses how much capital banks need to survive a specific-sized adverse shock. Under the assumption that bank capital does not affect the probability of default (PD), the size of the loss given default (LGD), or the correlation of PD and LGD across banks, the Reserve Bank uses appropriate analytical methods in drawing inferences about how much capital is sufficient to buffer the economy against a once-in-a-200 year shock. However, substantial research indicates that these assumptions do not hold. That is, research stresses that bank regulations shape the incentives of banks’ decision makers (influential owners and executives) and those incentives in turn shape the stability of the banking system by affecting PD, LGD, and the correlation of risk-taking across banks.

7. By largely ignoring the incentive-stability link, the RBNZ does not consider one of the two economic rationales for capital regulations: reducing the moral hazard problem. When major decision makers within banks—e.g., large, influential owners, directors, executives—have more of their personal wealth invested in banks as common equity, they have more to lose from their banks misallocating assets, i.e., they have more “skin-in-the-game.” Thus, to the extent that capital regulations induce such major decision makers to have more of their personal wealth at risk, they would tend to have stronger incentives to manage their banks prudently, potentially reducing the probability of bank failure.
8. I discuss several implications of not considering the incentive-stability connection stressed within the body of this Report. Here, I briefly summarize a few.
 - a. The impact of capital regulations on bank stability will depend on how those regulations influence the risk-taking incentives of bank decision makers, which depend on the ownership structures, executive compensation schemes, and governance systems of banks.
 - b. With respect to ownership, increasing bank regulatory capital requirements will tend to reduce risk-taking incentives more when the additional equity comes from influential owners with a high proportion of their wealth already invested in the bank than when the additional equity comes from small, diffuse shareholders with little of their wealth invested in the bank and who do not exert much influence over the bank.
 - c. With respect to compensation, the impact of capital regulations on the incentives of bank executives depends importantly upon the details of their compensation packages. To the extent that executives are compensated with option-type contracts tied to the bank’s return on equity (ROE), this tends to augment risk-taking incentives relative to situations in which executives are paid a simple salary or where executives are penalized for excessive risk-taking (regardless of the results of the risk-taking). Thus, the stability augmenting effects of increases in bank regulatory capital requirements will be greater if executives do not have compensation contracts that reward excessive risk-taking.
 - d. With respect to governance, the impact of capital regulations on stability depends on who is running the bank. With stronger governance, bank behavior is governed more by the incentives of owners; while with weaker governance, the incentives of executives exert a more powerful influence over bank behavior. Thus, for strong governance banks, the response to capital reforms will depend more on ownership and who is providing the additional capital. For a weak governance bank, the response to capital regulations depends more on executives and their compensation packages.

- e. The RBNZ could enhance their analyses by assessing how the ownership structure, executive compensation, and governance of big categories of banks, e.g., IRB banks and standardized banks, likely shape the impact of changes in bank regulatory capital requirements on stability.
9. Next, consider the incentive-efficiency connection. The RBNZ takes a plumbing view of banks: money flows into banks in the form of equity, deposits, and debt, and flows out to households and firms in the form of loans. According to this conception of banks, increasing capital requirements might increase the costs to banks of raising funds and hence reduce the flow of funds through the banking system to households and firms. From this perspective, capital requirements can affect economic output by reducing the quantity of loans available to the economy. This leads to the focus on the MM-offset: how much will an increase in capital regulations increase the cost of capital to firms and hence reduce the flow of credit through the banking system? While the RBNZ does a good job of analyzing and discussing the challenges associated with estimating the MM-offset, which I discuss in greater detail below, the Reserve Bank devotes little attention to how capital regulations might influence the allocation of credit.
- a. Besides influencing the amount of credit flowing through the banking system—as stressed by the RBNZ, capital requirements might alter the incentives of bankers and hence how they allocate credit across households and firms. For example, if new capital requirements induce bank decision makers to have more skin-in-the-game, this could lead to a reallocation of credit to more prudent endeavors. As a second, distinct example, consider a situation in which executives have primarily decision-making power in banks and those executives are compensated with option-type contracts tied to the bank’s ROE. In this case, new, higher capital regulations that increase bank equity might induce executives to reallocate the flow of capital to different, higher-risk ends. Thus, capital regulations can alter the distribution of economic activity.
 - b. Furthermore, the RBNZ might incorporate into their evaluations the possibility that higher bank regulatory capital requirements could fix an existing distortion in the financial system and improve the overall financial system with beneficial effects on economic growth. Specifically, explicit and implicit government guarantees on the investments by depositors and debtholders in banks means that (1) banks can borrow inexpensively because depositors and debtholders expect that governments will bail them out if banks fail (in this way, governments subsidize banks) and (2) banks can fund themselves with less equity and take greater risks because the depositors and debtholders have weaker incentives to constrain leverage and risk-taking because of those expected guarantees. This means that government policies (or expectations of policies) tilt the financial system in favor of banks and away from other providers of financial services. To the extent that higher bank regulatory capital requirements reduce the subsidy

for banks, this might allow other financial service providers to emerge, compete with banks, and enhance the overall efficiency and functioning of New Zealand's financial system.

10. A second exception to my positive assessment of the RBNZ's analyses is that the RBNZ does not sufficiently consider the dynamic response of the financial system to increased capital requirements. While the RBNZ stresses the static impact of capital requirements on output, the overall impact depends on the degree to which nonbanks emerge and grow to provide financial services to households and firms.
11. In evaluating the likely dynamic response of the economy to a change in bank regulatory capital requirements, the RBNZ should consider the degree to which there are legal, regulatory, and policy impediments to the emergence and operation of nonbank forms of household and firm finance in New Zealand.
12. Furthermore on dynamics, the RBNZ should more explicitly incorporate into its analyses that New Zealand is a small, open economy. The global banking system is distorted by the enormous subsidies that governments provide to banks in the form of implicit and explicit guarantees on bank debts. Although there might be global advantages in the form of stability and efficiency to reducing these subsidies globally, the RBNZ can only change the subsidies within New Zealand. The RBNZ should analyze how the Australian parents will respond and whether other entities can effectively substitute for any pullback of those banks. These considerations might also enter into the analyses of the transition period to the new regime.
13. Although I stress that the RBNZ's analyses would be enhanced by additional focus on incentives and dynamics, I also want to stress the RBNZ's analyses are not biased. They are balanced and well-reasoned. I am not arguing that giving greater attention to incentives and dynamics will cause the RBNZ's recommendations regarding capital ratios to be higher or lower. I am arguing that greater emphasis on incentives and dynamics will improve the Reserve Bank's analyses.
14. The RBNZ might view Tier 2 capital less as an ineffective loss-absorbing balance sheet item, and more as a potentially effective mechanism for constraining risk-taking incentives. The RBNZ is correctly suspicious of Tier 2 capital as a loss-absorbing liability that helps banks survive adverse shocks. But, the RBNZ could consider the possible influence of Tier 2 capital on the governance of banks and hence their incentives for taking risk, as I explain below.
15. Finally, I strongly urge the RBNZ to reconsider its evaluations of countercyclical capital buffers (CCyBs). I am skeptical that CCyBs would work in practice as suggested in consultation paper 4. Moreover, the RBNZ does not make convincing arguments for allowing banks to distribute dividends/bonuses during times of such great distress that authorities allow them to reduce their CCyBs.

Introduction

16. Banks exert a powerful influence on economic prosperity. They shape who can start and expand a business and who cannot; who can borrow to purchase a home and who cannot; who can borrow to smooth the pain of adverse events and who cannot. Furthermore, banks shape the lives of people who may never borrow from a bank by influencing economic activity and the demand for workers. Thus, the functioning of banks influences the opportunities available to individuals throughout an economy. In addition, when banking systems fail, this has far-ranging implications on businesses and households, including individuals who do not own, manage, or borrow from banks. People who rarely use banks may experience adverse disruptions to their livelihoods and well-being when banking systems falter or collapse.
17. The importance of banks in shaping the economic horizons and welfare of people throughout society helps motivate a range of government policies and regulations—including bank regulatory capital requirements.
18. There are two main economic rationales for bank regulatory capital requirements. First, there are large externalities associated with bank failures. As insightfully stated in Consultation Paper 4 (p.5), “If banks in New Zealand fail, some of us might lose money and some of us might lose jobs. However, there would also be indirect costs on all of society that may be harder to see that would negatively impact the well-being of all New Zealanders. In the end, we would all bear the cost of bank failures, in one way or another.” Since people beyond bankers suffer significantly from bank failures, there is a role for governments to impose bank regulatory capital requirements to reduce the probability of crises, while also considering any costs arising from those requirements.
19. The second economic rationale for government imposed bank regulatory capital requirements is that such regulations might be an effective mechanism for mitigating the adverse effects of other government policies (or expected policies) that spur banks to take excessive risk. That is, some government policies, or expected policies, intensify moral hazard, and it might be unfeasible to change those policies. Under these conditions, capital regulations might be an effective counterbalance to the risk-taking incentives generated by those other policies.
20. The most important government policy (or expected policy) that encourages excessive leverage and risk-taking by bankers is explicit or implicit government guarantee of investments by bank depositors and debtholders in banks. When depositors and debtholders expect that governments will bail them out if banks fail, they (1) lend money to banks at lower interest rates and (2) permit banks to become more highly levered and take greater risks. Thus, explicit and implicit government guarantees permit banks to fund themselves with lower levels of equity (“excessively low capital”) and (2) allow greater risk-taking (“excessive risk”) than

would exist in the absence of these government subsidies to (guarantees on) bank borrowing.

21. Bank regulatory capital requirements are one potential tool for counterbalancing the excessive risk-taking incentives generated by explicit or implicit government guarantees and thereby encouraging financial stability. Although there are other potential tools for addressing these excessive risk-taking incentives, it should be emphasized that it is generally not feasible to eliminate or even reduce investor expectations of government bailouts. This then provides a key rationale for government actions to mitigate the excessive risk-taking incentives generated by investor expectations that governments will bail them out.
22. Given the importance of safe, efficient banks for the people of New Zealand and the potential role of bank regulatory capital requirements in contributing towards the functioning of a sound and effective banking system, the RBNZ undertook a review of New Zealand's bank regulatory capital framework and requirements.
23. In my review of the RBNZ's analyses of the regulatory capital framework and its proposed changes I follow the structure of the consultation papers. Thus, I first assess the RBNZ's analyses of what qualifies and does not qualify as bank regulatory capital. I then evaluate RBNZ's examination of the best way to measure risk-weighted assets across the different banks in New Zealand. Finally, I assess the RBNZ's analyses concerning the computation of an appropriate regulatory capital ratio for New Zealand.

What Qualifies as Bank Regulatory Capital?

RBNZ analyses and recommendations

24. To establish and monitor compliance with bank regulatory capital requirements, regulators must define what qualifies as capital for bank regulatory purposes. That is, regulators must define which balance sheet items count—and do not count—as bank regulatory capital.
25. The RBNZ evaluates the merits of including particular balance sheet items as bank regulatory capital. The RBNZ evaluates the degree to which each balance sheet item can absorb adverse shocks to banks, so that banks can continue as an ongoing, viable entity (Consultation Paper 2, pp. 6-19). The RBNZ also provides a valuable description of the current capital regulatory regime in New Zealand (pp. 25-37).
26. Based on this evaluation of what should qualify as bank regulatory capital and the description of what currently qualifies as bank regulatory capital in New Zealand, the RBNZ draws a logical set of recommendations on reforming the definition of bank regulatory capital (Consultation Paper 2, pp. 42-51). The recommendations

follow logically from the analyses of the pros and cons of including each balance sheet item.

27. Much of the RBNZ's analyses of what should count as bank regulatory capital and many of those submitting comments on Consultation Paper 2 focus on contingent debt.

Contingent debt

28. One of the key reform recommendations emerging from the RBNZ analyses is that contingent debt should not count as bank regulatory capital. Contingent debt is debt that the bank would no longer owe, contingent on some "triggering" event, such as a large decline in market values, a material drop in the accounting valuation of assets, or a regulatory decision. The debt would be extinguished by writing off some or all of the debt or by converting the debt into equity. The trigger is considered higher (lower) if the contingent debt is extinguished or converted into equity when the equity value of the bank is higher (lower). Thus, with a sufficiently low trigger, the triggering event could happen when the bank is no longer a viable business. With a sufficiently low trigger, therefore, contingent debt might not behave as equity and save the bank from failing.
29. The recommendation to exclude contingent debt from bank regulatory capital emerges from an assessment of the potential advantages and disadvantages of including it as regulatory capital, where this assessment includes a discussion of theory, practicalities, and the history of contingent debt globally and in New Zealand (e.g., see Consultation Paper 2, pp. 8-19; 32-35; 42-46).
30. A major potential advantage of including contingent debt as bank regulatory capital is that when an adverse event triggers the write-off or conversion of contingent debt to equity, this boosts the equity value of the bank and cushions the impact of the adverse shock on the viability of the bank; it reduces the likelihood of bankruptcy. In this way, if the triggering event happens when the bank is still viable, contingent debt can act like equity in times of stress and accomplish this shock-absorbing role at lower costs to banks than issuing equity.
31. For convertible contingent debt there is a second potential advantage for including it as bank regulatory capital. The triggering event would convert the contingent debt into equity and thereby dilute the ownership stake of incumbent shareholders. To the extent that bank owners, directors, and officials would be harmed by this dilution, they might manage the bank more prudently to avoid the triggering event. Thus, convertible contingent debt can influence the risk-taking incentives of decision makers within banks.

32. The major disadvantages of including contingent debt involve the following risks and concerns.
- a. Economic theory shows that contingent debt can either increase or decrease incentives for risk-taking by bank owners; that is, contingent debt can increase or decrease bank stability. The impact of contingent debt on risk-taking incentives depends on whether the trigger is high or low and whether the contingent debt converts to equity or is write-off only. Thus, the degree to which contingent debt is stabilizing or destabilizing depends on its design.
 - b. Furthermore, when the trigger is low, contingent debt is similar to regular debt; it does not protect the bank from becoming non-viable. Under this condition, contingent debt is essentially debt, and does not have the loss-absorbing feature of equity.
 - c. There also are questions about whether the trigger will engage quickly enough in practice to save the bank from failure. This is related to whether the trigger is based on market prices, accounting values, or regulatory decisions and whether the triggering mechanisms operate effectively in practice. Indeed, contingent debt did not trigger quickly enough to save the large Spanish bank, Banco Popular, from collapse in 2017. While the contingent debt absorbed losses, this happened only after the bank was non-viable. Thus, the contingent debt acted like normal debt.
 - d. There also are concerns that bank regulators will trigger contingent debt sufficiently quickly and/or allow holders of contingent debt to experience losses. In this case, contingent debt would neither act like equity nor like uninsured debt. For instance, the Italian government bailed out retail holders of contingent debt in Monte dei Paschi di Siena when the government intervened in 2016-2017. Thus, contingent debt did not even absorb losses as planned. More generally, the theory behind contingent debt is that the triggering event happens quickly—even automatically—when the bank is still viable. Regulatory agencies, however, may not respond quickly and effectively in times of stress, or may not immediately appreciate the stresses buffeting banks. Thus, if the triggering of the contingent debt conversion or write-off (especially if the debtholders are politically influential) depends on regulators, this might further undermine the usefulness of contingent debt as an equity-like instrument.
33. The RBNZ does consider the possibility of using better-designed contingent bank debt (e.g., Consultation Paper 2, pp. 44). For example, the contingent debt could have a “high trigger” such that at weak but still viable equity values, the contingent debt would be written-off or converted to common equity. This would save the bank from bankruptcy by absorbing losses before the bank becomes non-viable.

34. The RBNZ, however, argues that this type of contingent debt is unusual in reality and untested. It therefore concludes that it is prudent for New Zealand to exclude contingent debt as a form of Tier 1 bank regulatory capital. At a broad level, the RBNZ concludes that rather than counting contingent debt as equity because it might act like equity, the RBNZ will simply count equity as equity. Given current conditions in New Zealand, I found the arguments in favor of this conclusion prudent and persuasive.

Response to submissions

35. The RBNZ provides a detailed response to the submissions concerning Capital Review Paper 2. The response summarizes the points raised in submissions from diverse groups in New Zealand and addresses key points thoroughly.
36. In many cases, the RBNZ provides further explanations for its positions. This is true especially for the case of contingent debt. While reasonable arguments can be made for including well-designed contingent debt as part of bank regulatory capital—as noted by the RBNZ and several submissions, the RBNZ has, as noted above, well-reasoned explanations for its position. The RBNZ also provides further explanations for why perpetual preference shares must be unredeemable to count as bank regulatory capital.
37. The RBNZ also modified its position along some dimensions after considering the submissions. The RBNZ made the right decision in leaving open the possibility of altering its treatment of bank regulatory capital for mutual banks. As it addresses this issue, I would urge the RBNZ to assess the degree to which particular balance sheet items within the structure of mutual banks will both absorb losses and encourage conservative, prudent risk-taking by decision-makers within those banks. The RBNZ also indicated that it needed to do more work on Tier 2 capital, which I discuss below.

Comments and concerns on what qualifies as regulatory capital

38. After reviewing Capital Review Paper 2, the background papers, the submissions by various parties, the RBNZ's response to those submissions, and a large literature on defining capital, I conclude that the Reserve Bank has conducted thorough analyses of what should qualify as bank regulatory capital in New Zealand and that the Reserve Bank has responded appropriately to submissions from the public.
39. I do, however, have two small concerns. First, I did not find the discussion about the RBNZ's regulatory philosophy helpful in examining what counts as regulatory capital. While the RBNZ provides sound analyses of what should count as bank regulatory capital, including whether contingent debt should count, these analyses

do not depend on the RBNZ’s regulatory philosophy. One can challenge the practical validity of the regulatory philosophy without challenging the RBNZ’s analyses concerning what qualifies as bank capital. For example, while RBNZ might believe that it does not insure bank liability holders, it did insure some of them when the last crisis hit. Furthermore, the New Zealand authorities are considering the adoption of deposit insurance, so that the formal regime may change. Moreover, an ample body of evidence indicates that debtholders and depositors would not permit banks to be as levered as they are without the expectation of government support in the case of a failure. The moral hazard problem is defined in terms of the expectations of a bank’s debtholders and depositors, not the expectations of the authorities. So, I question the validity and future of the regulatory philosophy. That said, I believe that the RBNZ provides sound analyses of what should, and should not, count as regulatory capital. Thus, changes to the regulatory philosophy—or disagreements about the validity of that philosophy—do not undermine the RBNZ’s evaluation of what counts as capital.

40. Second, discussing the cost of capital when evaluating the definition of capital seems misplaced. It seems more productive to first define capital and then to discuss the costs and benefits of capital when deciding on the appropriate level of capital requirements.

How to Measure Risk Weighted Assets (RWAs)

RBNZ analyses and recommendations

41. Bank capital requirements are expressed as a ratio of bank regulatory capital to risk-weighted assets. While Consultation Paper 2 focuses on defining the numerator, bank regulatory capital, Consultation Paper 3 and parts of Consultation Paper 4 focus on the denominator, risk-weighted assets (RWAs).
42. The RBNZ analyzes both the internal rating-based (IRB) and standardized approaches for calculating RWAs. Based on these analyses, the RBNZ proposes substantial reforms to the IRB approach for calculating risk-weights and less substantive reforms to the standardized approach.
43. The analyses are discussed in the RBNZ’s consultation papers, background papers, and in the RBNZ’s response to submissions regarding Consultation Paper 3. Rather than summarize these documents, I focus on two key issues: (1) whether the proposals concerning IRB models are based on sound analyses and (2) whether IRB and standardized approaches create an uneven capital regulatory environment between the four major banks in New Zealand that use the IRB approach (“IRB banks”) and the other banks that use the standardized approach for computing RWAs (“standardized banks”).

44. The RBNZ appropriately analyzes the potential benefits from, risks to, and international and domestic experiences with using banks' IRB models to calculate RWAs. The key potential benefit is that the IRB approach should, in theory, deliver a more accurate measure of each bank's RWAs. The key potential risk is that banks may manipulate their models to generate lower RWAs. Banks have strong incentives to produce lower RWAs because this will translate into lower minimum bank regulatory capital levels. The RBNZ's analyses and international experiences—albeit based on limited evidence—indicate that banks not only have strong incentives to use their models to produce lower RWAs, they act on those incentives.
45. After assessing these potential benefits, risks, and experiences, the RBNZ settles on a compromise: (1) allow the four major banks to use IRB models to get the potential benefits of improved RWA calculations, but (2) use a new scalar to boost the RWAs emerging from IRB models and impose a floor on IRB RWAs of 85% of the standardized approach to limit the potential manipulation of IRB models to generate lower RWA values. The proposal also calls for the four major banks to report RWAs based on both their IRB models and the standardized approach (dual reporting).

Responses to submissions

46. The RBNZ provides detailed responses to submissions from banks and others regarding the calculation of risk-weighted assets. In these responses, the Reserve Bank provides additional arguments for its decisions regarding global standards, IRB models, the dual reporting of IRB and standardized RWA measures by IRB banks, and the RBNZ's proposed changes to calculating IRB RWAs. These responses are careful and based on sound analyses. Furthermore, the RBNZ indicates that it will consider some modifications to its approach to operational risk, market risk, and the standardized approach going forward.

Comments and concerns on RWAs

47. I am wary of using IRB models to calculate RWAs because (a) the IRB banks have strong incentives to manipulate their models to reduce RWAs for regulatory purposes, (b) international evidence suggests that banks use their IRB models to generate lower RWAs, and (c) the RBNZ does not have all of the data and programs to vet fully each bank's IRB model.
48. The RBNZ, however, makes a reasonable case for continuing to allow the major banks to use their IRB models. The RBNZ first argues that the scalar and floor limit the risks of using the IRB models while getting the benefits of an IRB model.

Second, the RBNZ approves the IRB models, which also limits the risks of allowing banks to use those models. Although the RBNZ (a) does not have access to the full IRB model and data, (b) does not have the capacity to review (and either approve or reject) bank modifications to IRB models in a timely manner, and (c) is not itself fully confident in banks' IRB models, the Reserve Bank uses several strategies for gaining confidence in the IRB models.

49. On the scalar, floor, and strategies for assessing IRB models, I found the following. The analyses underpinning the scalar and floor are, by necessity, fairly ad hoc. The RBNZ wants the benefits of the IRB models while limiting the risks. It comes up with an ad hoc, but not unreasonable, compromise: increase the scalar to boost the RWAs emerging from the IRBs and impose a floor, so that the IRB models cannot deviate "too much" from the standardized approach. With respect to reviewing and approving the IRB models, the RBNZ does the best that it can given that (a) it has neither all of the data nor the programs underlying the IRB models and (b) it has limited resources.
50. Overall with respect to the scalar, floor, and assessment of the IRB models, and based on my reading of the RBNZ documents, the submissions by banks, and discussions with RBNZ officials, the analyses underpinning the Reserve Bank's views on IRB models do not seem unreasonable in the New Zealand-specific context, whereby "the New Zealand-specific context" I mean not just the specific composition of the banking industry but also the data, programs, and human resources available to the RBNZ.
51. The RBNZ should consider devoting additional attention to the degree to which the different capital regulatory regimes facing the four "IRB banks" and the "standardized banks" provide a reasonably fair, competitive regulatory environment. I am not suggesting that the existing or proposed regulatory regime is biased in one direction or the other. I am just suggesting that the RBNZ consider devoting some additional resources toward doing everything possible to create a regulatory regime that both (a) measures RWA as accurately as possible across the two categories of banks and (b) creates as unbiased a competitive environment as possible.
52. Addressing this combined accuracy-competitive balance issue is complex, messy, and unlikely to yield a simple answer. That said, throughout the Capital Review, the RBNZ has rigorously examined a range of nuanced issues and offered well-reasoned conclusions even when there are complex and messy challenges. Given its success in addressing such issues, the Reserve Bank might devote additional energy to assessing the accuracy and comparative severity of the IRB and standardized methods of computing RWA.¹

¹ This is not a simple undertaking. For example, one might observe that the IRB approach can yield RWAs that are 85% of the standardized approach, suggesting that the proposed regime is biased in favor of IRB banks. Such a conclusion, however, would be erroneous. The four large IRB banks are more complex than

How Much Capital is Enough?

RBNZ analyses and recommendations

53. The primary purpose of Consultation Paper 4 is to analyze and identify the ratio of regulatory capital to RWAs that is most likely to achieve the objectives of banking system soundness and efficiency. In examining the soundness objective, the RBNZ focuses on banks having enough capital to remain viable following shocks that only occur very infrequently, which is defined as once every 200 years. I am not going to comment on the appropriateness of the once-in-a-200-year shock criterion. That is a matter of social preferences. I will, however, comment on the analyses underlying the proposed capital regulations and whether they are likely to achieve that goal. In examining efficiency, the Reserve Bank focuses on the impact of capital regulations on economic output. I will also comment on these analyses.
54. In analyzing how much capital is enough to achieve these goals, the RBNZ uses (1) empirical evidence based on historical loss data from international findings, (2) stress testing, and (3) portfolio risk modeling. There are strengths and weaknesses with each analytical method for assessing how much capital is enough to achieve the soundness and efficiency objectives. The Reserve Bank is thorough in discussing the challenges, offering ranges of estimates, and providing arguments for its recommendations.
55. Consultation Paper 4 also analyzes countercyclical capital buffers, Tier 2 capital, a potential leverage ratio, and transitional arrangements. The discussion of the leverage ratio is strong and I will not comment on it. I do, however, have concerns with the analyses of the other items—countercyclical capital buffers, Tier 2 capital, and the transitional arrangements.

the standardized banks, so that the proposed regulatory regime could yield an accurate RWA for both types of banks. Indeed, depending on the nature of assets and liabilities in IRB and standardized banks, the bias could even go in the opposite direction. Similarly, one might observe that IRB banks will likely need to grow their Tier 1 capital at a faster rate than standardized banks to reach the new capital standards proposed by the RBNZ, suggesting that the proposed regime is biased against the standardized banks. But, this too would be a flawed conclusion since the regime might still be biased in favor of IRB banks. Notwithstanding the complexity and the likely conclusion that there is no way to fully assess the slant of the regulatory playing field, further analyses might uncover valuable insights on barriers to competition and fairness.

Overarching concerns with the risk appetite framework and beyond

56. In this subsection, I briefly discuss my two overarching concerns with the analytical framework underlying the examination of how much capital is enough: There is too little focus on (1) incentives and (2) the dynamic response of the economy to the proposed capital regulatory reforms. In later subsections, I provide more details on the implications of these two weaknesses on each component of the RBNZ’s capital proposal.
57. To frame my discussion of incentives and dynamics, it is valuable to recognize that one reason that banks around the world and in New Zealand can currently finance themselves with such small proportions of equity is that governments, implicitly or explicitly, *subsidize* bank borrowing. Specifically, governments implicitly or explicitly guarantee the investments that depositors and debtholders make in banks. These guarantees mean that depositors and debtholders (1) lend to banks at lower interest rates, (2) allow banks to become more levered, and (3) allow banks to become riskier than would be the case without the government guarantees. Put differently, without the government guarantees, depositors and debtholders would demand greater returns to compensate for the greater risks and would force banks to demonstrate their long-run stability, through higher capital ratios and less risk-taking (e.g., Lamoreaux, 1996; Calomiris and Jaremski, 2016).
58. Bottom-line: implicit and explicit government guarantees encourage banks to (1) fund themselves with lower levels of equity (“excessively low capital”) and (2) take greater risks (“excessive risk-taking”) than would exist in the absence of these government subsidies to bank borrowing. I use the word “excessive” because capital levels are lower and risk incentives greater than they would be in the absence of the government subsidies.
59. This is worth stressing because it means that the RBNZ’s review of capital regulatory requirements does not start from a situation in which current capital ratios and risk-taking are broadly set by market forces. Rather, the starting point of the RBNZ review is that the implicit and explicit government guarantees encourage the banking system in New Zealand (and elsewhere) to have both excessively low capital ratios and excessively strong incentives for risk-taking.
60. I do not believe that it is feasible to eliminate or even reduce investor expectations of government bailouts in New Zealand. Thus, these investor expectations—and their effects on bank capital ratios and risk-taking incentives—should be taken as given when assessing bank regulatory capital requirements.
61. Excessive risk-taking incentives—and the response of those incentives to increased capital requirements—may differ markedly across banks with different ownership structures, executive compensation schemes, and governance systems.² That is, the

² See, for example, the literature review in Levine (2005) and results in Laeven and Levine (2009).

same change in capital regulations could have different effects on banks depending on their ownership structures, compensation packages, and governance systems.

- a. With respect to ownership, bank owners will generally have stronger incentives to increase bank risk when they do not have a high proportion of their personal wealth invested in the bank, e.g., in widely-held banks with diffuse ownership. This may imply that increasing capital regulations will reduce risk-taking incentives more when the additional equity comes from influential owners with a high proportion of their wealth already invested in the bank than when the additional equity comes from small, diffuse shareholders with little of their wealth invested in the bank and who do not exert much influence over the bank.
 - b. Similarly, to the extent that executives are compensated with option-type contracts tied to the bank's return on equity (ROE), this tends to augment risk-taking incentives relative to situations in which executives are paid a simple salary or where executives are penalized for excessive risk-taking. Moreover, the impact of increasing capital regulations on the risk-taking incentives of executives may depend on executive compensation. For example, if executives receive bonuses based on ROE and increasing capital regulations reduces ROE by increasing equity, executives may now have stronger incentives to increase risk taking in search of higher returns. See, for example, the research by Saunders et al. (1990) and Laeven and Levine (2009).
 - c. Finally, the governance of banks will also shape how capital regulations impact bank behavior. With stronger governance, bank behavior is governed more by the incentives of owners; while with weaker governance, the incentives of executives exert a more powerful influence over bank behavior. Thus, for a strong governance bank, the response to capital reforms will depend more on ownership and who is providing the additional capital. For a weak governance bank, the response to capital regulations depends more on executives and their compensation packages.
 - d. Thus, the impact of capital regulations depends on how those regulations influence (a) the incentives of owners, (b) the incentives of executives, and (c) the comparative power of owners and executives within the bank.
62. Yet, the RBNZ analyses do not consider the potential for ownership structure, executive compensation, or governance to shape the impact of changes in bank regulatory capital requirements on either the stability or efficiency of banking operations.
- a. The RBNZ might consider conducting analyses that differentiate among banks a bit more—especially between IRB and standardized banks. The RBNZ might consider the following sequence of questions: Do owners or

executives exert a stronger influence on the banks' major decisions? If owners are the primary decision makers, will the new capital come from small, diffuse shareholders or large, powerful ones? If executives essentially run the bank, how are they compensated?

- b. From this sequence of questions, the analyses could incorporate more information on how the proposed capital regulatory reforms will alter the incentives of decision makers within banks and hence bank stability and efficiency.
 - c. Such an approach might also illuminate other changes that would enhance the effectiveness of bank capital regulatory reform, including altering the compensation contracts of executives so that they are penalized for excessive risk-taking and not simply rewarded when risk-taking succeeds.
63. The second key weakness in the Reserve Bank's analyses is the lack of focus on the dynamic effects of changing capital regulations on the economy.
 64. The government subsidizes banks in the form of implicit guarantees on bank debts, which currently tilts the financial system in favor of highly-levered banks with excessive risk-taking incentives and away from other financial service providers. To the extent that capital regulations reduce this subsidy for banks, the regulations will increase the cost of banking in New Zealand. The overall impact on the economy, therefore, depends on the degree to which new financial institutions can arise and compete with incumbent banks in financing households and firms.
 65. Thus, the RBNZ should evaluate the degree to which legal, regulatory, and tax systems are well-prepared for the emergence and expansion of non-bank forms of finance. The ability of the overall financial system to respond to changing capital requirements and provide financial services to households and firms is relevant for evaluating the impact of capital regulations on the economy.
 66. The RBNZ might also consider that reducing the subsidy provided to banks by increasing bank regulatory capital requirements might ultimately enhance the efficiency of the overall financial system in New Zealand by allowing greater competition across different types of financial services providers, e.g., banks, nonbanks, markets, etc. That said, the potential growth of these other entities should trigger an evaluation of questions concerning the oversight and regulation of these nonbank financial services providers.
 67. Furthermore, as I will explain more fully below, the RBNZ should more explicitly incorporate into its analyses that New Zealand is a small, open economy when it examines the dynamic impact of capital regulations on the economy. The global banking system is grossly distorted by the enormous subsidies that governments provide to banks in the form of implicit and explicit guarantees on bank debts. Although there might be global advantages in the form of stability and efficiency to

reducing these subsidies globally, the RBNZ can only change the subsidies within New Zealand. Thus, the RBNZ more critically evaluate the international studies that it uses to assess the impact of capital regulations on economic output. For example, studies based on the United States, or studies that consider a change to global regulations, or studies that assume that the economy under consideration is financially closed to the rest of the world should be viewed skeptically. When only one small, open economy changes capital regulations, the potential adverse impacts on that economy might be larger than if the world changed regulations.

68. In sum, it is not obvious that conducting more complete analyses that give greater attention to incentives and dynamics will cause the RBNZ's recommendations regarding capital ratios to be higher or lower.
69. However, focusing more on incentives and dynamics will (a) give a fuller picture of the likely effects of bank capital regulations on banks, nonbanks, and the overall economy in New Zealand, (b) enhance the formation of ancillary strategies for enhancing the positive effects of new capital regulations and reducing any costs (e.g., addressing legal, regulatory, and tax impediments to the entry and expansion of nonbank financial firms), and (c) establish a more comprehensive conceptual framework for any future bank regulatory and supervisory reforms.

Analyses of what is enough capital for a once-in-a-200-year shock

70. To analyze how much capital is enough to meet the objective that banks can survive a once-in-a-200-year adverse shock, the Reserve Bank uses findings from international studies, evaluations from stress tests of New Zealand's banks, and models of portfolio risk in New Zealand. The focus of the analyses is on determining how much capital banks need to continue operating if they are struck by large, adverse shocks to asset values. That is, the analyses focus on the shock-absorbing role of capital.
71. Under the assumption that bank capital does not affect the probability of default (PD), the size of the loss given default (LGD), or the correlation of PD and LGD across banks, the Reserve Bank uses appropriate analytical methods in drawing inferences about how much capital is sufficient to buffer the economy against a once-in-a-200 year shock. In using international studies, stress tests, and portfolio risk models, the Reserve Bank provides a range of values. These analyses provide sound backing for their reform recommendations within the confines of their "shock-absorbing only" role for capital.
72. For the international studies component of the Reserve Bank's analyses, the RBNZ could be more discerning in weighting the studies. The RBNZ essentially considers the average values across the international studies rather than digging into those studies and critically analyzing which studies and countries fit the specific

conditions of New Zealand most appropriately. The RBNZ could then give greater weight to those analyses that are more relevant for New Zealand.

73. Although the Reserve Bank has not yet provided written responses to submissions by the public regarding Consultation Paper 4, I discussed several of the issues raised in these submissions with the RBNZ. The Reserve Bank had sound responses that support the findings in the Capital Review.
74. Research on banking, however, (1) challenges key assumptions underlying the RBNZ's analyses, (2) questions the RBNZ's "shock-absorbing only" view of bank capital, and (3) emphasizes the role of incentives in banking. For example, research suggests that bank regulatory capital requirements can alter the allocation of credit and hence the probability that firms default (PD), the sizes of losses given default (LGD), and correlations of the PD and LGD across banks. Put differently, since these are key assumptions underlying the RBNZ's analyses, the Reserve Bank should either provide evidence in support of them or show how the RBNZ's analyses change when the assumptions are relaxed.
75. At the most basic level, distorted incentives can cause banking crises. Although the RBNZ's approach views banking crises as arising only from large shocks to the assets of banks, crises can also happen because banks have incentives to take excessive risks due to moral hazard. A substantial body of research suggests that the moral hazard view of the causes of banking crises is not demonstrably less important than the "large shock" view.³ The RBNZ's analyses should include this additional source of bank instability.
76. At a broader level, bank capital requirements might influence bankers' risk-taking incentives and hence the probability that any specific-sized adverse shock hits the bank. Thus, the RBNZ's once-in-a-200 year shock might hit the bank less frequently than once every 200 years if capital regulations induce bank decision makers to manage the bank more prudently. The RBNZ should analyze how the proposed capital regulatory reforms are likely to influence bankers' risk-taking incentives and hence the probability that crises occur.
77. Furthermore, a large body of academic research suggests that changes in bank capital regulatory requirements can have different effects on bank stability depending on the ownership structure, executive compensation schemes, and governance systems within banks.⁴ I take each of these in turn.

³ See, for example, the literature reviews, discussions, and evidence in Barth, Caprio, and Levine (2006, 2012) and Calomiris and Haber (2015).

⁴ See, for example, Saunders, Strock, and Travlos (1990), John, Saunders, and Senbet (2000), Laeven and Levine (2009), Hagendorff and Vallascas (2011), Ellul and Yerramilli (2013), Berger, Imbierowicz, and Rauch (2016), and Corbae and Levine (2018).

78. Consider ownership. When bank owners have more of their personal wealth invested in the bank, i.e., when they have more “skin-in-the-game,” this tends to dampen their incentives for inducing the bank to take excessive risks. Similarly, owners generally have stronger incentives to increase risk when they do not have a high proportion of their personal wealth invested in the bank, which is more likely to be the case in widely-held banks with diffuse ownership.
79. Thus, ownership structure might shape the response of a bank to higher bank capital regulatory requirements. For example, increasing capital regulations will tend to reduce risk-taking incentives by more when the additional equity comes from influential owners with a high proportion of their wealth invested in the bank than if the additional equity comes from small, diffuse shareholders with little of their wealth invested in the bank and with little influence over bank decisions. Bottom-line: the impact of bank capital regulatory requirements is likely to depend on the ownership structure of banks.
80. Next, consider executive compensation schemes. Abundant research explains that when executive compensation takes the form of option-based contracts tied to the bank’s return on equity (ROE), this tends to encourage risk-taking relative to situations in which a bank compensates executives with either a simple salary or with a compensation package that penalizes executives for excessive risk-taking, regardless of how those risks materialize.
81. Thus, executive compensation could shape the response of banks to higher bank capital regulatory requirements. For example, if executives receive bonuses based on ROE and increasing capital regulations increases bank equity, executives might have stronger incentives to increase risk-taking to generate the previous ROE. This might mean the bank capital regulatory requirements need to be that much higher to create a sufficient cushion against these incentives. Or, it might mean that the RBNZ should modify executive compensation systems so that they do not encourage excessive risk. Bottom-line: The RBNZ’s analyses should consider the potential impact of capital regulatory reform on risk-taking as a function of executive compensation.
82. Finally, consider the governance of banks, which ultimately shapes the degree to which credit allocation and risk-taking reflect the interests of banks owners or executives. With stronger governance, bank behaviors (and executive compensation schemes) are governed more by the incentives of owners.
 - a. As such, with stronger governance, the impact of bank capital regulatory reforms will depend more on the degree to which influential bank owners allocate more of their personal wealth to the bank in the form of common equity or whether it is small, diffuse shareholders providing this extra equity. If it is large, influential owners providing this equity, then this will tend to dampen risk-taking. If it is small diffuse shareholders, then

increasing capital requirements will have a smaller dampening effect on the risk-taking incentives of owners.

- b. With weaker governance, bank behaviors are shaped more by the incentives of executives—and hence by their compensation packages. As such, with weaker governance, the impact of bank capital regulatory reforms will depend on how those reforms shape executive incentives as discussed above. Again, the issue is that there are analytical advantages to considering the role of governance when evaluating the impact of capital regulations on individual banks and the banking system more generally.
 - c. In sum, the RBNZ could consider that the impact of capital regulations depends on how those regulations influence (a) the incentives of owners, (b) the incentives of executives, and (c) the comparative power of owners and executives within the bank.
83. Focusing more on incentives might also enhance the analyses of the comparative impact of the proposed capital regulations on the IRB and standardized banks. For example, to the extent the IRB banks are run primarily by executives who have a large part of their compensation in the form of options-type bonuses linked to ROE, this implies that (a) risk-taking incentives are especially strong, (b) capital regulations are unlikely to reduce, and might even increase risk-taking, suggesting that the capital cushions must be especially large. Moreover, under this example, complementing capital regulatory reforms with reforms of executive compensation schemes would be especially beneficial.

Assessing the impact of capital on output

84. In assessing the potential adverse impact of higher bank regulatory capital requirements on economic output, the Reserve Bank analyzes three steps: (i) the impact of higher capital requirements on banks' average cost of funding, (ii) the impact of those increased funding costs on the price and quantity of bank loans flowing to households and firms, and (iii) the impact of these changes in bank loans on aggregate output in New Zealand.
85. For the first step—evaluating the impact of higher capital requirements on banks' average cost of funds, the Reserve Bank and submissions focus on the Modigliani-Miller (MM) offset. The MM offset reflects the net effect of capital requirements on funding costs: Equity is typically an expensive source of external finance, but more equity tends to increase bank stability, potentially lowering the cost of raising external funds. As noted by the Reserve Bank, estimating the “right” MM offset is exceptionally difficult. Based on international studies, the Reserve Bank uses an MM offset of 50.

86. With respect to the analytical support for this MM offset, the RBNZ's analyses are sound and the estimates are reasonable given the material challenges to predicting the MM offset. My own assessment is that increasing bank regulatory capital is unlikely to reduce banks' cost of raising deposits and debt by much due to too-big-to-fail expectations by the purchasers of those debts that already keep the costs of debt low. Many submissions by banks challenge the RBNZ's MM offset, and the RBNZ will certainly provide more details in their responses to those submissions.
87. For the next two steps—analyzing the impact of higher funding costs on bank lending and the impact of bank lending on aggregate output, the RBNZ uses results from international studies. The studies yield fairly wide estimates of the ultimate impact of raising capital requirements on output. The RBNZ uses prudent estimates of the overall impact of higher capital requirements on the economy within the context of the Reserve Bank's risk appetite framework.
88. The RBNZ also correctly stresses that with larger capital cushions, any given shock to the value of banking system assets will be less likely to trigger reductions in output associated with banks becoming non-viable.

Assessing the impact of capital on output: Incentives

89. The RBNZ's assessments of the impact of capital requirements on output, however, are limited by its lack of emphasis on incentives and dynamics. In this subsection, I discuss incentives and in the next subsection turn to dynamics.
90. Before discussing some of the analytical consequences from not emphasizing incentives when assessing the impact of capital regulations on the economy, I want to briefly note the state of research on this topic. There is considerable research suggesting that (1) capital regulations influence the allocation of bank credit and bank risk and (2) banks influence economic growth primarily by influencing the allocation of credit, not the amount of credit, e.g., the literature review by Levine (2005). These findings suggest that to properly assess the impact of capital regulations on economic growth, researchers need to consider how capital regulations alter the allocation of credit. Despite this motivation, researchers are only just beginning to build models that incorporate banking systems in which incentives play a material role into macroeconomic models in order to estimate the impact of capital regulations (and other banking sector policies) on economic growth. This approach requires the building of models, such as in Corbae and Levine (2019) and the literature cited therein, parameterizing those models for a particular country, and then running policy experiments to garner insights on the impact of capital regulations on output. Thus, I will explain the concerns that I have with the RBNZ's analyses of the economic consequences of capital regulations with the expectation of triggering focused consideration of these issues, without

suggesting that the RBNZ build tools that have not yet been developed in academia or other policy institutions.

91. The RBNZ adopts a “plumbing” view of banks. Funds flow into banks in the form of equity, deposits, and debt and they flow out to households and firms. From this plumbing view, therefore, capital regulations that increase the cost of bank funds will tend to reduce the flow of bank credit out to households and firms. From this perspective, the MM offset is a first order consideration because it influences the reduction of the flow of credit through the pipes.
92. However, capital regulations can also influence incentives and hence how banks allocate credit across different households and firms.
 - a. For example, consider one of the key economic rationales for government imposed bank capital regulatory requirements: to offset the large government subsidies provided to banks in the form of implicit or explicit guarantees on bank liabilities, which are often amplified in too-big-to-fail banks. As noted, these government subsidies encourage banks, especially large banks, to become excessively levered and to take excessive risks. Furthermore, these subsidies for banks discourage nonbanks (and small banks that operate without too-big-to-fail government subsidies) from entering financial markets or expanding their operations. To the extent those subsidies materially harm the safe and efficient functioning of the overall financial system—not just the banking system, then capital regulations that effectively reduce those subsidies for banks can improve the overall functioning of the financial system. Higher capital regulations might improve the functioning of the overall financial system by reducing the subsidies flowing to large banks.
 - b. As a second example, if capital regulations induce influential owners to have more skin-in-the-game, they might choose to invest in less risky endeavors. This would involve a distributional shift in economic activity.
 - c. The Reserve Bank could devote more attention to the incentive effects of capital regulations and the potential implications on output and the distribution of output.
93. In making these points, I am not suggesting that the Reserve Bank’s analyses do not consider incentives. Incentives are prominently discussed in the context of IRB models and the non-technical summary of Consultation Paper 4 notes the role of incentives in paragraph 3. I am suggesting that the role of incentives could play a more prominent role throughout the analyses of stability and efficiency.

Assessing the impact of capital on output: Dynamics

94. There are also analytical consequences to not stressing the dynamic effects of capital regulations on output. The increase in bank capital regulatory requirements will, among other things, reduce the subsidy that the government provides to banks. It will increase the costs of being a bank in New Zealand. Thus, the impact of capital regulations on the economy depends on how—and how quickly—other segments of the financial system respond. If the legal, regulatory, and tax system is well-prepared for the emergence and expansion of nonbank forms of finance, this will tend to both reduce any adverse economic effects from higher capital regulations and enhance the positive implications from having a financial system less distorted in favor of banks. The opposite is also true. To the extent that there are material legal, regulatory, and tax impediments to the emergence and growth of well-functioning nonbank forms of finance, these would tend to make increasing capital regulations more costly. The Reserve Bank might consider analyzing these issues more intensively.
95. There are two types of additional analyses that the RBNZ might consider. First, and perhaps most crucial, it could carefully assess the legal, regulatory, and tax impediments to the emergence of well-functioning nonbanks. Second, it could build on the types of computable finance-macro models discussed above, e.g., Corbae and Levine (2019) to assess the overall impact of capital regulations on banks, nonbanks, and the overall economy, though this second step is beyond the boundaries of methods currently employed at central banks and regulatory agencies around the world.
96. Furthermore on dynamics, New Zealand is a small open economy. If higher capital requirements make banking less profitable in New Zealand, banks might shift their activities elsewhere. Thus, although there are good reasons for concluding that (a) bank capital ratios are excessively low and risk-taking incentives are excessively high among banks around the world and in New Zealand and (b) raising bank capital requirements would boost stability and potentially efficiency in the long-run, addressing excessively low capital ratios in one country might have greater effects than if the world collectively fixed this problem. Since studies of optimal capital regulations generally do not focus on one, small open economy adjusting its capital requirements, the RBNZ might want to consider this issue more explicitly.
- a. It is true that bank profits are comparatively high in New Zealand relative to neighboring economies, which suggests that banks will be unlikely to shift their activities elsewhere following a change in bank regulatory capital requirement.
 - b. However, the fact that bank profits are comparatively high also suggests that there are barriers to competition. This is problematic if those barriers

limit the dynamic response of New Zealand's financial system to the regulatory change.

- c. The RBNZ could analyze the likely dynamic response of the financial system and the economy in more depth to the proposed capital regulatory changes.

Countercyclical capital buffer (CCyB)

- 97. I would urge a reconsideration of the analyses underlying countercyclical capital buffers (CCyBs). In general, the RBNZ's Capital Review rigorously assesses each issue from a theoretical, empirical, and practical perspective. The examination of CCyBs, however, could use additional analyses with respect to the practical implementation of this policy.
- 98. The analyses underlying Consultation Paper 4 make the unsubstantiated assumption that policymakers are well aware of where the economy is with respect to business and financial cycles and can adjust CCyBs with sufficient lead time to navigate through troubled times. For example, the background paper that the RBNZ pointed me to argues, that "To be effective, a positive CCB must be implemented at least one year before risks crystallise."⁵ Is there any evidence of such prescience on the part of bank regulators? Is there any evidence that central bankers implement monetary policy actions at least one year before financial system risks emerge?
- 99. There is also an implicit assumption that policymakers will not use CCyBs when the economy is not facing banking system distress. I am skeptical. By mistake, CCyBs might be used at the wrong time, or not used at the right time. Furthermore, CCyBs could be abused for political purposes.
- 100. Moreover, the RBNZ does not make convincing arguments for allowing banks to distribute dividends/bonuses during times of such great distress that authorities allow them to reduce their CCyBs.

Tier 2 capital requirements

- 101. The RBNZ focuses on capital as a cushion against adverse shocks to bank assets. With more capital, banks can continue as going concerns when hit with larger shocks.
- 102. Thus, the RBNZ focuses on "going-concern capital;" capital that will keep the bank operating as a viable business after a shock. The RBNZ contrasts such going-

⁵ See page 5 of the 15/05/17 memorandum on "The countercyclical capital buffer strategy" by Michael Thornley.

concern capital with Tier 2 capital, such as subordinated debt, which is less effective as a cushion against non-viability because subordinated debt only absorbs losses when the bank is no longer a going concern.

103. If the RBNZ expands its focus to consider capital as both a cushion and an incentive device, Tier 2 capital can be a valuable complement to (not a substitute for) Tier 1 capital. To the extent that holders of Tier 2 capital (a) do not believe that the government will bail them out in times of distress and (b) influence bank decision-making either directly or through the price of Tier 2 capital, Tier 2 capital can dampen risk-taking within banks. While it is well-established that diffuse shareholders in widely-held companies typically have strong incentives to increase corporate risk after obtaining funds from debtholders, uninsured debtholders have incentives to limit this risk-shifting. Thus, well-designed Tier 2 capital can enhance incentives and complement Tier 1 capital.

Transitional arrangements

104. In assessing the transition to the new capital regulatory regime, the RBNZ focuses on the percentage of profits necessary to achieve the proposed capital regulatory requirement and the issuance of new common equity.
105. The Reserve Bank might deepen these analyses. The concern is not simply how quickly banks can issue new equity or accumulate sufficient retained earnings to meet the new regulatory requirements.
106. The concern is also how quickly the overall financial system can adapt to minimize any adverse effects on the economy and maximize the long-run benefits of a more diverse financial system. If existing banks are going to play slightly smaller roles following this capital regulatory reform, will other nonbank sources of finance emerge and prosper quickly? The expected speed and effectiveness of this response might inform the analyses of the transition period. These analyses might also identify key legal, regulatory, and tax impediments to the effective response of other financial institutions and market arrangements for financing households and firms.

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