

Industry Views on Credit Risk Mitigation

**Capital Group
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Introduction

In its “Consultative Paper on a New Capital Adequacy Framework” of 3 June 1999, the Basel Committee on Banking Supervision (the Committee) stated its plans to refine its approach to the treatment of credit risk mitigation techniques in the banking book. The Committee is looking to develop a more consistent and economic approach to these techniques, covering collateral, guarantees, credit derivatives and on-balance sheet netting.

The Committee acknowledges the benefits that can accrue from the use of credit risk mitigation techniques and the key role they can play in prudent risk management. The Committee also acknowledges the impact that regulatory requirements may have on market practices. Accordingly, the Committee believes it is important that the capital framework should afford a better recognition of risk mitigation techniques, reflecting the significant increase in recent years in the use and range of such techniques, as well as in the ability to manage the associated risks.

The Capital Group (the Group) of the Committee prepared a paper (“Issues related to Credit Risk Mitigation Techniques”¹) as a basis for discussion between the bank supervisors of the G10 countries and over 50 banks and industry associations within their jurisdiction. The purpose of the paper was to seek information on how credit risk mitigation techniques are used within risk management systems and to elicit some initial thoughts on the issues discussed in the Consultative Paper. Discussions were held with a cross-section of banks, including large internationally active banks with complex businesses and small domestic banks that primarily focus on traditional banking activities². This document provides a summary of the views expressed by the banks surveyed and is intended to prompt further discussions on the topic with the industry.

The summary is divided into two main sections. The first section covers general points on the use of credit risk mitigation techniques by banks and their treatment under the Accord. The second section discusses individual topics such as residual risks (i.e. risks arising from maturity mismatches, market price changes and asset mismatches), the extent of risk reduction, and issues relating to individual credit risk mitigation techniques (collateral, guarantees and on-balance sheet netting). The Group welcomes further comments on current bank practice and further suggestions for changes to the Accord.

¹ The contents of the issues paper are included in this document.

² The present Capital Accord and the proposed new framework are both targeted at internationally active banks. However, the Committee acknowledges that many countries apply the Capital Accord, in some form or another, to domestic banks. The objectives for the new framework state that the Accord “should be suitable for application to banks of varying levels of complexity and sophistication”.

Section I: General discussion

The issues paper raised the following general questions.

- Describe the credit risk mitigation techniques (collateral, guarantees, credit derivatives, and on-balance sheet netting) used by the institution. What factors does the organisation take into account in selecting a particular technique? What types of entities (banks, securities firms, insurance companies, trusts, corporates, etc.) are typically counterparties in transactions to mitigate credit risk? Is regulatory acknowledgement a factor in using such techniques?
- How is the legal certainty confirmed for various credit risk mitigation techniques named above, and does the process differ by jurisdiction? If master agreements are used, what types of transactions are covered by such agreements? Have there been cases where doubts or challenges to the legal enforceability of a contract have arisen?
- What is the general control process for various credit risk mitigation techniques within the risk management system? Does it differ among instruments, business units, etc?
- How effective is the current Accord in recognising the benefits of these techniques? How can it be modified without unduly complicating the framework?
- How are residual risks evaluated and controlled, and to what extent should the Accord require capital to cover them?
- How is the Committee's proposal to provide a consistent economic approach to the capital treatment of credit risk mitigation techniques viewed?

Banks' responses

The nature and prevalence of credit risk mitigation techniques

The extent to which credit risk mitigation techniques are used tends to vary with the size, business strategy, and level of sophistication of the banking institution. There are also a number of distinct national characteristics (e.g. national accounting, regulatory, and legal treatments) that play a role in the frequency and use of certain forms of credit risk mitigation. For example, the legal and accounting framework in many countries is significantly more conducive to the use of collateral as opposed to other forms of credit risk mitigation. As another example, the lack of recognition of on-balance sheet netting under most accounting regimes acts as a disincentive for the use of this technique. Some banks give greater consideration to their internal analysis of the adequacy of economic capital than to regulatory minimum standards in deciding to use specific mitigation techniques.

The main counterparties for transactions involving the use of credit risk mitigation tend to be other banks, securities firms and insurance companies. Under the current Accord, OECD bank and securities firm counterparties receive preferential regulatory capital treatment as compared with non-bank and non-securities firm counterparties. Some banks have noted that the Consultative Paper's proposed changes for obligor risk weights could have a significant impact on the range of counterparties that would be considered in structuring a credit risk mitigation transaction.

Collateral and guarantees appear to be the most widely used forms of credit risk mitigation. However, there is a marked difference in the types of instruments in different parts of banks' portfolios. For example, in the small- and medium-sized enterprises (SME) sector, the

provision of guarantees tends to be personal in nature. Furthermore, collateral tends to be less liquid, typically taking the form of receivables and properties linked directly to the borrowing person and/or company. These forms of credit risk mitigation sometimes tend to be supplemented by the use of strict covenants. In contrast, where banks deal with financial institutions and large corporates, third-party guarantees are used more often and in a number of countries collateral tends to take the form of marketable financial instruments. There is a wide range of practice regarding the extent to which banks recognise the effects of credit risk mitigation techniques for internal capital allocation purposes. Banks usually use a range of collateral and guarantees, many of which are not recognised for regulatory purposes. At the same time, it is also apparent that current regulatory rules have an impact upon the types of credit risk mitigation techniques used by banks.

In contrast to collateral and guarantees, the use of credit derivatives and on-balance sheet netting is much more limited. However, many banks expect the use of credit derivatives to grow significantly in the future. In the view of most survey participants, greater and more flexible regulatory recognition of the credit risk mitigating effect of credit derivatives - particularly maturity-mismatched credit protection - would provide for a strong impetus for the expansion of this market.

Banks generally consider a number of factors in selecting a particular credit risk mitigation technique. These factors include legal enforceability, price, liquidity, credit quality, the availability of the product and appropriate counterparties, historical recovery data, ease of structuring and regulatory treatment. For the majority of institutions, regulatory acknowledgement is of key importance in choosing an appropriate form of credit risk mitigation. However, there are exceptions to this view. For some, regulatory acknowledgement is a secondary consideration to internal economic capital effects.

Another important issue is the timing of the selection of a credit risk mitigation technique. A decision on whether or not to use collateral or guarantees is often taken as a part of the overall credit process in, for example, extending a loan (*ex ante*), whereas a decision on the use of credit derivatives and on-balance sheet netting tends to be taken *ex post*, at a somewhat later stage in the life cycle of a credit exposure. For some banks, the use of a credit risk mitigation technique is not factored into the initial decision to extend credit, although such techniques may be used to manage the extent of a counterparty's credit line utilisation vis-à-vis the bank's internal credit limit. These techniques are also used to manage the overall concentration profile of banks' portfolios.

Legal certainty

Standard practices exist for ascertaining the extent and sufficiency of legal certainty. Both in-house and external legal counsel are used to confirm the legal enforceability of credit risk mitigation techniques. Standard master agreements (ISDA, IFEMA, etc.) are used wherever possible and almost always for credit default derivatives. In addition, some countries have standard domestic documentation for specific instruments. Some banks make much use of the legal opinions supplied by the association issuing the master agreement as a means of assessing and ensuring enforceability. Challenges to enforceability appear to have been rare.

The general control process for credit risk mitigation techniques

Periodic mark-to-market valuation of collateral appears to be a common control process. Often, the use of daily mark-to-market valuations results from the application to banking book positions of techniques used for trading book positions. For many banks, the frequency with which mark-to-market valuations are performed is a function of the nature of the hedging instrument used and the credit quality of the counterparty. Revaluation can take the form of a true mark-to-market in the case of traded securities, or it can consist of a discounted cash flow analysis in the case of credit derivatives and other forms of collateral.

Other control processes tend to be tailored to the level of the institution's sophistication and its business needs. An example of good practice is the use of a centralised, highly automated collateral management unit. Such a unit is dedicated to monitoring and controlling the collateral posted with the bank by its obligors, as well as the collateral that the bank has posted with its creditors.

Effectiveness of the Accord

Since the promulgation of the current Accord, significant advances have been made in the field of credit risk mitigation. A commonly held view is that while the Accord succeeds in acknowledging the effect of a limited range of traditional credit risk mitigation techniques, it does not recognise the mitigating effects of newer or more diverse forms. As a result, the regulatory capital treatment often does not reflect the economic reality of many transactions and may, in fact, serve to discourage the use of some forms of credit risk mitigation techniques.

Banks' preliminary thoughts on potential modifications to the Accord

The vast majority of banks surveyed agree that there should be a broadening of the range of collateral that is recognised for regulatory capital purposes – i.e. eligible collateral. However, while it is generally agreed that at least liquid and marketable instruments should be recognised as eligible collateral, opinion is diverse as to whether or not the range of eligible collateral should be determined by instrument type. The argument against limiting eligible collateral by instrument type is based on the view that such an approach is at variance with banks' internal risk management methodology. According to this view, the decision on which forms of collateral are to be recognised ought to be based upon analyses of historical recovery data irrespective of specific collateral type. Some banks have suggested that a system should be adopted in which banks' internal haircuts are used as a basis for regulatory capital requirements; again the system would avoid setting specific limits on the types of collateral to be recognised.

Others argue for the recognition of a broader, specified range of high-quality collateral, including precious metals, liquid corporate debt securities with a readily determinable value, and guarantees.

A number of different views were expressed in respect of the current Accord's not recognising the double default effect in determining the benefits of guarantees and credit derivatives. "Double default" refers to the potential risk-reducing effect when a guarantee or credit derivative is applied to a credit exposure. In effect both the original obligor and the third-party guarantor (or credit protection seller) would have to default for the creditor to

experience a loss. Conceptually, the probability of the default of the two parties is significantly less than either one individually, assuming less-than-perfect correlation. This type of arrangement is sometimes referred to as “two-name” paper. While many banks view this lack of recognition as a hindrance to the effectiveness of the Accord, others contend that the current assumption of a perfect correlation is conservative and readily defensible in the context of both a standardised approach and (potentially) in an internal ratings-based approach (which falls short of credit risk modelling). While banks recognise that the double default aspect of collateral and guarantees has a risk-mitigating effect, there is relatively little statistical data to reliably estimate the magnitude of this effect.

Views on a consistent economic capital treatment of credit risk mitigation techniques

The field of credit risk mitigation is one in which banks feel they have made significant progress in recent years. Moreover, it is viewed as an area in which scope exists to increase the level of consistency between regulatory capital requirements and the level of credit risk identified by banks.

The majority of banks surveyed view the development of a more consistent economic approach to the capital treatment of credit risk mitigation techniques as a very important step in improving the current Accord, one which would promote the use of such techniques. Furthermore, the need to focus upon the underlying economics of a credit risk mitigation technique, as opposed to the individual instrument type, is seen by most as of paramount importance.

Conversely, other banks take the view that the motives for the use of different forms of credit risk mitigation techniques are disparate. Furthermore, the timing of the use of credit risk mitigation techniques varies considerably, as do the legal, contractual and operational characteristics of the individual instruments. These banks assert that the result of these factors is that consistent treatment may not be warranted and may, in fact, be misguided.

Section II: Discussions on Individual Points

For the issues discussed here, banks were asked how they would manage the risks internally and how they viewed the options expounded in the Consultative Paper and, where possible, to suggest alternative ideas.

1. Residual risks

Residual risks arise where the hedge is imperfect. Imperfect hedges can reduce credit risk and, therefore, may be desirable, but at the same time, it is necessary to deal appropriately with the residual risks. Three types of residual risks will be addressed here. Residual forward credit risk occurs in the case of a *maturity mismatch*, where the hedging instrument expires before the underlying asset. Basis risk arises where the exposure and/or the hedging instrument are subject to potential *changes in market price* that could create a shortfall in value of the hedge. A third type of residual risk relates to *asset mismatches*; this arises when an asset is hedged

by a credit derivative referenced to an asset with different default characteristics (e.g. default events or payments).

(i) *Maturity mismatches*

The current Accord does not specifically require that the maturity of a credit risk hedging instrument match that of the underlying asset. As a result, national practices vary. The Committee believes that there should be greater consistency in the regulatory capital treatment of hedges with maturity mismatches³.

The Consultative Paper suggests some possible ways forward:

- Option 1: Disallow capital recognition of risk reduction effects where there is a maturity mismatch.
- Option 2a: Subject maturity mismatches to an additional capital requirement in the form of a simple add-on against uncovered forward risk. The Committee would consider specifying a minimum remaining maturity for the hedge (for example one year) in order for regulatory capital recognition to be given; hedges of shorter remaining maturity would not be recognised.
- Option 2b: In principle the same as Option 2a, except that the add-on would be waived if the remaining maturity of the hedge were longer than a specified period (for example, two or three years).

Questions to banks

Internal management process

- Does the institution allow any maturity mismatches for credit risk hedging instruments within its risk management framework? If so, for which types of instruments?
- What are the motives for using hedging instruments with a shorter effective maturity than the underlying exposure?
- If maturity mismatches are allowed, is a minimum coverage in comparison with the maturity of the hedged asset required? If so, is the minimum coverage determined on absolute terms, proportionally to the maturity of the base exposure or through some other method? Does the institution differentiate between long-term and short-term exposures?
- How does the institution acknowledge and manage the risks arising from any maturity mismatches (e.g. rollover risks)? Is the mismatch treated as a separate risk element or is it factored into the overall assessment of the effectiveness of the hedge? Is it quantified on an individual hedge basis or for all positions against a single counterparty? If the latter, does the institution use a maturity ladder to

³ For the purposes of determining whether a maturity mismatches exists, maturity is defined as the “effective” maturity rather than the nominal maturity. For example, a hedge may have the same nominal maturity as the underlying exposure. However, as a result of a step-up clause or other callable feature in the hedging instrument, the “effective” maturity of the hedge may be less than the maturity of the underlying exposure.

quantify the risks)? Are there differences in methods among different types of instruments (e.g. collateral, credit derivatives)?

- How are such mismatches treated in connection with internal credit risk limits?
- What factors influence the risks arising from maturity mismatches: the type of hedged asset (e.g. loans, bonds) and hedging instrument (e.g. collateral, credit derivative), the effective maturities of the hedged asset and hedging instrument; the size of the matched period, the size of the mismatch period etc.? Do such factors result in different approaches to risk management and/or quantification of such risks?

Regulatory capital treatment

- How are the possible options stated in the Consultative Paper viewed? How is a minimum coverage requirement viewed? How can add-ons be calculated? How would the institution factor in the length of the maturity mismatch and the start date of the uncovered period? Should add-ons be waived in some cases?

Banks' responses

Acceptance of maturity mismatches within the risk management framework

The practices used differ significantly and depend upon the type of hedging instruments used.

- Maturity mismatches are more commonly associated with *credit derivative*-based hedging. In many countries, credit derivatives, even maturity-mismatched, obtain some regulatory acknowledgement of the risk-reducing benefits. In other countries, such acknowledgement is not afforded. Even where a regulatory capital offset is not available, some banks nonetheless give an internal economic capital offset for the use of maturity-mismatched credit protection.
- In general, maturity mismatches do not occur *for guarantees and collateral arrangements* attached to banking book positions⁴.
- Maturity mismatches are common in the small number of countries where *on-balance sheet netting* is relatively widely used.

Motives for using hedges with a shorter effective maturity than the underlying exposure

There are a number of motives for employing maturity-mismatched hedges. Mismatches in hedges are most commonly the result of the limitations of the current credit derivatives market, i.e. its relatively thin and illiquid nature. As a result, the acquisition of a credit derivative with a tenor identical to that of the underlying exposure is often not possible or may be prohibitively expensive. The longer-term hedges (e.g. longer than 5 years) are

⁴ However, there are instances (particularly in the case of derivatives) where the posted collateral maybe of shorter maturity than the underlying exposure, but roll-over arrangements are used.

particularly difficult to arrange, perhaps due to the general reluctance of protection providers to take on such longer-term exposures.

More generally, it is difficult for a protection buyer to match the maturity of portfolio credit derivatives to the maturities of individual assets, so mismatched hedges are employed as the best protection available. Mismatches also occur when the protection buyer has only a short-term concern with respect to a particular counterparty⁵. In such cases, rather than seeking credit protection for the full tenor of an exposure, a bank may wish to obtain cover for only 12 months, or until the anticipated run-off date of previously extended credits to a borrower or other borrowers from the same business sector. In addition, maturity mismatches are also run where banks manage concentration risk on a portfolio basis. The protection buyer can use credit protection in this way to bring credit line utilisation levels within internal limits, for either a single borrower or sector, and may also achieve a reduction in internally allocated economic capital.

Establishment of internal minimum coverage requirements and differences in internal treatment between long-term and short-term exposures

The banks surveyed rarely set any minimum for the duration of the hedge, either in absolute terms (e.g. six months) or relative to the maturity of the underlying exposure. In those few instances where a minimum term for coverage is specified, the minimum can vary according to market liquidity, counterparty quality, the risk profile of the underlying transaction, the timing of cash flows from the underlying transactions and the ability of the obligor to provide new collateral in the future. In other cases, the extent of minimum coverage required is determined by a qualitative assessment of the maturity mismatch within the bank's cost/benefit framework. The aim of this assessment is to ensure that the maturity of the hedge is not substantially shorter than that of the underlying exposure, otherwise, no relief is achieved for economic capital purposes.

Management of maturity mismatches

Maturity mismatches tend to be factored into the overall assessment of the hedge. This occurs most often in respect of each individual position, although in some cases the assessment may cover all positions with a single counterparty. Thus, maturity mismatch is generally not treated as a separate risk element, but tends to result in a partial disqualification of the hedge (e.g. through a discount applied to the value of the hedge).

Rather than employ maturity ladders, banks generally use monitoring procedures to quantify and manage the roll-over risk arising from maturity mismatches. These procedures range from basic controls, such as regular reporting, to more sophisticated techniques, such as early warning procedures or, even, simulations of portfolio roll-offs. The most significant differences in this area of quantification and monitoring are not attributable to differences in the types of hedging instruments, but to business lines (e.g. lending activities versus market transactions).

⁵ As may have been the case for some Asian obligors during the recent crisis.

Connection between mismatches and internal credit risk limits

There is a wide range of practice with regard to the recognition of maturity-mismatched hedges in internal credit limits; from not recognising the hedge at all to full recognition. Banks with internal capital allocation models tend to incorporate a measure of the forward risk posed by the maturity mismatch into their assessment of the hedge.

Factors influencing the risks arising from maturity mismatches

The duration of the mismatch and its start date (i.e. when the credit protection expires) are the primary considerations in assessing risks in maturity mismatches. The length of the mismatch is most often assessed relative to the length of the underlying position, rather than in absolute terms. Mismatches that begin sooner raise more concern than mismatches that begin later. Consideration is also sometimes given to other factors, such as the liquidity of the hedging instruments or the assets being hedged. However, the banks otherwise tend not to place much emphasis on the types of assets hedged or hedging instruments used. However, consideration is sometimes given to factors such as their liquidity. Generally, the length of a mismatch and its start date are primary considerations.

Reactions to the possible options stated in the Consultative Paper

Of the options proposed in the Consultative Paper for treating maturity mismatches, Option 2b (an add-on which would be waived for those hedges put in place for longer than a specific period) is preferred by the majority of the banks surveyed. This method is seen by these banks to achieve an appropriate trade-off between supervisory and market requirements. Some supporters of this option would oppose any requirement for a minimum coverage of the hedge in order for capital relief to be obtained.

Only a minority of the banks favour the other options, i.e. Option 1: disallowance of mismatches, and Option 2a: a system of add-ons that would not be waived for hedges beyond a certain term. Preference for these options appears to be driven by the simplicity of the proposed treatment.

A small number of banks expressed concerns about using any add-ons to capture risks arising from maturity mismatches. They argue that any such methodology would prove burdensome, that add-ons generally invite regulatory capital arbitrage and that roll-over risks should be dealt with through risk management techniques. According to this line of reasoning, full capital relief is warranted until the final day of the protection provided that the bank has good risk management systems in place.

A similar view is that the use of internal ratings to enhance the granularity of the risk weights scheme is an essential precondition for any consideration of the term structure of credit risk. They felt that the term structure of credit risk, while an important consideration, is secondary to the incorporation of additional granularity into the fundamental credit risk weighting scheme of the Accord.

Methodologies for calculating a maturity mismatch add-on

The survey provoked a number of other suggestions from banks as to the way in which an add-on to capture maturity mismatches might be calculated.

If full capital relief is not given for maturity-mismatched hedges, several banks have expressed an interest in developing a *proportional approach* to calculating a capital requirement for maturity-mismatched hedges. According to this approach, the capital requirement would comprise the weighted sum of the capital charge for the hedged portion of an exposure and that for the unhedged forward portion. The weights would represent the proportions of the hedged and unhedged periods to the maturity of the underlying obligation. Under this approach, a 10-year position hedged by a 7-year credit derivative, would be apportioned 30% of the risk weight of the original obligor and 70% of the risk weight of the protection provider based on the underlying notional exposure. The disadvantage of such an approach is that it would not differentiate between different absolute maturity mismatches; it would take no account of the start dates. For example, this approach would afford the same treatment to a 10-year exposure covered with a 5-year hedge as it would to a 2-year exposure covered by a 1-year hedge. A *non-linear approach* using a square root of time was suggested as a potential means of avoiding this problem.

Some banks suggest a *sliding scale approach*, whereby the capital requirement would be greater the closer to the maturity of the hedge (e.g. with a 3-year protection on a longer-dated asset, the capital charge could increase progressively during the last 12 months, maybe on a quarterly basis, so that an initial lower risk weighting based on the hedge instrument gradually increases to the risk weight of the underlying asset). By linking the capital charge to the residual maturity of the hedge, this approach would provide banks with an incentive to manage the position as the credit protection runs off. This proposal might be viewed as a variation on the Consultative Paper's Options 2a and 2b, with smoother transitions between the higher capital requirement, an add-on, and the lower capital requirement.

A variant of this proposal comprises combining the sliding scale with a more comprehensive treatment of the term structure of credit risk. In effect, this suggestion is equivalent to a *maturity ladder-based approach* of credit risk. Several banks advocated a two-dimensional matrix that would incorporate increased differentiation in credit quality and tenor and would obviate the need for add-ons and avoid incentives for regulatory arbitrage.

It should be noted that the alternative approaches discussed above are rather more complex than the ideas outlined in the June Consultative Paper.

(ii) *Changes in market prices*

Exposures and hedging instruments can be subject to future changes in market prices that can create a shortfall in credit protection (unless there is adequate over-collateralisation and frequent marking-to-market). Basis risk can arise as a result of fluctuations in the market value of securities used as collateral, as well as where the market value of the hedged exposure is subject to price fluctuations. It can also arise, for example, where an exposure and the collateral held against it are denominated in different currencies or, in the context of netting, where the asset is denominated in a different currency from the offsetting liability. To treat this form of risk, the Committee indicates in the Consultative Paper that it would consider either the use of an add-on approach similar to that used in the off-balance sheet area

or using a haircut approach where the value of the hedging instrument is discounted by a certain percentage.

Questions to banks

Internal management process

- How does the institution manage the risks arising from the change in market prices (for both the base exposure and for the hedge)? How often is the value of the hedge marked to market? What types of techniques are employed for evaluating the risks arising from potential changes in market prices?
- Does the institution use haircuts in evaluating the hedge? If so, how are such haircuts calculated and what are the factors which influence its level (e.g. type of instrument, initial margin and over-collateralisation, frequency of marking-to-market or margin calls)? What are the assumptions on holding periods and price volatilities that are used to calculate haircuts? Are stress tests on the level of haircuts conducted? Were the haircuts applied in the past sufficient to cover experienced price moves? Are haircuts for instruments in the banking book different from those in the trading book?

Regulatory capital treatment

- How is an add-on approach similar to the one applied in the current Accord for the potential future exposure of off-balance sheet derivative contracts viewed? How is a haircut approach, a mix of haircuts and add-ons, or any other alternative treatment viewed? How would any preferred approach work, and how feasible would it be to implement such an approach? Could different approaches be selected, for example, for different instruments?

Banks' responses

Managing the risks arising from changes in market prices

Risk due to changes in the market value of collateral is usually managed by applying haircuts to the current market value and through the use of loan-to-value limits. Limits may be applied to the net exposure, the uncovered exposure or to both. Regular monitoring and revaluation are also essential elements of managing these risks and may be accompanied by margin calls when the net exposure exceeds a predefined threshold. All banks surveyed recognise the importance of regular monitoring of the value of the underlying exposure in relation to the value of the collateral for effective management of the risk arising from potential changes in market value. The frequency of revaluation depends on, among other elements, the availability of market values for the exposure and the collateral, and influences the level of haircuts, if applied. Some banking book collateral, for which market values are readily available and the liquidity is high, are valued daily. For some specific types of instruments (e.g. repos) both the underlying exposure and hedge are valued on a daily basis. For other collateralised banking book positions, particularly loans, collateral tends to be revalued less frequently; in some instances, as infrequently as annually.

Some banks see no need for haircuts or add-ons when daily monitoring of positions takes place and agreements exist which allow for margin calls if (a) the collateral value falls below a defined threshold, or (b) the net or gross exposure exceeds the internal limit.

Use of haircuts

Haircuts are usually used for collateral instruments with a readily determinable market value which are pledged as collateral. Market practice regarding the size of haircuts varies across countries, as well as across banks. For certain types of transactions, the level of a haircut may be set on the basis of some national or international market standards. The factors that influence the size of the haircut for a specific position include the frequency of revaluation, the volatility of the market prices of the collateral/underlying exposure, term to maturity, liquidity and availability of market value for the collateral, the assumed holding period and the credit quality of the collateral/underlying exposure. Generally, haircuts in the banking book are more conservative than those used in the trading book.

The frequency of revaluation in the banking book often varies considerably according to the type of instrument used. In contrast, in the trading book the need for daily marking-to-market is dictated by both the higher relative volatility of trading book prices and supervisory requirements. Reflecting the respective frequency of revaluations, collateral covering trading book positions is often subject to smaller haircuts than in the banking book.

The revaluation period underlying the decisions on appropriate haircuts ranges from daily to time-to-maturity of the collateral, with a tendency for longer periods for banking book positions than trading book positions and for less liquid risk mitigation instruments. Some banks pointed out that physical collateral (e.g. real estate) has a detailed evaluation process when granting a loan, taking into account loan-loss experience through an entire economic cycle, but is re-evaluated less frequently than financial collateral.

Market practice in respect of the size of haircuts varies across both banks and countries. Some banks use internal models to calculate haircuts. Some of these methodologies involve the use of parameters specified for the market risk regulatory capital calculation (i.e. 10 days holding period, 99% confidence interval, and minimum 1 year of historical data). Some banks augment their collateralisation processes by stress testing exposures and portfolios in order to assess the need for and adequacy of collateral security.

Regulatory capital treatment

Views regarding the regulatory capital treatment for addressing changes in market prices varied among countries and banks, although most banks supported a simple approach if specific regulatory requirements were to be introduced. Many banks favoured a haircut approach, with some suggesting that the haircut could be waived where positions are marked to market daily. Support for an add-on approach is limited.

Some banks expressed concern that standardised haircuts could create excessive regulatory reporting burdens because they would have to take into account price volatilities of a large number of collateral types over a variety of mark-to-market horizons. Other banks pointed out that standard market haircuts already exist for certain types of transactions. They suggest that the adoption of different haircuts for regulatory capital purposes would impose upon the industry a disincentive to use credit risk mitigation techniques. For these reasons, a number of banks favoured the use of internal models for calculating haircuts.

Several banks favoured a simple regulatory treatment for changes in market prices that would take into account, and provide an incentive to implement, prudent risk management processes.

This type of approach would waive a capital charge for changes in market prices for exposures where the associated risks are effectively managed through daily revaluation and excess margining. Where this were not the case, the bank would be required to hold additional capital - e.g. set the risk weight of the underlying position one notch above the risk weight of the collateral.

(iii) Asset mismatches

Asset mismatches occur in the context of credit derivatives when the hedged asset (often a loan or a bond) is not identical with the reference asset of the credit derivative. Specifically, an asset mismatch is the risk that the credit derivative does not pay out the expected amount (is not triggered) when the supposedly hedged exposure defaults, because the derivative is triggered by a credit event that differs from the default requirements of the underlying credit. To address this, the Committee in its Consultative Paper stated that the following criteria should be met in order for the credit derivative to have a capital reducing effect on the underlying obligation: the reference and underlying assets must be issued by the same obligor, the reference asset must rank *pari passu* or more junior than the underlying assets, and cross-default clauses must apply.

Questions to banks

- What are the institution's views on the Committee's proposal?

Banks' responses

Cross-default clauses⁶ are seen by many market participants as a way of ensuring that the credit derivative pays out when there is a default of an obligation other than the reference asset. Usually, the cross-default clause refers to other obligations of the same borrower. The ISDA 1999 Credit Default Swap Definitions also define cross-acceleration⁷ clauses under which obligations become due and payable without an extra declaration, which is necessary under a cross-default clause. Some banks indicated that cross-acceleration rather than cross-default clauses are now the industry standard and are seen to be more appropriate to address the risk of asset mismatches.

⁶ “*Cross-default*” is defined as the occurrence of a default, event of default or other similar condition or event, other than a failure to make any required payment, in respect of the Reference Entity under one or more Obligations in an aggregate amount of not less than the Default Requirement which has resulted in such Obligations *becoming capable at such time of being declared due and payable before they would otherwise have been due and payable* (1999 ISDA Credit Default Swap Definitions).

⁷ “*Cross-acceleration*” is the occurrence of a default, event of default or other similar condition or event, other than a failure to make any required payment, in respect of the Reference Entity under one or more Obligations in an aggregate amount of not less than the Default Requirement which has resulted in such Obligations *becoming due and payable before they would otherwise have been due and payable* (1999 ISDA Credit Default Swap Definitions). Insofar as the Credit Default Swap Payment is triggered by events in Obligations other than the reference asset of the Credit Derivative, both clauses are identical.

Asset mismatches appear to be less important in the banking book than in the trading book. The exceptions to this are credit derivatives referenced to a sovereign which are used to mitigate the country risk exposure of a portfolio⁸. Some banks assert that only portfolio hedges can be found for their types of exposure (e.g. loans to SMEs).

More sophisticated market participants now tend to reference a class of obligations or entities rather than a specific asset. Some banks integrate their risk management systems in the trading and banking books for such mismatches.

2. The extent of risk reduction

Under the current Accord's substitution approach to credit risk mitigation the risk weight of the issuer of the collateral or the guarantor of an exposure is substituted for that of the underlying obligor. While this approach goes some way to recognising the risk mitigating effect of collateral and guarantees, it does not recognise the fact that a bank would suffer losses on a loan only if both obligor and guarantor (or the issuer of the collateral instrument) were to default simultaneously. In order to reflect the likelihood of such double defaults, a methodology for determining capital requirements would have to reflect the correlation between the default probabilities of the obligor and the guarantor or issuer of the collateral instrument.

The Committee appreciates the logic of affording regulatory recognition to the benefit of a double, rather than a single default risk, and the further incentives to manage risks that this would provide. However, such an approach would be practical only if it could ensure that the requisite levels of capital were held against residual risks.

With this in mind, the Consultative Paper indicated that the Committee had considered whether it might be possible to acknowledge the double default effect by applying a simple haircut to the risk weight that results from applying the substitution approach. Any such haircut would be set at a prudent level.

Questions to banks

Internal management process

- How does the institution evaluate the extent of risk reduction through guarantees and other credit risk mitigation techniques within its risk management framework? Are they quantified? In particular, does the institution have ways, other than through credit risk modelling, of reflecting correlation risks, for example through some form of selection rules? If so, what type of information is used (e.g. sectoral data, market data, geographical data)?
- Have there been cases where exposures with weaker covenants were accepted in exchange for the existence of credit risk mitigation techniques? How are the effects of such risk mitigation techniques evaluated in connection with internal credit risk limits?

⁸ Although not an issue of asset mismatches *per se*, a few banks suggested that the country risk of single exposures such as project financing could also be hedged.

Regulatory capital treatment

- How can the effects of risk reduction be reflected in regulatory capital requirements? In particular, what are the institution's views on applying a simple haircut to the capital charge that currently results from substituting the risk weight of the hedging instrument for that of the underlying obligor and how could such a haircut be calculated to give some recognition while remaining adequately prudent?

Banks' responses

Evaluating the extent of risk reduction; methods used

Processes for quantifying the benefit of credit risk mitigation techniques in reducing risk in the banking book differ considerably.

In evaluating the overall credit quality of an exposure protected by a third-party form of credit risk mitigation (so-called two name paper), a common practice in internal capital systems is to use the substitution method, analogous to that recognised by the Accord. In this method, the bank substitutes the credit quality of the credit protection provided through a guarantee, collateral, or credit derivative for the credit quality of the underlying obligor. This method implicitly assumes a perfect correlation between the default probabilities of obligor and guarantor. Banks have indicated that the conservative and simplistic nature of this approach has encouraged its use, even though the correlation of default probabilities is rarely perfect.

In order to capture the imperfect correlation of default probabilities, some more sophisticated institutions use statistical models. These models produce estimates of correlations of default probabilities by running historical data through a correlation matrix based on industry and/or geographic characteristics of the obligor and the credit protection provider. One bank indicated that the joint probability of default tends to increase over time and such an increase becomes pronounced for maturities over 5 years.

Somewhere between the simplicity of the substitution approach and the complexity of a modelling approach is a system for evaluating the extent of risk reduction based upon the use of selection rules. There is a wide variety in these rules. In the simplest case, some banks permit full offset between counterparty and hedge where the credit department believes there is a zero correlation between the two. However, no offset is given where a positive correlation exists. Other banks employ correlation matrices that reflect industry, size of counterparty, counterparty rating, and maturity. These matrices are also used to help determine pricing of new loans. Still other banks do not recognise double default risk reduction when the protection provider is domiciled in the same country as the underlying obligor.

Covenants

For some banks, one of the most important credit risk mitigation techniques in the banking book is the use of loan covenants. For these banks the weaker a counterparty's credit quality, the stricter the covenants required and the more likely another form of credit risk mitigation, such as collateral or a guarantee, will be sought for additional comfort. For these types of credits, they did not believe a trade-off between weaker covenants and a form of credit risk mitigation was acceptable from a risk management perspective. Good collateral, for example, is no substitute for a weak credit. Nonetheless, it was felt that the existence of mitigation could allow some negotiated flexibility in a particular transaction. Other banks appeared to

evaluate the credit risk of an exposure by taking into account both covenants and other credit risk mitigation techniques, such as collateral. These banks appeared willing to accept weaker covenants where credit risk mitigation is in place, but only when compensated, for example, via a reduced credit line and/or tenor.

Internal credit risk limits

The extent to which the effects of credit risk mitigation techniques are reflected in internal credit risk limits varies. Some institutions report and monitor exposures against credit limits both gross and net of any form of credit risk mitigation used. This enables the institution to assess the extent of its reliance upon credit risk mitigation techniques. Others ignore completely the presence of credit risk mitigation techniques and focus purely upon the gross level of exposures. Regardless of the form of monitoring of individual borrower risk, for some banks the use of credit risk mitigation techniques is a means of ensuring that a counterparty's credit line utilisation does not exceed the bank's credit appetite for that counterparty or its sector.

Regulatory capital treatment

Many banks favoured recognising the effects of risk reduction by substituting the capital charge of the credit protection provided for the obligor and applying a further haircut to recognise the lower probability of both the obligor and the credit protection provider defaulting within the same time frame.

Other ideas range from affording a risk weight one level below that of the credit risk protection provider, to using a matrix of up to ten correlations to develop a range of haircuts covering differing degrees of correlation between the credit protection provider and underlying obligor. Suggestions for categories in the matrix included tenor, underlying rating, industry, and country. Some banks felt that such an approach could be justified without relying on full credit risk modelling, as already ruled out for regulatory purposes at this time in the paper the Committee released in April 1999 ("Credit Risk Modelling: Current Practices and Applications").

On the other hand, a number of banks, including some larger more sophisticated institutions, felt there was no empirically defensible basis for setting a standardised haircut. In their view, the current substitution approach is defensible as the most conservative and one that even some sophisticated banks used in their economic capital allocation schemes. They think that the only effective way of capturing correlation effects is through the use of historical data on internal ratings, which currently have only limited availability. Further they think that haircuts that are overly generous could invite regulatory capital arbitrage and lessen incentives for banks to find better ways of quantifying the effects of risk reduction in their credit risk models.

A number of institutions assert that a lack of recognition of double default effects in the standardised capital framework could serve to discourage the greater use of credit risk mitigation techniques. They argue that as a result, the value of credit protection would decline in the eyes of the potential credit protection buyer.

3. Issues regarding individual instruments

(i) Collateral and guarantees

The Consultative Paper proposes expanding eligible guarantors to those that attract lower risk weights than the underlying exposure. It also indicated that the Committee is considering further expanding the scope for eligible collateral to all financial assets – not just marketable securities – that attract a risk weight lower than the underlying exposure, provided that the collateral is supported by a robust legal opinion and has a readily determinable and realisable value.

Questions to banks

Internal management process

- To what extent does the institution recognise as collateral financial assets such as accounts receivable from AAA/AA companies or cash flows from derivative contracts that are not marketable securities but which could qualify for a low risk weight under the proposals of the Consultative Paper?
- Does the institution have a different approach between where it or its counterparty has the right to rehypothecate (i.e. repledge to a third party) collateral pledged to it and where this is not possible? How does it manage the risks associated with rehypothecated collateral?

Regulatory capital treatment

- What types of instruments could be recognised as eligible collateral for capital purposes besides marketable securities?
- What criteria could be used to define such instruments? How can it be assured that the value of such instruments is readily determinable and realisable? Could the use and size of haircuts become a part of the criteria?
- How should the requirements differentiate between collateral which can and cannot be rehypothecated and, if so, how and to what extent?
- What will be the impact of expanding eligible guarantors and collateral in terms of reduction in regulatory capital requirements?

Banks' responses

Internal management process

Some banks currently accept a wide range of assets as collateral for risk management purposes, irrespective of the regulatory or economic capital treatment they receive. Others, however, are more restrictive. Recognition practices vary widely among countries, banks, and even among different departments within individual banks (e.g. credit departments vs. trading departments). The responses received suggest that:

- Cash, gold and other precious metals, as well as liquid and marketable securities seem to be accepted by most banks. Corporate debt, as well as equity, securities are commonly used as collateral for certain types of transactions.

- Cash flows from derivative contracts are typically not accepted as collateral.
- A number of banks recognise many forms of collateral, including accounts receivable, which typically are subject to a significant haircut. Some banks accept accounts receivable on companies of BBB or lower credit quality, provided the receivables are of high quality and the cash generated by the receivables is held by the bank.
- Some banks accept promissory notes and various insurance claims as collateral.

Scope of eligible collateral

The banks offered somewhat differing views on the scope of collateral eligible for regulatory capital purposes. Some banks seemed to prefer a fairly limited expansion of the set of assets eligible as collateral, whereas others argued for the removal of any limit by instrument type. The variations in views may reflect the different types of business in which each bank is engaged, for example, lending to large corporations vs. lending to small businesses. Such variations reflect different expectations of the extent of capital relief for collateralised positions in a future regulatory capital regime as well as different perceptions of the definition of "eligibility".

The banks provided a plethora of specific suggestions for expanding the scope of collateral and guarantees beyond what the Accord currently recognises. The suggestions include (but are not limited to):

- precious metals other than gold (which is currently recognised)
- "soft" commodities
- financial guarantee insurance
- pledges on real estate (mortgages) or parts of a mortgage book
- tradable loans to highly rated entities
- unit trusts/UCITS
- mutual fund shares
- corporate debt securities
- corporate equity securities
- asset-backed securities
- promissory notes
- life insurance
- bank's own debt securities
- privately placed government loans

- pledges on premises/inventory/merchandise, etc.

Some banks suggested that, in principle, all major categories of assets with an established record of enhancing recoveries should be recognised.

Criteria for eligible collateral

A number of criteria to assess the eligibility of collateral for capital recognition purposes were suggested. These include:

- legal certainty
- ability to objectively price or mark-to-market the value
- liquidity
- marketability
- low volatility
- low correlation with the underlying exposure
- rating of the collateral/ issuer of the collateral

Some banks suggested that internal ratings, external ratings, and empirical evidence on recovery through liquidation could form part of the eligibility criteria, in order to ensure that the value of collateral assets is readily determinable and realisable.

Many banks felt that the impact of changes in eligible collateral would be substantial. Some banks noted the impact depends on the level of disallowances and charges within the new rules. It would also depend on the extent to which insurance companies and other potential sources of guarantees and credit protection, with lower risk weightings, continue to enter the market.

Rehypothecation

Only a few banks in certain countries rehypothecate collateral. Rehypothecation is limited to high quality securities with a liquid market and to the few jurisdictions where the process is legally valid and does not attenuate the bank's claim on the collateral. Where those conditions are met, the involved banks felt rehypothecated collateral should be treated the same as other collateral for capital purposes.

(ii) On-balance sheet netting

In April 1998, the Committee proposed permitting netting for capital purposes of on-balance sheet loans and deposits with a single counterparty. The Consultative Paper proposes that, subject to certain conditions, the scope of on-balance sheet netting should be expanded to all assets and liabilities in the banking book.

Questions to banks

Internal management process

- What types of exposures are covered by bilateral netting contracts? Do they go across product lines, currencies and across maturities? If the institution includes tradable securities, how does it manage the risks involved (e.g. the risk that the security could be sold off by the counterparty without prior notice)? Do they go across on- and off-balance sheet exposures? Are there new types of master agreements which cover a wide range of products/exposures? Have the stability of legal opinions been confirmed in some way?
- What types of exposures are managed on a net basis? How are such exposures managed within the risk management framework? Are such exposures settled on a net basis under normal circumstances (i.e. intent to settle on a net basis)?

Regulatory capital treatment

- What are the institution's views on the Committee's proposals regarding the treatment of on-balance sheet netting? What are its views on the prudential risks of recognising for capital purposes netting of assets and liabilities across product lines and maturities?
- What are the institution's views on extending netting rules to include tradable securities?

Banks' responses

Use of on-balance sheet netting

In general, the scope and volume of on-balance sheet netting (other than derivatives contracts covered by off-balance sheet netting arrangements) seems to be limited to a small number of countries. Within those countries, some banks make much use of on-balance sheet netting. In some other countries netting is not permitted for accounting purposes and similarly is not recognised for capital purposes. In a few countries on-balance sheet netting is largely limited to repos and reverse repos, and only this limited netting is permitted for capital purposes.

Initial thoughts on the proposal to expand, subject to certain conditions, the scope of on-balance sheet netting to all assets and liabilities in the banking book

A number of banks supported the principle of on-balance sheet netting and some favour the broadening of its application in the Accord. Some banks noted that differing accounting practices for netting on-balance sheet exposures are potentially a source of competitive inequality. Others expressed concerns regarding the legal enforceability of netting agreements in the various jurisdictions and accordingly felt that the impact of broadening on-balance sheet netting would be limited. Still other banks were of the opinion that, if they wish to obtain the merits of any expansion of on-balance sheet bilateral netting, it could entail a large amount of operational risk and require significant investments in systems infrastructure, as well as changes in risk management frameworks, while the capital benefit would be relatively small. Some of these banks noted that netting across maturities would pose particularly complex systems and risk management challenges in view of the roll-off risk.

Some banks support recognising cross-product netting and netting between on- and off-balance sheet positions. Others support extending netting rules to tradable securities.