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Regulatory Update
Preparing for the Fundamental Review of the Trading Book (FRTB)

With the final set of definitions finalised in January 2016, Misys experts discuss which business impact the final market risk capital charge will have on the market and what financial institutions can do to prepare.

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What are the intended objectives of new market risk capital charge?

The market risk capital charge key objectives are to define the capital requirements for the trading book and "aim to contribute to a more resilient banking sector by strengthening capital standards for market risks",* as a further response to the financial crisis. The Basel Committee is also trying to achieve a regulatory framework with FRTB that can be consistently implemented by supervisors across jurisdictions and include the variability of market risk-weighted assets.

What are the key changes recommended by the Committee?

The Committee is changing the computation and reporting in five key areas:

• Replacing VaR by liquidity-adjusted expected shortfall as the measure of market risk used to compute the capital charge

"Expected shortfall (ES) will need to be calculated across various horizons with high granularity in terms of risk factor classification. This could have been a totally unrealistic computing problem were it not for some recent clarifications in the allowed procedures."

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* BCBS document: www.bis.org/publ/bcbs265.pdf

- Imposing more stringent requirements regarding the consistency of risk measures with front office P&L data at trading desk level.

- Updating the Standardized Approach (SA) significantly, to align it more closely with the new Internal Model Approach (IMA). Both methods will now have to be reported at trading desk level, the former acting as a fall back to the latter whenever the front office risk consistency requirements are not met.

- Revising the rules for determining the segregation of instruments belonging to the trading and banking books.

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What will be the implications on a bank's infrastructure?

Banks will need to review their current infrastructure carefully to determine if it can accommodate the following requirements:

- In addition to the continued calculation of VaR for some purposes, expected shortfall (ES) will need to be calculated across various horizons with high granularity in terms of risk factor classification. This could have been a totally unrealistic computing problem were it not for some recent clarifications in the allowed procedures. Nevertheless, it will be necessary to calculate 10-day expected shortfall on a transaction level basis with full revaluation. Where a transaction is driven by one or more risk factors with a liquidity horizon longer than 10 days, one or more additional calculations (depending on the liquidity horizon) will be required involving shocks to just those risk factors. In virtually all instances, this will require a considerable increase in computing power.

- To be able to use the Internal Model Method, banks need to investigate and assess the current level of consistency between their front office P&L and their risk management P&L. Inability to demonstrate consistency will force banks to use the standard approach, which would result in higher capital requirements and reduced margins.

- Time to market of new instruments will need to take into account the need to reconcile front office and risk P&L values, with potential delays or lower margins because of the higher capital charges from the application of the standard approach.

> "In addition to requiring significantly greater computing capacity, this treatment of illiquid instruments will cause a significant increase in required capital. The desks most affected will be those that are trading complex and structured products where limited liquidity is of greatest concern."

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What are the implications of moving away from VaR to Expected Shortfall (ES)?

Rationale

The ES is deemed to be a more accurate measure of risk as it covers "the whole tail". Banks will be required to incorporate a series of liquidity horizons specified by supervisors, varying from 10 days to one year, into their ES models. These horizons are to be based on the type of risk factor being modelled. This is designed to address regulatory concerns that the existing framework was not sensitive enough and that the pre-existing VaR multiplier of 3.0 was not conservative enough for illiquid assets.

Impact

In order to calculate ES, specific required liquidity horizons need to be assigned to every relevant risk factor. Banks then must assure that these risk factors are treated consistently with this assignment in all expected shortfall calculations. In addition to requiring significantly greater computing capacity, this treatment of illiquid instruments will cause a significant increase in required capital. The desks most affected will be those that are trading complex and structured products where limited liquidity is of greatest concern.

How Misys can help

Speaking to our customers, it has become clear that addressing these new requirements will demand early testing and a review of how more speed can be introduced. Banks that implement a single pricing engine across the front office and risk management systems will be at a distinct advantage, since consistency is thereby assured automatically.

How can the risk measures achieve consistency between front office P&L and risk management?

Assuring consistency between the front office P&L and risk system calculations, without continuing reconciliation and verification headaches, requires convergence of the technology stack that has traditionally been split between risk management and trading. The demand for a more integrated view of risk will only increase. Satisfying this demand will require

› common sources for both trade details and market data,
› shared pricing engines,
› uniform risk data aggregation and reporting schemas and
› identical classification of risk factors

across all trading and risk management systems.

A high speed and massively parallel IT architecture will be required for brute force batch calculations because the high granularity in risk factor classifications will impose more revaluations. Fully consistent intraday updates will require the ability to incorporate new, amended and cancelled trades into the stored simulation results followed by rapid re-aggregation of ES results. Absent such a capability, it would be necessary to use approximations to estimate the impact of new trades and shifting market conditions on both market risk and credit related measures using add-ons or similar methods.

Considerably more data will be required, including current market data, time series histories and simulation results at the individual trade level. All these must be collected and staged appropriately.

• In terms of data distribution, banks need to decide which output format to use. They also should investigate whether any drill-down or shared tools are already available that can be reused.

> "This will be especially complicated in many firms where the standardised market risk capital models are owned by finance while internal models tend to be owned by risk. BCBS 265 requires banks to run both calculation methods in parallel."

How Misys can help

- A single shared valuation engine significantly strengthens the case that a bank has taken the necessary steps to satisfy the new IMM requirements. Apart from having access to the same information at greater speed, time-to-market for new products would be reduced. FusionCapital and FusionRisk can use one common pricing engine across the two systems, either by using the native front office pricing engine and/ or the Misys FusionCapital Pricing engine.

- Misys Capital Pricing is a common fast valuation engine that leverages GPU parallel processing and provides seamless connectivity between the front office and risk management. This valuation engine can utilise models from multiple sources:

  › Misys standard out of the box pricing models,
  › Misys custom built models or
  › 3rd party or bank in-house models

with efficient integration of external pricing libraries.

> "A high speed and massively parallel IT architecture will be required for brute force batch calculations because of the high granularity in risk factor classification that will impose more revaluations."

What are the implications of the new Standardised Approach and the requirement to run both the Standardised Approach (SA) and the Internal Model Method (IMM) in parallel?

Rationale
IMM compliance will allow banks to optimise the required capital charges, thereby improving their margins overall. The current standard rules allow very little recognition of hedging or diversification benefits, resulting in grossly overstated capital requirements for the trading book. The purpose of the new standardised approach is to close the gap relative to the internal model approach by introducing more granular segmentation of risk weighting and several correlation matrices to account for diversification effects.

Impact
The changes will require these two sometimes fractious neighbours to work hand in hand. This will be especially complicated in many firms where the standardised market risk capital models are owned by finance while internal models tend to be owned by risk. BCBS 265 requires banks to run both calculation methods in parallel.

How Misys can help

Misys FusionRisk Advanced Measures can accommodate both calculation methods.

What needs to be considered for the move to Stress Expected Shortfall (SES)?

The current double counting of risk by using both VaR and stress VaR is eliminated, now only the stress metric is used. This arose because regulators are generally pleased with how calibration to stress periods operates, giving a risk sensitive but also conservative and non-pro-cyclical estimate of market risk capital.

Impact

Once again, considerable additional data will be required, which will need to be collected and staged appropriately. The SES data will need to be calibrated to a period of market stress.

How Misys can help

Misys has experience with both calculations. They are available in FusionRisk Advanced Measures and Fusion Risk Regulation v. 1.5

What are the implications of moving from Incremental Default Risk (and towards the new proposal of the Default Risk Charge)?

Rationale

The Basel Committee felt that migration risk reflected in the Incremental Risk Charge (IRC) and spread risk in the market risk capital charge involved considerable double counting. On this basis, the IRC has been eliminated.

Impact

There is no longer a requirement to model migration risk for non-securitisation credit positions. Similarly, the constant level of risk assumption in IRC will be abandoned due to complexity and lack of comparability. More stringent requirements are imposed regarding the estimation of Probability of Default (PD) and Loss Given Default (LGD) parameters. They now have to be estimated as consistently as possible with the Internal Rating Based (IRB) prescribed methodology.

How Misys can help

FusionRisk is compliant with Incremental Default Risk. And in parallel, Misys is ready for implementation of the new required features.

> "There is no longer a requirement to model migration risk for non-securitisation credit positions. Similarly, the constant level of risk assumption in IRC will be abandoned due to complexity and lack of comparability."

Clear segregation of instruments belonging to the trading/banking book

The Basel II rules encourage firms to push many credit sensitive positions into the trading book where they attract lower regulatory capital charges based on their presumed greater liquidity and easier sale if markets turn sour.

Impact

The imposition of stricter rules will limit regulatory arbitrage in which banks could shift positions into the classifications that provided the most favourable capital outcome. Banks are likely to face higher capital charges as it becomes more difficult to move assets between the trading and banking book.

Desk level reporting for the Internal Model Method (IMM).

Rationale

Under Basel II, banks generally sought approval for their Internal Model Approach for calculation of market risk capital at the enterprise level. Once granted, withdrawing such approval would have a major impact on a bank's entire trading operation. Increasingly it was felt that IMA approvals needed to be more granular.

The solution in Basel III is to define trading desks as a group of traders operating with a clearly defined business strategy and in a recognised risk management structure. Definition of such organisational entities is up to individual banks but this is to be subject to supervisory approval.

IMA approvals will be granted on a desk-by-desk basis, and therefore will be easier for regulators to withdraw if deemed necessary without institution-wide repercussions.

In line with this, Basel III demands that enterprise-wide market risk estimates be capable of being disaggregated down to, and reconciled with, desk level results.

Impact

Banks need to demonstrate their ability to obtain and report on desk level risk. This task is further complicated by the move from VaR to Expected Shortfall, with differential liquidity features, as the required measure. This will require trade level simulations with full valuation and enough replications to obtain reasonable stability for the average in the 2.5% tail of the resulting distributions.

Taken together, these will demand a significant increase in both the computation and memory storage requirements to meet the Basel III market risk specifications.

How Misys can help

Spreading calculations across massive numbers of processors is the only plausible means of harnessing the required computing power necessary to meet this challenge. The Misys Capital pricing platform is a highly efficient pricing engine that leverages multiple hardware options (grid computer farms, GPU cards and cloud computing installations) to achieve this kind of massive parallel processing.

In addition, the Misys Column Storage Module (CSM) is a highly efficient way to re-aggregate massive numbers of simulation results to derive updated expected shortfall values at multiple levels from individual trading desks to the full enterprise.

For more information visit www.misys.com/fusionrisk

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About FusionRisk

Misys FusionRisk addresses the strategic regulatory and risk management requirements of a bank across the trading, lending and banking books. It is helping risk managers to see risk where it happens, and delivers stringent risk governance and compliance with the ability to monitor risk and exposures across asset classes and trading systems.

FusionRisk - if you can't see risk you can't manage it.

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About Misys

Misys is at the forefront of the financial software industry, providing the broadest portfolio of banking, capital markets, investment management and risk solutions available on the market. With more than 2,000 customers in 130 countries our team of domain experts, combined with our partner eco-system, have an unparalleled ability to address industry requirements at both a global and local level. We connect systems, collect data and create intelligent information to drive smarter business decisions. To learn more about how our Fusion software portfolio can deliver a holistic view of your operations, and help you to solve your most complex challenges, please visit **www.misys.com** and follow **@MisysFS** on Twitter. For the latest news, interviews, videos and features from the financial technology industry visit **www.fusionwire.net**.

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