

**Banks Internal Risk Measurement Models - The approach of the international banking prudential supervision (as represented by the Basel Committee - BCBS) to the banks first pillar risk measurement and capital adequacy is changing. Is it an evolution or a an involution?**

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- The use of banks internal risk measurement models in order to quantify the **pillar 1** capital absorption and related requirements to be reported to the Supervision Authorities seems to be on the verge of being significantly restricted by the Regulators.
- The Basel Committee (BCBS) is proposing to OECD Supervision Authorities and banking industries the prudential supervision approach that has already been adopted by U.S. Supervision Authorities for U.S. banks and that can be synthesised as “**back to the standardized risk computation methodologies**”

The rationale behind the BCBS new guidelines and approach to banks internal risk measurement models seems to be the intent of undertaking strong corrective actions to mitigate:

1. **excessive heterogeneity** of internal models hypotheses and methodologies across banking industry;
2. **high model risk**, especially for certain exposure classes (e.g.: lack of data, low default credit portfolios);
3. **high risk of model parameters downward manipulation** made by banks, especially by the weakest (in terms of capitalization level) banks (which have reasonably maximum incentive to keep their RWA as low as possible, in order to better fulfill the capital requirements fixed by the Supervision Authorities), or by banks subject to high competition pressure (in order to attract customers by means of excessively optimistic risk assessments).

The March 2016 two BCBS regulation proposals (both still in a consultation procedure) respectively focusing on the **operational risk measurement** model and on the banks **IRB credit risk measurement** models are fully consistent with the new direction the Regulators are going to go as far as the topics of banks internal risk measurement models are concerned.

In a nutshell:

1. as per the Op. Risk BCBS Proposal (“**Standardised Measurement Approach for Operational Risk**”), banks should be deprived – for pillar 1 purposes - of the possibility to fit a proper loss distribution to the empirical distributions of their observed operational losses and evaluate the operational risk in the different risk classes also through the judgements of business owners (Op. Risk AMA model). The Op. Risk RWA computation should be carried out by means of a standardized approach (so called **SMA approach**), somehow averaging between two different measures:
  - a. the first measure (**BI component**) based upon a set of predefined weighting coefficients applied to a **business indicator (BI)**, calculated on the basis of profit/loss items and divided into five different size-buckets; 3

- b. the second measure (**Loss component**) based on the application of predefined multipliers to the **average operational loss** calculated in a ten year observation period (from current date and backwards in time) and under three different hypothesis, in such a way to penalise relatively big operational losses happened in the considered ten years.

**N.B.** The algorithm that aggregates the results of the BI component and of the Loss component and produces the final result (that is the Op. Risk capital requirement) is in general **conservative** (especially for banks of a certain size and with a relatively low operational risk profile) and has an implicit **floor embedded** (mathematically: the Internal Loss Multiplier is bounded below by  $(\exp(1) - 1)$ ). The SMA approach apparently awkward formulas produce an op.risk RWA (and a correspondent capital requirement) quite **downward inelastic** (i.e.: relatively sensitive to big operational losses as soon as they emerge, while requiring, to be materially reduced, a prolonged period of time during which just non-material loss events have happened);

2. as per the Credit Risk IRB models BCBS Proposal (“**Reducing Variation in Credit Risk Weighted Assets – Constrains on the Use of Internal Model Approaches**”):
  - a. the IRB model use should be restricted to only few asset classes (totally excluding financial, equity and large corporate exposures, for which just the SA should be permitted, while to the mid-size exposures the FIRB approach should be applied as the only alternative to the SA):
  - b. as concerns the IRB credit RWA computation, a system of both final output and inputs **floors** is to be introduced. As far as the **IRB model final output floor** is concerned, that should be applied to the SA (Basel II instead of Basel I SA – topic currently under discussion) results;

As regards the “corrective actions” to the potential weaknesses described in slide n. 2 presented by the Basel Committee with its March 2016 proposals:

1. they are **generally conservative** (that is they would generally imply an increase of the Pillar 1 RWA currently computed by banks using validated internal operational and / or credit risk measurement models and *coeteris paribus* a consequent decrease of their regulatory capitalization ratios). Nevertheless conservativeness doesn't necessarily mean banks stronger capital positions (in the short term at least), provided that capital is a relatively scarce financial resource;
2. they generate risk measures with a **reduced risk sensitivity**. As per the proposed BCBS regulation aimed to ensure greater homogeneity and comparability of internal risk measurement models across the international banking industry, a greater standardization of the RWA computation is imposed on the banks. Standard models are - almost by definition - less risk sensitive than internal models. Moreover the risk measures proposed by the Basel Committee seem to be **downward inelastic** to the risk sources, especially because of the effect of the proposed floor systems.

Due to relative “**insensitive**” **risk measures**, several drawbacks may emerge. Most relevant are:

1. “internal models” RWA would become less sensitive to risk factor dynamics and particularly to any factor, choice or dynamics, internal or external to a bank, which lowers the risk levels faced by that bank;
2. under the BCBS proposed prudential regulation, banks might have an incentive to increase their investments in riskier assets (or to diminish their investments in IT and control systems) and conversely decrease their investments in better quality assets (or to delay/avoid the costs of improving the reliability and safety of their business organization) **because of higher profitability (return-to-capital ratio) of the riskier strategies / policies**;
3. in other terms: potentially severe biases in banks key **capital allocation processes** might be caused by the wider resort to first pillar standardized scarcely risk sensitive risk measurement methods.

☞ More generally: under the BCBS proposed regulation (pushing towards more standardized risk measurement models), **banks could have less incentive to develop and/or boost their risk management departments**. As a matter of fact one of the main ideas of model-based capital regulation was to incentivize banks to adopt stronger risk management systems and practices (BCBS, 2006). By limiting the use of internal model and the potential capital savings deriving from their use (by means of floor systems and imposed conservativeness), banks could be discouraged to invest in their risk management departments.

- Even if perfect internal models homogeneity is not desirable, there is a broad consensus among industry and supervisors that current heterogeneity needs to be reduced.
- Nevertheless we believe this target may be pursued **without renouncing to adequately risk sensitive internal risk measurement models.**
- In 2016 EBA has started a comprehensive “IRB model repair” process, that aims to address all main issues (see *“The EBA’s regulators view of the IRB approach”*, *“Opinion of the European Banking Authority on the implementation of the regulatory review of the IRB Approach”* and more recently (Nov. 2016) *“Guidelines on PD estimation, LGD estimation and the treatment of defaulted exposures”*).
- We believe EBA approach is the right way to address the IRB models heterogeneity issue and at the same time to preserve an adequate model discrimination capacity between differently risky exposures (e.g.: short and long term exposures, collateralized and non collateralized exposures, performing exposures to different - in terms of default probability - borrowers).

As a matter of fact the main road to achieve the “**level the playing field**” goal and also possibly lower the **model risk** should be a supervisory regulation which tends:

- 1. to reduce the range of possible hypothesis and methodology choices of banks** when constructing their own risk measurement models;
- 2. to introduce adequate margins of conservatism** to be applied to the internal risk measures (also via appropriate floor systems that should be applied just to the **inputs of the models**, rather than to their final output), particularly for portfolios / loss event types characterised by scarcity of empirical evidence or data necessary to a fair risk computation, for quantifications of peculiar risks for which a bank shows poor experience (and so on).

- As for the supposed risk of **undercapitalization** associated to banks (particularly weak banks) possible misconducts in internal models development / calibration, we believe the issue is as serious as not well supported by strong empirical evidence.
- Studies which have tried to demonstrate on an empirical basis the existence of a link between the probability of downward manipulation of risk measures and capital absorption computed by internal models and the average level of capitalisation of manipulating banks do exist - see for example Plosser and Santos (2014) - but they have not reached any definitive and clear conclusion.
- As for IRB models, it must be also considered their through-the-cycle nature and the probable results of backtesting analysis during adverse cycle periods (like the present one).
- Single cases of misconduct may indeed exist and it should be up to the Supervision Authorities intercepting and consistently removing those single situations in which capital savings have been realized due to an internal model “tweak” rather than to the “virtuous” features of the portfolio – or of the bank organisation, in the operational risk case - under risk measurement. **But these single cases cannot be transformed into a general rule.**

- That's why the sound and prudent use of internal risk measurement models by banks require **strong and well qualified supervisors**. All the more so in the present very heterogeneous internal model context across Euro Area.

- Again: a **reduction of the range of methodological choices** available to banks when developing internal risk measurement models and the application of adequate **margins of conservatism** to crucial internal models' inputs (see the EBA Nov 2016 Consultation Paper on IRB models as a good example of the suggested approach) could well mitigate possible underestimation of risks and banks consequent undercapitalization.

- At the moment the orientation of ECB – DG4 as for its final approach to the internal risk measurement models of banks has not been definitively cleared even if a general review of the topics (so called Targeted Review of Internal Models - TRIM) is on going.
- TRIM is a positive chance to preserve internal model in a more harmonized regulatory environment and industry practices.
- The actual risk is that EU Supervision Authorities (SSM) may consider the “american evolution” proposed by the Committee as a chance to take, in their apparent effort “to force” a general increase of capitalization ratios throughout the Euro area banking system.

## Conclusions

Conducting supervision to banks which diffusely utilize internal models to quantify first pillar capital requirements (in a differentiated context like the European banking industry) it's not an easy task.

More homogeneous than in the past supervisory practices in internal model validation procedures are highly desirable

Nevertheless preserving the internal models approach to the prudential supervision it's important, provided they may contribute to a sound and prudent bank management via a **fair and adequately risk sensitive capital absorption computation.**

**These conditions require very skilled and independent supervisors.**

**The EU SSM is in the good position to reach these goals.**