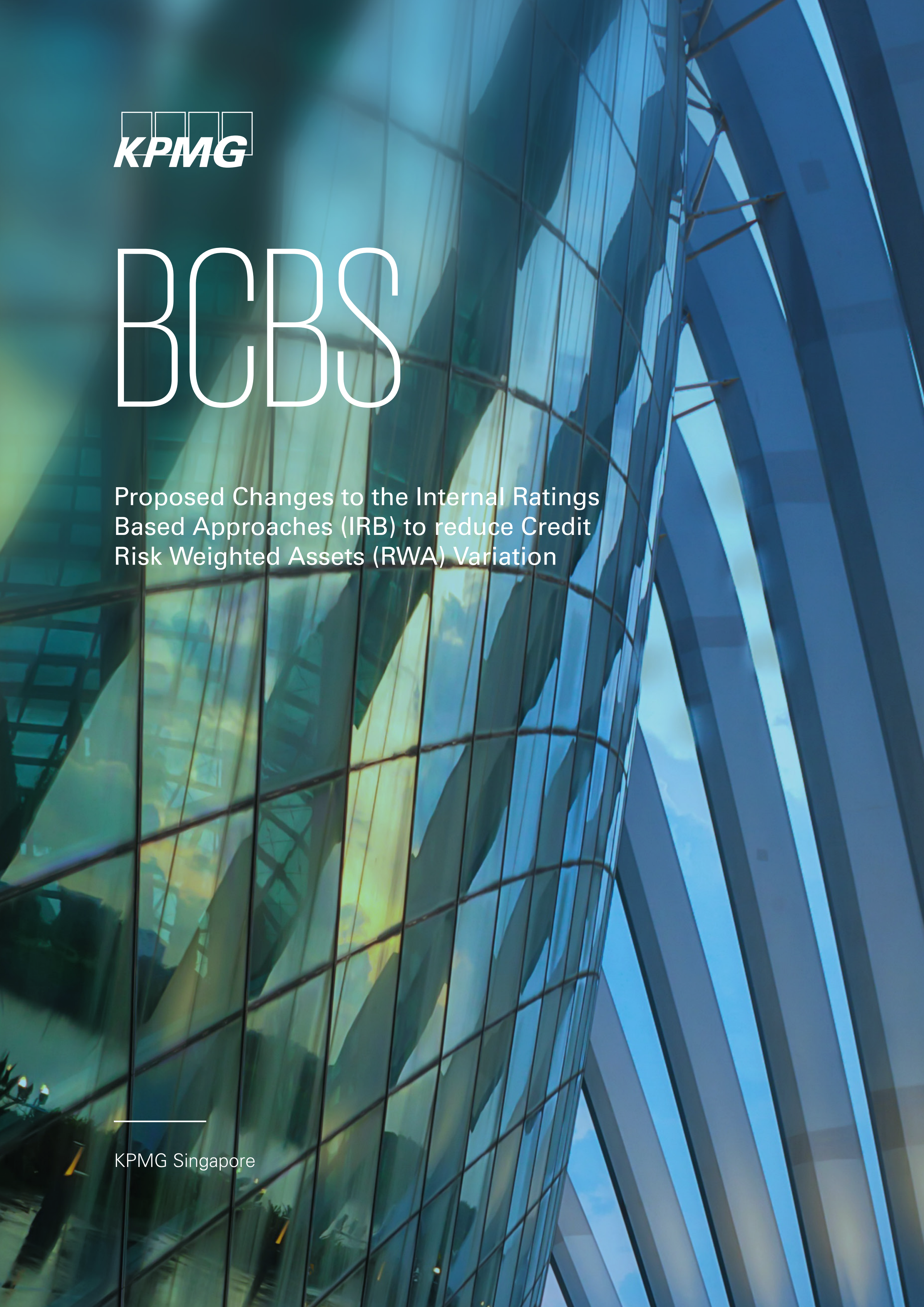


KPMG

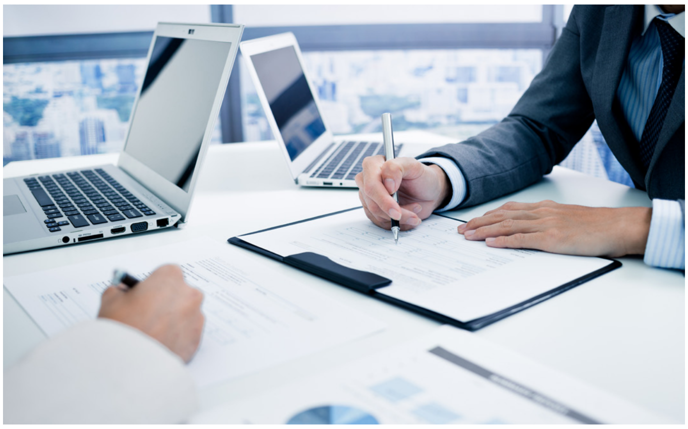
BCBS

Proposed Changes to the Internal Ratings Based Approaches (IRB) to reduce Credit Risk Weighted Assets (RWA) Variation

KPMG Singapore

Proposed Changes and Impacts

In March 2016, the Basel Committee on Banking Supervision ("BCBS") released a consultative document detailing proposed changes to the existing Internal Ratings Based (IRB) framework for credit risk weighted assets. The proposed changes are part of a broader regulatory reform initiative aimed at balancing risk sensitivity, simplicity and comparability. **What are the key proposals and potential impacts on Banks operating within Singapore?**



IRB approaches may no longer be allowable for certain types of exposures, and model-parameter floors plus new specifications on risk parameter estimations for remaining IRB exposures will be introduced to reduce variability in RWA.

The committee is also considering an **aggregate output floor** on RWA which in this version of the consultative document could range from **60% to 90%** of that calculated under the new Standardised Approach (SA). Only after a comprehensive impact study and further comments on the current proposal (by 24 June 2016) will the committee finalise the reforms to IRB.

Summary of Key Proposals	
Remove IRB Approaches	**Significant model and parameter risk** (Banks and Financial Institutions (FIs), Large Corporates, Specialised Lending) • This development will allow Banks to continue to use IRB for material portfolios, and estimates of RWA using IRB should be more reliable. • We see this as a retrogressive development as it places undue risk on the prudential regulatory authorities' capacity to conduct fundamental credit risk measurement activities which are best performed by the banks as part of their internal risk management assessment programmes.
Parameter Floors	**For IRB modelled parameters (PD, LGD, EAD) floors are introduced** • Floors range from 5bps (Corp) to 10bps (QRRE) for PD, and between 0% to 50% for (Secured) LGD, 50% of off-balance sheet exposure for EAD estimation plus all on balance sheet exposure. • We see the inclusion of regulatory floors at the parameter level an overly cautious approach to embedding margins of conservatism into the regulatory capital estimation framework.
Parameter Estimation	**Limit the range of permissible approaches for parameter assignment** • Reasonably neutral impact on RWA for RRE/CRE exposures when assessing the collective effects of an increased collateral haircut and reduced secured LGD. • We see this as a positive development to increase reliability and credibility of the IRB estimates as it would reduce RWA variability.

Proposed Treatments for IRB Exposures

Size of Obligor

Proposed IRB

Corporates
ONLY FIRB IF:
Total Assets* < EUR 50bn
and Annual Revenue* > EUR 200m
- PD Floor: 5bps
- LGD (U): 45% - 75%
- LGD (S): New Exposure Weighted Average Approach
- EAD: Supervisory CCF's

Middle Market / Non-Retail SME
IRB IF:
Annual Revenue* ≤ EUR 200m
- PD Floor: 5bps (FIRB)
- LGD (U) Floor: 25% (AIRB)
- LGD (S) Floor: 0% - 20% (AIRB)
- EAD: 50% of O/B x SA CCF (AIRB)

Retail - Mortgages
AIRB
New PD Floors Apply
- PD Floor: 5bps
- LGD (S) Floor10% (consistent with BCBS 128)

Retail - Other
AIRB
New Floors Apply
- QRRE Transactors:
  PD Floor 5bps LGD (U) Floor 50%
- QRRE Revolvers:
  PD Floor 10bps LGD (U) Floor 50%
- All Other Retail Products:
  PD Floor 5bps LGD (U) Floor 30%
- LGD (S) Floor: 0% Financial, 15% Receivables, 15% real estate, 20% all other physical

Current IRB to New SA

Global Large Corporates
Reduced effects of internal models
Total Assets* > EUR 50bn
Use SA External Ratings

Banks and Non-Bank FI's
Reduced effects of internal models
Use SA External Ratings or Risk Weight Table

Equities
NO MORE IRB
Use SA 250% Risk Weight

Specialised Lending
Stricter classification rules
Use SA or IRB Slotting only

TBD

Sovereign
TBD
Still under debate

* Proposal: Audited financial statement average of previous 3 years or from origination and updated every 3 years.

Difficult to model and low default portfolios previously allowed to use IRB approaches (Large Corporates, Banks, Equities, and SL) all go to the new Standardised Approach.

Criteria used by BCBS to assess internal model suitability

The BCBS has considered the costs and benefits of using internal credit risk models to estimate RWA. In doing so, the committee has used the following criteria to assess if a portfolio is suitable for internal modelling:

Criterion	Description
Data	The availability and quality of loss data in order to model the risk of a given portfolio/product.
Modelling Techniques	Clearly documented, identified model and parameter risk, empirically grounded and reliably validated.
Information Advantage	Whether or not the bank has unique information that can increase the reliability of the internal ratings compared to available market information.

Proposed Parameter Estimation Practices for IRB

PD Proposed Parameterisation Changes

All IRB Exposures

NEW REQUIREMENTS

- Reinforcement of the stability of assigned ratings and associated PD's (Through-the-Cycle (TtC) rating philosophy).
- Data used to estimate PD should include mix of 'good' and 'bad' years with minimum weighting of downturn years of 1 in 10.
- Focus on the granularity of the estimation of the likelihood of default (at a minimum, PD should be estimated for each rating grade).
- For Retail Exposures, the inclusion of seasoning effects into the estimation of PD (alignment with IFRS 9 likelihood of default requirements).

LGD Proposed Parameterisation Changes

Corporates FIRB - Unsecured

NOT CHANGED

- LGD (u): Senior exposures 45% - Subordinated exposures 75%

Corporates FIRB – Partially or Fully Secured

NEW WEIGHTED AVERAGE LGD CALCULATION

- $\mathrm{LGD} = LGD(u) \times \frac{E(u)}{E\cdot(1+He)} + LGD(s) \times \frac{E(s)}{E\cdot(1+He)}$
- Simpler approach with new haircuts applied to determine downturn LGD (s) for secured exposures.
- Increase haircuts for Receivables and CRE/RRE to 50%.
- All other haircuts use new SA Approach.
- New LGD (s):
  - Eligible Financial Collateral still 0%
  - Receivables now 20%
  - CRE/RRE now 20%
  - Other Physical now 25%
- No more 30% minimum collateralisation requirements.
- Grossing-up exposure values extended.

Corporates and Retail AIRB - Unsecured

NEW ADD-ON COMPONENT

- LGD will be the sum of long-run average LGD for each exposure plus a downturn LGD add-on.
- Downturn add-on is separately modelled and the committee may consider an additional floor; or supervisor specified add-on.

Corporates and Retail AIRB - Partially or Fully Secured

NEW WEIGHTED AVERAGE FLOOR CALCULATION

- $Floor = LGD(u\ floor) \times \frac{E(u)}{E} + LGD(s\ floor) \times \frac{E(s)}{E}$
- Banks can still model LGD for fully or partially secured exposures, but a weighted average floor will be applied to internal modelled estimates.
- This formula will not apply to mortgage portfolios.
- LGD (u) floor and LGD (s) floor are proposed in the document.

Exposure AIRB – Collateral Not Modelled

NEW APPROACH FOR COLLATERAL EFFECT

- For AIRB exposures where unsecured is modelled and collateral not modelled, the committee to apply formula:
- $\mathrm{LGD} = LGD(u) \times \frac{E(u)}{E\cdot(1+He)} + LGD(s) \times \frac{E(s)}{E\cdot(1+He)}$
- LGD (u) is modelled by the bank.
- LGD (s) is determined as under the new FIRB approach.

EAD Proposed Parameterisation Changes

Exposures FIRB

UPDATED CCF DEFINITIONS

- Use updated CCF definitions in new SA approach.

Corporates & Retail AIRB

NEW CONSTRAINTS

- Must not be subject to 100% CCF under new SA approach.
- Updated constraints and requirements on modelling EAD/CCF.
- Clarifications on the definitions of 'commitment' and 'unconditionally cancellable'.

Maturity (M) Proposed Parameterisation Changes

Exposures FIRB

NOT CHANGED

- Remains at the fixed 2.5 year parameter under FIRB.

Corporates and Retail AIRB

NEW CONSTRAINTS

- Based on the expiry date of the facility.
- Use of repayment date on current drawdown prohibited.

Credit Risk Mitigation (CRM) Proposed Parameterisation Changes

Exposures FIRB

ONLY FULL SUBSTITUTION ALLOWED AND NEW CONSTRAINTS

- For the covered portion of the exposure the PD of the guarantor replaces PD of the obligor.
- Other options on PD replacement removed.
- Double Default approach removed.
- No more own estimates for collateral haircuts.

Corporates and Retail AIRB

NEW CONSTRAINTS

- 'Conditional Guarantees' are now prohibited.
- New definitions on 'Unconditional Guarantees' to remain eligible credit risk mitigants.
- Double Default approach removed.
- Only first-to-default derivatives will remain eligible.

Potential Impacts on RWA Density

Illustrative Examples

FIRB Very Large Corporate Unsecured[1]

	EAD	M	PD[2]	LGD	RWA%	RWA $mn	Change in RWA Density %
Current	$1 bn	2.5 Years	.025%	45.00%	12.94%	$129 mn	54.40% ↑
	EAD				RWA%[3]	RWA $mn	
Proposed	$1 bn				20.00%	$200 mn	

1. Assumption: total assets exceed EUR 50bn and thus the new standardised approach applies.
2. Assumption: internal modeled PD is .025% which based on observed averages of internal modelled PD for SG bank's top two internal rating grades.
3. Assumption: counterparty is externally rated AA- by a rating agency and thus the 20% Risk Weight applies as per the New SA CR approach.

AIRB Very Large Corporate Unsecured

	EAD	M	PD[2]	LGD	RWA%	RWA $mn	Change in RWA Density %
Current	$1 bn	2.5 Years	.025%	30.00%	9.63%	$86 mn	131.81% ↑
	EAD				RWA%[3]	RWA $mn	
Proposed	$1 bn				20.00%	$200 mn	

1. Assumption: internal modeled LGD is 30% which is based on observed averages of internal modelled LGD for SG bank's top two internal rating grades.
2. Assumption: counterparty is externally rated AAA to AA- by a rating agency and thus the 20% Risk Weight applies as per the New SA CR approach.

FIRB Corporate Partially Secured[1]

	EAD	M	PD[2]	LGD[3]	RWA%	RWA $mn	Change in RWA Density %
Current	$50 mn	2.5 Years	.025%	45.00%	12.94%	$6.4 mn	39.19% ↑
	EAD	M	PD[2]	LGD[4]	RWA%	RWA $mn	
Proposed	$50 mn	2.5 Years	0.50%	41.25%	18.01%	$9.0 mn	

1. Assumption: corporate meets the new threshold requirements to remain on FIRB.
2. Assumption: internal modelled PD is .025% for top two internal rating grades, the new PD floor requirement is applied .05%.
3. Assumption: minimum post haircut collateralisation requirement of 30% under FIRB not met and thus the 45% unsecured LGD is applied.
4. Assumption: LGD is calculated using the new proposed weighted average approach, supervisory haircut of 50% is applied on a 15mn CRE eligible collateral.

AIRB Corporate Partially Secured[1]

	EAD	M	PD[2]	LGD[3]	RWA%	RWA $mn	Change in RWA Density %
Current	$50 mn	2.5 Years	.025%	30.00%	8.62%	$4.3 mn	51.85% ↑
	EAD	M	PD[2]	LGD[3]	RWA%	RWA $mn	
Proposed	$50 mn	2.5 Years	0.50%	30.00%	13.10%	$6.5 mn	

1. Assumption: corporate meets the new threshold requirements to remain on AIRB.
2. Assumption: internal modelled PD is .025% for top two internal rating grades, the new PD floor requirement is applied .05%.
3. Assumption: Internal modelled LGD is 30% (including downturn requirements), this is higher than the new weighed average LGD floor and thus 30% is applied.

AIRB Bank Exposure

	EAD	M[1]	PD[2]	LGD[3]	RWA%	RWA $mn	Change in RWA Density %
Current	$50 mn	1.5 Years	.03%	30.00%	6.57%	$3.3 mn	204.30% ↑
	EAD				RWA%[4]	RWA $mn	
Proposed	$50 mn				20.00%	$10 mn	

1. Assumption: Maturity modelled at 1.5 years.
2. Assumption: internal modeled PD is .03% which based on observed averages of internal modelled PD for banks top two internal rating grades.
3. Assumption: internal downturn LGD is estimated at 30.00%.
4. Assumption: counterparty is externally rated AA- by a rating agency and thus the 20% Risk Weight applies as per the New SA CR approach.

Key Challenges Facing Financial Institutions

The changes proposed by the BCBS in its recent consultative paper should come as no surprise to FIs. There have been concerns that modelled IRB estimates for certain types of exposures may be unreliable, and cause the variation in RWA seen across banks and jurisdictions. Furthermore, in an attempt to limit any such variation, regulators have been quite adamant that RWA floors and model output floors will be part of the finalised approach.

However, an area of contention is on the aggregate IRB output floor, which is intended to prevent banks' IRB-modelled RWAs from dropping below a fixed percentage of the new standardised approach for credit risk. This most recent consultative paper mentions that the range could be calibrated anywhere between 60% to 90%. Given the potential capital impact, this is something that the industry will need to watch quite closely. Additionally, the proposed changes will likely reduce the incentives for banks to move to the more risk sensitive advanced approaches for credit risk capital measurement.

The BCBS proposal would eliminate IRB for low default and difficult to model portfolios. For middle market and SME type exposures the proposal still allows for the IRB approach, which is a relatively positive development. However, once the new rules come into effect, the FIs will still need to update processes, systems, models, and RWA engines. Given the many other credit related regulatory changes on the horizon (e.g. IFRS 9, SA-CR, SA-CCR, Large Exposure Management, etc.) there could be a crunch on resources and IT departments.

RWA and Capital impacts will vary widely from one asset class to another. In general, the biggest impact is likely to be on those asset classes for which use of IRB will be disallowed. To make the issue more complex, under the proposed approach, external ratings would be used to derive the risk weights for Large Corporates, banks, and other FIs. The key issue in Asia is the limited coverage of external ratings from external credit assessment institutions (ECAI), and the associated outcome of the assignment of 100% risk weights. This may impact banks' incentives to model credit risk for these types of exposures.

The proposal also would change the credit valuation adjustment (CVA) risk framework, which is intended to measure counterparty credit risk. The proposal would eliminate the IMA approach for CVA, meaning banks must use either the SA-CVA or the BA-CVA approach. Furthermore, the BCBS paper retains the IMM-CCR but will now introduce a floor based on the new SA-CCR approach.

The BCBS intends to carry out a QIS in 2016 where they will test out all of the aforementioned floors and parameter changes. In particular, it was indicated the QIS will test:

- A higher LGD floor on residential mortgages (the current proposed floor is 10%).
- Appropriateness of a 0% LGD floor for exposures fully secured by financial collateral.
- Considerations on appropriateness of overall calibrations and potential to cause incentive shifts
- Consistency of floors to ensure that they do not lead to significantly higher risk weights than under the standardised approach.

FIs will need to put in place appropriate policies, procedures, processes and systems to ensure compliance with the new requirements.

Key impacted areas include:

- **Exposure Classification**
- **Collateral Management**
- **IRB Models**
- **RWA Density**
- **Internal Rating Systems**
- **Data Management**

What FIs need to do now

In order to be well prepared for the expected introduction of the new IRB and new SA requirements for credit risk assets, FIs should consider performing the following tasks:

- Undertake an impact analysis to determine which portfolios and product types are likely to have the biggest RWA impacts; in particular exposures that are no longer permitted to use IRB and use SA.
- Assess whether or not the FI should still consider building internal models and adopting IRB.
- Perform a materiality assessment and review of all existing IRB portfolios and models to assess if any changes are needed on parameter estimations, modelling techniques, data preparation and data management, design of new models or validation of existing models.
- Conduct a review of the current Collateral and CRM process to asses changes needed to process and systems, particularly for the newly required constraints, floors, and estimation approaches on LGD.
- Conduct a review of the readiness for the new rules and prepare a transition plan to implement the proposed new requirements in order to better mitigate capital, business and operational impacts.

"The onslaught of risk related regulations (IFRS 9, SA-CR, SA-CCR, FRTB, RDARR, etc.) amidst challenging business environment puts immense strains on the resources for banks. It is critical that banks start assessing these impacts holistically."

Dr Tey Chun Maw
Associate Director, Financial Risk Management

How We Can Assist

Our Financial Risk Management and Advisory teams are well placed to support FIs as they prepare for these new requirements, including:

- Capital and RWA impact analysis
- PMO and staff secondments
- Data cleansing and standardisation
- Credit Risk RWA reviews and testing
- IFRS 9 Expected Credit Loss Modelling
- Validation of credit risk models
- Design and build of IRB risk models
- Assist preparation for internal models applications with MAS
- Model review and verification analysis
- Design policies, procedures and internal controls for credit risk management
- Advise on credit risk data architecture and system design
- Training

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Publication name: BCBS - Proposed Changes to the Internal Ratings Based Approaches (IRB) to reduce Credit Risk Weighted Assets (RWA) Variation
Publication date: May 2016