

Market Insight

Reviewing the FRTB: Commentary on the Basel Committee's Fundamental Review of the Trading Book

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Abstract:

The Basel Committee on Banking Supervision published its *Fundamental Review of the Trading Book* (FRTB) in May 2012. The Review is a response to the shortcomings of trading book regulations that were exposed during the financial crisis, and sets out a vision for the future state of capital standards for trading risks. This note outlines the key points of the Review, and summarizes the remarks made by MSCI in its formal response.

Why This Matters:

- The FRTB is a glimpse of the regulators' mindset as they consider reworking the capital rules for trading risks.
- The FRTB proposes a significantly enhanced role for the standard model, possibly, in our opinion, to the detriment of banks' efforts to model risks internally.
- We believe that the proposals for enhancements to internal models—stressed calibration, a new risk measure, explicit treatment of liquidity—are largely positive steps, though some of the details of their implementations are cause for concern.

Introduction

In May 2012, the Basel Committee on Banking Supervision published its Fundamental Review of the Trading Book (FRTB), which had been promised by the Committee in its report to the G20 in October 2010.¹ As a Consultative Document, the FRTB outlines the Committee's vision for how trading risk should be capitalized in the future, providing a number of specific policy proposals, and invites the industry to submit comments. If past history holds, there will likely be at least one more proposal for industry comment, as well as a number of quantitative impact studies, before the revised rules are implemented.

In this note, we will step through the FRTB, attempting to articulate what we see as the Committee's motivations and offering a few of our impressions and suggestions. For more detail, please see [Finger and Acerbi \(2012\)](#), our formal response to the Committee.

Standardized Model

Though somewhat overlooked in the initial reactions to the FRTB, we believe the most significant of the Committee's proposals is its push to expand the role of the regulatory standard model beyond its current application, which is to set minimum capital for banks that do not have approval to use an internal model.

The first element of the expanded role stems from the Committee's decision to conduct model approval at the level of individual trading desks, rather than at bank level, as an all-or-nothing decision. An individual bank could choose to submit for approval an internal model for only a portion of its overall trading activity, or a supervisor could refuse or revoke approval for an internal model applied to a single desk. The standard model, as a result, must provide a "credible fallback" at the level of a trading desk.

In addition, all banks—even those with full internal model approval—would be required to regularly calculate minimum capital based on the standard model. The disclosure of risks based on the standard metric would provide a sanity check on the bank's own calculations, and enhance the ability of shareholders and creditors (not just supervisors) to meaningfully compare trading risks across banks.

Up to this point, it is difficult to find fault with the Committee's expanded vision for the standard model. One concern, of course, is the cost of building and maintaining both an internal and standard model, and of a more rigorous approval process. A second concern is that the standard model must become more realistic and risk-sensitive in order to serve as a viable benchmark and fallback mechanism. The expanded role for the standard model imposes an expanded responsibility on the Committee to define it.

The controversy arises with the Committee's statement that it is considering either a floor or surcharge based on the standard model. While the Committee may have a legitimate concern about internal models' potential to understate risk, a

¹ See Basel Committee on Banking Supervision (2010).

consequence of a floor is that banks would have little incentive to pursue internal models at all (at least for regulatory capital). The effect would be to establish the standard model as the de facto capital standard across most of the industry. We doubt that the Committee desires such a rigid regulatory framework. Even with a retooled standard model, opportunities for regulatory arbitrage would still arise, potentially leading to the type of behaviors that sparked the Basel II reforms. We suggest that a better approach would be to apply the standard model as a benchmark, and to allow supervisors the flexibility to challenge internal models when they produce significantly lower capital.

Trusting that incentives for internal models will remain, we move to a discussion of the main points of the FRTB on internal model developments.

Stress Calibration

The stress calibration is essentially a holdover from the Stress VaR component of the Basel 2.5 requirements. Essentially, banks should choose the twelve-month period over a longer history that, when used to calibrate the model (for instance, to estimate volatilities and correlations), gives rise to the largest risk for the current portfolio. The risk based on this stress calibration now accounts for the entire market risk capital; there is no longer a summation across a number of different risk estimates based on different calibrations, as under Basel 2.5.

Besides consolidating the risk capital estimate into a single measure, there are two other motivations for the stress calibration. First, it should produce a risk estimate that reflects a period of significant financial distress. Second, it should produce stable capital, addressing the concern that the former market risk capital regime was procyclical, looser in benign environments and tighter in stressed ones.

While we agree with these two points, we also have two concerns. One is that the calibration mechanism makes the capital sensitive to a single stressed market dynamic, leaving the possibility of vulnerability to a different set of market relationships. More troubling is that the calibration does not have any true statistical definition as a forecast, meaning that it is ambiguous how the model results should be validated. With a standard risk model, conditioned on the current environment to give the best possible forecast for the next period's risk, model backtesting is a concrete exercise. With the new stress calibration, we do not see how statistical validation can be achieved.

Missing Sources of Risk

After procyclicality, another concern expressed in many analyses of the financial crisis has been the severe underestimation of capital due to missing sources of risk. Prevalent examples include failures to account for the risk in the bond-CDS basis, or for the possibility that AAA-rated structured credit would trade differently from AAA-rated corporate debt.² To this point, the Committee has taken an important

² See [Finger \(2008\)](#) and references therein.

step by explicitly requiring P&L attribution as a component of model validation. In this context, P&L attribution is the practice of reconciling the actual P&L on a portfolio over time with the P&L explained only by those factors that enter into the risk model. Poor reconciliation will indicate an unmodeled source of risk, which a bank would be required to rectify in order to maintain model approval.

This emphasis on risk model completeness is an important innovation. Still, as the Committee acknowledges, the details of P&L attribution are still to be defined. In particular, the statistics to measure how well the two P&Ls agree, as well as critical levels for those statistics, are aspects the Committee proposes to study further.³

We must bear in mind that not all missing sources of risk will be uncovered by the P&L attribution exercise. It is limited by the quality of the actual P&L itself; poor valuation practices can still mask poor risk models. Moreover, even with reliable valuations, it is possible for certain sources of risk—for example, the LIBOR to OIS basis—to be stable for long enough to pass the P&L attribution, yet still pose material risk. It is crucial to complement the empirical attribution exercise with a qualitative assessment of what additional risks the model may neglect.

Constraints on Diversification

The Committee also expresses its concern that internal models “may significantly overestimate portfolio diversification benefits that do not materialize in times of stress.”⁴ Their proposal is to admit risk estimates at a trading desk level, but to impose a regulatory formula to aggregate from desk- to bank-level capital. The regulatory formula is essentially the formula for aggregating standard deviation, with correlations across desks imposed by the regulator rather than estimated by the bank. There is also an important link between this regulatory aggregation formula and the model approval regime discussed earlier: if a bank has internal model approval for some desks, but uses the standard model for others, then the regulatory formula can still be used to aggregate the desk-level risks.

We believe that the constraints on diversification are a sensible way to address the Committee’s concern, but only if they are applied to trading desks. We are concerned that the Committee is considering the application of the aggregation formula (and of the model approval process) to types of risk factors instead. In other words, a bank might calculate its risk across all of its desks due to equity, and then aggregate this with its risk across all its desks due to implied volatilities or exchange rates. Besides being a less natural division than trading desks for reporting purposes, this risk type breakdown could actually produce nonsensical results. At the heart of the problem is that positions and portfolios do not divide neatly into risk type buckets, and there are always interactions—sometimes complicated ones—between risk types. A stock denominated in a foreign currency is a simple example, a convertible bond a richer one. The implication of this is that one cannot be sure even that the sum of risks due to individual risk types is a bound

³ See [Finger and Abbasi \(2012\)](#) for one possible P&L attribution statistic, and a number of benchmark results.

⁴ See page 4 of the FRTB.

on the overall portfolio risk. This is true regardless of the risk measure employed. This issue has been pointed out by regulators in the past,⁵ and we have urged the Committee to stick with a proper decomposition of positions, such as the trading desk approach, rather than operate on risk factors.

New Risk Measure

We come finally to the issue that garnered much of the attention when the FRTB was first published: the adoption of Expected Shortfall (ES) as the risk measure on which to base capital. Though not a revolution, nor a rejection of the statistical approach (as some media outlets wrongly characterized it), it is a good decision to base capital on a more robust and better behaved summary statistic than VaR.⁶ And by moving to a measure with greater sensitivity to low-probability-but-high-impact events, the Committee gains some flexibility to include new risks—such as an integration of short-horizon default risk—that would have had little impact on VaR.

The Committee does seem concerned that the move to ES will be an operational burden, but given that most banks operate under simulation methods already, we do not feel the switch to a different statistic should pose problems. We also do not feel that ES brings about obstacles to statistical backtesting; the obstacles to backtesting, as we have discussed before, come more from the stress calibration. The new statistic will require some amount of reeducation about the interpretation of the actual levels of risk, but the measure is in fact more intuitive than VaR, and this should also not pose problems.

Liquidity Risk

The elements discussed thus far are essentially refinements to the current approach, better ways to capture the same risks as before. In contrast, the Committee's proposals for liquidity expand the definition of trading book capital to cover a new type of risk. The motivation is evident: to charge more capital for less liquid positions, other things being equal. The proposal is for banks to categorize their positions according to the time it would take to liquidate, in a stressed environment, with little or no market impact. These liquidity horizons would then serve as the risk horizon for computing ES.

At a coarse level, the proposal achieves the Committee's goal, attributing more capital to positions identified as less liquid. But we find the proposal too coarse, and in particular insensitive to three important attributes of liquidity.

First, the proposal is insensitive to bid-offer spreads. Indeed, the notion of liquidity horizon—that there is always a time over which a trade can be spread in order to achieve an immaterial impact—ignores the fact that material bid-offer spreads can exist even for small trades.

⁵ See Breuer et al (2008).

⁶ See [Finger and Acerbi \(2012\)](#), Acerbi and Tasche (2002) and Acerbi (2004).

Second, the proposal is insensitive to position sizes. Liquidity horizons are set for “typical position sizes”, with no mechanism to penalize for concentrated positions. Concentration, or endogenous liquidity risk, is treated under a separate charge, yet to be defined.

Finally, the proposal does not account for the actual behavior that would be typical for a trading book portfolio. The risk-to-liquidation approach assumes that under stress, the bank would slowly liquidate its portfolio over the liquidity horizon, suffering no market impact, but experiencing market risks for however long the liquidation takes. A more realistic view is that liquidity horizons are imposed by the need to raise cash quickly, or to generate return through turnover. A more realistic model framework would be one where a bank estimated the amount of cash or turnover a portfolio would need to generate over a short horizon, and then calculated the cost of achieving this in a stressed environment, accounting for both position size and bid-offer spreads.

We published such a model framework recently,⁷ and continue to work toward providing the necessary data to power it. The data needs for such a framework would not be significantly different from what the Committee requires to establish liquidity horizons and its endogenous liquidity charge.

Conclusion

In the end, the FRTB, while only the opening of what is likely to be a protracted debate, offers an important vision of the types of risk to be capitalized and the practical mechanisms suitable to assess them. The marketplace is full of important modeling ideas—in prior internal model developments, in model improvements since the crisis, in the FRTB itself, and in the industry’s responses to the FRTB. The one disquieting prospect is that the standard model effectively becomes the single, rigid model for capital globally. We would prefer that the Committee encourage model developments to flourish, contribute to the developments through its own research, and supplement these with a rigorous validation scheme and transparent model benchmarking.

⁷ See [Finger and Acerbi \(2010\)](#).

References

Acerbi, C. (2004). Coherent Representations of Subjective Risk Aversion, in Risk Measures for the 21st Century, ed. G. Szego, Wiley.

Acerbi, C. and D. Tasche (2002). On the Coherence of Expected Shortfall. Journal of Banking and Finance 26, 1487-1503.

Basel Committee on Banking Supervision (2012). Fundamental Review of the Trading Book. Consultative Document. May.

Basel Committee on Banking Supervision (2010). The Basel Committee's Response to the Financial Crisis: Report to the G20. October.

Breuer, T. et al (2008). Regulatory Capital for Market and Credit Risk Interaction: Is Current Regulation Always Conservative? Deutsche Bundesbank Discussion Paper, No. 14/2008.

Finger, C. (2008). The SSG and My Two Brains. RiskMetrics Research Monthly, March. www.msci.com/resources/research_papers/monthly/the_ssg_and_my_two_brains.html

Finger, C. and M. Abbasi (2012). 2011 Year in Review: Risk Model Backtesting. MSCI Market Report, February. www.msci.com/resources/research_papers/2011_year_in_review_risk_model_backtesting.html

Finger, C. and C. Acerbi (2010). The Value of Liquidity: Can It Be Measured? Working paper, June. www.msci.com/resources/research_papers/working_papers/the_value_of_liquidity_can_it_be_measured.html

Finger, C. and C. Acerbi (2012). MSCI Comments on the Fundamental Review of the Trading Book. September. www.msci.com/insights/risk_management/msci_comments_on_the_basel_committee_for_banking_supervision_consultative_document_-_fundamental_rev.html

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