What are we trying to achieve

• The **purpose** of the Capital Review is to identify the most appropriate capital adequacy framework for New Zealand-incorporated banks, taking into account our experience and changes to international standards.

• The key **principles** for this part of the Capital Review are:
  
  ➢ Capital requirements must reflect the risk of bank exposures;
  
  ➢ Capital outcomes should not unduly vary between standardised and IRB banks;
  
  ➢ Capital framework should minimize unnecessary complexity, and consider relationships with foreign-owned banks’ home country regulators; and
  
  ➢ Capital framework should be transparent to enable effective market discipline.
What we need from FSO

- We seek to confirm whether to retain or remove IRB modelling
- We seek in-principle decisions on the risk measurement framework
- We recommend a conceptual framework to assist in the overall calibration of capital.
- This approach will ultimately incorporate risk appetite into the ‘optimal capital framework’ for final capital decisions.
- Calibration is not the focus of this paper.
Retain or remove IRB models?

• Arguments to retain IRB models:
  ➢ In theory, IRB approach incentivises banks to improve risk management
  ➢ In theory, IRB approach is more risk sensitive than standardised approach, and banks are better-placed than regulators to measure risk
  ➢ Trans-Tasman considerations

• Arguments to remove IRB models:
  ➢ IRB models are complex, opaque, and resource-intensive to supervise
  ➢ Outcomes may reflect modelling approach rather than risk differences
  ➢ Unfair advantage for IRB banks (compared to standardised)
If we’re keeping internal models...

Then, we recommend that FSO agrees to:

1. Apply standardised approach for calculating capital for operational risk
2. Apply standardised approach for calculating capital for externally-rated loans (e.g. large corporates, banks, sovereigns)
3. Require dual reporting of IRB banks
4. Implement a capital output floor for IRB banks
1. Standardise approach to Operational Risk

**CURRENT CAPITAL CALCULATIONS**

Advanced Measurement Approach

- IRB banks use internal models
- Models are difficult to understand
- Basel Committee highlighted difficulty in modelling operational risk

**PROPOSED CAPITAL CALCULATIONS**

Standardised Measurement Approach

- Propose to adopt Basel approach with APRA adjustments
- Banks calculate capital on a simple measurement of bank income variables
- As bank’s income flow increases, op. risk capital will increase progressively

---

**INCOME STATEMENT**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest Income</td>
<td>$2mil</td>
</tr>
<tr>
<td>Interest Expense</td>
<td>$5mil</td>
</tr>
<tr>
<td>Fees Income</td>
<td>$3mil</td>
</tr>
<tr>
<td>Fees Expense</td>
<td>$1mil</td>
</tr>
<tr>
<td>Other Operating Income</td>
<td>$9mil</td>
</tr>
<tr>
<td>Other Operating Expense</td>
<td>$8mil</td>
</tr>
<tr>
<td>Total Profit</td>
<td>$XXbil</td>
</tr>
</tbody>
</table>
2. Standardise externally-rated exposures
3. Require dual reporting

- Propose to require IRB banks to **calculate capital using both IRB and standardised approach**
- Enhance transparency and comparability of capital outcomes (promote market discipline)
- Will likely involve changes to banks’ systems
- Different ways to implement dual reporting (e.g. exposure by exposure, asset class, portfolio level)
- Dual reporting at exposure basis / consistent with BS2A is most robust and transparent
4. Output floor

• Propose that IRB banks would not just measure (dual reporting), but hold capital on a greater-or-equal basis against a floor

• To reduce excessive variability of risk weights (between IRB banks, and between IRB banks and standardised banks)

• Calibration of the floor is not the focus of this paper, and would be considered in the ratio paper

• Basel and APRA have settled on 72.5% floor, to be applied at the aggregate portfolio level

• Most of the floors we have on IRB banks are already higher than 72.5%
Other issues to consider

• We generally look to align with APRA where sensible. However,
  - APRA’s reform is in some ways moving further from Basel;
  - APRA Review is expected to conclude in 2nd half of 2019;
  - Significant changes to the standardised framework to align with APRA may benefit IRB banks, but impose costs on standardised banks;
  - We already align with APRA on ad hoc basis, and one of the key principles of the Capital Review is to consider relationships with foreign-owned banks’ home regulators.

• Resourcing issues (particularly supervision of internal models)

• RBNZ’s current supervisory approach (more weight on self and market discipline)
Inputs into the setting of minimum capital requirements

- The international literature (including optimal capital analysis)
- QIS (Quantitative Impact Study)
- Comparative analysis
- Stress test results
- RBNZ Optimal capital model (V2 Harrison / Booth Model)
Optimal Capital Framework

Implied Appropriate Range of CET1 Ratios

Lower CET1 Ratio

Range of CET1 Ratios

Higher CET1 Ratio

Minimum Requirements: CET1 Ratio of 4.5%

Literature Review (Baseline Cases)

IMF Loss Avoidance Analysis

Harrison Model

Big Equity

NZBA / PwC Comparative Analysis

More Costly to Taxpayer

Recourse to the Taxpayer in a crisis

Less Costly to Taxpayer

Very High

High

Mid

Low

Very Low
Range of ‘optimal capital’ levels

The ‘optimal’ CET1 ratio $\Delta$GDP/$\Delta$CET1 = 0 (but the level of risk may still be too high)

Society must decide and apply its risk appetite (‘decision set’)

These options are inefficient as stability can be increased without sacrificing output

Each point on the curve implies a unique CET1 ratio

Low            High            Financial Stability
Next Steps

• Publish in-principle decisions along with summary of submissions (late June)
• Design the Quantitative Impact Study (QIS) to assess impact of proposed changes to capital framework for FSO’s approval (July)
• Workshop the QIS and in-principle decisions with banks (August)
• Develop the Risk Appetite framework, to inform calibration of capital requirements and the cost-benefit analysis (July / August)
Appendices
## Summary of submissions and proposed response

<table>
<thead>
<tr>
<th>Summary of banks’ submissions</th>
<th>Proposed response</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Credit risk – IRB approach</strong></td>
<td>No consensus among the Big 4 on the extent of limiting IRB modelling, while Kiwibank and TSB argued for the removal of the IRB approach.</td>
</tr>
<tr>
<td>3 of the 4 Australian banks, along with TSB, argued for alignment with APRA, while Kiwibank and Genworth expressed support for aligning with Basel III.</td>
<td></td>
</tr>
<tr>
<td><strong>Dual reporting for IRB banks</strong></td>
<td>All of Big 4 except for WNZL did not support dual reporting.</td>
</tr>
<tr>
<td><strong>Risk weight floor for IRB banks</strong></td>
<td>Two of the Big 4 supported applying a single floor on the whole portfolio, while WNZL supported applying the floor on a more granular level (asset class).</td>
</tr>
<tr>
<td><strong>Credit risk – standardised approach</strong></td>
<td>Kiwibank, TSB and Genworth supported adopting Basel 3 and keeping the 0% risk weight for sovereigns.</td>
</tr>
<tr>
<td><strong>Operational risk</strong></td>
<td>All of the Big 4 banks supported adopting new Basel 3 standardised framework for operational risk, as well as adopting additional requirements for op risk management.</td>
</tr>
<tr>
<td><strong>Market risk</strong></td>
<td>Nearly all submitters agreed to keep status quo, with some arguing for adoption of Basel approach at a later stage.</td>
</tr>
</tbody>
</table>
Comparison of RBNZ and APRA
Comparison of RBNZ and APRA

RBNZ IRB Asset Classes

- Corporate
- Sovereign
- Bank
- Retail
- Equity
- All Other Exposures

Specialised Lending
- Eligible corporate purchased receivables
- Farm lending
- Exposures secured by residential mortgages
- Qualifying revolving retail exposures (QRRE)
- Retail SME
- Eligible retail purchased receivables
- All other retail

Project finance
Object finance
Commodities finance
Income-producing real estate

- Standard Residential Mortgage Loans (RML)
- Reverse RML
  - Non-property investment RML (owner-occupiers)
  - Property investment RML
## Output floor implementation

### 1) Exposure by exposure

<table>
<thead>
<tr>
<th>Credit risk</th>
<th>Exposure (A)</th>
<th>Pure IRB</th>
<th>Standardised (exposure-by-exposure)</th>
<th>Min capital (exposure basis)</th>
<th>Explanation for Column F</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>RW (B)</td>
<td>Min capital ( C = A \times B \times 8% )</td>
<td>RW (D)</td>
<td>Min capital ( E = A \times D \times 8% )</td>
</tr>
<tr>
<td>Housing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loan A</td>
<td>$100.0</td>
<td>10%</td>
<td>$0.8</td>
<td>30%</td>
<td>$2.4</td>
</tr>
<tr>
<td>Loan B</td>
<td>$100.0</td>
<td>50%</td>
<td>$4.0</td>
<td>30%</td>
<td>$2.4</td>
</tr>
<tr>
<td>Total Housing</td>
<td>$200.0</td>
<td></td>
<td>$4.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corporate</td>
<td>$100.0</td>
<td>150%</td>
<td>$12.0</td>
<td>100%</td>
<td>$8.0</td>
</tr>
<tr>
<td>Op Risk</td>
<td></td>
<td>$1.0</td>
<td></td>
<td>$2.0</td>
<td>$2.0</td>
</tr>
<tr>
<td>Market Risk</td>
<td></td>
<td>$5.0</td>
<td></td>
<td>$1.0</td>
<td>$5.0</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>$22.8</td>
<td></td>
<td>$15.8</td>
<td>$25.4</td>
</tr>
</tbody>
</table>

Additional capital due to standardised floor (exposure by exposure) **2.60** = 25.4 – 22.8
Output floor implementation

2) Asset class

<table>
<thead>
<tr>
<th>Credit risk</th>
<th>Exposure (A)</th>
<th>Pure IRB</th>
<th>Standardised (asset class)</th>
<th>Min capital (asset class basis)</th>
<th>Explanation for Column F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing</td>
<td></td>
<td>RW (B)</td>
<td>RW (D)</td>
<td>Min capital (F = Max (C,E))</td>
<td></td>
</tr>
<tr>
<td>Loan A</td>
<td>$ 100.0</td>
<td>10%</td>
<td>$ 0.8</td>
<td>$ 4.8</td>
<td>Max (4.8,4.8)</td>
</tr>
<tr>
<td>Loan B</td>
<td>$ 100.0</td>
<td>50%</td>
<td>$ 4.0</td>
<td>$ 12.0</td>
<td>Max (12,8)</td>
</tr>
<tr>
<td>Total Housing</td>
<td>$ 200.0</td>
<td></td>
<td>$ 4.8</td>
<td>$ 8.0</td>
<td>Max (5,1)</td>
</tr>
<tr>
<td>Corporate</td>
<td>$ 100.0</td>
<td>150%</td>
<td>$ 12.0</td>
<td>$ 2.0</td>
<td></td>
</tr>
<tr>
<td>Op Risk</td>
<td>$ 1.0</td>
<td></td>
<td>$ 2.0</td>
<td>$ 5.0</td>
<td></td>
</tr>
<tr>
<td>Market Risk</td>
<td>$ 5.0</td>
<td></td>
<td>$ 1.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>$ 22.8</td>
<td></td>
<td>$ 15.8</td>
<td>$ 23.8</td>
<td></td>
</tr>
</tbody>
</table>

Additional capital due to standardised floor (asset class) 1.00 = 23.8 – 22.8
# Output floor implementation

## 3) Aggregate

<table>
<thead>
<tr>
<th>Credit risk</th>
<th>Pure IRB</th>
<th>Standardised (portfolio basis)</th>
<th>Min capital (portfolio basis)</th>
<th>Explanation for Column F</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Exposure</td>
<td>RW Min capital</td>
<td>RW Min capital</td>
<td></td>
</tr>
<tr>
<td>Housing</td>
<td></td>
<td>$ 100.0 10% $ 0.8</td>
<td>$ 4.0</td>
<td></td>
</tr>
<tr>
<td>Loan A</td>
<td>$ 100.0 10% $ 0.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loan B</td>
<td>$ 100.0 50% $ 4.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Housing</td>
<td>$ 200.0 150% $ 12.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corporate</td>
<td>$ 100.0 150% $ 12.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Op Risk</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market Risk</td>
<td>$ 100.0 150% $ 12.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>$ 200.0 150% $ 12.0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Additional capital due to standardised floor (aggregate)** 0.00 = 22.8 – 22.8
Proportion of IRB Banks' *bank* and *20 largest* exposures that are externally-rated

As at 31 March 2018. Source: Large Exposure survey