

# Basel's Evolution: A retrospective

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*The Basel capital framework has evolved significantly since 2008, with the Internal Ratings Based (IRB) approach supporting greater sophistication in risk management and incentivizing a greater emphasis on risk in strategic decision-making. With current proposals standing to reverse this trend and instead emphasizing simpler capital metrics, we should heed the lessons of the simpler and standardized Basel I that prevailed in the lead-up to the crisis.*

*As well as providing mis-incentives, the Basel I era also saw material reductions in banks' average Risk Weighted Assets (RWA). Contrary to several claims, average RWA has at least stabilized, and often increased, since the 2008 introduction of the IRB approach.*

The Basel Committee has recently published proposals for substantial constraints on (and in some cases the complete removal) of banks' risk-based models for the capital framework. These proposals have far-reaching consequences, and stand to reverse some of the substantial progress in risk management sophistication and the prominent focus on risk in banks' strategic decision-making that has been achieved through the evolution from Basel I to Basel II, 2.5 and III.

The IIF has consistently emphasized the criticality of risk-sensitivity. As described in our September 2015 paper 'Risk and Capital: the Essential nexus', we consider it vital that capital requirements reflect the underlying riskiness of banks' assets, in order to set the right incentives for how banks choose to invest in particular business units and customer segments, how they price credit, and how they assess and reward staff performance.<sup>1</sup>

Amidst the current debate on the veracity of internal models and their role in the capital framework, it is timely to undertake a brief retrospective of the move from the blunt, highly standardized, approaches of Basel I to the internal modeling capabilities of Basel II (and then III), in terms of the relative substance of those approaches, as well as the timing of their transitions.

## Basel I revisited

Developed in the 1980's, Basel I essentially provided a simple risk-weight to each asset on a bank's balance sheet according to the categorization of the borrower, namely:

- Sovereigns: 0%
- Banks: 20%
- Mortgages: 50%
- Corporates: 100%

Banks applied this set of standard risk-weights without being able to reflect the strength or creditworthiness of the individual borrower, rather simply determining a value based on the segment that the borrower belonged to. In that sense, it has some similarities to a Leverage Ratio and to the Basel II/III Standardized Approach.

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<sup>1</sup> IIF, *Risk and Capital: the essential nexus*, September 2015, [iif.com/publication/regulatory-report/risk-and-capital-essential-nexus](http://iif.com/publication/regulatory-report/risk-and-capital-essential-nexus)

This treatment clearly creates distortions, in that banks' capital requirements were the same for all mortgages (Prime, Alt-A, and Sub-prime); equally that banks would have the same capital requirement when lending to a stable, low-gearred blue-chip corporate as they would providing leveraged loans or lending to start-ups. Where the available market yields might have some sensitivity to risk but be applied over a flat capital requirement, banks were incentivized to grow their ROE by lending to the weaker borrowers.

It also created some obvious arbitrage opportunities. For instance, where banks did lend to a strong corporate, they could hedge this exposure via a Credit Default Swap (CDS) with another bank, immediately reducing their risk-weight from 100% to 20%. Entering a transaction to achieve this 80% RWA reduction made economic sense for high-grade corporates (where the spread cost of the CDS was relatively small), though not for weaker credits with expensive spreads, meaning that banks were being driven toward adverse selection within the portion of their corporate portfolios that they retained.

Meanwhile the growth in this CDS activity helped fuel the inter-connectivity between financial institutions, and most notably, while the logic of recognizing default-risk mitigation was valid, banks received the reduced 20% risk-weight regardless of the credit quality of their counterparty banks.

Concurrently, similar opportunities existed for securitized mortgages. Where mortgages held on balance sheet incurred risk-weights of 50%, if packaged into an RMBS parcel on a basis that achieved full risk transfer, the originating bank could reduce its RWA to zero while the purchaser (if it was another bank) might incur a risk-weight of only 20% if they held it as a Banking Book asset, or even less if held in their Trading Book.

There were many contributing causes to the crisis, not least insufficient total levels of bank capital and insufficient liquidity buffers. But the mis-incentives and arbitrages described above also aided some of the market distortions and portfolio imbalances that were allowed to develop in the pre-crisis years. It was, as Andrew Bailey described it: "a system which was very poor at creating the right incentives for good outcomes."<sup>2</sup>

### **The timing of Basel II**

Contrary to general belief, the new Basel II regime was not yet implemented during the period leading up to the financial crisis. In reality, Basel II and the use of internal models for capital requirements commenced only for the first banks in Europe, Japan, Canada and Australia during 2008 – simultaneous to the onset of the crisis.<sup>3</sup>

Even this was a gradual process within those jurisdictions, because all bank internal models had to be assessed, validated and approved by national regulators, each model being subject to years of parallel runs before banks were permitted to use them in a 'live' sense for capital purposes. Some banks consequently only moved on to internal models some years later.

In the US, the use of internal models came much later, with the first approvals by the Federal Reserve and the OCC in February 2014.<sup>4</sup> Some major US banks, including GSIBs Wells Fargo and Bank of America only received their approvals in 2015.<sup>5</sup>

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<sup>2</sup>A. Bailey, speech at New York Fed conference "Defining the objectives and goals of supervision", March 18, 2016, [bankofengland.co.uk/publications/Pages/speeches/2016/894](http://bankofengland.co.uk/publications/Pages/speeches/2016/894)

<sup>3</sup>Annual Reports for banks in these countries cite that they commenced use of the Advanced Internal Ratings Based approach in their 2008 financial year, noting the specific year-end period differs across jurisdictions.

<sup>4</sup>Federal Reserve Bank and Office of the Comptroller of the Currency, *Agencies Permit Certain Banking Organizations to Begin Using Advanced Approaches Framework to Determine Risk-Based Capital Requirements*, February 21, 2014, [federalreserve.gov/newsevents/press/bcreg/20140221a.htm](http://federalreserve.gov/newsevents/press/bcreg/20140221a.htm)

<sup>5</sup>Reuters, Bank of America gets US approval to use internal models for capital, September 3, 2015, [reuters.com/article/bank-of-america-fed-capital-idUSL1N11927A20150903](http://reuters.com/article/bank-of-america-fed-capital-idUSL1N11927A20150903)

Consequently, while Basel II and the Internal Ratings Based (IRB) Approach fixed a number of the problematic issues of Basel I, it arrived too late to have an impact on the crisis. If a bank had managed its capital efficiently to its prevailing constraints, it entered the crisis with a Basel I portfolio.

As such, it is mistaken to blame Basel II for the crisis, or internal models for allowing the build-up of crisis conditions.<sup>6</sup> Such claims ignore or misrepresent the actual sequencing of the crisis and the regulatory changes.

Rather, the adoption of Basel II's risk-based modeling at the center of the capital framework reversed the misincentives of Basel I, now encouraging banks to pursue better credit quality and to exit their arbitrage trade positions. Basel 2.5 and Basel III retained these strengths and built on them further, raising the required capital ratios and improving risk coverage in areas such as counterparty credit and market risk. The system and industry are better for these changes.

Andrew Haldane, in his speech 'The Dog and the Frisbee' in August 2012, argued that risk-based capital ratios were no better predictors of a bank's tendency to default than was a non-risk-based Leverage Ratio historically, across a sample of bank defaults up until 2006.<sup>7</sup> The crucial point here is that the period that Haldane referred to is prior to the commencement of Basel II and the adoption of internal risk models. The so-called "risk-based ratios" that he refers to are those of Basel I – which wasn't actually risk-sensitive at all.

In contrast to Haldane's use of Basel I as a basis for comparison, Moody's compared the Leverage Ratio against Basel II risk-based metrics, in their September 2014 Proposed Bank Rating Methodology and their finalized version in March 2015. Moody's affirmed the predictive power of RWA as the basis of the best indicator of potential default, observing:

*"in our failure study, the TCE/ RWA [Tangible Common Equity divided by RWA] measure was the most predictive indicator of failure amongst a number of other measures, including an un-weighted leverage measure."<sup>8</sup>*

### **Trends in risk-weighted assets**

It is often claimed that banks' risk-weights have reduced while they've been using internal models (and that models are therefore just a way to reduce capital requirements); however, the post-crisis data reveals a different picture.<sup>9</sup>

Across a sample of 39 banks (the 30 GSIBS plus the DSIBs of Canada and Australia), the post-crisis trend in Average RWA has actually been a reasonably stable picture, as shown in Table 1.

Indeed, the stable trajectory sees a notable increase as we move to 2014, in part due to some major US banks reporting Operational Risk RWA for the first time as they received their Basel II authorizations. If we exclude Operational Risk from the data for the full time-series, the Average RWA increases from 38.3% in 2008 and 38.9% in 2011 to 42.0% in 2014.

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<sup>6</sup> For instance, see the IMF *Global Stability Report* of October 2014.

<sup>7</sup> A. Haldane, *The Dog and the Frisbee*, speech at Federal Reserve Bank of Kansas City 366<sup>th</sup> economic policy symposium, Jackson Hole, August 31, 2012.

<sup>8</sup> Moody's Investor Service, *Proposed Bank Rating Methodology*, September 9, 2014; Moody's Investor Service, *Rating Methodology: Banks*, March 16, 2015.

<sup>9</sup> The BIS 2014 Annual Report cited that the ratio of RWA to Total Assets had reduced by about 20% from 2007 to 2013.

**Table 1: Average RWA, global major banks 2008-14**

	2008	2011	2014
Total RWA (€ 100 millions)	16,169,601	17,601,272	21,640,683
Total Assets (€ 100 millions)	39,642,826	42,353,641	45,911,166
Average RWA (ie. Total RWA / Total Assets)	40.8%	41.6%	47.1%
RWA excluding Operational Risk	15,169,140	16,418,746	19,272,788
Average RWA excluding Operational Risk	38.3%	38.8%	42.0%

Source: banks' Annual Reports and Pillar 3 disclosures<sup>10</sup>

Narrowing the scope of this sample to just those banks in jurisdictions that adopted Basel II in 2008 (ie. Europe, Japan, Canada and Australia), which should have a more common basis over the 2008-14 period, the Average RWA again represents a small increase, as shown in Table 2.

**Table 2: Average RWA, Europe, Japan, Canada & Australia major banks 2008-14**

	2008	2011	2014
Total RWA (€ 100 millions)	8,697,777	8,611,828	9,339,990
Total Assets (€ 100 millions)	26,766,518	26,120,204	26,493,256
Average RWA (ie. Total RWA / Total Assets)	32.5%	33.0%	35.3%
RWA excluding Operational Risk	7,966,030	7,757,880	8,433,778
Average RWA excluding Operational Risk	29.8%	29.7%	31.8%

Source: banks' Annual Reports and Pillar 3 disclosures<sup>11</sup>

This overall stability is a mix of contributing factors that since the height of the crisis have perhaps largely served to offset each other:

- i. there have been several regulatory and methodology changes that have incrementally increased RWA, principally to improve risk coverage and address the lessons of the crisis; these include Basel 2.5, requirements for CVA and the Asset Value Correlation Multiplier for exposures to other financial institutions
- ii. banks have actively sought to reduce risk on their balance sheets, both in responding to the crisis and in heeding the risk-based incentives of Basel II, as well as holding expanded portfolios of low-risk liquid assets such as sovereigns for reasons of the Basel III liquidity regulations

But more notable is the trend that prevailed under Basel I.

Focusing on Europe, being the region with the greatest depth of history through the Basel accords, the Average RWA fell consistently through the period when Basel I prevailed, as shown in Figure 1, dipping from 44.8% in 1996 and 45.0% in 1998, to 33.1% in 2007 and finally to 28.9% in 2008 as the first banks were approved to use their IRB models.

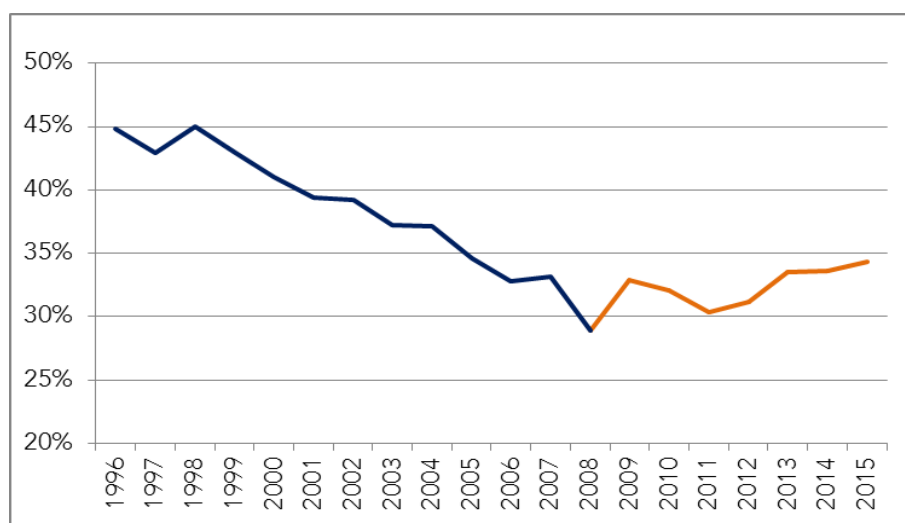
<sup>10</sup> Figures for all periods have been converted to Euro at each currency's prevailing rate as at December 31, 2015.

<sup>11</sup> Ibid.

While it is stressed that banks had different risk appetites and different responses to the Basel I regulatory incentives, and so it is important to not over-generalize, the nature of those incentives were very clear, and contributed to market pressures on conservative and aggressive banks alike. It would appear that many banks had successfully identified how they could maximize the available opportunities (such as arbitrages) under a blunt, standardized regime, with the reduction accelerating in the years immediately preceding the crisis.

When banks moved on to Basel II and had their internal models accredited by regulators, Average RWA actually plateaued. From that initial activation point of 28.9% in 2008, European GSIBs' Average RWA fluctuated within the 30-34% range for the next six years, before reaching a new high of 34.3% in 2015.

**Figure 1: Average RWA, European GSIBs, 1996-2015**  
Basel I in blue, Basel II in orange



Source: banks' Annual Reports and Pillar 3 disclosures, Bloomberg<sup>12</sup>

This observed trend of average risk-weights under Basel I and II/III firstly contradicts the claims that internal models are merely used to reduce capital requirements.

It is indeed true that banks try to rationalize and efficiently allocate their capital across businesses, and grow their ROE, as any commercial business with shareholders should. When capital is risk-based, this efficient allocation is pursued by trading returns directly against risk, so the trajectory after the Basel II implementation should not surprise; ie:

- If you pursue high-yield (and high-risk) credits, you grow both the numerator and denominator of the ROE equation
- You can seek to reduce capital requirements by improving credit quality, but, in doing so, you concurrently reduce revenue; ie. contract both the ROE numerator and denominator

In contrast, under Basel I conditions, there were relatively easy routes to optimize (and reduce) capital without sacrificing yield.

<sup>12</sup> Figures for all periods have been converted to Euro at each currency's prevailing rate as at December 31, 2015. Data sample includes all years for all current European GSIBs, except Group BCPE, which was excluded due to the complexity of its merger histories during the period.

This leads to the second key conclusion from the trend across the Basel I and II/III years: that far from internal models having had a role in leading to the crisis, they might have actually helped to avert or reduce it if we'd started using them earlier.

### The Next Chapter

It is agreed that models are imperfect: for low-risk assets, there are (by definition) insufficient historical cases of borrowers defaulting to give a richness of data, and banks do need to reduce the variance between their respective models. To this end, the IIF RWA Task Force undertook a comprehensive review of 43 banks' risk modeling practices in 2014, identifying sources of variance and making 78 recommendations of items in banks' modelling parameters and assumptions that could be harmonized.<sup>13</sup>

However, as the trends in banks' portfolio composition and risk metrics over the last two decades show, we need risk-sensitivity to be at the forefront of the capital framework. We are so much better, and the system safer and more stable, for having moved on from the Basel I conditions.

Accordingly, as adjustments to the capital framework are considered this year, care is needed to ensure that the Basel I type of pre-crisis conditions are not inadvertently re-imposed across the banking industry. Rather than over-riding models with blunt approaches, the industry and regulators should collectively work to pursue new initiatives that can deal with model shortcomings while preserving risk-sensitivity.

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<sup>13</sup> Distribution of the IIF RWA Task Force Final Report is limited to regulators, supervisors and the 43 participating banks; an abridged summary of the identified sources of variance is provided in B. Carr, "Risk Modelling: Convergence Needed but some Variances are Legitimate" in *Journal of Risk Management in Financial Institutions*, vol.8, no.4, Autumn/Fall 2015.