

# BASEL IV

## *and Australian banking*

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*International standard setters' approach to the appropriate design of regulatory bank capital requirements is currently in a state of flux. We examine the potential effects of recent Basel III and proposed Basel IV changes on the future role of risk sensitivity and internal models in capital requirements, competitive advantages from and incentives for banks to attain IRB status, and the implications for the Australian mortgage market. This is an abridged and revised version of a paper presented at the 20th Melbourne Money and Finance Conference.*

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In December 2014, the Basel Committee (BCBS 2014b, 2014c) issued consultation papers proposing fundamental changes to minimum capital standards for banks. They involved changes to risk-weight calculations in the standardised approach for credit risk and the redesign of 'capital floors' for 'advanced Basel banks',<sup>2</sup> calculated by reference to proposed revised standardised capital requirements for credit, market and operational risks.<sup>3</sup>

These changes, plus final calibration of the Basel III leverage ratio, will reduce the large discrepancies between the minimum capital requirements calculated under the advanced and standardised approaches for many banks.

Also, in November 2014, the Basel Committee (BCBS 2014a) signalled a potential narrowing of allowable internal ratings-based (IRB) modelling approaches and a longer-term review of risk-sensitivity in the regulatory capital framework (including a potentially reduced role for banks' internal risk models).<sup>4</sup>

These and other proposed changes to the Basel regulatory framework (including a capital charge for interest rate risk in the banking book (IRRBB) are generally referred to (informally) as 'Basel IV'.<sup>5</sup> The likely effects of such substantive changes are difficult to assess, particularly since the Basel III changes (including introduction of Total Loss Absorbing Capital requirements and additional capital charges for Systemically Important Banks) are being gradually implemented.

In this paper we argue that careful calibration of the proposed capital floors and leverage ratio requirement will be necessary to maintain appropriate risk sensitivity in regulatory capital requirements. These have become increasingly important in Australian bank capital allocation and planning since the Basel III changes to risk weights and required capital levels which have reduced the relevance of (now relatively smaller) bank 'economic capital' calculations. We emphasise, and examine, the potential effect of reducing bank incentives to improve risk management capabilities to achieve IRB accreditation within the regulatory framework. We identify potentially substantial changes to the supply and cost of mortgage credit in Australia, and conclude by commenting on the ongoing longer-term review of the Basel framework.

### **Risk sensitivity and capital requirements: The leverage ratio requirement**

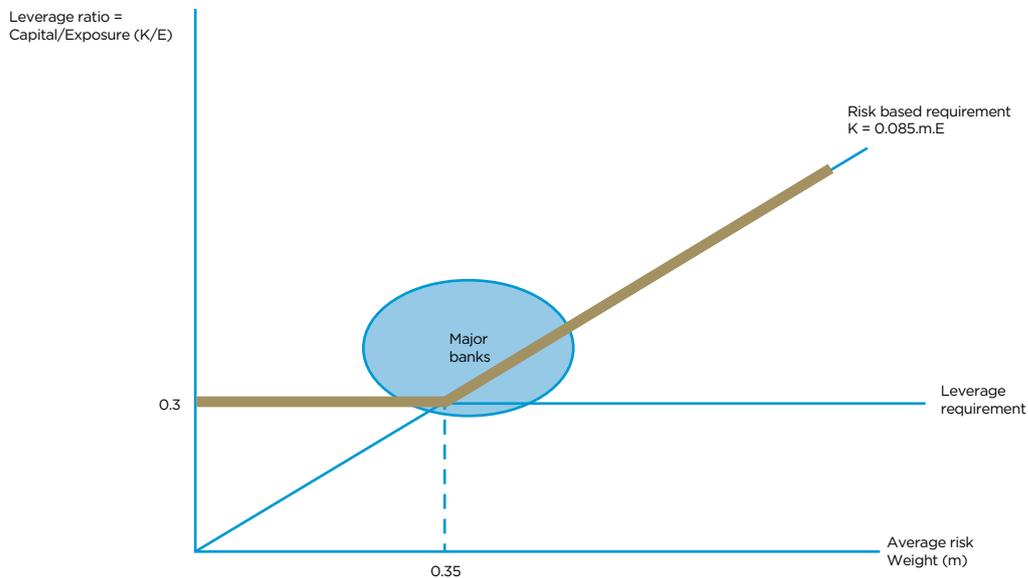
Risk-based, and risk-sensitive capital requirements have been a fundamental precept of the Basel approach to date. The Basel II changes sought to redress inadequate risk sensitivity in the Basel I framework which had prompted regulatory arbitrage and led to inadequate bank capital levels. However, excessive amounts of leverage by some banks prior to the financial crisis, together with post-crisis doubts about the reliability of banks' risk models for 'low-default' portfolios, led to the introduction in Basel III of a non-risk-weighted 'leverage ratio' requirement. This was initially intended primarily as a 'backstop' measure to risk-based capital requirements, to avoid bank capital levels falling below acceptable minimum levels.

At the time of writing, the final calibration of the minimum leverage ratio has not yet been announced by the Basel Committee; this will be determined by end-2016. However, the Committee has announced that the minimum leverage ratio will be based on a Tier 1 definition of capital and at least 3 per cent of 'exposures'<sup>6</sup> which incorporate both on-balance sheet and off-balance sheet credit exposures (weighted by credit conversion factors).<sup>7</sup>

But even at 3 per cent, the leverage ratio could act to constrain certain low risk-weight activities such as residential mortgage lending. For example, under the risk-weighted assets (RWA) approach with a minimum Tier 1 capital requirement of 8.5 per cent of RWA, \$100 of exposures with an average risk weight of 30 per cent would require \$2.55 of Tier 1 capital. This is less than the \$3 which would be required under a minimum 3 per cent (average) leverage ratio requirement.

Similarly, at an effective average risk weight of 35 per cent or less, a leverage ratio of 3 per cent would become binding (Figure 1). Even if not binding overall, it creates an implicit additional capital cost for low risk-weight lending. For example, residential mortgage lending would, at the margin, effectively be subject to a Tier 1 capital requirement of at least \$3 per \$100 loan if the actual leverage ratio is not to be reduced. In contrast, \$2.125 is the effective minimum average capital charge applicable under APRA's 2015 decision to require a minimum average risk weight for mortgages for Australian IRB banks of 25 per cent from 1 July 2016.

**FIGURE 1: Leverage ratio calibration**



It is quite difficult to determine the precise calibration of the leverage ratio at which the current aggregate, effective 'average risk weights' of the major Australian banks would cause the leverage ratio to be binding. This is partly because operational and market risks are included in the calculation of minimum risk-weighted capital requirements, whereas the leverage ratio calculation compares total Tier 1 capital (including that which is held for market and operational risks) against an exposure figure which only incorporates on- and off-balance sheet credit exposures. Nevertheless, based on the Basel Pillar III disclosures of the major banks in November 2015,<sup>8</sup> it appears that a minimum leverage ratio, even as high as 4.5 per cent, would not have been binding for the four major Australian banks as at 30 September 2015.<sup>9</sup>

We examine potential mortgage market consequences of the leverage ratio later.

A sufficiently high minimum leverage ratio requirement which becomes the 'binding' capital constraint could remove or diminish risk-sensitivity in the regulatory capital framework. This would be inconsistent with the Basel Committee's commitment to risk-sensitivity of capital requirements, as reflected in the proposed revisions to the standardised approach for credit risk and in the recently revised standardised approach for market risk.<sup>10</sup>

## The future of the IRB approach

There have been numerous academic critics of the merits of the IRB approach (see, for example, Goodhart 2010; USSFRC 2013; Admati and Hellwig 2013). While regulators and the banking industry are generally supportive (for example, Byres 2014, 2015; IIF 2015a, 2015b), some (for example, Haldane and Madouros 2012; Tarullo 2014) have been critical.

At a practical level, depending on how they are designed, calculated and calibrated (together with the leverage ratio requirement), the Basel IV 'capital floors' could render the complex IRB calculations of risk-weighted assets and minimum capital requirements for credit risk essentially redundant. Such an outcome would effectively remove any material (capital) incentive for banks to expend the hundreds of millions of dollars required to strengthen risk management systems and processes to meet the standards required to achieve IRB accreditation from national regulators.

It is interesting to note that some regulators and commentators have lost confidence in banks' internal risk models, which underpin the IRB approach. One reason has been the demonstration (Basel 2013a, 2013b) that banks' internal risk models throw up wide disparities in risk weights (and consequent capital requirements) for specified exposures. However, as explained by the Bank of England (2014), there are valid reasons to expect such disparities. Perhaps more relevant is the global financial crisis (GFC) experience, when at the peak of the crisis in late 2008 many market participants lost faith in banks' reported, risk-based capital ratios derived using internal models and focused more on simple leverage measures. This is reflected in concerns about the (lack of) international comparability of measures of bank risk and capital strength.

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Also relevant has been the increasing technical and quantitative complexity of the IRB framework. This can create a disjuncture between technical modellers and relevant business decision-makers and risk managers, and also create difficulties for banks' senior management and board directors to participate meaningfully in discussions about these matters. This provides a significant challenge for effective risk governance – which requires the primary exercise of collective wisdom and judgment – and seems to us to be a more important critique than interbank differences in RWA assessments.

A further concern of some academic commentators (see, for example, Admati and Hellwig 2013, p. 184) is that while development and use of more sophisticated bank risk management systems is desirable, that should be a commercial decision by banks in the context of the activities they wish to pursue. These commentators argue that those systems do not necessarily provide a suitable basis for financial regulation where considerations of financial system stability are paramount, but are not a component of banks' commercial decisions about economic capital levels and allocation. In this view, the case for reliance upon bank internal models and alignment of regulatory requirements with commercial decisions about capital allocation has not been proven.

Recently, the industry has been arguing strenuously to the contrary, that it is essential to keep risk sensitivity, and the role of internal risk models, at the centre of the future regulatory capital framework. In a November 2015 letter to the Chairman of the Basel Committee, the Institute of International Finance (IIF 2015a) stated that the preservation of risk sensitivity is 'of vital importance for safety and soundness', and 'critical to banking':

The IIF strongly believes that it is critical to keep risk-sensitivity at the center of the capital framework. This belief is driven by the industry's judgment that risk sensitivity is the best way to minimize the misallocation of resources by instilling in banks' decision-making processes the primacy of aligning capital support with risk of loss. Long term divergence between regulatory capital frameworks and underlying economic risks is bound to have serious adverse consequences ...

The IIF letter concludes with the statement:

The preservation of risk sensitivity is so critical to banking that the industry and supervisors must collectively take up the challenge to improve models and restore the credibility of the IRB framework ...

A comprehensive discussion paper issued by the IIF in September 2015 (IIF 2015b) makes the industry case in greater depth. In November 2015 (Byres 2015) the APRA Chairman also expressed support for continuing the use of internal models within the regulatory framework, albeit subject to certain conditions, including a stronger set of modelling constraints and increased consistency in modelling practices.

Ultimately, the case for the merits of the IRB approach versus increased reliance on some form of simpler standardised approach involves three primary considerations:<sup>11</sup>

- > the merits and priority attached to risk-sensitive regulatory capital requirements
- > the impact of regulatory requirements on the efficacy of bank internal risk management processes
- > whether the design of such requirements can provide adequate incentives for future improvements in bank risk management practices, and the importance that should be attached to such incentives.

Did the Basel II introduction of the IRB approach and associated capital incentives lead bank regulation up a blind alley? Arguably not. The capital concessions provided for IRB-accredited banks provided a material inducement for banks to spend vast sums to develop strengthened credit risk management processes. In that regard they were successful, and such inducements were arguably appropriate at that time of rapid financial innovation and increasing complexity. In practice, the capital concessions were typically essential in successfully making the business case to bank boards to make the very substantial necessary investments in risk systems and infrastructure.

In the future, the benefits for risk management and pricing for IRB-accredited banks could be expected to persist, regardless of whether the internal models approach survives in the regulatory capital framework. But whether the strong (albeit, very complex) 'guard rail' of the current, prescriptive Basel requirements, and associated detailed supervisory review, is necessary to drive ongoing improvements in the effectiveness of (both IRB and standardised) banks' internal credit risk management processes is an important consideration.

'Best practices' in credit risk management have improved substantially since the introduction of Basel II and information about such practices is more easily accessible to banks today. In tandem, supervisory requirements for risk management have evolved and become substantially more rigorous over the past decade.

In this context, it is reasonable to question whether we have now reached a point where competitive pressures are sufficiently powerful to drive risk future management improvements in banks without IRB capital incentives.

Current IRB banks are well-placed to adopt further improvements to their risk management practices at relatively small additional cost. However, we are not convinced that the boards of many standardised banks perceive the quantum leap and substantial cost of improvements to their risk management capabilities required for IRB status as a source of potential future competitive advantage or, indeed, necessary for maintaining competitiveness with sophisticated peers. Without the IRB capital incentives, few are likely to make the needed investments to achieve that status.<sup>12</sup>

Whether this provides a case for retention of substantial capital incentives within the credit risk framework, which apply across all business activities, is another question. Arguably, it may be possible to design and calibrate a 'standardised approach' which provides adequate risk sensitivity and appropriate prudential requirements, and which enables smaller banks to compete in markets where less sophisticated risk management approaches suffice (and avoid activities for which their risk management capabilities are inadequate).

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In this context, it is interesting to note that substantial capital incentives have indeed been retained by the Basel Committee in the new, revised standards for minimum capital requirements for market risk issued in January 2016.<sup>13</sup>

### **Australian mortgage market implications**

It is significant that, despite the original Basel focus on internationally-active banks, the banking markets in which the differences between IRB and standardised minimum capital requirements have arguably had most effect on competitive neutrality have been residential mortgage, SME and personal loan markets — which are largely segregated domestic markets. Even if capital requirement differences are reduced, if the IRB accreditation requirements did, in fact, lead to better credit risk assessment and improved pricing, the IRB banks would still retain a commercial competitive advantage.

The changes in residential mortgage risk weights for Australian IRB banks announced by APRA on 20 July 2015, which increase the average risk weight from around 16 per cent to a minimum of 25 per cent, have already had a significant effect on mortgage pricing. Even though the changes do not come into effect until July 2016, the four major banks chose to undertake large capital raisings in anticipation of the change, and increased residential mortgage interest rates by 15 to 20 basis points in October 2015, in consequence (several standardised banks also took advantage of those changes to increase their rates).

The proposed Basel IV changes could potentially have quite significant additional implications for Australian residential mortgage markets.

One important effect arises from the proposed specification of risk weights for the revised standardised approach. A greater range of risk weights is proposed, based on the (newly proposed) 'risk driver' of loan-to-valuation ratio (LVR). A minimum risk weight of 25 per cent is proposed for loans with LVR < 40 per cent. In contrast, a loan where the LVR is 80–90 per cent would attract a risk weight of 70 per cent (BCBS 2015b).<sup>14</sup>

This implies a potentially significant decline in the capital requirement for loans as they age over time, as the LVR ratio falls due to principal repayments and house price growth. Increased differentiation of pricing for old ('back book') loans and new loans and increased competition for the former (and increased switching behaviour by borrowers) could be one outcome.<sup>15</sup> Because increases in property values after loan origination are not generally allowed in calculating the LVR for this regulatory purpose, that may also prompt switching behaviour if the new loan triggers a new higher valuation and improved pricing.

These proposed revisions to the capital requirements for banks contained within the standardised approach also increase their competitive ability in the low-risk end of the mortgage residential market, at the same time as the recent APRA changes have reduced the competitive advantage of IRB banks in that market. As noted earlier, while a minimum leverage ratio requirement of 4.5 per cent would not (with current balance sheet structures) be binding for the IRB banks, it implies a capital requirement of \$4.50 per \$100 of exposure for loans, including mortgage loans, at the margin. This may diminish the appetite of IRB banks for mortgage lending as they may seek to allocate scarce capital to higher-yielding assets including the higher-risk part of the mortgage market, where they will likely retain a competitive advantage compared to standardised banks under the proposed new standardised risk weights.

If the proposed Basel IV changes come to fruition, the ability of the IRB banks to pass any increased funding costs from higher capital requirements onto mortgage borrowers may be limited at the low-risk end of the market by the increased competitive ability of standardised banks, the re-emergence of securitisation based on low-risk, simpler structured arrangements, and the emergence of new disruptive loan business models based on new technology. With more risk-based pricing reflecting greater risk sensitivity of the proposed future standardised capital requirements, the potential exists for a substantial increase in the loan rates charged on higher-risk (high LVR) loans. To the extent that such borrowers are the marginal price-setting purchasers for average dwellings, such a change could have significant effects on the sustainability of current house price levels. More generally, the compression of the difference in capital requirements for mortgage loans relative to other lending could be expected to see a shift in the composition of overall loan supply away from mortgage lending (and/or relative interest rate adjustments, i.e. a relative increase in the cost of mortgage finance).

### **Conclusion: Basel and risk management**

We have noted the crucial importance of the Basel IV calibration challenge for the Basel standard-setters. There are real risks in setting the levels of the minimum leverage ratio and/or the proposed new capital floor too high, rendering the IRB approach for credit risk (and the advanced approaches for market and operational risks) largely meaningless, and reducing or eliminating the risk sensitivity of the Basel framework. For banks which have already achieved advanced Basel status (in particular, IRB status), the likely impact will be to shift capital away from, and increase pricing for, low-risk assets and portfolios, including mortgages. For standardised banks, the consequence will be to remove the capital incentive to pursue advanced Basel accreditation.

This raises an important consideration in assessing the Basel agenda. While its initial focus was on 'microprudential' regulation, that has morphed over time into an equal emphasis, at least, on 'macroprudential' regulation. But also important has been its role in attempting to induce improvements in bank risk management processes, both via capital incentives (for the IRB approach) and strengthened supervisory arrangements. This last consideration suggests a view that competitive forces alone are inadequate to induce banks to devote sufficient resources to developing improved risk management systems — at least from a social perspective, where risk management failures can have significant adverse consequences. Since such social costs can be mitigated by either imposing higher capital requirements, and/or by improved risk management processes, recent strengthening of capital requirements (and the experience of the GFC) suggests that such a view remains current.

If that view is correct — that competition alone will not induce socially optimal improvements in, and the adoption of, ‘best practice’ risk management practices — it has clear implications for the Basel agenda. If correct in the context of large complex banks, there may still be a role for the current (albeit, very complex) prescriptive Basel requirements for the advanced approaches to credit, market and operational risks, including supervisory review and approval of banks’ internal models, according to the highly technical requirements.

In the context of simpler banks, engaged in simpler activities, the question is whether the standardised approach, and supervisory oversight, can ensure a sufficient quality of risk management practices and adequate risk sensitivity to limit regulatory arbitrage, while achieving some degree of regulatory competitive neutrality in those markets. Where ‘standardised’ banks enter into activities where IRB level risk management skills, systems and processes are needed, capital incentives for IRB accreditation in that activity would thus have merit.

That does, however, raise the question of whether advanced accreditation for credit risk should be largely an ‘all or nothing’ hurdle,<sup>16</sup> or whether it is more appropriately required only for specified ‘sophisticated’ activities. Such a potential regulatory shift away from an ‘all or nothing’ accreditation hurdle (as has occurred recently within the new, revised market risk standards, which will allow for internal model accreditation at the individual trading desk level) would open up the possibility for standardised banks to apply for IRB accreditation only for certain products and portfolios initially. This could potentially enable a staged, progressive or partial implementation of IRB in the Australian regional banks, over time, and possibly reduce the substantial cost disincentive to such accreditation for those banks.

In this context, we note that APRA has recently made a small move in this direction, by offering Australian banks the option of staged IRB accreditation, subject to certain conditions, but stopping short of offering partial accreditation (APRA 2015). The conditions attached to APRA’s offer of staged IRB accreditation include the requirement for banks to present to APRA at the outset a credible plan to ultimately bring all material credit portfolios under the IRB approach within a reasonably short time after accreditation of the initial portfolios (not to exceed two years), and a holding back of a substantial portion of the IRB capital benefit until accreditation for all portfolios is complete. Additionally, a major difficulty for Australian banks to achieve IRB accreditation in the past has been the requirement that they must also achieve advanced accreditation for operational risk (AMA accreditation) at the same time — ie., both risk types must be accredited together. An additional element of APRA’s December 2015 proposals, is the dropping of this requirement, ie., the decoupling of these two accreditation processes. Through both of these changes, APRA is seeking to make it easier for Australian banks to receive IRB accreditation (in accordance with a suggestion of Financial System Inquiry (FSI, 2014)), while retaining both the high, overall standards that such accreditation requires, and also the substantial capital incentives available for complete IRB accreditation of all portfolios.

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## Notes

1. The Basel Committee has also recently finalised significant revisions to the capital calculations for both the standardised and modelled approaches for market risk (in a 'fundamental review of the trading book', see BCBS (2016b)), and has proposed significant revisions to the capital calculations for the standardised approach to operational risk.
2. We use this term for banks (such as the four Australian majors) which have been accredited to use their internal risk models under the 'advanced approaches' within the Basel framework for credit risk (Internal Ratings-Based approach – IRB), market risk, and operational risk (Advanced Measurement Approach – AMA).
3. Basel II incorporated a 'transitional' capital floor expressed as a percentage of the minimum capital requirement that would have been required under Basel I. The proposed new capital floor would replace the transitional floor, with its design as yet unspecified.
4. In November 2015, the Basel Committee signalled abandonment of the internal models approach for operational risk (BCBS 2015a)
5. Technically, there isn't going to be a Basel IV document, in the same way that documents exist for Basel I, II, and III. Rather, 'Basel IV' is a collection of refinements to the existing Basel III regulatory framework.
6. See <http://www.bis.org/press/p160111.htm>
7. In the United Kingdom, an interim minimum leverage ratio requirement of 3% has been proposed with the numerator comprising Common Equity Tier 1 capital (CET1) plus some Additional Tier 1 (AT1) instruments (Bank of England 2014).
8. As required under APRA Prudential Standard APS 330.
9. The four major Australian banks reported leverage ratios as at 30 September 2015 (calculated in accordance with APRA's required methodology, specified in APS 110, attachment D) as follows: ANZ: 5.07%; CBA: 4.73%; NAB: 5.54%; WBC: 4.76%.
10. See BCBS (2016b).
11. These considerations are examined in detail in the [Appendix](#) to the longer conference paper on which this is based and also by Lawrence in Chapter 8 of Cowell and Levins (2015, pp. 174–9).
12. Indeed, even in the presence of such capital incentives, it is only very recently that the Australian regional banks have begun the accreditation process.
13. The result of the calibration of the final, revised minimum capital standards for market risk is that the market risk capital charges (for non-securitisation exposures) under the revised standardised approach are 1.4 times those of the revised internal models approach (i.e. 40 per cent higher) for the median bank in the Basel Committee's sample of 44 banks. See Table 2 of BCBS (2016a), p. 11.
14. An earlier proposal from the Basel Committee to also include the Debt Service Coverage ratio (DSC) as a risk driver was dropped in the December 2015 revision.
15. The ability of lenders to inhibit switching was reduced by legislation preventing charging of exit fees on new variable rate mortgage loans from July 2011.
16. Some specialised activities of advanced banks are subject to a form of standardised approach, and APRA's guidance on achieving advanced accreditation implies a strong preference for accreditation across all activities.

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