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FRTB: A collection of thought leadership

From our financial risk analytics experts



The Fundamental Review of the Trading Book (FRTB) will transform banks' risk systems and the way they manage capital. On the road to compliance, there will be many challenges: from the viability of the P&L attribution test to the management of non-modellable risk factors and the requirement for good, clean transaction and pricing data, banks have their work cut out.

Even though deadlines have been pushed out, the design and implementation of target risk architectures need to be planned well ahead of time. Banks will also require the means of determining the materiality of decisions that can impact capital long before their target architectures are locked in place.

In this booklet, we shine a light on some of the challenges faced by the industry and offer insights on possible approaches to compliance.

Dr. Andrew Aziz

Managing director and global head of Financial Risk Analytics at IHS Markit

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FRTB: The case for dynamic capital assessments

The Fundamental Review of the Trading Book (FRTB) will introduce unprecedented volatility to banks' market risk capital quotas. This diminishes the value of traditional point-in-time quantitative impact studies (QIS) as a gauge of firms' capital demands – as these can only provide snapshot calculations based on assumptions, which will vary in appropriateness as market conditions and model accuracy fluctuates.

Assessing desk- and firm-level requirements through these static lenses would undermine capital planning initiatives because they cannot account for the ebbing and flowing of capital consumption over time, nor permit the range of scenario testing necessary to inform the most efficient FRTB internal models approach (IMA) configuration and implementation strategy. One FRTB lead at a European bank says that “dynamic scenario analysis” would be the bank's preferred method of estimating its capital needs under the framework.

Interactive capital study frameworks

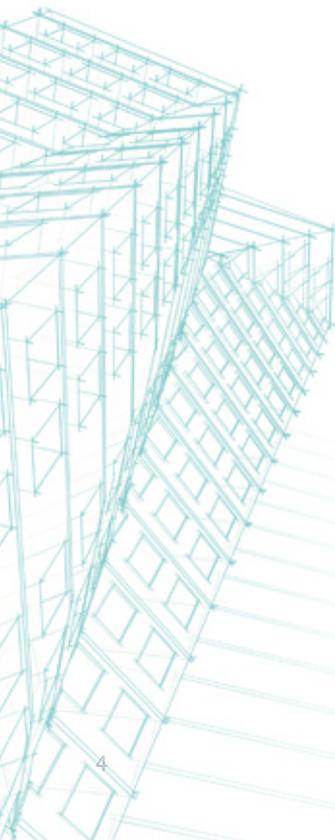
Thus, there is demand for a smarter analytical tool – namely an interactive capital study (ICS) framework capable of charting FRTB constraints on a dynamic basis. Through an ICS, banks can gain a comprehensive view of their resource requirements that considers the effects of assumption changes, varied data inputs, different desk configurations and internal model failures. It can also adapt to various iterations of the regulation, allowing firms to see how their capital demands would be affected by different calibrations of the regime. This is especially useful as no-one can guess how FRTB will be implemented across jurisdictions.

ICS frameworks equip firms with the means to restrain their costs and minimise the risks associated with their FRTB change programmes – saving time, money and effort.

“Many firms have a target risk architecture for FRTB, but to achieve this they are using a static QIS – which locks them into making decisions now that they can’t validate,” says Andrew Aziz, global head of financial risk analytics at IHS Markit. “We think it is suboptimal to do a static impact study based on imperfect data, then have to wait until implementation to know if it was the correct decision. It’s much better to do dynamic assessments, considering several scenarios without becoming locked into a decision – particularly as certain aspects of FRTB may change,” he adds.

Many firms have a target risk architecture for FRTB, but to achieve this they are using a static QIS – which locks them into making decisions now that they can’t validate.

- Andrew Aziz, IHS Markit



A dynamic analysis is indispensable, considering the fragility of permissions surrounding the use of internal models. While firms have the option of applying an IMA to their trading desks – which should produce smaller market risk capital increases than those associated with the new standardised approach (SA) – the conditions under which this approach can be deployed are limited.

Model robustness is challenged on an ongoing basis through a new profit-and-loss attribution (PLA) test and value-at-risk backtesting. The failure of too many tests within a rolling 12-month period will force a desk off of the IMA and onto the more capital-intensive SA.

Even desks that clear these hurdles may attract punitive capital add-ons in connection with non-modellable risk factors (NMRFs). Indeed, a 2016 industry study demonstrated that these could account for 30% of total market risk capital for IMA banks.

The ability to assess how the balance of IMA and SA desks will shift over multiple time horizons – as certain portfolios move in and out of model eligibility – will allow firms to better judge where to focus their modelling efforts, and save resources squandered on desks unlikely to retain model eligibility over time.

Similarly, an ICS framework would offer an insight into model risk factors that are vulnerable to an NMRF downgrade – assisting decision-making related to risk factor proxying, which can markedly reduce the capital add-on burden. It could also take firms even further by providing a window into how certain modellable risk factors can degrade over time, allowing early warning of when add-ons will increase, and helping to visualise seasonality effects. This intelligence could in turn help firms fine-tune their FRTB calibration – by, for example, identifying critical risk factors for which model approval should be a priority, or earmarking desks where the NMRF burden is such that reversion to the SA would be more capital-efficient.

“NMRFs are a big wild card, and you have to plan for different scenarios. Some businesses may survive and some may not – some may be borderline. You need flexibility to keep checking the viability of your plans,” says a head of analytics at a large North American bank.

Complementing existing infrastructure

Banks are hungry for these capabilities. But with implementation projects already in train, and calculation engines in the front and middle office already undergoing convergence in response to the demands of the PLA test, appetite for uprooting existing infrastructure is lacking.

IHS Markit is therefore promoting a solution that can leverage in-house calculation engines or vendor packages to produce an ICS.

“Banks have little appetite for expensive or risky projects. What we provide with an ICS leverages the sensitivities already used for front-office risk management, and can provide end-to-end workflow capabilities. These include everything from real-price observations – such as committed quotes, modellability assessments and NMRP proxying – to capital impact across IMA and SA. While we do have a risk engine as part of our offering, we are really focused on providing modular components that can be easily embedded within banks’ existing ecosystems,” says Aziz.

The industry will therefore converge around common methods of assessing desk modellability. This increases the added value of leveraging software-as-a-service type solutions to perform these assessments, as they can liberate resources in-house to work on those risk management tasks that actually sharpen a bank’s competitive edge.

“What we’ve done with our service is build an application programming interface layer that allows firms to be completely proprietary with how they develop risk factor proxies and generate scenarios, but at the same time is largely turnkey. That combination of features doesn’t exist in bank infrastructure today – which is why IMA is becoming too expensive for many banks,” says Paul Jones, global head of FRTB solutions at IHS Markit.

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- Paul Jones, IHS Markit

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What makes a price “real”?

Modellability data standards for FRTB



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The Fundamental Review of the Trading Book (FRTB) standards published by the Basel Committee on Banking Supervision (BCBS) in early 2017 require banks to differentiate between risk factors that are “modellable” and those that are “non-modellable”. The latter carry a hefty capital add-on that could account for some 29% of total market risk capital⁷. The modellability classification comes down to whether the firm has access to sufficient data to model the position – that is whether it can demonstrate that there are continuously available “real” prices for a sufficient set of representative transactions.

The final BCBS standards provide some guidance on “real prices”. A price will be considered “real” if: “it is a price from an actual transaction conducted by the bank; it is a price from an actual transaction between other parties (e.g. at an exchange); or it is a price taken from a firm quote, (i.e. a price at which the bank could transact).”⁸

Nevertheless, there is still much debate as to what should and should not be classified as a real transaction price. We asked participants at our recent FRTB roundtables in London, Sydney and Frankfurt

whether they believe repo transactions can be used in demonstrating modellability.

Overall, the feedback illustrated that even some of the largest banks are still figuring out what data can be used for real prices under FRTB and therefore which risk factors are modellable.

As IHS Markit works with the industry to source the relevant data that qualifies for use under FRTB, we have been considering how best to identify whether prices are “real” and transactions relevant. Most firms agree that, in accordance with the policy intent, only trades which are “price forming” should be used. Specifically, only if the transaction plays a part in setting the prevailing market price for a particular instrument and results in a risk transfer between the parties, is it “real”.

This principle should be applied to filter transaction data so that the FRTB risk factors derived will automatically include only trades that fall into the price-forming categories.

⁵ Risk Magazine: EBA plans reboot of FRTB’s P&L test, 31 March 2017

⁶ McKinsey Working Papers on Corporate & Investment Banking No.11

Based on this principle, the following types of transactions should be included:

- Price-forming transactions, such as new trades, terminations, amendments and novations
- For derivative transactions that are centrally-cleared, only one of the two transactions that results from the clearing process will be considered.

On the other hand, the following would not qualify:

- Non price-forming transactions, such as compression trades, internal trades, internal novations, error correction trades and trades amended same day or next day
- Swaption parent trades

There has been an increasing amount of pressure on data management from banking regulators in recent years. FRTB only increases the stakes. While debate within the industry will undoubtedly continue about what should be classified as a real transaction price, it's important that firms have the capabilities to clean and intelligently manage transaction data to meet the FRTB standards. ■



FRTB: The Scrooge of Christmas?

Why trading desk holidays may never be the same again



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Could there be a direct correlation between how much time traders will be allowed to take off for Christmas and how much capital firms will need to hold under FRTB? This question might seem incongruous, but our recent research shows that if the Fundamental Review of the Trading Book were applied today, then risk factor modellability, and consequently bank capital, might suffer from a little seasonal excess during the holiday period.

Under the FRTB text, for a bank to fully ‘model’ a risk factor and so benefit from the portfolio effects, the risk factor must be readily observable in the market. Risk factors for IMA are divided into modellable (MRFs) and non-modellable (NMRFs). A risk factor is only modellable if “real” prices for representative transactions are observed at least 24 times per year and with a maximum gap between observations of less than a month.

It’s this maximum gap requirement that can lead to a significant number of risk factors becoming non-modellable over holiday periods. For example, if we group risk factor observations by currency and identify those that fail the modellability tests due to a gap in time, they occur during periods of national celebrations.

Using analysis on millions of trade observations carried out with our [Risk Factor Utility](#) shown below, we can see a steep increase in the number of NMRFs for the Philippine Peso over Holy Week, which is a week-long national holiday. A similar trend is visible over the Christmas period or winter holidays affecting multiple currencies including the Swiss Franc and Hong Kong Dollar.

So, could the introduction of FRTB and the desire to mitigate the associated capital charges lead to the cancellation of Christmas holidays for traders?

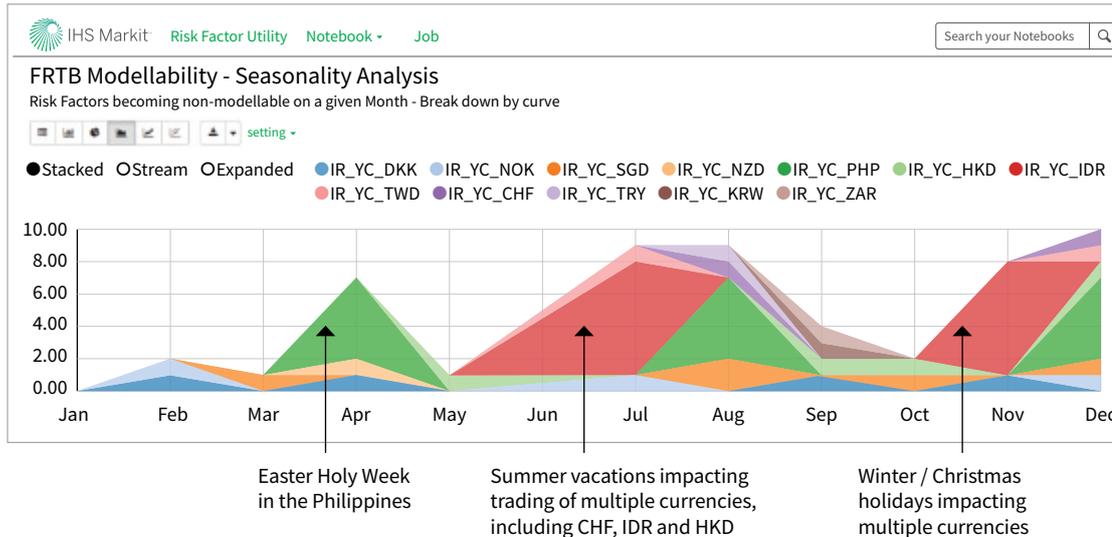
Well, probably not. The good news is that traders should be able to continue to enjoy national holidays if banks and the broader industry prepare in the right way for FRTB over the coming months.

In particular, access to a rich and diversified source of transaction data will be critical to mitigating NMRF capital charges. At present, individual banks are unlikely to be able to view real prices for all representative transactions in the market since they are directly involved in only a subset of these transactions and are also affected by the seasonality challenges outlined above.

Our [previously published research](#) demonstrates how external transaction data can be combined with a bank's internal data sets to increase modellability of risk factors. In our studies, this in turn led to capital charge reductions of as much as 40% through the reduction of NMRFs.

Another area we've explored is the use of proxies where modellability data for a risk factor is unavailable. Our research to date shows that well-chosen proxies can deliver significantly lower capital, although this is very much dependent on the portfolio and proxy methodology.

As banks start preparing in earnest for the introduction of FRTB, modellability of risk factors remains one of the most significant challenges and the seasonality trends identified only add to this complexity. Leveraging pools of transaction data and solid proxy methodologies will not only help banks reduce the capital impact of NMRFs, but will also ensure that traders can continue to enjoy their national holidays and don't receive unwelcome capital charges as Christmas presents. ■



The capital impact of proxy choice



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The Fundamental Review of the Trading Book (FRTB) rules require banks to decompose risks into (and hold capital against) risk factors, or exogenous characteristics that cause changes in position values. The standards provide a definition of what makes a risk factor “modellable” for capital purposes, with non-modellable risk factors (NMRFs) requiring extra capital to be held. Last year’s ISDA quantitative impact study found that this add-on could account for some 30% of total market risk capital. With bank trading operations already struggling to maintain profitability under high capital requirements from Basel III, tough business decisions will need to be made unless they can find ways to reduce the capital impact of FRTB to maintain profitability.

Current efforts are focused on exploring reductions in NMRF-related capital. Increasing available data can also increase the modellability of risk factors and reduces capital. IHS Markit [previously published research](#) that demonstrated how external transaction data can be combined with a bank’s existing, internal data sets to increase modellability of risk factors. This in turn led to capital reductions by as much as 40% through the reduction of non-modellable risk factors. However, even using external data, the impact of NMRF remains significant, leading banks to look for other ways of reducing the number of non-modellable risk factors.

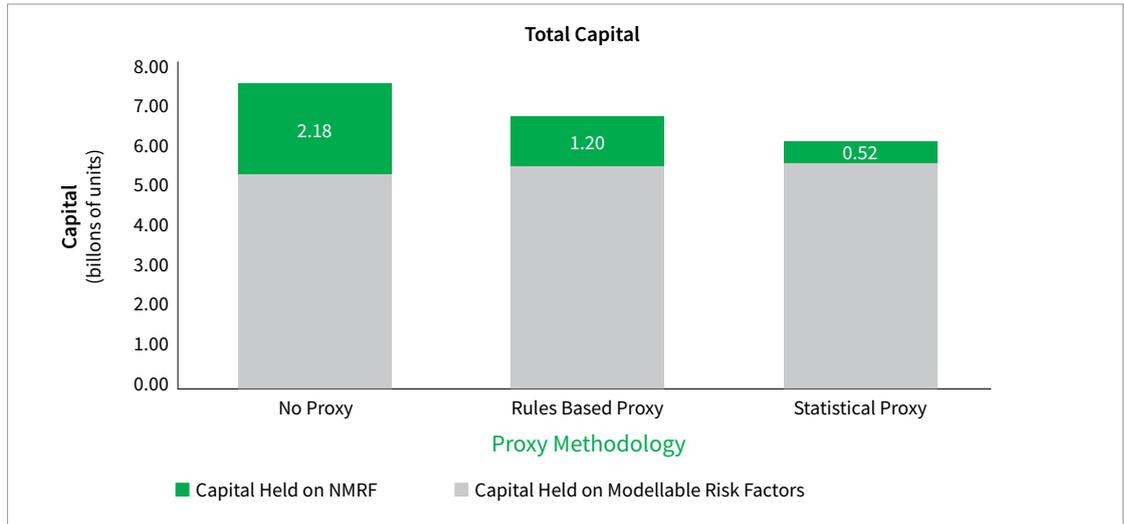
One area worth exploring further is the use of proxies where modellability data for a risk factor is unavailable. We have assessed two such options for deriving proxies for risk factors and the capital impact of these choices. The two methods tested were:

1. Simple rules-based approach
2. Statistical modelling approach

Under the first approach, the proxies are created using rules to find the closest modellable tenor from the interest rate curve. The “closest fit” modellable risk factor is then used to proxy the non-modellable risk factor.

Under the second approach, a statistical model looks to ascertain the best proxy by looking for the most correlated risk factors and using data from that modellable risk factor as a proxy for the non-modellable risk factor.

The research uses IHS Markit’s internal data and a hypothetical swaps portfolio, as in the prior study.



While both approaches have merit in their transparency and auditability, our research to date shows that the second method delivers the best overall proxy, as well as the greatest capital savings. In the example above, using the rules based approach reduces capital by 11%. However, the statistical modelling approach produced a 19% saving in capital.

As these results will likely vary when applied to different asset classes, work will need to be done to

understand the differences in these two methods by instrument type. We are already expanding the research into different asset classes to ensure the results hold true and to explore further the effects of the assumptions made in the two methodologies. However, what's clear is that using proxies and the selection of the proxy methodology can have a significant impact on NMRF capital charges. Given the earlier ISDA findings, this is clearly an area of research worth pursuing. ■

The P&L attribution test - going, going, gone?



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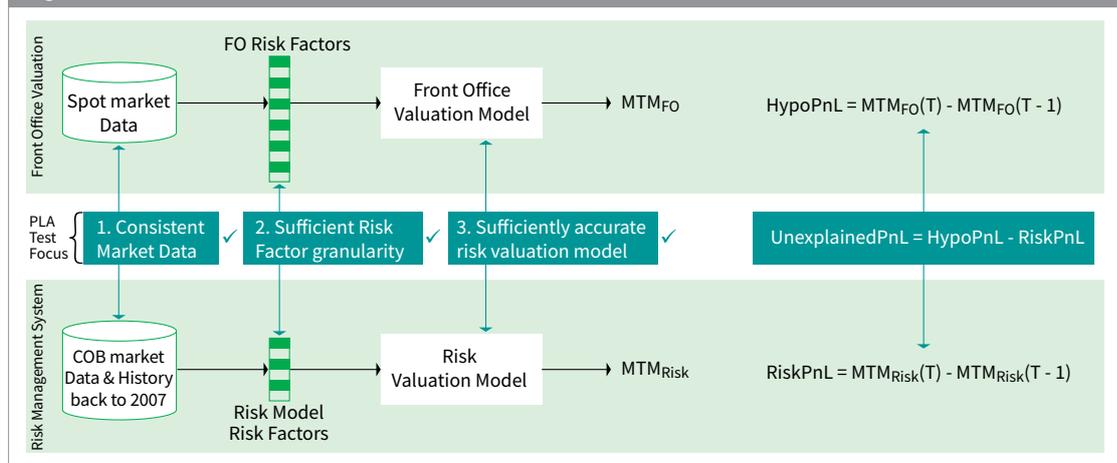
The P&L attribution test (PLAT) is one of the most hotly debated topics in FRTB with industry experts doubtful whether the test can ever be made to work¹. In this article we review the goal of the test, summarise our empirical findings and speculate on what the future holds for PLAT.

In outline, PLAT assesses the difference between the P&L calculated by the front office and the P&L

calculated in risk. If this difference – the unexplained P&L – is too big or too variable, then a breach is counted. Four breaches within any 12-month period will force the trading desk onto the Standardised Approach (SA) with a capital impact of up to six times².

Getting the unexplained P&L down to an acceptable level requires aligning a number of components of the calculation as illustrated in Figure 1.

Figure 1: Schematic of the PLAT



¹ Risk Magazine: P&L test in Europe's FRTB may not work – research, 18 April 2017

² Risk Magazine: The P&L attribution mess, 2 August 2016



Aligning market data can be a headache for banks, but it is achievable by using the same market data to fuel front office calculations as the risk ones. The area that our clients have been most interested in therefore is the second two components: risk factor and valuation model alignment.

We have run the PLAT on real portfolios exploring how different risk factor grain, desk structures and valuation models impact the result. The following high level observations have emerged:

- **Linear directional portfolios can be represented by simple Taylor expansion risk models and pass PLAT.** This is good news for banks with simple portfolios as it means that they don't necessarily need to invest in expensive risk model upgrades.
- **Exotics typically fail PLAT unless the risk model and front office model are identical.** This may justify risk model upgrades but only if the cost of the upgrade is less than the capital saving from using the Internal Model Approach compared to the Standardised Approach.
- **Adding linear directional portfolios to exotic portfolios can result in an overall PLAT pass.** This may lead to a consolidation of regulatory desks.

➤ **The PLAT is relatively insensitive to the granularity of risk factors (e.g. the number of points on an IR curve) so the risk factors can be tuned to pass PLAT whilst minimising the non-modellable risk factor (NMRF) capital charge.** The PLAT-NMRF conundrum³ is an area that we have been researching in detail. You can read our white paper on the topic [here](#).

The third observation is also made from a theoretical point of view in an article in Risk⁴ where the authors represent both the hypothetical and unexplained P&L for an individual instrument as a normal distribution. This gives a model for the probability of passing PLAT at a desk level which the authors use to demonstrate that increasing the average correlation between trades in the hypothetical P&L (making the desk more directional) increases the likelihood of passing.

The same paper demonstrates that maintaining a PLAT pass for a given desk over a sustained period will be difficult because of flaws inherent in the test ratios. This could be the final nail in the coffin for the PLAT in its current form.

So what now? Despite the troublesome ratios, the principle behind the PLAT was widely welcomed by the industry and it is unlikely that the test will be

³ Risk Magazine: Inconsistent FRTB model advice vexes dealers, 16 February 2017

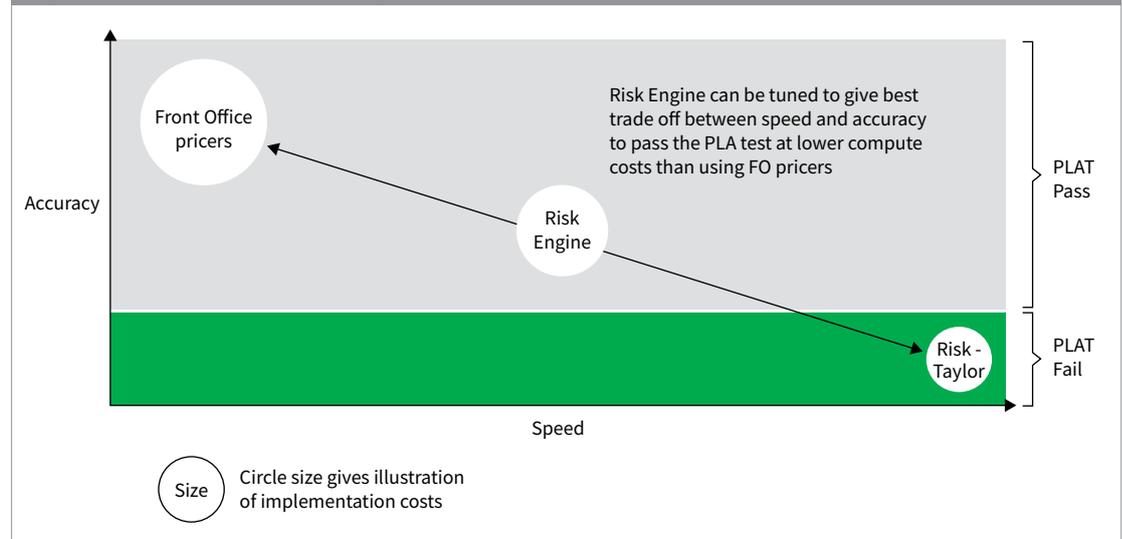
⁴ The P&L Attribution test, Peter Thompson, Hayden Luo, Kevin Fergusson, 13 January 2017

dropped entirely. The European Banking Authority has recently stated that it intends to reboot the test in the Regulatory Technical Standard supporting the Capital Requirements Regulation (CRR II)⁵.

A test that remains very sensitive to the size of the unexplained P&L may push banks down the path

of overhauling their risk systems to use front office pricers at great cost. But is this the only option? Ideally a risk model would sit somewhere between the accuracy of a front office pricer and with the speed of a market risk approximation (e.g. Taylor expansion or discrete valuation grids approaches). This is illustrated in Figure 2.

Figure 2: Ideal behaviour of risk engine



⁵ Risk Magazine: EBA plans reboot of FRTB's P&L test, 31 March 2017

⁶ McKinsey Working Papers on Corporate & Investment Banking No.11

For risk applications, full front office pricing accuracy is not required because the goal is to generate a loss distribution rather than beat a competitor to a transaction price. Therefore, a certain level of unexpected P&L is tolerable as it simplifies the risk system and reduces hardware costs.

Under FRTB, the number of scenarios used to price trades has increased by an order of magnitude compared to Basel 2.5⁶. Consequently, front office pricers designed for accuracy but not performance

may never be able to calculate FRTB capital within an overnight batch. Techniques that build a risk model by fitting a surface to a limited set of valuations generated from a front office model may offer the optimal balance between accuracy and speed.

Reaching this middle ground of sufficient accuracy at high speed (and so low hardware costs) is an area of research for IHS Markit and we'll give further details in future articles. ■



FRTB accentuates the need for good, clean data



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The introduction of FRTB will put considerable pressure on banks' resources to gather, cleanse and analyse a large volume of transaction and pricing data. The challenges were clearly illustrated in 2015 when the Basel Committee for Banking Supervision published its October 2015 Quantitative Impact Study (QIS) and it could only be completed in a usable form by 31 out of 78 banks.

This inability to aggregate good, clean data to meet the new standards will directly lead to higher capital requirements in banks. According to the most recent QIS results published by ISDA, the add-on capital for non-modellable risk factors (NMRFs) accounted for 30% of market risk capital under the new rules. The study saw a minimum increase in capital of 1.5 times the current levels but only under a full IMA model approval assumption that ISDA believes is unattainable. There is clearly potential to impact these punitive capital add-ons with better data and better management of that data in the context of risk factors.

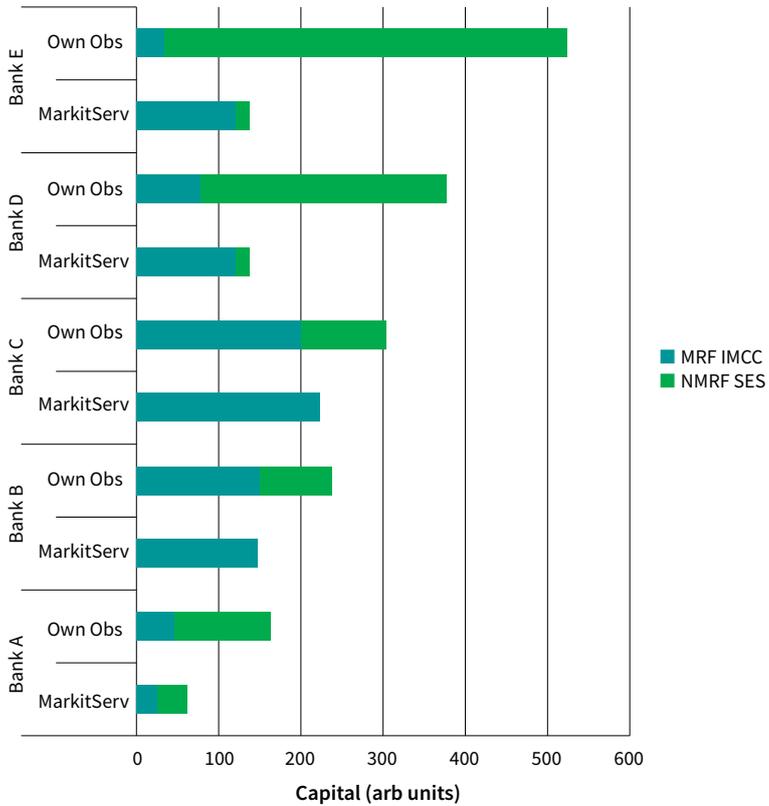
When the final FRTB guidelines were published in January 2016, we were curious to see how much impact data would have under NMRF. Prior capital impact studies conducted by many banks have been based on their existing Risks Not In VaR (RNIV) frameworks. Using sets of historical pricing and transaction data, we conducted an initial study.

The results made the impact of transaction data availability very clear.

The chart that follows shows the results for the swaps desk of five of the 20 banks examined in the study. Although the findings vary from bank to bank, the addition of an external data set presents the opportunity to significantly reduce the capital held in each instance – and by a significant margin in most cases. No matter how adept at data management, these results illustrate the difficulties banks are likely to face when trying to use only their own observations for proving modellability under FRTB.

We believe the impact of data availability cannot be overstated. Although this example uses a fairly liquid asset class, it does show that a typical bank using only their own transaction data will have meaningful gaps that lead to higher capital requirements. We found that the average saving from using our data is 40% of the swap desk capital compared to banks using only their own data.

There is of course room to add to this analysis using more complex desk strategies. However, it is already evident from this simple example that the potential impact of FRTB as a result of NMRF alone is big enough to require careful evaluation of data and external data sources. ■



FRTB: Sparking new approaches for big data analytics



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The introduction of the Basel Committee's Fundamental Review of the Trading Book (FRTB) standards involves a comprehensive overhaul of banks' market risk capital frameworks. The move from value-at-risk (VaR) to scaled expected shortfall (ES) in order to capture tail risk will significantly increase the number and complexity of the capital calculations that banks need to undertake, as well as the sheer volume of data to be managed.

From a computation perspective, this means that P&L vectors need to be generated per risk class, per liquidity horizon and per risk set. Removing the redundant permutations brings the total number of P&L runs to 63 (some of which can be done weekly), compared to two (VaR and Stress VaR) in the current approach.

Firms are faced with the challenge of performing a significantly increased range of FRTB capital calculations at scale while also managing their costs and risk. The question is: are banks' current IT risk infrastructures up to the task ahead?

If banks want to achieve proactive and intraday risk management while also effectively managing their capital over the long-term, they will require high-performing IT infrastructure that can handle the intensive calculations required. However, many banks today rely on technologies such as relational

databases and in-memory data grids (IMDGs) to conduct risk analytics, aggregation and capital calculations.

IMDGs work by replicating data or logging updates across machines. This requires copying large amounts of data over the cluster network, which has a far lower bandwidth than that of RAM. As a result, IMDGs incur substantial storage overheads, are sub-optimal when applied to pure analytics use cases, such as FRTB analytics, and are expensive to run.

In short, banks' legacy IT architectures will need a significant overhaul when it comes to FRTB and firms are looking for alternative options. One of those options is Apache Spark, an open source processing engine built around speed, ease of use and sophisticated analytics.

Spark has a distributed programming model based on an in-memory data abstraction called Resilient Distributed Datasets (RDDs) which is purpose built for fast analytics. RDDs are immutable, support coarse-grained transformations and keep track of which transformations have been applied to them. RDD immutability rules out a big set of potential problems due to updates from multiple threads at once and lineages that can be used for RDD reconstruction. As a result, checkpointing requirements are low in Spark. This makes caching, sharing and replication easy.

These are significant design wins. There are other advantages over IMDGs too:

- ↘ Memory optimisation: IMDGs require the entire working set in memory only and are limited to the physical memory available. Spark can spill to disk when portfolios do not fit into memory making it far more scalable and resource efficient.
- ↘ Efficient joins: IMDGs have fixed cubes and cannot do joins across datasets which limits flexibility. Spark supports joining of multiple datasets natively. This allows reporting using different hierarchies and analytics using other reference data without the need for a new cube and additional memory. Joins are very performant as Spark does a broadcast behind the scenes of smaller datasets. Broadcasts are based on a peer-to-peer BitTorrent-like protocol.
- ↘ Polyglot analytics: Spark supports custom aggregations and analytics which can be implemented in a variety of languages: Python, Scala, Java or R compared to the limited SQL or OLAP expressions possible with IMDGs.
- ↘ Multi-tenant support: Spark supports dynamic resource allocation, resource management, queues and quotas, allowing multiple users and processes such as operations reporting, decision support, what-if and back testing to be supported on the same cluster.

- ↘ Frugal hardware requirements: The immutable nature of RDDs enables Spark to scale and provide fault tolerance efficiently. A Spark cluster is highly available without the need for Active-Active hardware.

In fact, our own studies have demonstrated many of these capabilities, highlighting the power of Spark in terms of performance, scalability and flexibility. For example, we recently completed a proof-of-concept with a European bank, which showed that our capital analytics and aggregation engine can support the FRTB capital charges for IMA and SA in single digit seconds. This is based on a portfolio of one million trades with 9 million sensitivities, 18 million P&L vectors and on hardware costing just USD20k.

As one of the most active projects on the Apache platform, Spark benefits from thousands of contributors continuously enhancing the platform. In fact, we've seen a 20% improvement in Spark aggregation performance year-on-year since we started building our solutions on the platform in 2016. We're excited to see the improvements that are bound to come in the year ahead! ■

FRTB-CVA:

Are you ready for the next piece of the FRTB puzzle?



Dr. Andrew Aziz

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Regulatory reform over the past decade – driven to a large extent by the Basel Committee – has made managing regulatory capital a priority for banks around the world. The introduction of the Fundamental Review of the Trading Book (FRTB) and the potentially significant capital implications of key decisions banks must make around issues such as non-modellable risk factors, P&L attribution and desk level reporting, further underlines its importance.

While much attention has been focused on the implications of the new regulation on market risk, the landscape for credit valuation adjustment (CVA) regulatory capital is undergoing its own transformation. As such, banks are trying to assess the potential impact of the CVA capital requirements and how they can best be mitigated.

Back in 2015, the Basel Committee on Banking Supervision (BCBS) launched its review of the CVA risk framework. Its objective was to take into account the market risk exposure component of CVA along with its associated hedges, as well as ensuring consistency with the proposed revisions to the market risk framework under FRTB. The review would enhance

the current Basel III CVA risk framework, which was implemented in 2010 to respond to the significant CVA losses suffered by banks on their OTC derivatives portfolios during the financial crisis.

The proposed CVA risk framework introduces two new types of risk models: i) the Basic Approach (BA-CVA) and ii) FRTB-CVA which consists of the Standardised Approach (SA-CVA). Consistent with the typical regulatory approach, banks can choose to implement either basic regulatory models or the SA-CVA, which requires regulatory approval and is based upon meeting certain prescribed criteria.

In order to better understand – and minimise – the impact of FRTB-CVA, and other regulatory changes, four large banks commissioned IHS Markit to conduct Quantitative Impact Studies (QIS) at the end of 2015. These studies were based on the draft regulatory parameters and were run on representative portfolios⁹. Although some of the parameters within the regulations have since changed, we found that by moving from BA-CVA (SA-CCR¹⁰) to SA-CVA, banks could potentially reduce CVA risk capital by 71%. To read the full findings, you can download the paper [here](#).

⁹ The studies were conducted on representative portfolios containing 1,000 to 100,000 actual trades with 50 to 2,000 collateralised and uncollateralised counterparties, with the majority being uncollateralised corporates. The portfolio did not include CVA hedging trades

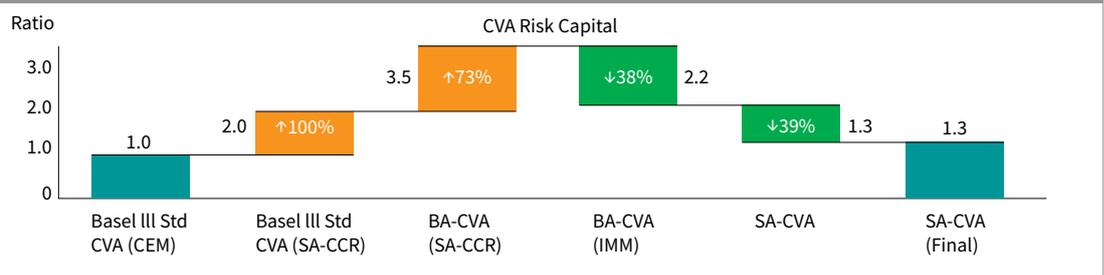


Since then, the BCBS has made a number of [updates to the draft regulatory parameters](#)¹¹. Taking these latest changes into account, our updated research shows us that banks that are currently on the Basel III Standardised CVA (Basel III Std CVA) charge using the Current Exposure Method (CEM) as the input for exposure-at-default could face a CVA risk capital

increase of 3.5 times (from a ratio of 1.0 to 3.5) when moving to the new framework.

This increase is due to the combined impact of having to move from CEM to the new SA-CCR, and from Basel III Std CVA to the new BA-CVA. See Figure 1 below for more details.

Figure 1: Capital comparison across regulatory models, March 2016



In order to mitigate the impact of this capital increase, banks can instead choose to adopt the new SA-CVA, which could reduce the capital charge by 2.7 times (from a ratio of 3.5 to 1.3).

However, as mentioned earlier, in order to adopt the SA-CVA approach, banks will need to meet certain prescribed criteria. One of the key pre-requisites is that banks that do not already have an active CVA desk in place, will need to set one up for the 'risk

management and hedging of CVA'. This will require non-trivial investment in software systems and skilled CVA expertise, to name just two considerations.

The review of the CVA risk capital regulation is expected to be finalised soon at which stage we will update our original paper and calculations. However, suffice to say that banks that have yet to embark on an analysis of the impact of the new regulations could find a huge capital increase looming in the horizon. ■

¹⁰ SA-CCR is the Standardised Approach which replaces the Current Exposure Method (CEM) and the Standardised Method (SM) in Basel's capital adequacy framework <http://www.bis.org/publ/bcbst279.htm>

¹¹ Basel Committee on Banking Supervision, Instructions: CVA QIS, February 2016

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