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IRRBB Revisited

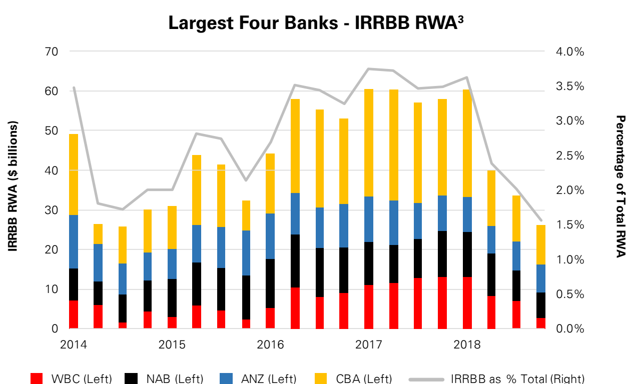
November 2019

APRA recently opened a second consultation on Interest Rate Risk in the Banking Book (IRRBB)[1]. The draft Prudential Standard it released with that consultation will tighten risk management practices at all ADIs, while changing the measure of regulatory capital for IRB institutions and potentially increasing system capital. This note outlines and explores the main changes in the draft Standard.

Key themes

APRA had several objectives in revising APS117. These included:

- Lowering volatility in RWA. IRRBB has represented an average 2.8 percent of the RWA of Australia's largest four banks over the last five years. In that time, its quarter-on-quarter volatility has been almost six times higher than total RWA volatility for those same banks. APRA regards at least some of this disparity as 'unnecessary', and it has implemented changes to reduce volatility in RWA generated by IRRBB. The chart below shows the extent of the variability in RWA generated by the four largest banks.
- Increasing comparability. APRA has been seeking uniformity in risk reporting for all risk types, and its imposition of consistency in the measurement of IRRBB capital is unsurprising. Differences in modelling practices at the largest four banks have hindered comparisons of their risk profiles. For example: at CBA, RWA due to IRRBB has fluctuated as a proportion of total RWA from 1.4 percent to 6.3 percent over the last five years; at Westpac, the same range is 0.5 percent to 3.1 percent. Differences in business models alone are unlikely to fully explain these discrepancies in risk profile across the two banks. As the chart below shows, the contribution of each bank to system capital varies considerably over time.



- Achieving global consistency. Australia was unusual in its early adoption of a pillar one capital treatment for IRRBB at the largest four banks. Global standards have now emerged, and they differ from longer-standing local requirements. Change is therefore needed[2].
- Raising standards of governance. Qualitative aspects of risk governance and the use of IRRBB in business decisions vary significantly across ADIs. APRA is effectively bringing many smaller institutions up the curve by subjecting them to APS117 and making its expectations of risk management more explicit.
- Driving consistency with traded market risk. Under the draft Standard, the capital treatment of tradeable instruments will be much more consistent with traded market risk.

Achieving these aims will come at some cost. For one, the more prescriptive capital calculations create a wedge between regulatory capital models and the assumptions that banks use to run their businesses. This could ultimately weaken the linkage between regulatory capital and actual risk outcomes. APRA is aware of this problem but regards it as a fair price to pay for reducing the variability of capital levels across institutions and over time.

A more concrete cost of the reforms is the remediation work that they entail. Changes to risk measurement in the banking book tend to be pervasive, and therefore expensive, from a systems perspective. There is therefore much to do ahead of an expected go-live in 2022. Smaller ADIs will need to upgrade their model governance and their stress testing. Larger institutions will have even more on their plates, as they reconfigure their risk systems for the draft capital calculation methodology.

1 Consultations close on 6 December 2019

2 Basel Committee on Banking Supervision, Interest Rate Risk on the Banking Book, April 2016

3 Pillar 3 Disclosures

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What's in the box?[4]

Key change 1: Standardising the internal modelling approach

ADIs currently set their own repricing assumptions for banking book items that do not have contractually defined repricing dates. APRA sees this as a source of unnecessary cross-sectional variability in RWA, and so it has proposed standardised duration assumptions for non-maturing deposits. Its assumed duration varies according to whether or not the banking item is a core deposit, defined as one that:

- is either a stable deposit or an operational deposit as defined under APS 210 Liquidity; and,
- pays an interest rate that is managed by the ADI, is generally materially below wholesale market rates for overnight lending, and does not usually change in response to movements in wholesale market rates.

The draft Standard constrains the duration of core deposits by requiring that principal payment be at least 20 percent overnight, with the remainder spread evenly or tapered over a period not exceeding five years. All other non-maturing deposits have an overnight repricing profile, unless otherwise approved by APRA.

Basis risk add-ons have been removed from capital charge, except for:

- single-currency basis risk arising from market-related banking book items; and
- proprietary positions in cross-currency basis swaps, any explicit exposures to cross-currency basis risk and other risk factors from instruments, unless there is an effective hedge relationship which neutralises the exposures.

Optionality risk will be calculated by specifying scalar factors for behavioural assumptions. Additional optionality risk add-ons are required if the ADI, through its annual review process, determines that the potential losses from all other exposure to optionality risk are material.

The removal of basis risk add-ons will probably and partially offset increasing capital charge on repricing and yield curve risks.

4 The full consultation package and draft standard are available at: https://www.apra.gov.au/consultations-revisions-capital-framework-authorised-deposit-taking-institutions

Key change 2: Distributional assumptions

APS 117 levies an IRRBB capital charge on the 99th percentile of the distribution of economic value over a one-year holding period. The draft Standard replaces this approach with a 97.5th percentile expected shortfall measure. It also mandates absolute – that is, additive rather than proportional – interest rate shocks as the basis for the distribution of returns.

In addition, for the purposes of the VaR calculation, the draft Standard also proposes to mandate:

- using an eight year observation period, ending no earlier than three months before the calculating date;
- historical simulation as the method used in estimating the 97.5th percentile expected shortfall;
- using five business day overlapping holding periods, with scaling up of rate shocks to a one-year equivalent by the square root of 50;
- Zeroing the mean of shocks applied to risk factors from the observation period;
- No cap or floor for shocks applied to an interest rate or the post-shock interest rate; and
- full revaluation, or an APRA-approved sensitivity-based method, for market-related items.

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Key change 3:
Extension of qualitative requirements

The draft Standard imposes an IRRBB framework on all ADIs, effectively making explicit requirements that might otherwise be left open to interpretation under APS110 and CPS220. Large ADIs already comply with many of these requirements, but smaller ADIs will need to adapt to them. They include:

- An IRRBB management framework that is clearly documented, articulates ADI's risk appetite for IRRBB in both economic value and earnings, assigns accountabilities, and articulates responsibilities and reporting relationships to the Board;
- Board oversight of the IRRBB management framework;
- Active involvement of senior management in the implementation of the IRRBB management framework and policies with responsible executive committee;
- Sufficient resources dedicated to the management and measurement of IRRBB;
- An IRRBB risk management function;
- Assessment of IRRBB characteristics for new products;
- An IRRBB measurement system with comprehensive and detailed documentation;
- A stress testing program incorporating sudden changes in interest rates for both economic value and net interest earnings;
- Internal reporting of IRRBB exposures;
- Integration of the IRRBB measurement system into day-to-day risk management;
- Stricter governance over the booking of the liquids portfolio;
- Comprehensive data collection as well as, testing and documentation that are transparent and verifiable; and,
- Independent review of the IRRBB management framework.

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Our take

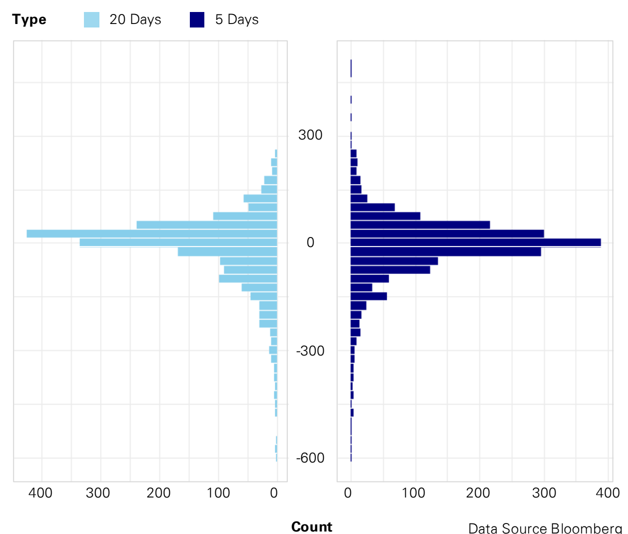
Despite the removal of some basis risk charges and APRA's expectation of little change in overall system capital, IRRBB capital requirements are likely to rise. We base this suspicion on several features of the draft Standard:

- Conservative constraints have been set at a number of key points in the interest rate calculation.
  - The capital charge has an in-built ratchet: it is the greater of the capital charge at the calculation date or the average of latest three month-ends.
  - The post shock economic value expected shortfall is the minimum economic value across the set of repricing assumptions.
  - The prepayment rate assumption for optionality risk calculated as central prepayment rate assumption multiplied by standardised factor but no greater than the "highest possible prepayment rate" for fixed-rate, non-market-related assets.
  - The drawdown rate assumption for optionality risk is capped at 100 percent.
- Interest rate floors have been disallowed in the simulation of banking book values. This will prevent the modelled value of a banking book from declining under the weight of lending spread compression. In that way, it will support the modelled level of RWA during periods of declining interest rates, without reducing capital should the interest rate cycle turn.
- Some of the most important forms of basis and optionality risks have been retained.

Changes to the assumed period of return in historical simulations are also likely to drive RWA up. Most banks currently assume holding periods longer than the five days set by the draft Standard when simulating historical returns. Reducing the holding period to five days should fatten the tails of the distribution of rate changes. This is because mean reversion in interest rates often happens slowly.

To illustrate the point, we modelled changes in a number of different AUD benchmark interest rates using an eight-year historical data window. The tails of the distribution of five day (zero-mean) changes in those rates tend to be fatter than the tails of the distribution of changes using the more common twenty-day period. The case of the three month BBSW rate is typical.

Basis Point Changes in BBSW 3M over 5 and 20 Days Windows



The effect of other changes to the distributional assumptions for the capital charge are hard to predict and probably variable over time. But they are likely to serve APRA's aim of reducing inter-temporal volatility in RWA through at least two channels:

- The expected shortfall measures are much less subject to the 'cliff effects' associated with single percentile measures of risk, such as VaR.
- Absolute shocks used in historical simulation are likely to remove much of the instability that would be associated with the more conventional proportional shock, when interest rates are low.

Beyond the quantitative elements of the draft Standard, the qualitative changes are a welcome improvement. Qualitative IRRBB standards have been a grey area for institutions not covered by APS117.

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Next steps for you

ADIs will have much to do in adapting to the draft Standard. To a large extent, the specific steps will depend on the size of the ADI.

For the bulk of ADIs (i.e. those that do not currently report under APS117), key steps will include:

1. Compliance gap assessments and development of a transition plan.
2. Reform of governance processes up to, and including, the role of the board.
3. The establishment or enhancement of limit setting frameworks and a more detailed expression of interest rate risk appetite.
4. Development of additional reporting mechanisms.

KPMG offers comprehensive services to support you with the transition including:

- Compliance gap assessment;
- Independent model validation and testing for economic value and earning-at-risk;
- Independent review of IRRBB management framework and policies;
- Stress testing;
- Behavioural modelling; and
- Management information development..

For further information, contact our Financial Risk Management practice.

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