Reserve Bank Capital Review
Industry Forum

21 February 2019
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Opening remarks: Adrian Orr
Competition protocols
Timeline of Capital Review and next steps
Objectives and Principles

• Promote the maintenance of a sound and efficient financial system by setting the most appropriate capital adequacy framework for New Zealand

• According to principles of Capital Review, capital should…
  1. Readily absorb losses ahead of creditors and depositors
  2. Take account of the relative risk of banks’ exposures
  3. Not vary substantially between different methods for determining capital requirements
  4. Reflect the risk inherent in NZ financial system and the RBNZ’s regulatory approach, and therefore the outcome should be conservative relative to peers
  5. Be practical to administer, minimise unnecessary complexity, and account for home-host regulatory relationships
  6. Be transparent to enable effective market discipline
What we’re proposing

- Tier 1 capital of 16/15 percent of RWA
- Recalibrate internal models to around 90 percent of standardised
- Capital buffers tied to Escalating Supervisory Response framework
  - Enhanced role for capital buffers (including countercyclical, DSIB)
  - Leverage ratio – disclosure and minimum (4/3 percent of exposures)
  - 5 year transitional period
What we’re proposing

<table>
<thead>
<tr>
<th>Tier 1 ratio</th>
<th>Large banks</th>
<th>Prop. minimum</th>
<th>Current outcome</th>
<th>Proposed minimum</th>
<th>Small banks</th>
<th>Prop. minimum</th>
<th>Current outcome</th>
<th>Proposed minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>11.8%</td>
<td>$35bn</td>
<td>16%</td>
<td>$48bn</td>
<td>14.1%</td>
<td>$5.5bn</td>
<td>15%</td>
<td>$5.9bn</td>
</tr>
<tr>
<td></td>
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</table>
Clarity on regulator-regulated relationship

- More efficient model approval process
- Escalating Supervisory Response (ESR) – greater clarity about supervisory actions with a graduated buffer approach
Timeline – near term

- Another industry forum penciled in Auckland (March)
- Analytical note on Risk Appetite Framework (March)
- Consultation period extended (3 May)
- Open to further discussions with industry during the consultation period, including bilateral meetings if desired
- Release of final decisions, accompanied by Regulatory Impact Statement (Q3)
Further work

• Consultation on further elements of the framework:
  ➢ Near term:
    – Identification framework for systemically important banks (March)
    – Internal model change process (workshop with affected banks)
  ➢ Later in 2019 and beyond:
    – Mutual capital instrument
    – Leverage ratio design (if decision to proceed)
    – Escalating Supervisory Response framework and trigger points
    – Strategy for setting the countercyclical capital buffer
    – Operational risk framework (pending APRA finalisation)
    – Tier 2 (subject to current consultation)

• Dovetail with changes to Banking Supervision Handbook as Capital Review decisions are implemented
# Proposed transition

<table>
<thead>
<tr>
<th>Quarter / year</th>
<th>Proposal</th>
</tr>
</thead>
</table>
| Q3 2019        | • Confirm final Capital Ratio decisions  
                 • New AT1 instruments need to meet revised standards |
| Q4 2019        | • Start of transition to higher ratios  
                 • Implement changes to IRB framework (floor / scalar) |
| 2020           | • Dual reporting  
                 • Revised Standardised Measurement Approach (Op Risk)  
                 • Leverage ratio requirements  
                 • Transition to higher capital ratios |
| 2021           |         |
| 2022           |         |
| 2023           | • Transition to higher capital ratios |
| 2024           |         |
Proposed transition

- Tier 1 requirement including prudential buffers
- Current Tier 1 capital ratio
- Tier 1 capital ratio after changes to IRB framework

Systemically important banks

<table>
<thead>
<tr>
<th>Year</th>
<th>Q3-2018</th>
<th>end-2019</th>
<th>end-2020</th>
<th>end-2021</th>
<th>end-2022</th>
<th>end-2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tier 1</td>
<td>8.5%</td>
<td>10%</td>
<td>11.5%</td>
<td>13%</td>
<td>14.5%</td>
<td>16%</td>
</tr>
</tbody>
</table>

Non systemically important banks

<table>
<thead>
<tr>
<th>Year</th>
<th>Q3-2018</th>
<th>end-2019</th>
<th>end-2020</th>
<th>end-2021</th>
<th>end-2022</th>
<th>end-2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tier 1</td>
<td>8.5%</td>
<td>9%</td>
<td>10.5%</td>
<td>12%</td>
<td>13.5%</td>
<td>15%</td>
</tr>
</tbody>
</table>
Risk appetite framework and calibration
Contents

• The risk appetite framework
• The quantitative modelling
• Output impacts. What basis for claims of “win-win”?
Context for the policy

• The Basel standards are a **minimum**, local context matters

• Financial crises have significant economic and social impacts

• Established conventions in the academic literature about the relationship between capital, crises and output

• RBNZ’s soundness and efficiency mandate

• Risk appetite is central to calibrating financial regulation (Basel III, Solvency II in insurance)
Four lenses on capital adequacy

Risk Appetite Framework:

- **Soundness objective**
  - Capital sufficient to retain the confidence of creditors when subject to an extreme (notional 1 in X) shock

- **Efficiency objective**
  - Subject to meeting soundness objective, does the capital requirement maximise expected economic output?
Conventional expression of the policy problem

Relationship of Benefits, Costs and Optimal Capital Level ($K^*$)

Marginal costs and benefits of capital
Conventional relationships deliver an output peak

Output relative to capital

K ratio

Stability is increasing
The RBNZ’s illustration takes one further step - maps output against stability

- Capital requirements that maximise expected output (but the level of stability may still be too low)
- Trading lower expected output for more stability (though expected output still higher than current settings)

Expected economic output (GDP)

Stability and output combination implied by current minimum requirements

Less stable Financial stability More stable
Risk Appetite Framework

• Soundness objective
  ➢ Capital sufficient to retain the confidence of creditors when subject to an extreme (notional 1 in X) shock

• Efficiency objective
  • Subject to meeting soundness objective, does the capital requirement maximise expected economic output?
Four lenses on capital adequacy

- International financial crisis data
- Stress testing
- Risk modelling of NZ banks
- ‘Optimal’ capital modelling (RBNZ and others)
Quantitative modelling
Quantitative modelling - introduction

1. Optimal capital literature

2. Loss modelling (Value at Risk model)
   - Focus was on the relationship between capital and the probability of a crisis
   - Aim was to produce a range of capital ratios that would deliver market confidence in the face of large shocks, after taking allowance of provisions
   - Required a quantitative value for the risk appetite, we used 1 in 200 years
## International financial crisis data

<table>
<thead>
<tr>
<th>Study</th>
<th>Ratio measurement</th>
<th>Required amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCBS (2010)</td>
<td>CET1 (Equity) / RWA</td>
<td>10% to 13% (Bank of England restated as 16%+ Tier 1 Ratio)</td>
</tr>
<tr>
<td>Brooke et al. (2015)</td>
<td>Tier 1 Capital / RWA</td>
<td>14% to 16%</td>
</tr>
<tr>
<td>(Bank of England)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Firestone et al. (2017)</td>
<td>Tier 1 Capital / RWA</td>
<td>17%+</td>
</tr>
<tr>
<td>(Federal Reserve)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dagher et al. (2016)</td>
<td>Equity / RWA</td>
<td>15% to 23% required to avoid 85% of the banking crises during the GFC</td>
</tr>
<tr>
<td>(IMF)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Loss modelling approach

• Model NZ system as a single bank (precedent in RBNZ modelling, going back to Basel III model in 2012)

• Asymptotic Single Risk Factor (ASRF) model (x2 streams)

• Some of the decisions required:
  – What loss indicators?
  – What banks to include in the historical sample?
  – How, if at all, to incorporate overseas info?
  – How, if at all, to incorporate IRB model inputs?
## Risk modelling approaches

<table>
<thead>
<tr>
<th>Stream A</th>
<th>Stream B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Historical NPL</td>
<td>Historical and model data</td>
</tr>
<tr>
<td>Simple average all NZ banks</td>
<td>Weighted average NZ</td>
</tr>
<tr>
<td>99.5% confidence</td>
<td>99.5% to 99.7% confidence</td>
</tr>
<tr>
<td>Strict solvency</td>
<td>Failure level of capital</td>
</tr>
<tr>
<td>Reference to overseas</td>
<td>Reference to NZ IRB</td>
</tr>
<tr>
<td>Stress test results for LGD</td>
<td>Stress test results for LGD</td>
</tr>
<tr>
<td>R value 0.16 to 0.4</td>
<td>R value 0.24 to 0.32</td>
</tr>
<tr>
<td>Tier 1 = 14.5% to 16%</td>
<td>Tier 1 = 15.5% base case</td>
</tr>
</tbody>
</table>
Stream A output illustration

Monte Carlo analysis

- Confidence level = 99.5%
- $1.5\% < PD < 3\%$
- $35\% < LGD < 50\%$
- $0.20 < R < 0.40$
- Failure threshold = 0%
- Median capital ratio = 15.2%
- Mean capital ratio = 15.5%
Stream A output illustration

<table>
<thead>
<tr>
<th>LGD = 40%</th>
<th>PD</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5%</td>
<td>8.1</td>
<td>11.4</td>
</tr>
<tr>
<td>2.0%</td>
<td>9.7</td>
<td>13.6</td>
</tr>
<tr>
<td>2.5%</td>
<td>11.1</td>
<td>15.5</td>
</tr>
<tr>
<td>2.8%</td>
<td>11.9</td>
<td>16.6</td>
</tr>
<tr>
<td>3.0%</td>
<td>12.4</td>
<td>17.2</td>
</tr>
</tbody>
</table>

Confidence = 99.5%
Stream B output illustration

Figure 3: Monte Carlo analysis (PD 1-2%, LGD 30-40%, R 24-32%)

Confidence level = 99.7%,
1% < PD < 2%,
30% < LGD < 40%,
24% < R < 32%,
Failure threshold = 2%,
Median capital ratio = 15.3%,
Mean capital ratio = 15.4%
Output impacts – what basis for “win-win”?
Marginal costs and benefits of equity
Output assessment

- Estimated impact of policy on lending *margins* 20 bps to 40 bps
- Net benefit of policy proposal =
  
  \(\text{Expected Costs of Crisis} \times \text{Reduction in probability of crisis} \) –
  
  Lower steady state output due to higher lending margins

- Overseas research suggests the PV impact of this change in lending rates on long run GDP could be -0.16% to -0.33% of GDP
- Will factor in bank cost estimates to final cost benefit analysis / Regulatory Impact Statement (RIS)
## Capital and output

<table>
<thead>
<tr>
<th>Source</th>
<th>Effect on lending rates (basis points)</th>
<th>Effect on GDP (basis points)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal Reserve Board (2017), Full Pass Through</td>
<td>6.9</td>
<td>-7.4</td>
</tr>
<tr>
<td>Federal Reserve Board (2017), Half Pass Through</td>
<td>3.4</td>
<td>-3.7</td>
</tr>
<tr>
<td>BCBS (2010)</td>
<td>13</td>
<td>-9</td>
</tr>
<tr>
<td>Federal Reserve Bank of Minneapolis (2016)</td>
<td>5.7</td>
<td>-5.7</td>
</tr>
<tr>
<td>RBNZ meta-study (2016)</td>
<td>5 to 8</td>
<td>-1 to -5</td>
</tr>
</tbody>
</table>
The meaning of “win-win”

Capital requirements that maximise expected output (but the level of stability may still be too low)

Trading lower expected output for more stability (though expected output still higher than current settings)

Stability and output combination implied by current minimum requirements

Expected economic output (GDP)
International comparisons
International comparisons can be a misleading basis for assessing capital policy

- Multiple sources are available that report relative capital levels of banks globally
  - BCBS, S&P, EBA

- But comparative results are an unreliable guide to capital adequacy
  - Our policy aim is to calibrate to absolute NZ risk and an NZ risk tolerance, not peer relative outcomes

- Comparative results can reveal little about relative regulatory policy settings in different countries
  - Actual outcomes reflect different Pillar 1/Pillar 2 philosophies, “side letters”, voluntary capital choices etc., and not just nominal regulatory minima
### Basel III Monitoring Report (BIS) – Dec 2017 data

**Fully phased-in CET1, Tier 1 and total capital ratios under the final Basel III standards**

<table>
<thead>
<tr>
<th>In per cent</th>
<th>Group 1 banks</th>
<th>Of which: G-SIBs</th>
<th>Group 2 banks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CET1</td>
<td>Tier 1</td>
<td>Total</td>
</tr>
<tr>
<td>Max</td>
<td>54.0</td>
<td>56.8</td>
<td>58.3</td>
</tr>
<tr>
<td>95th percentile</td>
<td>21.8</td>
<td>22.4</td>
<td>24.0</td>
</tr>
<tr>
<td><strong>75th percentile</strong></td>
<td>13.9</td>
<td>15.1</td>
<td>17.2</td>
</tr>
<tr>
<td>Median</td>
<td>12.3</td>
<td>13.4</td>
<td>15.1</td>
</tr>
<tr>
<td>25th percentile</td>
<td>10.8</td>
<td>11.7</td>
<td>13.3</td>
</tr>
<tr>
<td>5th percentile</td>
<td>8.7</td>
<td>9.8</td>
<td>11.0</td>
</tr>
<tr>
<td>Min</td>
<td>7.1</td>
<td>7.2</td>
<td>10.0</td>
</tr>
<tr>
<td>Weighted average</td>
<td>12.2</td>
<td>13.3</td>
<td>15.2</td>
</tr>
</tbody>
</table>

**Source:** Basel Committee on Banking Supervision.

- Limitations: NZ application of Basel framework on average more conservative than other jurisdictions, dataset includes banks with less comparable business models to NZ
International comparisons – S&P RAC

• Limitation: Standard and Poor’s Risk-Adjusted Capital methodology relies on S&P’s economic risk assumptions

(peer group: 4 largest NZ banks, large retail and commercial banks in each country; NZ (p) = pro forma at 17% Tier 1)
International comparisons - Basel

• Limitation: Basel framework applied differently across jurisdictions

(peer group: 4 largest NZ banks, large retail and commercial banks in each country; NZ (p) = pro forma at 17% Tier 1)
International comparisons - Leverage

- Limitation: Leverage ratio doesn't control for different risk profiles

(peer group: 4 largest NZ banks, large retail and commercial banks in each country; NZ (p) = pro forma at 17% Tier 1)
Afternoon tea
Quality of capital
Contents

• Recent global policy focus on gone-concern
• Why the Reserve Bank has a focus on going-concern
• Why we don’t want CoCos in the capital framework
• Ordinary share capital for banks structured as mutual societies
Recent global policy – gone concern

- FSB’s TLAC – Principles and Term sheet released Nov 2015
- APRA’s Tier 2 proposal – consultation paper released Nov 2018
Rationale for Gone Concern capital

• Banking crises do great harm
• Bailing-in creditors once a bank is non-viable helps contain a crisis, and reduces fiscal risk
• Gone concern capital instruments operate to deliver bail-in
Why we prefer going-concern

- Banking crises do great harm – preventing them makes sense
- The case for increasing *going-concern* requirements is sound
- Bailing-in creditors can be problematic:
  - Potentially lengthy, costly, uncertain outcome
  - Particularly difficult when hosting a systemic bank
- We have options to increase capital that other countries may not have (a reasonable flow of earnings that can be retained)
Why we reject CoCos

- Our focus is prevention, not resolution. History shows that CoCos may not be Tier 1 material:
  - Suspending dividends makes a bad situation worse
  - May not trigger in time (i.e. when the bank is viable)
- In NZ CoCos have been primarily sold to parents (fill-in for equity)
- History shows they may have fiscal risk (not reliable for resolution)
- Uncertainty generated by ‘circuit breakers’ for NZ-issued CoCos sold domestically (not reliable for resolution)
Ordinary share capital for mutuals

• “Full voting rights” = one vote per member, not share

• BS2A’s requirements for distributions and allocation of net surplus assets – dividend policies and society rules the solution?

• Building Societies Act 1965 – Section 11 raises a potential question about the permanence of issued share capital

• We are committed to working with the sector to facilitate the issuance of ordinary shares.
Changes to IRB framework
Objectives

• Preserve the risk differentiation and capital allocation benefits of internal models, where we think these exist

• Where internal modelling doesn’t offer net tangible benefits, more efficient to use standardised approaches

• For a given underlying level of risk, internal models and standardised approaches should produce broadly comparable capital levels
  • Disparity of outcomes we see in key areas (e.g. mortgages) hard to justify on the basis of different underlying risks

• Put risk mitigants in place to allow for more efficient processes
  • Streamline the model approval process
  • Reduce reliance on model interventions, overlays
How to balance competing objectives?

- Reduce gaps between IRB and standardised
- Preserve a risk-sensitive capital framework
- Reduce gaps across IRB banks
- Adjust IRB calibration (scalar)
- Combination of output floor and scalar
- Output floor tied to standardised
- More intensive monitoring, enforcement of IRB (e.g. regular benchmarking)
Quantitative Impact Study

- QIS provided information on how current IRB outcomes compare to standardised approach, used to calibrate output floor and IRB scalar
- Currently, IRB approach produces average of 76 percent of standardised
Proposals

• Reduce scope of internal models
  • Standardise sovereign and banks, operational risk modelling

• Recalibrate IRB approach closer to standardised outcomes
  • Increase scalar so that average IRB outcome is around 90 percent of standardised
  • No loss of risk differentiation or capital allocation benefits

• Output floor of 85 percent of standardised, supported by robust dual reporting
  • Acts as a backstop, though not expected to be binding

• More level playing field for comparable risks

• Consulting on calibration (~90 percent outcome, compared to current 76)
A more level playing field

- Current Tier 1 capital per $100 of mortgage lending, Tier 1 capital at proposed minimum ratios (estimate using public data only)
Other issues