Basel Committee
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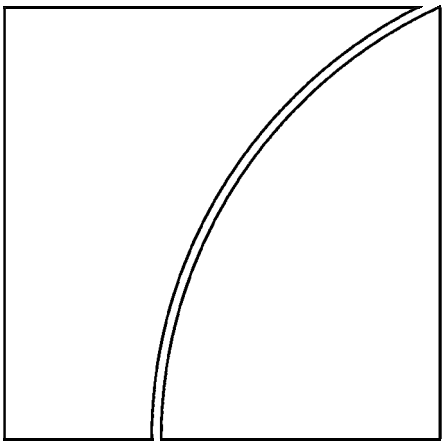

# Guidelines for computing capital for incremental risk in the trading book

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# Guidelines for computing capital for incremental risk in the trading book

## I. Background and objectives

1. The Basel Committee/IOSCO Agreement reached in July 2005,[1] contained several improvements to the capital regime for trading book positions. Among these revisions was a new requirement for banks that model specific risk to measure and hold capital against default risk that is incremental to any default risk captured in the bank's value-at-risk (VaR) model. The incremental default risk charge was incorporated into the trading book capital regime in response to the increasing amount of exposure in banks' trading books to credit-risk related and often illiquid products whose risk is not reflected in VaR. In October 2007, the Basel Committee on Banking Supervision (the Committee) released guidelines for computing capital for incremental default risk for public comments. At its meeting in March 2008, it reviewed comments received and decided to expand the scope of the capital charge. The decision was taken in light of the recent credit market turmoil where a number of major banking organisations have experienced large losses, most of which were sustained in banks' trading books. Most of those losses were not captured in the 99%/10-day VaR. Since the losses have not arisen from actual defaults but rather from credit migrations combined with widening of credit spreads and the loss of liquidity, applying an incremental risk charge covering default risk only would not appear adequate. For example, a number of global financial institutions commented that singling out just default risk was inconsistent with their internal practices and could be potentially burdensome.

2. The incremental risk charge (IRC) set forth below is intended to complement additional standards being applied to the value-at-risk modelling framework. Together, these changes address a number of perceived shortcomings in the current 99%/10-day VaR framework. Foremost, the current VaR framework ignores differences in the underlying liquidity of trading book positions. In addition, these VaR calculations are typically based on a 99%/one-day VaR which is scaled up to 10 days. Consequently, the VaR capital charge may not fully reflect large daily losses that occur less frequently than two to three times per year as well as the potential for large cumulative price movements over periods of several weeks or months. Moreover, the current framework's emphasis on modelling short-run P&L volatility (eg backtesting requirements) allows the use of relatively short data windows for estimating VaR parameters (as short as one year), which can produce insufficient required capital against trading positions following periods of relative calm in financial markets.

3. As described in more detail below, the IRC represents an estimate of the default and migration risks of unsecuritised credit products over a one-year capital horizon at a 99.9 percent confidence level, taking into account the liquidity horizons of individual positions or sets of positions. The Committee expects banks to develop their own models for calculating the IRC for these positions. This paper provides guidelines on how an IRC model should be developed. It also contains guidance on how supervisors should evaluate banks' IRC models.

4. As there is no single industry standard for addressing the trading book issues noted above, the IRC guidelines generally take the form of high level principles, with considerable flexibility afforded banks in terms of how to operationalise these principles. The Committee,

[1] Basel Committee on Banking Supervision, *The application of Basel II to trading activities and the treatment of double default effects*, July 2005.

through its Trading Book Group, will continue to work closely with industry groups and individual firms during the implementation period of the new capital requirement.

5. Banks have to meet the guidelines for calculating the IRC that are laid out in this document to the extent that they seek to model incremental risks according to paragraph 718(xcii) or comprehensive risks according to paragraph 718(xcv) of the Basel II framework as outlined in the *Revisions to the Basel II market risk framework*[2].

6. The Committee has already conducted a preliminary analysis of the impact of an incremental risk capital charge only including default and migration risk, largely relying on the data collected from its quantitative impact study on incremental default risk in late 2007. It has collected additional data in 2009 to assess the impact of changes to the trading book capital framework. In the coming months, the Committee will review the calibration of the market risk framework in light of the results of this impact assessment. This review will also include the floor to the liquidity horizon specified in paragraph 20.

7. The remainder of this paper is structured as follows:

- Section II sets forth the scope of the IRC and principles underlying the construction of IRC models.
- Section III discusses the validation of IRC models.
- Section IV specifies ways in which the results of banks' internal risk measurement models can be used as the foundation for an IRC.

## II. Principles for calculating the IRC

### A. IRC-covered positions and risks

8. According to paragraph 718(xcii) of the Basel II Framework, the IRC encompasses all positions subject to a capital charge for specific interest rate risk according to the internal models approach to specific market risk but not subject to the treatment outlined in paragraphs 712(iii) to 712(vii) of the Basel II Framework, regardless of their perceived liquidity.

9. With supervisory approval, a bank can choose consistently to include all listed equity and derivatives positions based on listed equity of a desk in its incremental risk model when such inclusion is consistent with how the bank internally measures and manages this risk at the trading desk level. If equity securities are included in the computation of incremental risk, default is deemed to occur if the related debt defaults (as defined in paragraphs 452 and 453 of the Basel II Framework).

10. However, when computing the IRC, a bank is not permitted to incorporate into its IRC model any securitisation positions, even when securitisation positions are viewed as hedging underlying credit instruments held in the trading account.

[2] Basel Committee on Banking Supervision, *Revisions to the Basel II market risk framework*, July 2009.

11. For IRC-covered positions, the IRC captures

- Default risk. This means the potential for direct loss due to an obligor's default as well as the potential for indirect losses that may arise from a default event;

- Credit migration risk. This means the potential for direct loss due to an internal/external rating downgrade or upgrade as well as the potential for indirect losses that may arise from a credit migration event.

## B. Key supervisory parameters for computing IRC

### *1. Soundness standard comparable to IRB*

12. One of the Committee's underlying objectives is to achieve broad consistency between capital charges for similar positions (adjusted for illiquidity) held in the banking and trading books. Since the Basel II Framework reflects a 99.9 percent soundness standard over a one-year capital horizon, the IRC is also described in these terms.

13. Specifically, for all IRC-covered positions, a bank's IRC model must measure losses due to default and migration at the 99.9 percent confidence interval over a capital horizon of one year, taking into account the liquidity horizons applicable to individual trading positions or sets of positions. Losses caused by broader market-wide events affecting multiple issues/issuers are encompassed by this definition.

14. As described immediately below, for each IRC-covered position the model should also capture the impact of rebalancing positions at the end of their liquidity horizons so as to achieve a constant level of risk over a one-year capital horizon. The model may incorporate correlation effects among the modelled risk factors, subject to validation standards set forth in Section III. The trading portfolio's IRC equals the IRC model's estimate of losses at the 99.9 percent confidence level.

### *2. Constant level of risk over one-year capital horizon*

15. An IRC model should be based on the assumption of a constant level of risk over the one-year capital horizon.[3]

16. This constant level of risk assumption implies that a bank rebalances, or rolls over, its trading positions over the one-year capital horizon in a manner that maintains the initial risk level, as indicated by a metric such as VaR or the profile of exposure by credit rating and concentration. This means incorporating the effect of replacing positions whose credit characteristics have improved or deteriorated over the liquidity horizon with positions that

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[3] This assumption is consistent with the capital computations in the Basel II Framework. In all cases (loans, derivatives and repos), the Basel II Framework defines EAD in a way that reflects a roll-over of existing exposures when they mature.

The combination of the constant level of risk assumption and the one-year capital horizon reflects supervisors' assessment of the appropriate capital needed to support the risk in the trading portfolio. It also reflects the importance to the financial markets of banks having the capital capacity to continue providing liquidity to the financial markets in spite of trading losses. Consistent with a "going concern" view of a bank, this assumption is appropriate because a bank must continue to take risks to support its income-producing activities. For regulatory capital adequacy purposes, it is not appropriate to assume that a bank would reduce its VaR to zero at a short-term horizon in reaction to large trading losses. It also is not appropriate to rely on the prospect that a bank could raise additional Tier 1 capital during stressed market conditions.

have risk characteristics equivalent to those that the original position had at the start of the liquidity horizon. The frequency of the assumed rebalancing must be governed by the liquidity horizon for a given position.

17. Rebalancing positions does not imply, as the IRB approach for the banking book does, that the same positions will be maintained throughout the capital horizon. Particularly for more liquid and more highly rated positions, this provides a benefit relative to the treatment under the IRB framework. However, a bank may elect to use a one-year constant position assumption, as long as it does so consistently across all portfolios.

### *3. Liquidity horizon*

18. Stressed credit market events have shown that firms cannot assume that markets remain liquid under those conditions. Banks experienced significant illiquidity in a wide range of credit products held in the trading book, including leveraged loans. Under these circumstances, liquidity in many parts of the securitisation markets dried up, forcing banks to retain exposures in securitisation pipelines for prolonged periods of time. The Committee therefore expects firms to pay particular attention to the appropriate liquidity horizon assumptions within their IRC models.

19. The liquidity horizon represents the time required to sell the position or to hedge all material risks covered by the IRC model in a stressed market. The liquidity horizon must be measured under conservative assumptions and should be sufficiently long that the act of selling or hedging, in itself, does not materially affect market prices. The determination of the appropriate liquidity horizon for a position or set of positions may take into account a bank's internal policies relating to, for example, prudent valuation (as per the prudent valuation guidance of the Basel II Framework), valuation adjustments[4] and the management of stale positions.

20. The liquidity horizon for a position or set of positions has a floor of three months.

21. In general, within a given product type a non-investment-grade position is expected to have a longer assumed liquidity horizon than an investment-grade position. Conservative assumptions regarding the liquidity horizon for non-investment-grade positions are warranted until further evidence is gained regarding the market's liquidity during systematic and idiosyncratic stress situations. Firms also need to apply conservative liquidity horizon assumptions for products, regardless of rating, where secondary market liquidity is not deep, particularly during periods of financial market volatility and investor risk aversion. The application of prudent liquidity assumptions is particularly important for rapidly growing product classes that have not been tested in a downturn.

22. A bank can assess liquidity by position or on an aggregated basis ("buckets"). If an aggregated basis is used (eg investment-grade European corporate exposures not part of a core CDS index), the aggregation criteria would be defined in a way that meaningfully reflect differences in liquidity.

23. The liquidity horizon is expected to be greater for positions that are concentrated, reflecting the longer period needed to liquidate such positions. This longer liquidity horizon

[4] For establishing prudent valuation adjustments, see also paragraphs 718(xcxviii) to 718(xcxxii) of the Basel II Framework.

for concentrated positions is necessary to provide adequate capital against two types of concentration: issuer concentration and market concentration.

### *4. Correlations and diversification*

*(a) Correlations between defaults and migrations*

24. Economic and financial dependence among obligors causes a clustering of default and migration events. Accordingly, the IRC charge includes the impact of correlations between default and migration events among obligors and a bank's IRC model must include the impact of such clustering of default and migration events.

*(b) Correlations between default or migration risks and other market factors*

25. The impact of diversification between default or migration risks in the trading book and other risks in the trading book is not currently well understood. Therefore, for the time being, the impact of diversification between default or migration events and other market variables would not be reflected in the computation of capital for incremental risk. This is consistent with the Basel II Framework, which does not allow for the benefit of diversification when combining capital requirements for credit risk and market risk. Accordingly, the capital charge for incremental default and migration losses is added to the VaR-based capital charge for market risk.

### *5. Concentration*

26. A bank's IRC model must appropriately reflect issuer and market concentrations. Thus, other things being equal, a concentrated portfolio should attract a higher capital charge than a more granular portfolio (see also paragraph 23). Concentrations that can arise within and across product classes under stressed conditions must also be reflected.

### *6. Risk mitigation and diversification effects*

27. Within the IRC model, exposure amounts may be netted only when long and short positions refer to the same financial instrument. Otherwise, exposure amounts must be captured on a gross (ie non-netted) basis. Thus, hedging or diversification effects associated with long and short positions involving different instruments or different securities of the same obligor ("intra-obligor hedges"), as well as long and short positions in different issuers ("inter-obligor hedges"), may not be recognised through netting of exposure amounts. Rather, such effects may only be recognised by capturing and modelling separately the gross long and short positions in the different instruments or securities.

28. Significant basis risks by product, seniority in the capital structure, internal or external rating, maturity, vintage for offsetting positions as well as differences between offsetting instruments, such as different payout triggers and procedures, should be reflected in the IRC model.

29. If an instrument has a shorter maturity than the liquidity horizon or a maturity longer than the liquidity horizon is not contractually assured, the IRC must, where material, include the impact of potential risks that could occur during the interval between the maturity of the instrument and the liquidity horizon.

30. For trading book risk positions that are typically hedged via dynamic hedging strategies, a rebalancing of the hedge within the liquidity horizon of the hedged position may also be recognised. Such recognition is only admissible if the bank (i) chooses to model rebalancing of the hedge consistently over the relevant set of trading book risk positions, (ii)

demonstrates that the inclusion of rebalancing results in a better risk measurement, and (iii) demonstrates that the markets for the instruments serving as hedge are liquid enough to allow for this kind of rebalancing even during periods of stress. Any residual risks resulting from dynamic hedging strategies must be reflected in the capital charge. A bank should validate its approach to capture such residual risks to the satisfaction of its supervisor.

### *7. Optionality*

31. The IRC model must reflect the impact of optionality. Accordingly, banks' models should include the nonlinear impact of options and other positions with material nonlinear behaviour with respect to price changes. The bank should also have due regard to the amount of model risk inherent in the valuation and estimation of price risks associated with such products.

## III. Validation

32. Banks should apply the validation principles described in the Basel II Framework in designing, testing and maintaining their IRC models. This includes evaluating conceptual soundness, ongoing monitoring that includes process verification and benchmarking, and outcomes analysis. Some factors that should be considered in the validation process include:

- Liquidity horizons should reflect actual practice and experience during periods of both systematic and idiosyncratic stresses.
- The IRC model for measuring default and migration risks over the liquidity horizon should take into account objective data over the relevant horizon and include comparison of risk estimates for a rebalanced portfolio with that of a portfolio with fixed positions.
- Correlation assumptions must be supported by analysis of objective data in a conceptually sound framework. If a bank uses a multi-period model to compute incremental risk, it should evaluate the implied annual correlations to ensure they are reasonable and in line with observed annual correlations. A bank must validate that its modelling approach for correlations is appropriate for its portfolio, including the choice and weights of its systematic risk factors. A bank must document its modelling approach so that its correlation and other modelling assumptions are transparent to supervisors.
- Owing to the high confidence standard and long capital horizon of the IRC, robust direct validation of the IRC model through standard backtesting methods at the 99.9%/one-year soundness standard will not be possible. Accordingly, validation of an IRC model necessarily must rely more heavily on indirect methods including but not limited to stress tests, sensitivity analyses and scenario analyses, to assess its qualitative and quantitative reasonableness, particularly with regard to the model's treatment of concentrations. Given the nature of the IRC soundness standard such tests must not be limited to the range of events experienced historically. The validation of an IRC model represents an ongoing process in which supervisors and firms jointly determine the exact set of validation procedures to be employed.
- Firms should strive to develop relevant internal modelling benchmarks to assess the overall accuracy of their IRC models.

## IV. Use of internal risk measurement models to compute the IRC

33. As noted above, these guidelines do not prescribe any specific modelling approach for capturing incremental risk. Because a consensus does not yet exist with respect to measuring risk for potentially illiquid trading positions, it is anticipated that banks will develop different IRC modelling approaches.

34. The approach that a bank uses to measure the IRC is subject to the "use test". Specifically, the approach must be consistent with the bank's internal risk management methodologies for identifying, measuring, and managing trading risks.

35. Ideally, the supervisory principles set forth in this document would be incorporated within a bank's internal models for measuring trading book risks and assigning an internal capital charge to these risks. However, in practice a bank's internal approach for measuring trading book risks may not map directly into the above supervisory principles in terms of capital horizon, constant level of risk, rollover assumptions or other factors. In this case, the bank must demonstrate that the resulting internal capital charge would deliver a charge at least as high as the charge produced by a model that directly applies the supervisory principles.