

Basel Paper on Market Risk

Basel Publishes Minimum Capital Requirements for Market Risk

While firms have almost three years to comply with these new requirements, time can fly if you don't start promptly. Here is a selection of key issues in this new BIS paper

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Just when you thought life could not get more complicated our friends at the Bank for International Settlements have attempted to simplify the market risk capital calculation. Whether they have succeeded or not, I leave to you to decide. Published in January 2019 it will become compulsory as of 1 January 2022, so firms do have some time to get the processes and procedures into place to meet these requirements.

This BIS paper is in a different format to previous papers and at a high level, the chapters of the standard are organised as follows:

Acronym	Descriptor
RBC25	Boundary between the banking book and the trading book
MAR10 to MAR12	Definitions and application
MAR10	Market risk terminology
MAR11	Definitions and application of market risk
MAR12	Definition of a trading desk
MAR20 to MAR 23	Standardised approach
MAR20	Standardised approach: general provisions and structure
MAR21	Standardised approach: sensitivities-based method
MAR22	Standardised approach: default risk capital requirement
MAR23	Standardised approach: residual risk add-on
MAR30 to MAR33	Internal models approach
MAR30	Internal models approach: general provisions
MAR31	Internal models approach: model requirements
MAR32	Internal models approach: backtesting and P&L attribution test
MAR33	Internal models approach: capital requirements calculation
MAR40	Simplified standardised approach
MAR90	Transitional arrangements
MAR99	Guidance on use of the internal models approach requirements

It is a 136-page paper, so this article only addresses selected issues raised for attention.

Scope of the Trading Book

This section of the BIS paper deals with both what needs to be included within market risk and the accounting that needs to be adopted.

Market risk instruments comprise financial instruments, foreign exchange (FX), and commodities. In these terms a financial instrument is any contract that gives rise to both a financial asset of one entity and a financial liability or equity instrument of another entity. Financial instruments for these purposes include primary financial instruments (or cash instruments) and derivative financial instruments. A financial asset is then defined as any asset that is cash, the right to receive cash or another financial asset or a commodity, or an equity instrument. A financial liability is also defined as the contractual obligation to deliver cash or another financial asset or a commodity. Commodities also include non-tangible (i.e. non-physical) goods such as electric power.

Banks may only include a financial instrument, instruments on FX or commodity in the trading book when there is no legal impediment against selling or fully hedging it.

Banks must fair value daily any trading book instrument and recognise any valuation change in the profit and loss (P&L) account.

It continues stating that any instrument a bank holds for one or more of the following purposes must, when it is first recognised on its books, must be designated as a trading book instrument, unless specifically otherwise provided for. Those stated are: (1) short-term resale; (2) profiting from short-term price movements; (3) locking in arbitrage profits; or (4) hedging risks that arise from instruments meeting (1), (2) or (3) above.

Any of the following instruments is seen as being held for at least one of the purposes listed above and must therefore be included in the trading book, unless specifically otherwise provided for: (1) instruments in the correlation trading portfolio; (2) instruments that would give rise to a net short credit or equity position in the banking book;^[1] or (3) instruments resulting from underwriting commitments, where underwriting commitments refer only to securities underwriting, and relate only to securities that are expected to be actually purchased by the bank on the settlement date.

The following instruments must be assigned to the banking book: (1) unlisted equities; (2) instruments designated for securitisation warehousing; (3) real estate holdings, where in the context of assigning instrument to the trading book, real estate holdings relate only to direct holdings of real estate as well as derivatives on direct holdings; (4) retail and small or medium-sized enterprise (SME) credit; (5) equity investments in a fund, unless the bank meets at least one of the following conditions: (a) the bank is able to look through the fund to its individual components and there is sufficient and frequent information, verified by an independent third party, provided to the bank regarding the fund's composition; or (b) the bank obtains daily price quotes for the fund and it has access to the information contained in the fund's mandate or in the national regulations governing such investment funds; (6) hedge funds; (7) derivative instruments and funds that have the above instrument types as underlying assets; or (8) instruments held for the purpose of hedging a particular risk of a position in the types of instrument above.

Definition of Market Risk

Market risk is defined as the risk of losses arising from movements in market prices. The risks subject to market risk capital requirements include but are not limited to: (1) default risk, interest rate risk, credit spread risk, equity risk, foreign exchange (FX) risk

and commodities risk for trading book instruments; and (2) FX risk and commodities risk for banking book instruments.

Trading Desk Risk Management

You might be surprised but this paper includes risk management requirements that will apply to trading desks in financial institutions. There is a requirement that a trading desk must have a clear risk management structure.

(a) Risk management responsibilities: the bank must identify key groups and personnel responsible for overseeing the risk-taking activities at the trading desk.

(b) A trading desk must clearly define trading limits based on the business strategy of the trading desk and these limits must be reviewed at least annually by senior management at the bank. In setting limits, the trading desk must have: (i) well defined trading limits or directional exposures at the trading desk level that are based on the appropriate market risk metric (e.g. sensitivity of credit spread risk and/or jump-to-default for a credit trading desk), or just overall notional limits; and (ii) well-defined trader mandates.

(c) A trading desk must produce, at least weekly, appropriate risk management reports. This would include, at a minimum: (i) profit and loss reports, which would be periodically reviewed, validated and modified (if necessary) by Product Control; and (ii) internal and regulatory risk measure reports, including trading desk value-at-risk (VaR) / expected shortfall (ES), trading desk VaR/ES sensitivities to risk factors, backtesting and p-value.

Notice the use of the word must in this case. Clearly VaR is back and is at the heart of the work to be conducted. As with all BIS papers banks will need to conduct a gap analysis against these requirements since some of the matters could require systems changes.

There is also a requirement that the bank must prepare, evaluate, and have available for supervisors the following for all trading desks:

- (1) inventory ageing reports;
- (2) daily limit reports including exposures, limit breaches, and follow-up action;
- (3) reports on intraday limits and respective utilisation and breaches for banks with active intraday trading; and
- (4) reports on the assessment of market liquidity.

While (1) and (2) should be in place for all firms, we have seen cases where (3) has required systems changes. However (4) is a new requirement and not one that I have generally seen being in place.

Standardised Approach

The standardised approach capital requirement is the simple sum of three components: the capital requirement under the sensitivities-based method, the default risk capital (DRC) requirement and the residual risk add-on (RRAO).

(1) The capital requirement under the sensitivities-based method must be calculated by aggregating three risk measures – delta, vega and curvature:

- (a) Delta: a risk measure based on sensitivities of an instrument to regulatory delta risk factors.

(b) Vega: a risk measure based on sensitivities to regulatory vega risk factors.

(c) Curvature: a risk measure which captures the incremental risk not captured by the delta risk measure for price changes in an option. Curvature risk is based on two stress scenarios involving an upward shock and a downward shock to each regulatory risk factor.

Notice that this is the standardised approach and without going into greater detail you will note that this is more complex than the earlier calculations. Hopefully most of the firms that will be using this approach will not have options that are to be caught by these rules. If they do, then this additional measure is likely to be new to many firms.

Stress Testing

For banks using internal models there are specific requirements with regard to stress testing. These include the following:

A routine and rigorous programme of stress testing is required. The results of stress testing must be:

- (1) reviewed at least monthly by senior management;
- (2) used in the bank's internal assessment of capital adequacy; and
- (3) reflected in the policies and limits set by the bank's management and its board of directors.

So, the frequency of the stress tests is now clearly articulated as being at least monthly. Many firms have been either doing them quarterly or annually – so again this represents a change for some firms.

Internal Audit

Again, for banks using the internal models approach there are the following requirements:

The bank's internal audit and validation functions or external auditor must conduct an independent review of the market risk measurement system on at least an annual basis

The scope of the independent review must include both the activities of the business trading units and the activities of the independent risk control unit. The independent review must be sufficiently detailed to determine which trading desks are impacted by any failings. At a minimum, the scope of the independent review must include the following:

- (1) the organisation of the risk control unit;
- (2) the adequacy of the documentation of the risk management model and process;
- (3) the accuracy and appropriateness of market risk management models (including any significant changes);
- (4) the verification of the consistency, timeliness and reliability of data sources used to run internal models, including the independence of such data sources;
- (5) the approval process for risk pricing models and valuation systems used by the bank's front- and back-office personnel;
- (6) the scope of market risks reflected in the trading desk risk management models;

- (7) the integrity of the management information system;
- (8) the accuracy and completeness of position data;
- (9) the accuracy and appropriateness of volatility and correlation assumptions;
- (10) the accuracy of valuation and risk transformation calculations;
- (11) the verification of trading desk risk management model accuracy through frequent backtesting and PLA assessments; and
- (12) the general alignment between the model to determine market risk capital requirements and the model the bank uses in its day-to-day internal management functions.

This will need quite a bit of skill to enable this to be conducted effectively. I would hope that internal audit functions will be able to rise to this challenge and complete this work effectively. Clearly internal audit market risk training courses will in future need to consider such matters.

Model Validation

There has been a lot of questioning as to what is the minimum requirements with regard to model validation. Now we do have some guidance. This paper states: Banks must maintain a process to ensure that their internal models have been adequately validated by suitably qualified parties independent of the model development process to ensure that each model is conceptually sound and adequately reflects all material risks.

Model validation must be conducted both when the model is initially developed and when any significant changes are made to the model. The bank must revalidate its models periodically, particularly when there have been significant structural changes in the market or changes to the composition of the bank's portfolio that might lead to the models no longer being adequate. Model validation must include profit and loss attribution and backtesting, and must, at a minimum, also include the following:

- (1) Tests to demonstrate that any assumptions made within internal models are appropriate and do not underestimate risk. This may include reviewing the appropriateness of assumptions of normal distributions and any pricing models.
- (2) Further to the regulatory backtesting programmes, model validation must assess the hypothetical P&L (HPL) calculation methodology.
- (3) The bank must use hypothetical portfolios to ensure that internal models are able to account for particular structural features that may arise.

Conclusion

This is a lengthy and complex paper. Firms will need to consider which approach they are intending to adopt and then the control implications that go with them. Initially a working group will need to be created including capital, trading and risk specialists as well as IT and finance teams. The initial gap analysis and systems implications will need to be considered and in some cases changes to calculations and reporting will clearly be required. Training will also be required – awareness training for senior management and detailed training for project participants.

While you do have almost three years to comply with these requirements, time can fly if you don't start promptly. There are also likely to be significant demands on the limited number of consultants that can grasp what they are trying to do here. Firms that have first mover advantage are likely to get those resources quickly, whilst those that wait and see may find no such resources are available.

For the mathematicians amongst you there are a good variety of equations to confuse others with. The challenge is likely to be to turn these into understandable information appropriate for supervisory and senior management professionals.

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