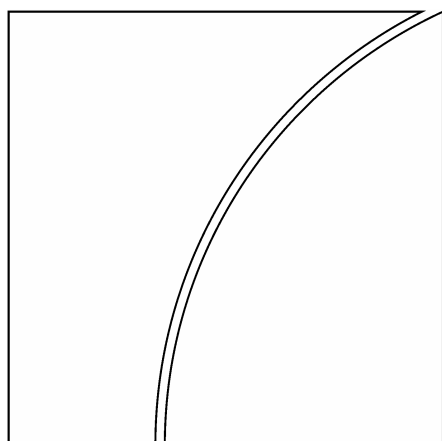


Basel Committee
on Banking Supervision



Trading Book Survey: A Summary of Responses

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Table of Contents

| | |
|--|----|
| Introduction..... | 1 |
| I. Criteria for determining suitability for market risk treatment | 2 |
| 1.1 Trading intent | 2 |
| 1.2 Challenges posed by this definition..... | 3 |
| 1.3 Monitoring of trading book positions | 4 |
| 1.4 Hedging across books..... | 4 |
| 1.5 Concerns with the definition of trading book | 4 |
| II. Valuation and risk measurement of trading book positions | 6 |
| 2.1 Valuation of trading book positions | 6 |
| 2.1.1 Positions with and without active reference markets | 6 |
| 2.1.2 Fair value practices for all positions that are in the trading book..... | 7 |
| 2.1.3 Price verification..... | 7 |
| 2.1.4 Valuation adjustments and reserves..... | 8 |
| 2.1.5 Valuation challenges..... | 9 |
| 2.2 Trading book risk measurement..... | 9 |
| 2.2.1 Overview of internal VaR methodology..... | 10 |
| 2.2.2 Exposure coverage and risk capture | 10 |
| 2.2.3 Adjustments to VaR | 12 |
| 2.4.4 Practical challenges in applying the 1996 Market Risk Amendment | 13 |
| III. Counterparty credit risk issues related to repo-style transactions, securities financings, and unsettled trades and credit derivatives | 13 |
| 3.1 Overall management of counterparty credit risk for repo-style transactions, securities financings, and unsettled trades | 13 |
| 3.2 Securities financings and repo-style transactions | 14 |
| 3.3 Unsettled trades | 14 |
| 3.4 Credit default swaps..... | 14 |
| 3.5 Netting arrangements..... | 15 |

Trading Book Survey: A Summary of Responses

Introduction

In January 2004, the Basel Committee on Banking Supervision (BCBS) and the International Organization of Securities Commissions (IOSCO) decided to set up a joint working group (hereafter the Joint Group) to consider the issues that could potentially arise from implementation of the International Convergence of Capital Measurement and Capital Standards: A Revised Framework¹ (hereafter the Revised Framework), especially with respect to certain aspects of the trading book. Indeed, in the process of revising the 1988 international solvency standards, the BCBS focused mainly on the assessment of credit and operational risk, with less emphasis on the market risks, previously tackled in the 1996 Market Risk Amendment². In comments received on the third consultative paper on the Revised Framework³ (CP3), released in April 2003, many firms and industry associations expressed concerns about potential distortions that could arise, between banking book and trading book regimes, as a result of interpretation and/or implementation of the Revised Framework. These concerns are magnified by the fact that, in some jurisdictions, the Revised Framework is going to apply to both banks and investment firms, whose activities are more focused on trading. In that respect, the Joint Group identified three sets of issues that needed to be addressed before implementation of the Revised Framework, in order to avoid such distortions and create a level playing field between banks and investment firms. These three sets of issues are:

1. Updating the treatment of counterparty credit risk arising from certain derivative and securities financing transactions to increase consistency with the internal rating based (IRB) approach of the Revised Framework.
2. Reviewing some aspects of the Revised Framework to align them with firms' current practices in their trading and/or banking book. Specifically, the focus is on the treatment of double-default effects on hedged exposures and the maturity adjustment for short-term transactions in the IRB approach.
3. Revising some aspects of the current trading book treatment to adapt it to the Revised Framework or to the recent developments observed in trading activities. This third set of issues also includes some clarifications on the Revised Framework like the treatment of unsettled and failed trades.

As a first step, the Joint Group launched, in July 2004, a survey of banks' and investment firms' trading books. Indeed, considering the growth and development of financial markets, the extent of innovations in those markets, and improvements in risk management techniques since the implementation of the Market Risk Amendment, in 1996, as well as the growing complexity of trading book activities, the Joint Group deemed it appropriate to review the risk-sensitivity and level of capital required under the current trading book regime. In this survey, special emphasis was placed on:

¹ See BCBS, *International Convergence of Capital Measurement and Capital Standards, A Revised Framework*, June 2004.

² See BCBS, *Amendment to the Capital Accord to Incorporate Market Risks*, January 1996.

³ See BCBS, *The New Basel Capital Accord*, April 2003.

1. Further clarifying the intent-based definition of the trading book, as set forth in the Revised Framework;
2. Understanding the range of practices across firms for translating applicable accounting and regulatory capital standards into internal policies and procedures relating to the inclusion and treatment of positions in the trading book;
3. Considering the risk-sensitivity of the current VaR-based and standardised trading book regime;
4. Better understanding valuation methodologies and adjustments across firms, including interactions with applicable accounting standards, their interpretation, and their implementation in practice; and
5. Evaluating the adequacy of capital treatment for less liquid positions currently held in trading book.

To achieve this objective, the trading book survey was divided into three sections. The first section aimed to identify criteria for determining suitability for market risk treatment. The second section was intended to take stock of firms' practices for the valuation and risk measurement of trading book positions. The third section was more specifically directed to the treatment, for risk management purposes, of counterparty credit risk issues related to repo-style transactions, securities financings, unsettled trades, and credit derivatives.

A total of 47 banks, investment banks and investment firms across the G10 countries⁴ provided detailed responses to the survey. To preserve the confidentiality of information, each supervisory authority in the respondents' countries synthesized responses given by their firms. A summary of those responses is provided below.

I. Criteria for determining suitability for market risk treatment

This part of the survey identified the criteria used across firms for including positions in the trading book, focusing on those for which this designation is most challenging.

1.1 Trading intent

The definition of trading book is given in paragraph 685 of the Revised Framework, which states: "A trading book consists of positions in financial instruments and commodities held either with trading intent or in order to hedge other elements of the trading book. To be eligible for trading book capital treatment, financial instruments must either be free of any restrictive covenants on their tradability or able to be hedged completely. In addition, positions should be frequently and accurately valued, and the portfolio should be actively managed." In addition, the trading intent criterion is more precisely defined in paragraph 687 of the Revised Framework: "Positions held with trading intent are those held intentionally for short-term resale and/or with the intent of benefiting from actual or expected short-term price

⁴ G10 countries encompass Belgium, Canada, France, Germany, Italy, Japan, Luxembourg, Netherlands, Spain, Sweden, Switzerland, United Kingdom of Great Britain and Northern Ireland, and United States of America.

movements or to lock in arbitrage profits, and may include for example proprietary positions, positions arising from client servicing (e.g. matched principal broking) and market making.”

All firms surveyed use the trading intent (and hedging trading book items) as a basis for designating positions for inclusion in the trading book. Their working definition of trading intent, which is generally very close to that set forth in the Revised Framework, is generally two-pronged: (i) benefiting from short-term price variations, and (ii) actively managing positions. However, this primary criterion is generally supplemented by additional requirements such like marked-to-market valuation, liquidity, and/or tenor of the positions.

No major difference is apparent between banks and investment firms/securities firms in this regard, except that more emphasis can be put on some criteria, according to the type of firms (i.e. for some investment firms that have no banking book, the trading intent is assumed at origination or purchase and they mark to market all their positions in inventory).

Generally, the liquidity of instruments does not seem to be a critical element for the definition of trading intent. However, a couple of firms indicated that liquidity determined the booking of instruments. Another firm said that liquidity was critical for hedging instruments, even if the position hedged was not liquid. Other firms mentioned that liquidity was a factor for reserve and accounting purposes, rather than for regulatory purposes.

1.2 Challenges posed by this definition

Some firms indicated that they generally do not encounter any problems in applying the definition of the trading book, based on trading intent. However, others pointed out issues with regard to the treatment of some specific instruments, including:

- **Derivatives:** banks, especially in Canada and in the United States, raised the fact that derivatives were often used to manage and/or hedge non-trading positions. Although these derivatives may not exactly meet the trading intent definition, they are fair valued for accounting purposes and, therefore, booked in the accounting trading book. These banks point out that such inconsistencies between regulatory and accounting standards contribute to the blurring of the boundaries between trading book and banking book, because they now have to hold non-trading regulatory capital books that are marked to market⁵. As a matter of fact, many firms expressed concerns about the widening gap between accounting rules, mainly IAS 39, and the definition of the trading book for regulatory capital purposes.
- **Traded loans:** many firms pointed out that they hold loans in their trading book, mainly mortgage loans and distressed loans. These loans are held in order to be securitised and are managed using market risk techniques (VaR, stress tests, limits, etc.) even if they are generally held for a longer holding period than traditional trading book items (e.g. up to six months, or more).
- **Illiquid debt:** some firms mentioned that some debt securities do not trade in a liquid market. In those cases, additional analysis is generally required by firms internal policies to support the trading book treatment.

⁵ The same issue was also raised by European firms, since a similar discrepancy will exist as soon as the IAS 39 is enforced.

- Funds, hedge funds, mutual funds, funds of funds, etc., have also been mentioned as positions that can potentially cause difficulties for trading book designations.
- Credit derivatives: several firms mentioned that liquidity is often questionable for credit derivatives, especially tranches of CDOs.
- Structured transactions: more generally, these types of transactions were mentioned as difficult to designate as trading book positions.

By and large, the current trading book definition, based on trading intent, is challenged by instruments for which liquidity is questionable and/or that are held for medium or long-term periods. This latter category encapsulates two broad categories: credit-related products (loans and bonds, CDOs, and basket credit derivatives) and exotic derivatives (long-term foreign exchange and interest rate swaps, equity swaps, and, to a lesser extent, weather derivatives). In the quantitative responses provided, both categories can represent together up to 15 percent of firms' total trading books.

1.3 Monitoring of trading book positions

Most firms pointed out that transfers of positions between trading book and banking book were unusual. However, on a case-by-case basis, trading book positions may be re-designated into the banking book. These positions may, for instance, become stale and illiquid, or the market price may not move for a considerable period of time, or the firm may own a sufficient amount of the stock compared to daily traded volumes that liquidity is impaired. To identify such cases, firms generally have in place formal procedures involving regular meetings between risk management unit and staff of operational units.

Transfers from the banking book to the trading book are more usual. One example of a likely occurrence would be loans or debt instruments awaiting securitisation.

1.4 Hedging across books

A few firms indicated that they did not hedge across books. Others mentioned that they hedge some banking book items with trading book instruments. Such internal hedging is a current practice with credit derivatives but some banks pointed out that the trading book derivative must be laid off externally for the bank to benefit from any capital relief, for regulatory capital purposes.

1.5 Concerns with the definition of trading book

Firms generally pointed out that the definition of trading intent set out in the Revised Framework does not challenge their own definition and current practices, although some raised ambiguous terms that, according to them, would deserve some further clarification:

1. Paragraph 685 of the Revised Framework states that "financial instruments must either be free of any restrictive covenants on their tradability or able to be hedged completely". Some firms pointed out that some restrictions were embedded into some securities, resulting from securities law requirements or banking relationships. They suggested that this should not prevent those securities from being booked in trading book if other requirements of the trading intent definition are met. Furthermore, they argue that the ability to be hedged completely is not clearly defined and can be subject to restrictive interpretations. As a result, they wonder if

the ability to hedge the material risk of a position would be sufficient to meet this requirement.

2. Paragraph 687 of the Revised Framework defines positions held with trading intent as “those held intentionally for short-term resale and/or with the intent of benefiting from actual or expected short-term price movements”. However, the text does not give any detail on what “short-term” means. Therefore, these firms were concerned that a strict definition of short-term, based on the 10-day holding period, could prevent corporate debt trading from being included in the trading book.
3. Paragraph 688 of the Revised Framework requires that firms must have “clearly documented trading strategy for the position/instrument or portfolios, approved by senior management (which would include holding horizon)”. Some firms pointed out that this requirement was vague and that it was difficult to figure out if their business and business strategy plans would meet the requirement. Furthermore, others argued that the holding period requirement mentioned in this paragraph should apply to the risk of the position rather than to the position itself. Indeed, some positions/instruments are held for longer periods whereas the risk they incur (e.g. spread risk) is actively hedged.
4. Finally, paragraph 688 also requires that firms have in place clearly defined policies and procedures for the active management of positions, which should include daily mark-to-market or daily assessment of model parameters if marking to model was used. Some firms wonder if marking to market for accounting purposes was required or if a mark-to-market for risk management purposes was sufficient. Others pointed out that certain model inputs do not have a rigorous daily assessment because they do not change materially on a daily basis and that doing so would involve a large reliance on assumptions in order to retain real changes in the market and avoid changes resulting from market “noise”.

As a result of the imprecision of the current definition, a strict interpretation of the Revised Framework’s trading book definition would lead, according to these firms, to the exclusion of the following positions from the trading book treatment:

1. Credit derivatives hedging banking book items. Currently such positions are booked in the trading book because they are fair valued, for accounting purposes, but, for some commercial banking firms, they will not meet the trading intent definition. Some firms were of the view that they should not be included in the regulatory trading book;
2. Merchant banking transactions/Private equity; strategic investments;
3. Seed capital in mutual funds sponsored by investment banks;
4. Loans held for investment;
5. Held to maturity securities;
6. Claims, fees, commissions, dividends, margins and interest rate related to trading book positions.

The concerns associated with the exclusion of these positions from the trading book treatment were mainly raised by investment and securities firms which do not currently maintain separate trading and banking books. Indeed, most of the positions mentioned above are generally not eligible for banks’ trading book treatment.

II. Valuation and risk measurement of trading book positions

This part of the survey identifies the current composition of trading books and approaches to valuation and internal risk measurement across firms.

2.1 Valuation of trading book positions

This section of the survey provides insight into the current approaches used for the valuation of trading book positions. A distinction was made between positions for which active reference markets exist and those for which there is no active reference market. With a particular focus on the latter, the questions in this section sought information on valuation methods, price verification, valuation adjustments and reserves, and challenges currently faced by firms in valuing their positions.

2.1.1 Positions with and without active reference markets

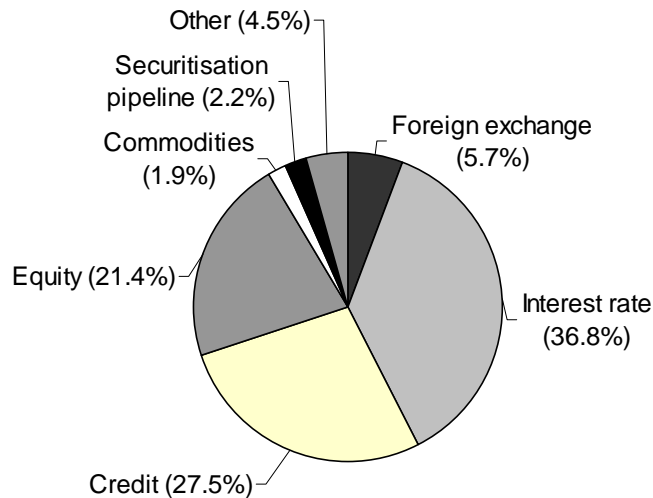
Based on responses received, the amount of positions held without an active reference market (e.g. those that are not level 1 for firms using US Generally Accepted Accounting Principles⁶), ranges from 0.2 percent and 28 percent of total trading book positions. However, the variation in percentages may be due in part to whether percentages are calculated on a net or on a gross basis. On a net basis, the proportion can be much higher, up to 80-85 percent, reflecting the fact that positions with an active reference market are typically hedged more fully. Furthermore, the definition of “active reference market” appears to vary across firms and jurisdictions. Indeed, marking to active reference markets encompasses a wide range of practices: direct price comparison, comparison of market inputs where the model can simply be viewed as a marking convention (e.g. interest rate swaps, vanilla OTC derivatives within strike and maturity range of exchange traded equivalents), comparison of market inputs where a range of models are used but all the inputs are observable (e.g. barrier options), models where the main inputs are observable but not all are (e.g. basket options), or models where inputs are extrapolated or adjusted (e.g. long-dated foreign exchange options). As a result, it is difficult to compare firms’ answers as to the amount of their positions that are not associated with an active reference market.

However, based upon a sample of responses that were comparable, trading book positions without active reference market, are broken down as shown on figure 2 below. Because of the limitations mentioned above, the percentages set out below are just indicative and are not intended to provide a detailed picture of non-tradable or less-tradable positions.

⁶ The levels 1,2, and 3 are defined in the FASB *Exposure Draft, Proposed Statement of Financial Accounting Standards: Fair Value Measurement*, No 1201-100, June 23, 2004. Level 1 refers to positions for which firms have immediate access to the market, regardless the firm’s intent to currently access that market. Level 2 refers to positions for which firms establish fair values using quoted prices for similar instruments in active markets, adjusted as appropriate for differences. Finally, level 3 refers to positions for which fair values are determined based on the result of multiple or model-based evaluation techniques. The estimates, based on the results of multiple valuation techniques, vary to the extent of market input used. However, the responses to the survey indicated that the distinction made in the GAAP hierarchy from the Exposure Draft do not perfectly match firms’ perception of liquid and transparent markets. For example, firms indicated that interest rate swaps are placed in the level 3 of the hierarchy though they are generally liquid instruments.

Figure 1

Positions with no active reference market



2.1.2 Fair value practices for all positions that are in the trading book

Firms in general have formal internal valuation/valuation adjustment policies. Firms generally try not to be too aggressive or too conservative when marking their trading books to market. Rather, they try to bring their valuation in line with the market, which means that they consider liquidating their positions or hedging out their derivative risks in a normal timeframe and in a normal market environment, without moving the markets. For cash positions, they tend to value long positions to bid and short ones to offer. Generally firms mark derivative positions to the mid-market price and make some adjustments to take into account close-out costs, illiquidity, credit spread model risk, etc. Those adjustments differ across markets, across firms, and across jurisdictions. Firms also appear to differ in terms of the degree to which adjustments are purely driven by formula or made with a combination of judgement and formulaic process.

Furthermore, horizons over which trading books are assumed to be hedgeable vary across portfolios. Some firms assume a relatively short valuation horizon (about two weeks), after which valuation adjustments apply, while others allow for a somewhat longer horizon.

2.1.3 Price verification

Firms control the quality of the fair value determination of a position through an independent price verification process, at minimum on a monthly basis. The price verification is performed by a group outside of the front office either on a transactional or a portfolio basis. The price verification results are reported to the senior management and the risk management committee. If a price cannot be verified, any excess amount over the defined portfolio threshold is reserved.

For positions that have active reference markets (i.e. in terms of prices or inputs into a pricing model), the firms can check their internal reporting prices against the reference market prices quoted on a transactional basis to determine whether the front office's prices are reasonable. They can also verify the market inputs in a model, such as volatility matrix or spreads, against their internal parameters into the models.

For products that do not have active reference markets, firms either try to proxy the values by checking similar transactions in the market, or build the spread curves by inferring them from similar products. A majority of emerging market sovereign bonds are valued using this method. Where prices cannot be validated, firms tend to put the positions into a “high focus” inventory group. One firm noted that it marks its unverifiable structural trades to zero.

Although valuation may sometimes prove itself to be less accurate on a trade-by-trade basis, firms generally feel comfortable that their valuation practices are accurate representations of fair value on a portfolio basis.

2.1.4 Valuation adjustments and reserves

Firms apply various valuation adjustments or reserves, mostly on a portfolio level to gauge the illiquidity, concentration, pricing model uncertainties, etc. For instruments that receive fair value accounting treatment, valuation adjustments refer to adjustments to the price to arrive at the fair value. Reserves refer to pricing changes in the valuation away from fair value. The rationales behind the valuation adjustments are similar. Examples of typical adjustments or reserves that may be applied are:

- **Bid/offer:** as mentioned above, firms generally mark their cash positions to the conservative bid/offer basis. If cash positions are marked at the conservative bid or offer, then no valuation adjustment is taken. If cash positions are marked to mid market, then a valuation adjustment is made to arrive at the conservative bid or offer price. However, derivatives are marked to mid-market and firms generally estimate extra closing out costs that would result from flattening out the book and set up corresponding reserves on a portfolio basis. Occasionally, for complex derivatives, reserves are calculated on a transactional basis.
- **Credit:** For some derivative exposures firms can be exposed to the risk that a counterparty may fail to perform on its contractual obligations. The market value of the expected loss on the portfolio of exposures to a counterparty is the basis of a credit valuation adjustment.
- **Administrative:** firms apply this reserve on the basis of extra costs that would result from closing out risk and maintaining the book over its life, factoring in the potential administrative costs during that period.
- **Aging:** firms apply this kind of reserve or adjustment for positions that have been held for a long period of time and cannot be sold in the markets. The reserves or adjustments are generally set up after the trades are held beyond a specific holding period. However, the holding period varies by firms and by products.
- **Liquidity:** firms apply this reserve or adjustment to positions that do not have observable market prices, by taking into account the extra time and cost that would be necessary to hedge out the position, or risk within the position, in an orderly fashion, or how much bid/offer would move over time to close out the position. They define a reasonable liquidation period for each product. That period varies by firms (e.g. one firm considers a 60-90 day period as a reasonable time period for certain types of products or trading strategies, while another considers one week to be the norm). The amount of a liquidity reserve is often based on judgements about the liquidity of a market.
- **Concentration:** firms apply this reserve or adjustment to unusually large positions in the market, even if observable prices exist. Firms monitor the turnover of their

trading books and the type of concentration in the market (e.g. the number of deals and counterparties) to determine how much bid/offer would move to close out the positions. For many firms the size of this adjustment is based on judgement.

- Model uncertainties: firms apply this adjustment to positions that derive their values from a pricing model, either due to uncertainties associated with the models themselves (e.g. failure to capture volatility skews) or with the inputs into the models (e.g. lack of data points for long tenor trades). The adjustment is usually set up at the portfolio level to cover any uncertainties for the same type of instruments.
- Accounting: in the United States, some firms apply specific reserves for the Financial Accounting Standards Board's (FASB) rule EITF 02-03⁷. These reserves are applied on a transaction level after all other adjustments are made. Such reserves are aimed to gauge the potential extra costs that may result from a reclassification of instruments according to the EITF 02-03 hierarchy. Firms defer the initial profit on the derivative contract until there is observable market data. The introduction of EITF 02-03 has led some firms to restructure their deals (e.g. getting upfront fees) to avoid this requirement.

2.1.5 Valuation challenges

Most of the firms still face valuation challenges for the highly complex derivatives or transactions that do not have readily available market inputs such as products with long-term volatility, distressed assets, and highly illiquid products. Some products that usually appear on firms' watch lists are:

- Complex derivatives and structured products, for which firms use model-driven valuations with parameters, such as correlations and long-term volatilities, that are not directly quoted in the market;
- Illiquid products, like highly distressed debt and emerging market bonds, that are infrequently traded, and for which firms most often use proxies to infer the value;
- Hybrid products with cross-asset classes; and
- One-way flow deals.

2.2 Trading book risk measurement

This section of the questionnaire obtained information on how firms' internal methodologies compensate for risks that are not fully captured by the current regulatory VaR capital framework. These risks generally stem from structured positions, shortage of historical data for key risk factors, concentrated positions and the monitoring of single-name positions across portfolios.

⁷ The Emerging Issues Task Force (EITF) was formed in 1984 in response to an FASB recommendation. The mission of the EITF is to assist the FASB in improving financial reporting through the timely identification, discussion, and resolution of financial accounting issues within the framework of existing authoritative literature.

2.2.1 Overview of internal VaR methodology

All kinds of VaR approaches (i.e. variance/covariance, Monte Carlo, and historical simulations) are used by firms. According to the responses provided, many firms indicated that they use a historical simulation approach, estimated using data over 250 to 750 business days (with or without decay factors), and sometimes in conjunction with a Monte Carlo or a variance/covariance approach. There is generally no difference between the approach used to calculate regulatory capital and that used for internal management purposes, except with respect to specific risk. Many firms that do not use supervisory approved models for specific risk use models for internal risk management purposes. Furthermore, the model parameters used for regulatory purposes may differ from those used internally, for example: different holding periods, lower confidence intervals (several values have been mentioned, ranging from 95 percent to 98 percent), models encompassing event risk for internal use, and volatility estimates exponentially weighted.

With respect to the use of VaR for banking book exposures, firms reported a wide range of practices. Some use a VaR approach for all banking book positions, while others limit the use of VaR to specific types of exposures, most commonly equities and merchant banking positions. VaR is generally used in the banking book for risk management and limit purposes.

2.2.2 Exposure coverage and risk capture

(a) Risks that are difficult to capture under the VaR methodology

Firms identified material risks that are not easily captured in an internal VaR framework for a wide range of trading book products. These risks are described in table 1 below. It is important to note that, for all product types, market liquidity and position concentrations have been identified as material risks that are difficult to capture.

Table 1: Risks difficult to capture by product types

| Type of products | Type of risks |
|--|---|
| Credit products | Market liquidity and position concentrations; correlation risk; basis risk; jump-to-default risk; lack of data on recovery rates and on implied volatilities associated with single obligors. |
| Interest rate derivatives | Market liquidity and position concentrations; volatility skew. |
| Equities and equity derivatives | Market liquidity and position concentrations; volatility skew; lack of data on volatilities; no data on correlations for equity baskets |
| FX and FX derivatives | Market liquidity and position concentrations; volatility skew. |
| Commodity products | Market liquidity and position concentrations; basis risk; volatility skew. |
| Fixed income and money market securities | Market liquidity and position concentrations; basis risk. |

Exposures to those risks that are difficult to capture are roughly estimated from immaterial up to 20 percent of total trading book exposures. In terms of provisions, one firm indicated that 75 percent of its total provisions for market risks was in respect of correlation risk. Examples of specific products include correlation products (equity and credit baskets, index options),

products with non-linear risks (hedge fund, mutual fund and basket options), MBS and ABS subject to prepayment risks, structured products, high-yield and distressed debt, whether derivatives. In general, stress tests, stress scenarios, and add-ons are used to supplement the VaR measure on those specific products. For instance, stress tests were frequently mentioned as useful sources of information on jump-to-default risk on credit products. Similarly stress scenarios are used to monitor liquidity risk on exotic interest-rate portfolios. Changes in volatility smiles can be captured through add-ons.

(b) System limitations and use of proxies

Generally, system limitations are not considered problematic by firms. The notable exception is products, especially complex options, for which valuations are particularly time-consuming. As shown in table 1 above, the availability of reliable data is more challenging for firms and modelling requires the use of proxies. Proxies are generally used for the products mentioned above that embed risks that are difficult to capture. The proxies used are, for instance, associate benchmarks (e.g. for bonds without direct prices), an index (e.g. for long-term equity volatility), or historical volatilities, instead of implied volatilities.

(c) Challenges for marking exposures to market

Firms point out that marking to market can be challenging for positions where valuation is dependent on unobserved implied correlations or volatilities, or where the liquidity of the market is an issue. Examples of such positions include distressed, high-yield or structured credit products, and hedge fund products. Firms generally acknowledge that the integrity of backtesting is negatively impacted by valuation issues. The number of backtesting exceptions can be significantly increased just by the fact of large and sudden changes in market prices arising from the occurrence of an observable market; the change will represent the cumulative mispricing since the last observed market price rather than a one day change. When market and model parameters are proxied this can lead to backtesting problems as well. However, this negative impact is generally considered to be non-material because those positions comprise only a small part of a firm's trading book.

(d) Single-name capture

Among all firms surveyed, 17 use an approved model for capturing specific risk across all trading book exposures. Others may use a model for some particular portfolios (usually interest rate and/or equities) and the standardised method for other exposures.

Single-name capture in specific risk models, raises challenges often due to a lack of data (e.g. differences between on the run and off the run bonds). Exposures to single names are captured at the trading desk level and, sometimes, across products. However, aggregating single-name trading exposures can be challenging with respect to combining cash and derivative positions, integrating equity and credit products reflected on different systems, decomposing baskets of assets, and decomposing the risk components of an asset (e.g. interest rate, credit spread, etc). Aggregating exposures across different subsidiaries of the same parent company when they are maintained in different systems can also be difficult.

(e) Concentration and liquidity capture

Concentrations are explicitly captured in some VaR measures, for instance, by adjusting the correlation factors for the same issuer, across products. One firm uses a liquidity-adjusted VaR for long-term equity holdings. When concentrations are not captured by the VaR, they factor into internal risk management frameworks and limit setting. Some firms take explicitly liquidity adjustments to internal capital.

Liquidity is generally not directly reflected in VaR models but, rather, quantified through ageing and concentration reserves, Greek limits for derivatives, credit limits, comparisons with average turnover, bid-ask spreads, or open interest. Most firms take liquidity into account to some extent for internal risk management purposes.

(f) *Event risk*

Event risk has been raised as an issue difficult to capture through VaR. In that respect, several firms noted that emerging market exposures can cause difficulties because of the greater probability of event risk and lack of data.

2.2.3 Adjustments to VaR

Financial institutions employ a varying mix of methods to adjust for shortcomings in VaR.

- Historical observation or holding period: in half of the countries involved in the survey, financial institutions generally make no adjustments to holding periods or historical time series. Where adjustments are made, the most frequently mentioned is adjustment to historical data. Other adjustments include desk-level holding periods, rolling average VaR with a one standard deviation add-on, exponential smoothing of VaR, and a worst seven day average. One bank also indicated that it scaled economic capital to different holding periods.
- Stress tests: the use of stress testing to complement VaR is widespread, generally for risks not covered in VaR. Types of portfolios/products mentioned include credit products, correlation products, non-linear positions, positions with liquidity gaps, equity derivatives, and CDOs. Types of risks include event, jump-to-default and skew. Respondents from three countries said they do not use stress tests for determining economic capital.
- Reserves and valuation adjustments: banks in two countries and US securities firms said reserves or valuation adjustments have no direct role. Other respondents consider that the various types of reserves, mentioned in 2.1.5 above, compensate for VaR deficiencies. Some firms noted that accurate market prices are a prerequisite for an accurate VaR model and that VaR was indirectly affected by pricing policies.
- Roles of VaR and stress tests: while a number of institutions use both VaR and stress testing for market risk management (i.e. setting trading limits), only a small number of banks integrate VaR and stress testing for regulatory capital purposes. However, many respondents do look at stress testing results in relation to their VaR results.
- Roles of different adjustments: while a number of respondents consider adjustments and reserves to be complementary to VaR, an equal number said that there was no particular relationship between those elements. A third group of respondents identified a specific relationship between valuation adjustment and reserves for expected losses for predicting future volatility, adjusting fair value and evaluating profit and loss stress. Other respondents pointed out that adjustments and reserves may capture risks that are not in VaR and that adjustments can be used as historical measure of a change in position.

2.4.4 Practical challenges in applying the 1996 Market Risk Amendment

Areas in which the Market Risk Amendment's distinction between general and specific risk and internal risk measurement frameworks diverge include event and idiosyncratic risk. For some firms, the 4 specific risk multiplier generally does not provide an incentive to make improvements to the regulatory approach. Some firms noted that the real incentive was improving internal risk measurement and management. Risks that are difficult to capture in VaR and that could potentially be reflected in a comprehensive VaR include correlation, concentration, basis and default risks. In addition, VaR does not reflect liquidity and spread volatility. Most firms oppose the use of a mandated stress test or reserves in regulatory capital.

III. Counterparty credit risk issues related to repo-style transactions, securities financings, and unsettled trades and credit derivatives

Following up on previous research undertaken by the Credit Risk Mitigation group of the BCBS on counterparty credit risk, this part of the survey gathered further information on how firms practically manage this risk arising from repo-style transactions, securities financings, unsettled trades and credit derivatives. Questions were not specifically directed to counterparty credit risk arising from OTC derivatives.

3.1 Overall management of counterparty credit risk for repo-style transactions, securities financings, and unsettled trades

It is difficult to generalise a response to these questions, as the responses vary quite widely. At most firms, repos and securities lending exposures to a single counterparty are aggregated across different products; however, at some, they are not. A few firms track exposures on both a gross and a net basis for each counterparty. Some firms aggregate unsettled trades with other exposures; other firms provide for a separate tracking.

Some firms capture repo-style exposures within economic capital; others do not include these types of exposures in internal capital measures. At investment banking firms, prime brokerage is conducted on a collateralized basis in a manner that does not generate current or potential exposure and, therefore, are not aggregated with counterparty credit risk exposures. One commercial banking firm with prime brokerage exposures does measure the potential credit exposure of this line of business; it may be that the prime brokerage business at this banking organisation is conducted in a manner different than securities firms. Moreover, the term "prime brokerage" may have different meanings across firms and jurisdictions.

One firm derives its economic capital requirements from models that are based primarily on the volatility of the underlying collateral, while limits are based on counterparty exposure. At a number of firms, total exposure to a single counterparty (for economic capital and/or limit setting purposes) includes both banking book and trading book exposure. At one firm, exposure is measured on a contingent basis where a factor is applied to the notional amount of the exposure representing the potential amount the price of the security could move prior to the determined close-out period. Other firms calculate aggregate exposure based on mark-to-market plus potential exposure. One firm uses standard add-ons to cover probable future changes in the mark-to-market value.

A number of firms use a peak exposure measure for limit setting and an expected exposure measure for economic capital calculations.

One firm reported no economic capital methodology in place at present.

3.2 Securities financings and repo-style transactions

Most commercial banking firms employ an economic capital model that encompasses these transactions. At these firms, the methodology is broadly similar to that used for loan exposures. At one firm, economic capital is calculated as the product of a loan-equivalent expected positive exposure and a measure of economic capital per unit of exposure for a one-year loan with a particular facility risk rating.

At investment banking firms, the incorporation of securities financings and repo-style transactions is at various stages. There is not broad consensus on an approach to these exposures.

Losses on these types of transactions generally are reported as rare or non-existent.

3.3 Unsettled trades

There is a range of practices with respect to tracking unsettled trades. Some firms do not track failed trades at all, some firms track all unsettled trades, and some firms track only certain types of trades that fail to settle (e.g. foreign exchange trades or those perceived to have heightened delivery risk). Firms generally did not describe different tracking methods for delivery-versus-payment (DvP) and non-DvP trades. However, one firm tracks extended settlement trades beyond 45 days in its credit system. Some firms noted the role of the operations area in tracking failed trades, as many are due to operational problems rather than credit issues. Interestingly, only a few banks mentioned that a portion of their trades are processed through systems like Continuous Linked Settlement (CLS®)⁸ or another central clearinghouse.

3.4 Credit default swaps

Firms generally allocate internal capital for counterparty credit risk exposure on credit default swap transactions in which the firm is purchasing protection. A slight majority take into account double default effects. A minority of firms take into account double recovery as well. Restructuring risk generally is not reflected.

With respect to single-name credit default swaps, mismatches occur between the delivered obligation and the reference obligation, maturity, the level of premium and premium payment dates, restructuring events, and tenor. Basis risk is assessed only qualitatively at one firm and treated as residual risk at another. Firms did not describe any specific quantitative approach to basis risk but some believe that the conservativeness of their models accounts for this risk.

⁸ CLS® (Continuous Linked Settlement) is a means of settling foreign exchange transactions finally and irrevocably.

3.5 Netting arrangements

Industry associations⁹ have provided responses to this particular question. They indicate that their member firms all engage in securities lending, repo-style transactions, and margin loans, documented under different types of netting agreements. As far as securities lending is concerned, firms principally use the 2000 TBMA and SIA¹⁰ New York-law Master Securities Loan Agreement for loan on US securities involving US counterparties, and the 2000 ISLA¹¹ English-law Global Master Securities Lending Agreement, for other securities transactions. For repo-style transactions, firms generally use the TBMA New York-law Master Repurchase Agreement for repos on US securities involving US counterparties, and the TBMA and ISMA¹² English-law Global Master Repurchase Agreement, for other transactions. Margin loans are documented under house standard agreements.

Securities financing transactions involve the simultaneous exchange of cash and securities, as a source of credit support. In practice, when a financial institution (i.e. bank or investment firm) receives credit support, it does so on a deliver-out basis (i.e. it takes custody or ownership of the credit support and obtains a first priority claim on it). In contrast, when a financial institution provides credit support, it can do so either through tri-party or in hold-in-custody arrangements. In the former, a third party takes custody of the credit support in a segregated account and, in case of credit event, the recipient of credit support is able to exercise default remedies while the provider has relatively unrestricted rights of substitution. In the latter, the provider of credit support retains custody or control on it.

Firms assess their ability to rely on netting agreements and credit support upon a counterparty's insolvency, bankruptcy, or default by obtaining legal opinions from external counsels or industry associations. They also rely on cross-product netting agreements, for instance, through the use of "master-master" agreements that cover other master agreements mentioned above. However, such practices do not seem to be very developed outside prime brokerage.

⁹ Response to this question was provided by The Bond Market Association (TBMA) and the International Swaps and Derivatives Association (ISDA), in a joint letter dated 15 October 2004.

¹⁰ Securities Industry Association.

¹¹ International Securities Lending Association.

¹² International Securities Market Association.