Operational Risk: The end of internal modelling?
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Operational risk capital based on AMA-style internal modelling has significant shortcomings

The New Standardised Approach (Oct.2014) failed to provide a viable alternative to the AMA

Banks should shift their analytical capabilities to internal models intended to inform management decisions, not capital calculations

Conclusion

Exhibit 1

Exhibit 2

Contacts

Stand out for the right reasons
Operational Risk: The end of internal modelling?

Bill Coen, the Secretary General of the Basel Committee on Banking Supervision (BCBS), surprised many industry participants with comments he made about the Advanced Measurement Approach for Operational Risk (AMA) in an interview in early October 2015. “There are always two sides of a debate. But when it comes to the advanced measurement approaches for operational risk, the views largely converge in the same direction – that the AMA has not worked as intended,” Coen said in an exclusive interview with Risk.net. “When we consult by the end of the year on a revised standardised approach, I expect we will also propose removing the advanced modelled approach from the regulatory framework.”

Financial institutions globally have been investing significantly over the past 15 years to implement internal model-based AMAs, often in the hope of having to hold less regulatory capital for operational risk than they would have under alternative approaches. It is therefore hardly surprising that these comments have further fueled the ongoing industry debate on the usefulness, and the possible future path of, the AMA. There has been widespread criticism of certain types of AMA by both financial institutions and regulators, because of their resource intensity and perceived lack of simplicity, comparability, and risk sensitivity. They have also been considered poor instruments to guide operational risk management decisions.

Speculations about the future of the AMA picked up steam in October 2014, when the BCBS proposed revisions to its operational risk capital framework. The proposal set out a new standardised approach (new SA) to replace both the basic indicator approach (BIA) and the standardised approach (TSA) for calculating operational risk capital. Although it did not directly address internal modelling-based AMA, it was widely perceived as setting a regulatory capital floor for AMA institutions as well. However, the proposed new SA itself was broadly criticised by the industry as being too blunt and lacking risk sensitivity.

1 http://www.bis.org/publ/bcbs291.pdf
So operational risk modelling is undoubtedly at a crossroad, and industry participants are anxiously awaiting the content of the BCBS’ consultative paper expected by the end of 2015. Although few specifics have been disclosed in advance, the publication is expected to propose a single method for calculating regulatory capital to replace all three methods currently in use. It is expected to be simpler than the current AMA, yet more risk sensitive than the new SA, and it could retain incentives for financial institutions to continue to collect operational risk loss event data and build out qualitative operational risk management techniques. Such techniques increasingly include analytical tools and models designed to support management decisions, rather than regulatory capital calculations. Hence, while the demise of the AMA may spell the end of internal models for capital purposes, it may well free up analytical capabilities to develop different internal models that could arguably be far more useful to the management of operational risk than the AMA.

Recent News

Internal operational risk models used for regulatory capital purposes are perceived to have failed in mitigating operational risk losses and, at the same time, have resulted in risk-weighted asset differences across banks that are difficult to justify.

The BCBS has recognised the need to update its operational risk (OR) capital modelling requirements and will be issuing a consultative paper in late 2015. The publication is expected to propose a single method for calculating regulatory capital to replace all three methods currently in use, including the Advanced Measurement Approach.

Although a number of key questions remain unanswered until the release of the consultative paper, it is unlikely that the demise of the AMA will spell the end of all internal modelling of operational risks. To the contrary: it may provide financial institutions with capacity to redirect their efforts toward developing different internal models, focused on informing management decisions rather than regulatory capital levels.
Operational risk capital based on AMA-style internal modelling has significant shortcomings

Under the Advanced Measurement Approach (AMA) established by the Basel II capital accord of 2003, large financial institutions were required to measure their operational risk regulatory capital using advanced internal models that were sensitive to the quality of risk management and tailored to the institution’s risk profile. As the adage goes, what gets measured, gets done; therefore, the approach was expected to result both in improved operational risk management and lower capital levels. But the Basel Committee provided only high-level guidance on AMA-compliant regulatory capital models, leaving the door open to a lengthy discovery process which showed that building such models was more resource intensive, assumption laden, and complex than originally assumed. Twelve years on, financial institutions and regulators are frustrated and the AMA seems to have reached an impasse.

To illustrate the shortcomings of the AMA’s, it is helpful to consider their behaviour in the aftermath of the financial crisis. Operational risk regulatory capital based on AMA calculations would have been insufficient in many institutions to cover unprecedented government agency fines and settlements. To boot, once realised, these historical losses left many financial institutions with modelled operational risk capital figures, which they claim, are outsized relative to their true risk profile going forward.

At the heart of such shortcomings lies the AMA’s statistical loss distribution approach and its heavy use of historical-event data, which makes many AMAs by definition backward-looking. Once a significant loss enters into an institution’s data set, theoretical capital numbers could rise significantly and permanently unless institutions are allowed to somehow mitigate the impact of such loss events on their regulatory capital calculations. Many banks argue that in practice, without adjustments, the burden of expensive, past losses lingers on in their capital numbers – long after the causes of those losses have been remediated. In that sense, the risk sensitivity of AMA-style internal models (which was supposed to be one of their advantages) can be severely lacking.

In addition, AMA-style internal models use many modelling choices. Disparate practices are common when it comes to model data inputs, methods, and modelling choices generally. Such variations matter greatly because similar data sets can be modelled in very different ways and yield significantly different regulatory capital figures. This decreases comparability and transparency of calculated regulatory capital across institutions, and invites caution by regulators – particularly if the models suggest a decrease in required operational risk regulatory capital.

Finally, internal AMA models have proved to be computationally intensive, requiring heavy, multi-year investments in data, technology, and skilled resources, both to generate the required model inputs and to build models acceptable to regulators.

And yet, bank regulators remain sceptical of internal model-derived operational risk capital numbers, and have frequently required institutions to adjust their models in a way that negates much of the capital relief that institutions were expecting from adopting the AMA in the first place. Many bank management teams are also sceptical: the model outputs do not resonate because the input data is inconsistent and modelling choices are often not driven by practical management needs. Unlike for, say, credit models, there is no clean narrative to describe what is happening in operational risk models. As a result, operational risk managers at many financial institutions will admit that their institutions have benefited more from gathering and analysing capital model inputs (such as loss event data, or operational risk and control self-assessments) than from the internal model outputs themselves. The inputs give management better insight into the bank’s current risk exposures, which allows for better risk management.
In October 2014, the Basel Committee proposed a New Standardised Approach to replace Basel II’s original (and computationally simple) Standardised Approach and Basic Indicator Approach. Unlike the BIA and TSA that rely on crude measures of gross income (GI) as indicators of risk exposure, the New SA methodology used an enterprise-wide approach (called the Business Indicator – BI), which included absolute values of net income from interest, services, and trading and banking activities. Notably, the Business Indicator excluded dividend income but included net banking book income (see Exhibit 1).

This approach would have required banks to hold capital even in years where their income is negative and they are therefore operating in an environment that is more likely to require capital. Thus the New SA was expected to better explain changes in operational risk exposure, and to achieve greater comparability among firms because it relied on inputs that were readily available for most banks.

Yet, the reaction from financial institutions was guarded, and it was not considered a viable alternative to the AMA, for two reasons. On the one hand, most institutions would likely have experienced an increase in operational risk regulatory capital under the new approach. For a sample of 29 of the largest global banks, operational risk capital would have been considerably higher under the New SA than under Basel II’s Basic Indicator Approach (see Exhibit 2). Since the AMA is based on internal models that are presumably more precise than the BIA (and calibrated to produce lower capital numbers), the New SA would thus likely have placed upward pressure on capital for AMA institutions as well.

On the other hand, in its feedback to the BCBS the industry criticised a number of perceived design flaws and open questions, including:

- The validity of the BIA was questioned, as an accurate indicator of a bank’s operational risk and from which to calculate its capital. It failed to take into account the internal structure and the complexity of the operations of an institution.
- The approach did not incorporate stress events which may lead institutions to be undercapitalised in a stressed scenario.
- It eliminated the notion of business lines which, the industry claimed, made it harder to incentivise business towards better risk management through risk-based performance per business line.
- It did not specify how the BI should be applied in cases of a group comprising several legal entities and/or using mixed approaches across jurisdictions.
- The new approach used five buckets based on the firm’s size to calculate operational risk capital requirements (ranging from 10% to 30% of the BI), which was criticised as too few to reflect the vast variations in bank size and business models across different markets.
- Importantly, the New SA did not propose a mechanism to differentiate between banks based on the quality of their operational risk management practices, or for improvements in their control environments.

The industry is now understandably sceptical as to how any simple approach for OR capital calculation – let alone a universal one replacing all existing approaches – would be able to address the full complexity of these issues.

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Banks should shift their analytical capabilities to internal models intended to inform management decisions, not capital calculations

First, differentiation among firms’ operational risk management prowess will come in the form of better long-term performance, not lower capital. In order to improve returns on regulatory capital, firms will need to redeploy their analytic resources towards reducing future operational losses. Hence the primary objective of internal models should no longer be to create models that lower regulatory capital requirements, but to improve management’s understanding of risk exposures, which in turn makes it possible to better identify, assess, and manage these risks. Given the extensive investment of recent years in data, technology and skills to perform OR modelling, there are ample capabilities to redeploy to this goal if the AMA is no longer available as a capital regime.

Second, internal modelling capabilities should be directed at the analysis of the underlying factors that drive operational risk exposures at the process and product level. The industry is doing some promising work in such factor-based models. Yet, up to now, their development has been hampered by the fact that such models did not fit into the regulatory capital framework. If these models enable a more granular alignment of risk and performance measures than has been possible with AMA-type models, they could yield considerable benefits from a management perspective.

Third, banks should continue to improve their analytics and gain further insight into the behaviour of operational risks under stress. It is in environments of pressure and stress that large operational risk events tend to flourish. Institutions should emphasise improving the quantitative rigour of forward-looking tools such as scenario analysis.

Finally, banks should leverage their new insights, and direct more operational risk resources to help inform business decisions. Too often, the emphasis on operational regulatory capital and on the production of inputs to capital models has left operational risk managers with little time to mine their data for insights that are true value-adds to the business. In many banks, operational risk managers need to shift their attention to engaging business leaders into strategic conversations regarding the operational risks to which they are exposed, and how to manage and effectively mitigate those risks. Such a shift is cultural in nature. It may take time, and will require operational risk managers to enhance their current skill sets, but it should help firms position themselves favourably in light of regulators’ heightened expectations with respect to risk management.
The current Basel regulatory framework has drawn the immediate attention of many banks to their operational risk regulatory capital, sometimes to the detriment of managing their true operational risk profile. Far-reaching changes in the regulatory regime and the abolition of AMA-like internal models seem at hand. Yet, while the demise of the AMA may spell the end of internal models for capital purposes, it may favour the redirection of resources to developing internal models that could arguably be far more useful to the management of operational risk than the AMA. Continued emphasis on framework improvements and innovation will differentiate the leaders from the laggards and better position banks to have a resilient operational risk posture.
The new Standardised Approach (Oct. 2014)

The Basel Committee on Banking Supervision (BCBS) proposed revisions to its operational risk capital framework in October 2014. The proposal sets out a new standardised approach (SA) to replace both the basic indicator (BIA) and the standardised approach (TSA) for calculating operational risk capital.

Background

Basel II provides three methodologies for calculating operational risk capital requirements:

- The Basic Indicator Approach (BIA) for regional, non-complex firms, with capital calculated at 15% of gross revenues.
- The Standardised Approach TSA (and Alternative Standardised Approach – ASA) is the expected level for most financial services firms, with capital calculated at 12% to 18% of GI depending on the business lines in the firm.
- Advanced Measurement Approach (AMA) requires prior regulatory approval to be used and is currently in place at many of the global systemically important banks (G-SIBs), with capital calculated by mathematical model.

These methodologies are different in terms of complexity of calculation and risk sensitivity, both of which increase from one model to the next. Theoretically more ‘sophisticated’ methodologies with greater risk sensitivity should result in more accurate risk calculations and lower regulatory capital.

One of the main weaknesses of the BIA and TSA is their use of GI as a direct, linear indicator for operational risk exposure. As noted by BCBS, this assumption does not hold under many scenarios, including periods of stress where GI levels may decrease at a time when the bank is facing increased operational risk.

These less sophisticated methodologies also employ limited risk sensitivity in their calculations. For example, these methodologies may not effectively account for differences in operational risk exposure across different business units. Although the TSA attempts to resolve this issue (by applying a business line-specific approach), the BCBS notes that it has not produced statistically different outcomes. As a result, many banks using these simpler methodologies are considered inappropriately capitalised.

Although the more sophisticated AMA methodology endeavours to address these issues, it also requires more expansive data collection and modelling than the formulaic BIA and TSA, and thus is more costly. As a result, the AMA is generally adopted by large and complex firms that can derive benefit from its precision and are better able to absorb its higher associated costs of implementation. However, the BIA and
TSA methodologies are nevertheless used by these firms (and regulators) to benchmark and calibrate capital requirements calculated under the AMA.

**The new SA methodology**

The SA methodology employs variables that should better explain changes in operational risk exposure. Unlike the BIA and TSA that rely solely on GI as an indicator of risk exposure, the SA methodology uses an enterprise-wide approach called the 'Business Indicator' (BI).

The BI is based on the three macro-components of a bank's income statement:

<table>
<thead>
<tr>
<th>BI Component</th>
<th>Calculation Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest</td>
<td>Absolute Value (Interest Income – Interest Expense)</td>
</tr>
<tr>
<td>Services</td>
<td>Fee Income + Fee Expense + Other Operating Income + Other Operating Expense</td>
</tr>
</tbody>
</table>

According to the BCBS, the following are the advantages of the BI against GI:

- More sensitive to operational risk than GI (e.g. P&L from banking book, other operating expenses, fee and commission expenses).
- Uses absolute values to avoid counterintuitive results.
- Reduces weight of components associated with activities less exposed to OR (e.g. interest income generated by pure lending activity).
- Increases weight of components associated with activities more exposed to OR (e.g. gains and losses on traded and sold portfolios, commissions from services payments, penalties from mis-selling and inadequate market practices).

By adopting this formulaic approach that looks to better capture and reflect the drivers of operational risk while limiting implementation costs, the SA methodology seeks to optimise the balance between accuracy and simplicity.

The SA also takes into account the firm’s size by taking a tiered approach to calculating operational risk capital requirements, ranging from 10% to 30% of the BI. The capital requirement progressively increases as the BI exceeds certain levels, leading to a range of capital requirements.
Figure 1: Operational Risk Capital Charges – BIA vs SA

 Billsions (USD)

Basic indicator approach capital
Standardised approach capital
Source: PwC
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