

Position paper of the
Association of German Banks
on retaining model-based capital charges
(short version)

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Contact: Uwe Gaumert
Tel.: +49 30 1663 2150
E-mail: uwe.gaumert@bdb.de

Banks are currently permitted to make large-scale use of internal risk models to calculate capital requirements, subject to these models passing a strict supervisory approval process. Take, for example, rating models which measure credit risk under the internal ratings-based approach and value-at-risk (VaR) models to measure market risk.

This has attracted criticism. In the eyes of their detractors, internal models are

- too error-prone,
- only suitable for use in “fair-weather” conditions,
- too variable in their results when analysing identical risks,
- insufficiently transparent for investors and
- manipulated by banks, with the tacit acceptance of supervisors, in order to reduce capital requirements.

This has placed a question mark over the credibility of model results and their usefulness as a basis for calculating capital requirements. It therefore makes good sense to explore the suitability of possible alternatives to basing capital requirements on the results of internal models.

The position paper begins by analysing why stakeholders came to lose confidence in internal model results. It confines itself to the most important internal models, namely market risk models (VaR models) and IRB models. It is nevertheless likely that its analysis could also be applied to other types of model.

Banks and supervisors learned many lessons from the sometimes unsatisfactory performance of market risk models in the crisis. This led, at bank level, to a range of improvements in methodology, and also to the realisation that not all products and portfolios are suitable for internal modelling. At supervisory level, Basel 2.5 swiftly ushered in an initial reform with rules that were much better at capturing extreme risks (tail risks) and that increased capital requirements at least threefold. Work on a fundamental trading book review (frequently referred to as Basel 3.5) is also underway and will bring further methodological improvements to regulatory requirements.

Criticism of the performance of IRB models was more muted. True, some critics argued that the models were too slow in making adjustments both in economic downturns and in upswings. But there were understandable reasons for this. Nor did the claim that the models exacerbate procyclicality ultimately prove tenable. So when regulatory requirements were revised in the wake of the financial crisis (especially under Basel III), changes to the IRB approach were limited to a few tweaks. It should not be forgotten, moreover, that the introduction of IRB models in the course of implementing Basel II brought significant progress in terms of the quality of banks’ quantitative credit risk measurement and credit risk management.

A further reason cited for the loss of confidence is that model results vary too widely even when the risks involved are the same (divergence of model results). But this divergence can be readily explained by

- differences in legal frameworks across jurisdictions,
- differences in the rules set by national supervisors for calculating capital requirements (e.g. rules for estimating prudentially relevant parameters such as probability of default) and
- legitimate modelling decisions taken by banks (and subject to a strict supervisory approval process) based on differing assessments of the risk involved.

It is nevertheless possible – and useful – to address all three determinants of the divergence and reduce it by harmonising supervisory approval processes worldwide and standardising certain aspects of the models themselves.

Given the difficulties associated with modelling and the variation in results, it is legitimate to ask whether model-based, risk-sensitive capital charges should be dropped altogether. Such a step would significantly simplify regulatory requirements, though it would not necessarily simplify supervision. In our view, however, the better question is whether it would not make more sense to address the undoubted weaknesses of internal models by means of the reforms already in place or in the pipeline without “throwing the baby out with the bath water”. In other words, should we not try to learn from past mistakes instead of just giving up? These questions can best be answered systematically by examining to what extent current regulatory proposals could, together or on their own, replace model-based capital charges. There are essentially two alternatives under discussion:

- dropping risk-sensitive capital charges and introducing a leverage ratio as the sole “risk metric”;
- regulatory standardised approaches: applying risk-sensitive capital charges while abandoning model-based ones.

An exclusively applicable, binding leverage ratio would only be a logical response if it had to be assumed that neither banks nor supervisors were capable of measuring the risks involved in banking. We do not believe that this is normally the case: measuring risk is a core competence of the banking industry. We have serious doubts as to whether the leverage ratio is a suitable heuristic for ensuring solvency. There is an economic rationale behind these doubts. Empirical studies come to differing conclusions about the suitability of the leverage ratio. In addition, Goodhart’s Law needs to be considered. On top of that, the leverage ratio has a very long – and already widely discussed – list of drawbacks. These are the points of most relevance here:

- Perverse incentives and the potential for arbitrage: there are strong incentives to make business models more risky. Because assets are measured on a non-risk-weighted basis, an AAA investment, for instance, ties up just as much capital as does a B investment.
- A leverage ratio is by no means “model free”: highly complex valuation models or even simulation approaches are sometimes needed to measure derivatives on a marked-to-market basis, for example. In a broader context, this is more or less true for all balance-sheet valuations. So even a leverage ratio cannot claim to be a simple,

robust rule. Furthermore, the Basel Committee's search for a suitable definition of "leverage ratio" shows that better definitions invariably lead to significantly greater complexity.

- It makes it impossible to compare capital adequacy across banks. The adequacy of a bank's capital resources cannot be assessed without measuring the associated risks.

As for regulatory standardised approaches, i.e. approaches which spell out in detail how to calculate capital requirements on the basis of prudential algorithms ("supervisory models"), these are by no means sufficient, especially for banks with complex risk structures. The reasons are as follows:

- It is invariably true of a standardised approach that "one size does not fit all banks". Since a standardised approach is not tailored to an individual bank's portfolio structure, it cannot measure certain risks (such as certain basis risks in the area of market risk) or can only do so very inaccurately. It is normally much less risk-sensitive than an internal model. The standardised approach to credit risk, for example, is entirely insensitive to risk when measuring the risk of counterparties that have not been externally rated.
- A related problem is that a standardised approach is usually designed with comparatively simple portfolios in mind. This can result in risk being overstated or understated.
- It normally fails to capture diversification and hedging effects, or cannot do so adequately.
- Standardised approaches can thus be more dangerous than internal models because it is often easy to "game the system". Trading revenue, for instance, can be generated seemingly without risk, enabling trading units to inflate risk-adjusted earnings.
- Standardised approaches are simple models. But as all proposals for standardised approaches to date have shown, supervisors are by no means better at constructing models than are the banks themselves.

To sum up, standardised approaches have considerable failings when it comes to measuring risk. On their own, they are not an adequate basis on which to determine appropriate capital requirements. So it may be concluded that, together or separately, a leverage ratio and standardised approaches are inappropriate and insufficient – including from a supervisory perspective. Internal models must remain the first choice. Confidence in internal models needs to be significantly strengthened, however.

We see the following ways of restoring confidence in model results. These are explored in detail in the long version of the paper):

Enhancing transparency
A comprehensive approach to model validation
Reducing the variation in model results by means of standardisation
Highlighting the positive developments to come out of the trading book review
Strengthening the use test concept
Consideration of model risk
Voluntary commitment by banks to a code of "model ethics"

In our view, moreover, restoring confidence is not a task for banks alone: supervisors also have a role to play. We believe that, together, these measures could go a long way towards winning back trust in internal models.

The key conclusions of this position paper can therefore be summarised as follows:

- A risk-sensitive and model-based approach to calculating capital requirements for banks should be retained.
- Risk sensitivity is the central objective of the regulatory framework and should be given top priority to avoid creating perverse risk management incentives and regulatory arbitrage. Comparability, with the aim of ensuring the framework's acceptance, should take second place in the hierarchy of objectives. And finally, simplicity should be a guiding principle and binding secondary condition in any form of regulation.
- Not only should model-based approaches be formally retained, but there should also continue to be a capital incentive to use these approaches. This means
 - no overriding leverage ratio and
 - no floor set at too high a level.
- Non-risk-sensitive approaches to calculating capital requirements, such as the leverage ratio, should at most be used in a complementary capacity, serving merely as indicators and not as binding limits. Otherwise, dangerous perverse incentives will arise.
- Risk-sensitive standardised approaches carry dangers, too, because these may overestimate or underestimate the actual risk.
- Even if used in combination, the leverage ratio and standardised approaches are not an adequate substitute for internal models and are thus an insufficient basis for calculating capital requirements.
- Variation across model results is something we need to live with to a certain extent.

The long version of the paper can be found at

<http://bankenverband.de/themen/fachinformationen/bankenaufsicht.>