ISDA®

International Swaps and Derivatives Association, Inc.

Market Review of OTC Derivative Bilateral Collateralization Practices

Release 2.0

March 1, 2010

Abstract

The UK Financial Services Authority on behalf of the international group of OTC derivative supervisors asked ISDA in October 2009 to conduct a broad market review of bilateral collateralization practices for OTC derivatives to facilitate better understanding of current market practice, especially as it relates to the different types of counterparties active in the market.

The deliverables from this project will be reviewed by and discussed with the following supervisors:

- UK Financial Services Authority
- Federal Reserve Board
- Connecticut State Department of Banking
- Federal Reserve Bank of New York
- NY State Banking Department
- Federal Reserve Bank of Richmond
- Office of the Comptroller of the Currency
- Federal Deposit Insurance Corporation
- Securities and Exchange Commission
- BaFin
- Swiss Financial Market Supervisory Authority
- Commission Bancaire
- Japan Financial Services Agency

The objective of the review is to enable a more complete appreciation of the use of collateral as a credit risk mitigant across the diverse OTC derivative market, including (generically) the motivations, capabilities, limitations, and typical practices of market participants engaging in collateralization. While the dealer segment of the market is the largest and most systemically significant subset of market participants and has received a high degree of scrutiny and analysis in recent times, there is an interest in developing a similarly complete view of collateral in the wider market from a credit risk mitigant perspective. This review will facilitate the assessment of whether any systemic risks exist, and if so, whether any reforms to collateral practice should be implemented to address any such risk in any segment of the market.

Scope and Approach

ISDA has worked collaboratively with regulators to scope this analysis paper (the "Paper") on collateral use across the market. The Paper has been released in two stages, with an interim release in early February 2010 and the final version in March 2010:

- The first deliverable was an analysis of the existing structures and current practices in bilateral collateralization of OTC derivatives, highlighting any areas of risk.

- This second deliverable includes recommendations based on risks identified from the current state analysis.

Following publication of this Paper, updates will be made as necessary to the ISDA Roadmap for Collateral Management (first published on June 2, 2009) in order to capture any new issues or initiatives that arise from this work.

This market review has been led by the ISDA Collateral Steering Committee. It is of note that a wide cross-section of market participants are heavily involved in this Committee and have contributed to this review, including representatives of banks and broker-dealers, asset managers, corporate end-users of derivatives and law firms. Contributors have spanned the full array of market specialisms, including operations, trading, risk management, credit, legal and other functions. The market review is one of the major pieces of work currently being undertaken by the working groups of the ISDA Collateral Steering Committee. Appendix II lists the current work in progress within the committee and references the regulatory commitments that have been made in the collateral management arena.

Every year, ISDA conducts an annual market survey of margin practice which is normally published in April with data as of the prior year end (the "ISDA Margin Survey"). At the request of regulators and in order to inform this Paper with relevant market data, ISDA has accelerated the survey process for a subset of 14 of the largest derivatives dealers[1] (we refer to results for this accelerated subset as the "ISDA Margin Survey Preliminary Results"). Since the total response pool for this subsample totals only 14 firms, albeit the largest ones, changes in only one response can change aggregate results substantially. Therefore, *all results included in this Paper are to be considered preliminary and subject to change*. ISDA will publish the full survey in April.

[1] Technically we note that there are actually 15 firms as two firms presently completing consolidation of operations following a merger are still reporting separately. It should be noted that not all survey questions received a response from all firms in the expedited survey. ISDA's Research staff conducted the survey and have made appropriate adjustments to minimize the impact of non-responses.

Contents

1. INTRODUCTION

A brief introduction which explains credit risk, methods of mitigation and the context for collateralization as a risk reduction technique.

1.1 Credit Risk and Collateralization

Credit risk is the danger that a firm will not receive an amount of money it is owed because the party that owes the firm the money is unable to pay or otherwise defaults on its obligation. Credit risk exists whenever a firm has a relationship where a counterparty has an obligation to make payments or deliveries in the future.

There are five main ways to address the credit risk arising from a derivatives transaction, as follows:

- avoiding the risk by not entering into transactions in the first place;
- being financially strong enough and having enough capital set aside to accept the risk of non-payment;
- making the risk as small as possible through the use of close-out netting (which can be achieved by appropriate netting arrangements such as the ISDA Master Agreement – if default occurs, these documents act to consolidate multiple obligations between two parties into a single net obligation);
- having another person or entity reimburse losses, similar to the insurance, financial guarantee and credit derivatives markets; and
- obtaining the right of recourse to some asset of value that can be sold or the value of which can be applied in the event of default on the transaction: ideally, firms would like an asset of stable and predictable value, an asset that is not linked to the value of the transaction in any way and an asset that can be sold quickly and easily if the need arises.

This latter method of credit risk mitigation provides the context for collateralization as a means of managing the credit risk associated with derivatives transactions. Collateralization provides protection in the event of a default on a transaction, since the collateral receiver has recourse to the collateral asset and can thus make good some or all of the loss suffered. It has become a risk-reduction method of choice for banks and non-bank financial institutions for many reasons; it caters for the disparity in creditworthiness between parties, it reduces capital requirements which frees up capital for other investment purposes, and it improves transaction pricing by reducing the credit spread that is charged to a counterparty. It also eliminates the need to fund derivative receivables if the underlying derivative becomes an asset (i.e. has positive net present value)

Credit risk charging relates to the cost of the credit risk that a dealer takes. It may directly reflect the cost of the hedging of such credit risk, for example via the purchase of credit derivative contracts, charges may also reflect the funding cost of the derivative position. To the extent that collateralization reduces such credit and funding risk, then such charges may be reduced. In managing credit risk, consideration may be given to the cost of hedging credit risk relative to the cost of funding collateral. This will vary from counterparty to counterparty, based on a range of factors, including the access to collateral that a counterparty has, its operational ability to provide collateral, and the existence of an appropriate credit derivative market. For a variety of reasons discussed later in this Paper, some counterparties (in

particular corporates) may be practically unable to post collateral so credit risk is managed in a different way. It should be remembered that blanket recommendations for particular collateral provisions within credit support arrangements should be resisted because credit derivatives, or other means of reducing credit risk, may provide a cheaper and better solution, dependent on the circumstances of the case.

Collateralization can also be viewed as a risk transformation technique, in which the beneficial effect on counterparty credit risk is exchanged for a combination of:

(i) Operational risk (i.e. the risk that a failure to properly effect anticipated processes leads to a shortfall in protection), and;

(ii) Residual credit risk resulting from:
   a) increases in exposure that occur between the last settled margin call prior to counterparty default and the point that a party's final loss amount is crystallized;
   b) reductions in the value of securities collateral, again occurring between receipt of the collateral and crystallization of loss amount, and;
   c) over-collateralization, including but not limited to that arising from the pledging of Independent Amounts.

In addition, there are inherent costs to managing these risks; legal expenses associated with the negotiation process and development and maintenance of necessary documentation, operational and technology costs associated with administering the process, and custody fees and financing costs associated with pledging, receiving and monitoring collateral.

According to the ISDA Margin Survey 2010 Preliminary Results, 78% of all derivatives trades are subject to collateral arrangements. However, this blended result needs to be treated with some caution as it reflects a wide range of asset-class-specific underlying results. For example, the collateralized percentage for credit derivatives is substantially higher at 97%, whereas for the FX, metals and commodities markets the levels are lower. These differences are in part reflective of the riskiness of the underlying trades. For example, some markets such as FX are spot or very short-dated and thus present lower risk that is not practical or economic to secure with collateral. Other markets, such as metals, energy and commodities use collateral selectively but may employ other forms of credit protection such as letters of credit instead.

It should also be noted that the blended rate is not weighted according to market size - the interest rate derivative market, for example, is several multiples of the commodity derivatives market in scale.

Therefore, the key points to note from this data are that:

- Substantially all credit derivatives are collateralized (97%)
- The overwhelming majority of fixed income derivatives (mostly interest rate related) are collateralized (84%)
- Well over three-quarters (78 %) of all derivatives of any underlying type are collateralized
- There are several good reasons why not all derivatives are, or should be, collateralized. These are discussed later in this Paper.

The following table breaks out the percentage of trades subject to collateral arrangements by type of underlying contract.

Figure 1
Transactions Covered by Collateral Arrangements, by Underlying Asset Class

Percent of trades						
All OTC derivatives	Fixed Income derivatives	Credit derivatives	FX derivatives	Equity derivatives	Precious & base metals derivatives	Energy and other commodity derivatives
78%	**84%**	**97%**	**63%**	**68%**	**63%**	**62%**

1.2 Note on Terminology

The term "Collateral Provider" is used throughout this Paper to refer to the party that is required, pursuant to the terms of the applicable credit support arrangement, to provide collateral in respect of its obligations. It is therefore used to refer to the transferor of collateral (under a title transfer document, as described below) or the party granting a security interest in collateral (under a security interest document, as described below), as applicable.

Similarly, the term "Collateral Taker" is used to denote the other party, i.e. the party that is the transferee of collateral or the secured party. Please also note that these are not technical legal terms.

In the section describing the common legal documentation, other capitalized terms are used according to the relevant document being described. However, please note that for clarity of expression in the sections on operational issues (which necessarily cover a number of different documentary forms), such capitalized terms are used to refer to the meaning given to them in the 1994 ISDA Credit Support Annex under New York Law or the equivalent provision under any relevant collateral arrangement, as the case may be.

1.3 No Obligation to Secure Exposure by Collateralization

It is important to note that banks, asset managers, corporations and other entities are generally free to assume credit risk at their own discretion, with some limited exceptions. Banks, in particular, are in the business of taking credit risk, which is weighed carefully against the probability of default, the size of potential losses relative to capital, and consideration of any loss mitigation that may exist. Unless otherwise established by contract, official rules or statute there is no obligation on any party that any OTC derivative transaction must be collateralized. If the parties do elect to collateralize, there is no requirement that particular commercial terms be established, for example, unsecured thresholds of particular size or excess collateral requirements - these are all commercial and credit risk management decisions subject to negotiation between the parties. This structural flexibility that allows parties to express a wide range of risk appetites, and to hedge a wide array of risks, is an essential hallmark of the OTC derivatives market, and one of the underpinning foundations of modern financial markets.

Recommendation 1 : Subject to relevant capital standards and supervisory oversight (where applicable) parties[2] active in the bilateral OTC derivative markets should have the responsibility and the authority to make decisions regarding the credit risk they assume, including the potential use of credit risk mitigation measures such as collateralization, insurance or other credit enhancement techniques.

[2] This includes counterparties of all types, including but not limited to banks, broker-dealers, corporates, investment funds (both regulated and non-regulated), private individuals, supranationals, sovereigns, national debt offices and central banks.

In particular, any contemplated regulatory or legislative changes affecting collateralization in the bilateral OTC derivatives market should consider the scope of applicability and recognize both the risk hedging flexibility required by end users and the credit risk management methods that OTC market participants employ. These are discussed more fully in Section 4, but imposing full collateralization across market participants may restrict the operating models of certain market participants and create significant operational, liquidity, legal, and regulatory risks.

2. LEGAL FOUNDATIONS OF COLLATERALIZATION

A description and analysis of the key legal foundations supporting collateralization including the ISDA Master Agreement and ISDA credit support arrangements.

2.1 The ISDA Master Agreement[3] and Exposure thereunder

OTC derivative transactions are commonly documented pursuant to either a 1992 Multi-Currency Cross Border ISDA Master Agreement (the **1992 Agreement**) or a 2002 ISDA Master Agreement (the **2002 Agreement**, and together with the 1992 Agreement, each an **ISDA Master Agreement**) between the parties.

Each ISDA Master Agreement consists of pre-printed standard provisions and a Schedule in which the parties make certain elections and may vary any of these provisions. Unless otherwise stated, the description in this Paper refers to the unamended pre-printed provisions.

The pre-printed terms of the ISDA Master Agreement and the Schedule thereto contain the legal and credit aspects of the relationship between the parties. The commercial terms of each transaction that is subject to a particular ISDA Master Agreement are set out in a confirmation which forms part of that ISDA Master Agreement. The ISDA Master Agreement and all confirmations thereunder constitute a single agreement.

2.1.1. Payments on Termination of transactions

Following the occurrence of an Event of Default or Termination Event (each as defined in the ISDA Master Agreement[4]) in respect of a party to an ISDA Master Agreement, the other party will be entitled to terminate all transactions[5] that are under (and therefore form part of) the relevant ISDA Master Agreement (except in the case of certain Termination Events, when only "Affected Transactions" may be terminated). Where several transactions are terminated at the same time, the ISDA Master Agreement provides, in Section 6(e), for close-out netting to apply.

The effect of close-out netting is to provide for a single net payment requirement in respect of all the transactions that are being terminated, rather than multiple payments between the parties. Under the applicable accounting rules and capital requirements of many jurisdictions, the availability of close-out netting allows parties to an ISDA Master Agreement to account for transactions thereunder on a net basis.

In most cases, this favorable accounting and regulatory treatment is available only to parties who can demonstrate the enforceability of close-out netting arrangements to the satisfaction of the relevant regulator(s). For this and other reasons, ISDA has obtained legal opinions confirming this from counsel in

[3] Many of the issues discussed in this section are described in greater detail in the User's Guide to the ISDA 1992 Master Agreement and the User's Guide to the ISDA 2002 Master Agreement, each published by ISDA.

[4] The Events of Default in the pre-printed terms of the ISDA Master Agreement are: "Failure to Pay or Deliver"; "Breach of Agreement"; "Credit Support Default"; "Misrepresentation"; "Default Under Specified Transaction"; "Cross Default"; "Bankruptcy"; and "Merger Without Assumption". Termination Events are "Illegality"; "Tax Event"; "Force Majeure" (in the 2002 Agreement only); "Tax Event upon Merger"; "Credit Event upon Merger" and "Additional Termination Event". Parties may agree to vary the terms of, or even disapply, these or may incorporate other events.

[5] For more on this see the User's Guide referred to above.

54 jurisdictions and has also obtained legal opinions in respect of the enforceability of the standard ISDA collateral documents in 44 jurisdictions[6].

Where close-out netting is enforceable, a party's exposure is effectively limited to the extent of any net sum that would be payable to it by its counterparty on the termination of transactions. As is set out in more detail in the following paragraphs, this concept is a key part of the determination of the amount of collateral to be posted. As such, the calculation of the net payment on close-out is described in paragraph 2.1.5 below.

The immediately preceding paragraph refers to the benefit of close-out netting where a net sum is due from the defaulting party to the non-defaulting party. However, it is worth noting that close-out netting also benefits the non-defaulting party in the converse situation because its obligation to pay gross amounts in respect of any out-of-the-money transactions and claim in respect of in-the-money transactions (which raises obvious problems, particularly on the insolvency of the defaulting party) is replaced with a single obligation to pay the net amount.

Recommendation 2[7] : National, Regional, and State legislative bodies should review applicable laws within their jurisdiction and take steps to ensure that netting and collateral provisions, (including those relating to security interests), typically used in the bilateral OTC derivative market are promptly enforceable in the event of insolvency, bankruptcy, administration, conservatorship and other similar proceedings affecting all market participants.

Recommendation 3 : Consideration should be given to ensure there is a level playing field across the market in legislation and regulation with minimal variation due to geography and entity type[8].

[6] It should be noted that each legal opinion is specific to a particular jurisdiction and subject to a number of assumptions and qualifications. Further, certain entities are not covered in the opinions obtained by ISDA: because of the different legal structures that apply to them. For example, individuals, insurance companies, municipalities, sovereigns and quasi-governmental entities are often not covered. It is also important to note that for any number of reasons it may not be possible to obtain an opinion confirming the availability of close-out netting in all cases, even in 'netting-friendly' jurisdictions (as a single example, the enforceability of netting with respect to U.S. insurance companies is not covered because it is determined on a state-by-state basis.) The enforceability, or not, of netting has an impact on whether collateralization would work as expected/be appropriate and any lack of legal certainty and consistency is therefore inherently problematic.

[7] ISDA has been promoting law reform in relation to close-out netting almost since the year of its foundation in 1985 and during that time has been involved in dozens of national initiatives to strengthen close-out netting, and many national statutes have been wholly or partly based on, or at least influenced by ISDA's Model Netting Act (the third and most recent version of ISDA's Model Netting Act was published in 2006 and is available from www.isda.org). In this context please also note the efforts of industry (most notably by ISDA and the European Financial Markets Lawyers Group) to promote a European Union Directive on close-out netting. ISDA continues to monitor and, where appropriate, actively promote national law reform developments in relation to netting and financial collateral, most recently in China, Russia, Kazakhstan, the Ukraine, Poland, the Czech Republic, Slovakia, Slovenia, Romania, Croatia, Serbia, Pakistan, the UAE, Bahrain, Qatar, Colombia, Peru, South Africa, Mauritius, Nigeria, South Korea, Indonesia and Malaysia. In addition, it has been monitoring recent and current post-financial crisis legislation with potential to affect current protections for netting and financial collateral in a number of other countries, including the USA, Canada, the United Kingdom, Germany, Ireland, Denmark, Iceland, Switzerland, Hungary and South Africa.

[8] For example, the UK FSA's position on what collateral types constitute liquid collateral in its policy document titled "Strengthening Liquidity Standards" is significantly stronger than other regulators (www.fsa.gov.uk/pages/Library/Policy/Policy/2009/09_16.shtml)

2.1.2. Calculation of Collateral

The amount of collateral required is described in the ISDA Credit Support Documents (as defined in paragraph 2 below), as the "Credit Support Amount", which is defined as follows:

"(i) the [Collateral Taker]'s Exposure … plus (ii) the aggregate of all Independent Amounts applicable to the [Collateral Provider], if any, minus (iii) the aggregate of all Independent Amounts applicable to the Collateral Taker, if any, minus (iv) the [Collateral Provider]'s Threshold"

"*Exposure*"

The term Exposure is defined in a technical manner that in common market usage essentially means the netted mid-market mark-to-market (MTM) value of the transactions that are subject to the relevant ISDA Master Agreement[9].

This term is the core of the Credit Support Amount calculation, and tends to drive the overall collateral requirement between the parties, except in situations where portfolios are small (and therefore often have small MTM) in relation to any applicable Independent Amounts or Thresholds. As mentioned above, the commercial reason for basing the collateral requirement around "Exposure" is that this represents an approximation of the amount of loss that would occur between the parties if one were to default and close-out netting were enforceable.

Note that, in common with all derivatives, OTC or exchange-traded, this can only ever be an estimate because the MTM of positions varies through time.

The definition of Exposure in the New York CSA also includes any due but unpaid amounts between the parties - these would be part of the termination calculation, of course. This would include both payments ordinarily in transit between the parties (though the English CSA and English CSD do not include these) and also payments due and currently unsettled. For technical reasons to do with the practical timing of feedback from international settlement processes compared to the timing of margin calculations, general market practice is currently not to include unpaid amounts of either sort in collateral calculations, although this topic has been raised within industry forums and market practice may be amended in the future. It should be noted that unpaid amounts are typically pursued with vigor by counterparties using alternate means.

Exposure is to be calculated as of the "Valuation Time" on each "Valuation Date". These are specified by the parties in the relevant document and normal practices are described elsewhere in this Paper.

Thresholds and Independent Amounts

If a Threshold is applicable to a party, the effect of the Credit Support Amount calculation is that Collateral is only required to be posted to the extent that the other party's Exposure (as adjusted by any Independent Amounts) exceeds that Threshold. Thresholds therefore represent the parties' commercial agreement that a certain amount of credit risk is uncollateralized - reflecting the key point made earlier that not all credit risk need be secured by collateral if that reflects the risk tolerance and commercial intent of the parties.

[9] Technically, the definition of Exposure refers to the amount, if any, that would be payable to a party that is the Collateral Taker by the other party (expressed as a positive number) or by a party that is the Collateral Taker to the other party (expressed as a negative number) if all transactions under the relevant ISDA Master Agreement were being terminated as of the relevant time for valuation, calculated using estimates at mid-market of the amounts that would be paid for replacement transactions (having the effect of preserving the economic equivalent of the terminated transactions).

If applied, Thresholds are often specified as fixed amounts though market participants sometimes seek to provide for a Threshold to decrease commensurately with any decrease in credit rating. This is often strongly resisted to avoid an obligation to provide potentially large quantities of collateral in what may be a time of economic difficulty for the downgraded party. Particular consideration of this kind of variable Threshold has recently been seen in the context of AIG.

An Independent Amount applicable to a party serves to increase the amount of collateral that is to be posted by that party. This is to provide a "cushion" of additional collateral to protect against certain risks, including the possible increase in Exposure that may occur between valuations of collateral (or between valuation and posting) due to the volatility of mark-to-market values of the transactions under the ISDA Master Agreement.

Independent Amounts may be specified in either the relevant ISDA Credit Support Document or in a specific transaction confirmation. If Independent Amounts are specified in relation to both parties, they will of course tend to cancel each other out, since in calculating the Credit Support Amount you *add* the Independent Amount applicable to the Collateral Provider but *subtract* the Independent Amount applicable to the Collateral Taker.

A number of specific issues (including in relation to the possibility of over-collateralization and segregation) are raised by the use of Independent Amounts. For detailed discussion of these, as well as market practice in relation to Independent Amounts and their interaction with other elements of the Credit Support Amount, please see the white paper on "Independent Amounts", (the "ISDA Independent Amounts White Paper"). One particular issue raised in the "ISDA Independent Amounts White Paper" concerns the current complexity and lack of standardization for legal documents that govern third party custodian and tri-party collateral agent arrangement for the holding of Independent Amounts.

Recommendation 4 : ISDA, SIFMA, MFA, and market participants should work together to develop standard provisions that may be incorporated into documents for Third Party Custodian and Tri-Party Collateral Agent IA holding arrangements. (See the "ISDA Independent Amounts White Paper" for additional information)

Other Terms

Other terms from ISDA Credit Support Documents are used in this Paper, including the "Credit Support Balance" and the "Delivery Amount". The "Credit Support Balance" is, broadly speaking, the amount of collateral that has already been provided to the Collateral Taker (although the term Credit Support Balance is used in the English CSA, the New York CSA and the English CSD use the term "Posted Credit Support"; in this Paper, "Credit Support Balance" is used to refer to either concept, as applicable).

The "Delivery Amount" is, in respect of the time at which a collateral calculation is performed, the amount by which the "Credit Support Amount" exceeds the value of the "Credit Support Balance" (i.e. the collateral call). The term "Return Amount" is used in the ISDA Credit Support Documents to mean the excess of the value of the Credit Support Balance over the Credit Support Amount (i.e. an amount of collateral previously posted, the return of which may be demanded by the Collateral Provider in accordance with the terms of the relevant collateral arrangement when the collateral on hand exceeds the calculated Credit Support Amount).

Although not a technical term, "variation margin" is commonly used to refer to the portion of required collateral that relates to the MTM of covered transactions (i.e. the "Exposure").

Another term commonly used that technically does not exist in the OTC derivatives market is “initial margin”. Historically this is an exchange clearing house term, but when applied colloquially in the OTC derivatives market it has roughly the same meaning as Independent Amount.

Two other concepts in the ISDA Credit Support Documents that are relevant to the determination of the amount of collateral to be posted at any time (and are therefore referred to in this Paper) are “Minimum Transfer Amounts” and “Rounding”. A Minimum Transfer Amount (MTA) sets a minimum level below which the Delivery Amount is not required to be posted; this avoids the need to transfer (or return) a small amount of collateral to reduce operational burden. Because the MTA is only a "floor", it does not remove the possibility of transfers of uneven amounts of collateral. To do this, parties may specify a convention by which transfer amounts are rounded up or down.

2.1.3. Partial Collateralization

One consequence of the single agreement structure of the ISDA Master Agreement is that, strictly speaking, it is not possible to include collateralized and non-collateralized transactions under the same ISDA Master Agreement (i.e for collateral to be applied in relation to some transactions under the relevant ISDA Master Agreement but not others). Upon default and early termination, no further amount is due in relation to individual transactions under the ISDA Master Agreement. Instead, an amount is due under the close-out provision as briefly described in paragraph 2.1.5 below. The early termination payment is determined on a net basis by reference to all terminated transactions, and therefore no conceptual method exists for determining which “part” of that net amount may be allocated to the collateralized transactions and which “part” may be allocated to the non-collateralized transactions - all the collateral is applied against the net exposure, with no disaggregation therefore possible. This combination of netting and collateral set-off, when applied across the widest possible set of exposures between two parties, provides the optimal solution for credit risk reduction[10].

It is possible, however, by careful drafting to create an economic effect similar to collateralization of some but not all transactions under the same ISDA Master Agreement. One way to achieve this is for the term “Exposure” in the relevant ISDA Credit Support Document to be amended to refer only to “Collateralized Transactions”, so that the Credit Support Amount represents only the net exposure of the Collateral Taker in relation to those transactions specified as “Collateralized Transactions”. Thus, the Collateral Provider is never required to deliver more collateral than it would have done if such Collateralized Transactions had genuinely been separately collateralized. Nevertheless, upon the early termination of all transactions as a result of an Event of Default or Termination Event under the ISDA Master Agreement, all of the collateral on hand would be available to satisfy the total amount payable on early termination, up to the full value of that collateral.

2.1.4. Collateralization of Different Types of Product

Generally, all OTC derivatives types will be included within the scope of the ISDA Master Agreement and therefore (unless amended, for example as described in paragraph 2.1.3 above) within the relevant

[10] Legally enforceable netting and collateralization of the entire set of exposures will yield the most optimal credit risk reduction result between two parties. It should be noted that splitting that same portfolio across several different jurisdictions and venues (including clearing systems and branches) according to product type or geography will necessarily lead to a sub-optimal credit risk reduction between the two original counterparties, and may in fact raise the credit risk in the residual non-cleared part of the portfolio above the level measured for the original complete portfolio. The countervailing benefit of the clearing scenario is, of course, that the portfolio of risk is distributed across several central counterparties; each of these presents their own independent counterparty credit risk. Which scenario represents the greatest reduction of risk overall will depend on the facts and circumstances pertaining to each pair of counterparties, the portfolio between them, and the characteristics of the available clearing venues for that portfolio (or parts thereof).

collateral arrangement, though this is subject to certain caveats. Typically, any carve-outs for OTC transaction types are effected at Master Agreement level and fall into three main categories:

(a) Jurisdictional and Legal restrictions. Where the nature of the instrument would not meet legal criteria for effective close-out netting, particularly on bankruptcy, under the ISDA Master Agreement will have an impact the decision to exclude a product type. There may also be legal restrictions in relation to characterization of certain OTC contracts in some jurisdictions (for example under gaming laws), or restrictions on the capacity of a counterparty to enter into certain types of OTC transaction in certain circumstances (for example, English building societies are, generally speaking, limited to derivatives transactions for hedging purposes only) which will also affect the inclusion of certain products under the ISDA Master Agreement.

(b) Non-OTC products. Instruments such as repos, debt, loans, etc, typically covered by other market standard or bi-lateral agreements, and particularly if the nature of any transaction may prejudice enforceability of close-out netting. More generally, counterparties may agree to include or exclude Spot FX in an ISDA Master Agreement, largely determined by volume and materiality of their business line or encompassed by other trading terms between the parties: typically, however, FX forwards and FX derivatives will be included within the scope of the ISDA master since these transactions anticipate a longer period of performance and therefore an element of risk warranting collateralization.

(c) Transactions with Bespoke Collateral Terms. As the exception to the rule, whilst included within the scope of the ISDA master, some transactions may be documented with bespoke collateral terms. These transactions will typically have specific formulae or triggers for calculating exposure which would not be captured by the standard calculations contemplated by the terms of standard credit support arrangements. The occurrence of such bespoke arrangements is low.

2.1.5. Calculation of Early Termination Amount

Under the 1992 Agreement, the parties select one of two alternative methods for calculating the close-out payment on termination of the transactions: “Market Quotation” or “Loss”. Market Quotation was until relatively recently the more common, due at least in part to the more objective and verifiable process that it provides.

Broadly speaking, the Market Quotation in respect of a party and each transaction is determined on the basis of at least three quotations received from dealers of the amount that would be paid to such party (expressed as a negative number) or by such party (expressed as a positive number) in consideration of agreement to enter into a replacement transaction that would have the result of preserving the economic effect of the terminated transaction.

The Market Quotation is the arithmetic mean of such quotations, after disregarding the highest and lowest (or, if only three quotations are obtained, the quotation remaining after disregarding the highest and lowest).

If Market Quotation is elected but a party (i) cannot, in practice, obtain the minimum-required three quotations or (ii) determines that quotations that have been obtained would lead to a commercially unreasonable result[11], there is a fall-back to Loss as the method for calculating the close-out payment.

[11] The limits of this provision and other aspects of the calculation of close-out payments have been analyzed in the courts, notably in *ANZ v Société Générale* and *Peregrine v Robinson*, which cases have been subject of discussion among commentators and practitioners.

Where Loss applies (either because the parties have elected that it should or as a fall-back), it provides a more flexible means of determining the close-out payment and covers the "total losses and costs" of a party from the termination of transactions. A party may, but need not, use quotations from dealers in determining its Loss.

Under the 2002 Agreement, there is a single measure, the "Close-Out Amount". This was introduced to give greater flexibility over the Market Quotation payment measure following the difficulty in obtaining quotations (and in some cases wide divergence in quotations) experienced by many market participants during market crises in 1998 and 1999; at the same time, the Close-Out Amount definition includes greater elements of objectivity and transparency than the "Loss" measure. As for "Loss" under the 1992 Agreement, the 2002 Agreement expressly permits (but does not require) the use of quotations in determining the Close-Out Amount (though from a broader source of third parties than does Market Quotation).

The net termination payment is, where necessary, converted into the currency specified for this purpose in the Schedule to the ISDA Master Agreement (the "Termination Currency").

Upon default close-out, valuations will in many circumstances reflect the replacement cost of transactions calculated at the terminating party's bid or offer side of the market, and will often take into account the creditworthiness of the terminating party. However, it should be noted that Exposure is calculated (for the purposes of the definition of "Credit Support Amount", as described in paragraph 2.1.2 above) at mid-market levels so as not to penalize one party or the other (i.e., by calculating Exposure on one party's side of the market). As a result of this, the amount of collateral held to secure Exposure may be more or less than the termination payment determined upon a close-out.

Other differences in the valuation methodologies applied to the determination of (i) the collateral posting requirement and (ii) any payment on early termination also contribute to the potential for discrepancy between these two amounts. Where the "Loss" or "Close-Out Amount" provisions apply, a party may take into account the costs of terminating, liquidating or re-establishing (or, in the case of "Loss" only, establishing) "any hedge or related trading position". Further, it will also be reasonable in some circumstances for a party to consider the loss suffered from being required to pay a lump sum (or the benefit derived from receiving such a sum), i.e. the cost of funding.

Conversion into the Termination Currency, where applicable, may also contribute in this regard as this conversion is to be done at the rate applicable on the day on which a trade would be executed for value on the date of early termination date (for most FX trades this would be two business days prior to such date).

More generally, movements in the mark-to-market value of transactions between close-out and the last prior valuation for the purpose of collateral posting would affect the ratio of collateral posted to early termination payment.

2.1.6. Other Aspects of the ISDA Master Agreement

Conditions Precedent

In addition to other legal and commercial mitigants against credit risk described here and elsewhere in this Paper, each party's obligations under the ISDA Master Agreement are subject to a condition precedent that no Event of Default or Potential Event of Default (being an event or circumstances that, with the giving of notice or the lapse of time or both would constitute an Event of Default) is outstanding in respect of the other party.

2.2 The Credit Support Deed and English and New York Credit Support Annexes

Collateral is commonly provided in respect of parties' exposures to one another under an ISDA Master Agreement pursuant to the 1994 ISDA Credit Support Annex under New York law (the **New York CSA**), the 1995 ISDA Credit Support Annex under English law (the **English CSA**) or the 1995 ISDA Credit Support Deed (the **English CSD** and, together with the English CSA and the New York CSA, the **ISDA Credit Support Documents**). The provisions of each of these three documents are considered in the following sections of this Paper.

As will be seen, there are a number of similarities between the three ISDA Credit Support Documents and for this reason they are treated together in a number of places. That said, there are also significant differences, most obviously as set out in paragraphs 2.2.1 and 2.2.2.

2.2.1. Security interests created by the English CSD and the New York CSA

Both the New York CSA and the English CSD create a security interest over collateral, though the specific provisions of the security clauses differ between the two documents as a result of the different governing law in each case.

Subject to the immediately following sentence, collateral is transferred to the Collateral Taker, provided that the Collateral Taker satisfies any eligibility conditions in the applicable document (the pre-printed terms of the New York CSA and the English CSD provide that the Collateral Taker must not be in default but other conditions may be agreed). Alternatively, the Collateral Taker may designate a custodian to whom collateral is to be transferred.

"Transfer" means, in the case of cash, payment and, in the case of securities, appropriate delivery. One point to note is that the English CSD imposes more stringent requirements on the Collateral Taker and any custodian it appoints, including in requiring the Collateral Taker to open (or procure the opening of) segregated accounts in which collateral is to be held and identified, segregated from and not commingled with property of the Collateral Taker.

On a return of collateral by the Collateral Taker, the security interest therein is immediately released. The circumstances in which the Collateral Taker is entitled to exercise the rights available to a secured party under the applicable law, including to liquidate any posted collateral (i.e. comprising what is termed in this Paper the Credit Support Balance) are set out in paragraph 8 of the New York CSA or English CSD, as applicable. In addition to the designation of an Early Termination Date in respect of (i.e. the termination of) transactions under the relevant ISDA Master Agreement, these include broader bases, including the occurrence of an Event of Default in respect of the Collateral Provider.

Although conceptually similar in many ways, there are significant differences between certain aspects of the English CSD and the New York CSA; one example of this is the rights of the Collateral Taker to use posted collateral.

The New York CSA permits the Collateral Taker to sell, pledge, rehypothecate, assign, invest, use, commingle or otherwise dispose of any posted collateral (though these rights can be restricted by the parties' agreement). By contrast, the English CSD does not allow for the use of collateral; the Collateral Taker is required to exercise reasonable care to assure the safe custody of the posted collateral. Further, the interest of the Collateral Taker is only a partial one – ultimate ownership (in the form of the equity of redemption) remains in the Collateral Provider (i.e. the chargor) and accordingly, it is inconsistent that the Collateral Taker should be able to directly or indirectly dispose of full title in the collateral (under a repurchase or stock lending agreement or a sale, for example).

Parties wishing to deliver support without granting a security interest in such support (for example by means of a letter of credit or financial guaranty insurance policy) may also do so by designating such support as "Other Eligible Support" under the applicable document.

Parties choosing a New York CSA or English CSD must be careful to analyze the choice-of-law rules which apply to security arrangements in respect of specific kinds of collateral. Regardless of the parties' contractual choice, certain rules may apply to determine the governing law of security arrangements. The applicable law for the creation, perfection and priority of security interests granted under the New York CSA or the English CSD may depend on various factors, including how the collateral is classified under relevant regulation and how the collateral will be held.

2.2.2. Title Transfer under the English CSA

Unlike the New York CSA or the English CSD, the English CSA does not create a security interest in the collateral transferred in favor of the Collateral Taker. Instead, the Collateral Provider retains no proprietary interest in the collateral itself and full legal and beneficial ownership in the collateral passes to the Collateral Taker, subject to an obligation on the Collateral Taker to return "equivalent" property as described below.

There are a number of areas in which the distinction between title transfer and the creation of a security interest is relevant; these are discussed more fully elsewhere in this Paper.

The most important provision of the English CSA is Paragraph 6, which provides that, upon the designation or deemed occurrence of an "Early Termination Date" in respect of (i.e. the termination of) all transactions under the relevant ISDA Master Agreement as a result of an Event of Default, an amount equal to the "Value" (as defined in the Credit Support Documents) of the Credit Support Balance at that time will be included in the close-out netting calculations of the ISDA Master Agreement.

This is not a separate and subsequent contractual set-off of the net exposure under the ISDA Master Agreement against the value of collateral. Instead, the cash value of the Collateral Taker's conditional contractual obligation to make a payment in relation to cash collateral or to deliver equivalent fungible securities in relation to securities collateral (in other words, the cash value of the Credit Support Balance) forms an integral part of the final close-out of transactions under the single agreement created by the ISDA Master Agreement.

As noted above, Paragraph 6 provides that the "Value" of the Credit Support Balance is included in the close-out calculation. This defined term incorporates any 'haircut' the parties have agreed (as described below). The effect of this term in Paragraph 6 is that collateral would be valued at the post-haircut level, rather than including the full value of the collateral posted by the Collateral Provider in the calculation. Most parties, however, will want the value of securities comprised in the Credit Support Balance to be valued at full market value on default and it is therefore common practice, particularly among sophisticated market participants, to amend Paragraph 6 to provide for this.

It should also be noted that Paragraph 6 only applies following an Event of Default and not a Termination Event. In the event of close-out of all outstanding transactions pursuant to a Termination Event, the exposure of each party would fall to zero and any collateral held by one party would be required to be returned to the other party as a Return Amount. However, this extends the time for which the parties are exposed to the credit risk of each other and parties commonly (but not universally) extend Paragraph 6 so that it also applies upon the designation or deemed occurrence of an Early Termination Date as a result of a Termination Event in relation to all (but not less than all) transactions.

Final returns such as those which occur if Paragraph 6 is not amended in this way might also be subject to the effect of the Minimum Transfer Amount and/or Rounding provisions, leading to the risk of collateral possibly becoming "trapped", though parties commonly amend the English CSA to address this issue.

The English CSA contemplates only the transfer by the Collateral Provider of cash and securities as permissible forms of collateral ("Eligible Credit Support"). It does not provide for "Other Eligible Support" as that term is used in the English CSD or New York CSA (as mentioned in paragraph 2.2.1 above): although it may be possible to include provisions to allow this, this is relatively uncommon.

The parties specify the types of asset that will constitute Eligible Credit Support for this purpose.

One point to note is that it is important for the effectiveness of the outright transfer contemplated by the English CSA that the securities are capable of being traded.

2.2.3. Other Issues in Structuring the Provision of Collateral pursuant to the ISDA Credit Support Documents

Unless amended, the ISDA Credit Support Documents provide for collateral to be posted on a bilateral basis such that either party may be required to provide or entitled to receive collateral depending on the net exposure under the ISDA Master Agreement on a mark-to-market basis (and any other aspects of the Credit Support Amount, as described above).

The table below shows data from the ISDA Margin Survey 2010 Preliminary Results indicating that 84 percent of all collateral agreements are bilateral.

Figure 2
Reciprocity Characteristics of Collateral Arrangements

Unilateral			**Bilateral**			**All**
ISDA collateral agreements - Unilateral	Non-ISDA agreements - Unilateral	Total number for 2009 - Unilateral	ISDA collateral agreements - Bilateral	Non-ISDA agreements - Bilateral	Total number for 2009 - Bilateral	Total
21,170	3,672	24,842	118,771	8,799	127,570	152,412
14%	2%	16%	78%	6%	84%	100%

Other Collateral Arrangements

2.2.4. Other ISDA Documentation

Between them, the three Credit Support Documents so far described in this Section 2, together with the ISDA Credit Support Annex under Japanese Law and the 2001 ISDA Margin Provisions (described below), constitute approximately 94% of collateral arrangements used by respondents to the ISDA Margin Survey 2010 Preliminary Results.

2001 ISDA Margin Provisions

In 2001, ISDA published the 2001 ISDA Margin Provisions (the "**Margin Provisions**"), under which parties may elect either a security interest approach (governed by New York law) or a title transfer

approach (governed by English law), as an alternative to the ISDA Credit Support Documents described above.

The Margin Provisions were developed as a result of market participants' consensus in relation to concerns raised during periods of market volatility in 1997 and 1998. Among other things, the Margin Provisions were intended to tighten certain timing mechanics and to provide a more "plain English" drafting style and simpler documentation scheme.

The Margin Provisions are drafted sufficiently broadly that they may be used with agreements relating to financial transactions other than the ISDA Master Agreement or to collateralize a party's exposure under more than one agreement.

It should be noted that market uptake of the Margin Provisions was not as great as had been anticipated, possibly because of the difficultly of revising historical documents and also because some firms adopted key elements of the Margin Provisions and incorporated them into custom amended forms of the ISDA Credit Support Annexes, thus achieving many of the benefits of the newer document but in a familiar structure.

Due to their relatively limited use in the market, more detailed consideration of the Margin Provisions is not set out here as the focus is on the more widely used ISDA Credit Support Documents described above. However, further description of the development of the Margin Provisions (and their terms) can be found in the "User's Guide to the 2001 ISDA Margin Provisions", published by ISDA.

Japanese law Credit Support Annex
The 2008 ISDA Credit Support Annex under Japanese law is intended for use in documenting collateral arrangements under Japanese law and combines two different legal approaches: a Japanese law pledge and the creation of loan collateral (in some ways comparable to title transfer under English law). This document is not discussed further here due to its limited range of application.

2.2.5. Non-ISDA Arrangements

The ISDA Margin Survey 2009 identifies a number of other (non-ISDA) arrangements such as bespoke margin agreements, master margining agreements, commodity-specific margining agreements, and jurisdiction-specific agreements such as the French 1998 AFB Collateral Annex or the German Rahmenvertrag.

Alternatively, market participants may set out specific collateral provisions in the confirmation in respect of a specific transaction.

2.3 Prime Brokerage

Prime brokerage is a colloquial term for a number of different relationships between large securities dealers and banks and their clients. There are two main ways in which derivatives trading is relevant to prime brokerage and both typically have different collateral management arrangements.

2.3.1. Derivatives Prime Brokerage

Derivatives prime brokerage describes an arrangement where a client has agreed with its derivatives prime broker that it will be able to execute derivatives transactions with a number of nominated executing dealers but that upon execution, the trade between the client and the executing dealer will immediately be given up or novated to the prime broker, who becomes the executing dealer's counterparty; at the same

moment, a new back to back trade on exactly the same terms arises between the prime broker and the client.

The trade between the dealer and the prime broker is invariably governed by an ISDA Master Agreement and collateralized under the terms of a standard credit support arrangement. The trade between the prime broker and the client will be governed by an ISDA Master Agreement but there will also be a separate derivatives prime brokerage agreement. There is little or no standardization of such derivatives prime brokerage agreements but, generally speaking, they deal with issues such as scope for client to execute trades with executing dealers, remuneration and the ability to adjust the client trade to reflect changes in the dealer trade. Such an agreement may also include collateral provisions. These range from simply accelerating delivery times in the credit support arrangement to in some cases carving certain trades out of the definition of "Exposure" in the credit support arrangement and setting out a bespoke margin or collateralizaton calculation model.

2.3.2. Classic Prime Brokerage and Cross Margining of Derivatives

Classic prime brokerage is the provision of securities custody and clearing services by prime brokers combined with the provision of cash and securities lending to facilitate use of leverage and short exposure by clients, typically hedge funds. Prime brokerage services are usually governed by a bespoke prime brokerage agreement that includes margining and collateralization provisions in relation to the cash and securities lending.

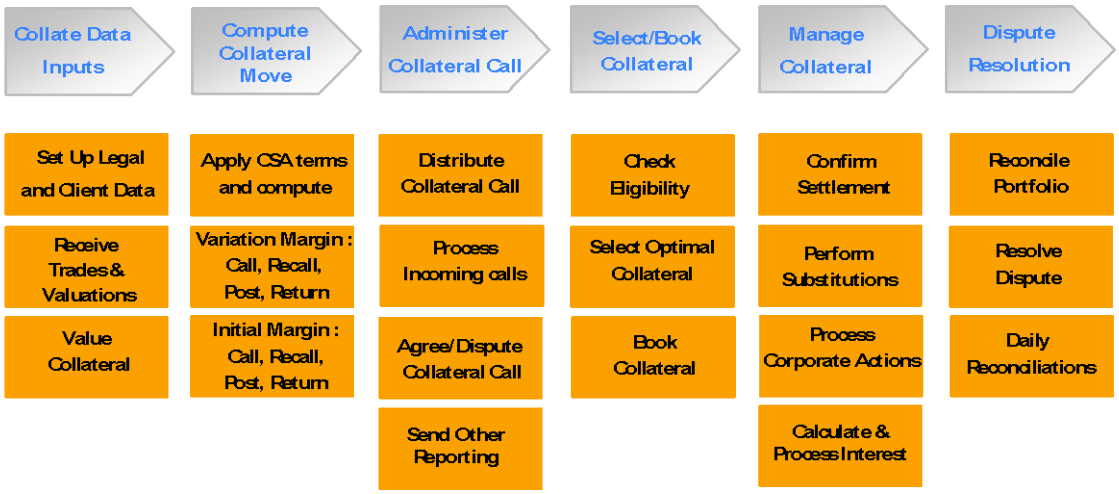
Derivatives are used by prime brokerage clients for several reasons including to hedge economic risks created by the fund's activities in physical securities or to replicate the performance of holding a physical investment, or trading under a derivatives prime brokerage arrangement described above. Ordinarily a client would post collateral under the prime brokerage agreement for its physical securities activity and a separate amount of collateral under an ISDA credit support arrangement in respect of its derivatives exposure. However, where derivative positions held by a prime brokerage client operate to reduce risk or offset exposure of physical positions held by the client, or vice versa, when considered on a "whole portfolio" basis, prime brokers may offer to cross margin and cross collateralize the physical and derivative transactions, thereby reducing the amount of collateral that is required into a single lower amount. In such cases the derivatives transaction remains governed by the ISDA Master Agreement but the trades to be cross-margined are typically carved out of the definition of "Exposure" in the credit support arrangement. These trades are then included in the prime brokerage margin calculation and will be used to determine a single amount that the client is required to maintain in its prime brokerage account against its consolidated exposure. This collateral will usually take the form of securities and cash held in custody by the prime broker and subject to a pledge or charge. Whilst the securities or cash are generally subject to client money and client asset protections in the hands of the prime broker, the prime broker may also have a right to use or rehypothecate such securities or cash subject to an obligation to redeliver equivalent collateral upon satisfaction by the client of their liabilities to the prime broker.

Documenting cross-margining arrangements such as those described above can be done by simply amending the relevant ISDA Master Agreement and prime brokerage agreements but is more commonly achieved by using a form of master netting agreement. In addition to cross margining prime brokerage and OTC positions bilaterally, arrangements to cross margin physical positions at the prime brokerage entity with OTC positions held at an affiliate company of the prime broker are becoming more common. Master cross netting and cross guarantee structures are the most commonly used methods for documenting such arrangements.

3. OPERATIONAL MECHANICS

An overview and supporting descriptions of the operational processes necessary for collateralization.

Figure 3
Operational Mechanics of Collateralization



3.1 Collate Data Inputs and Compute Collateral Moves

3.1.1. Collating Data Inputs

There are several data points which need to be collated so that they can be included in collateralization calculations.

The terms and conditions of the collateral agreement need to be captured in the margining system. These include parameters such as Thresholds, Minimum Transfer Amounts, Independent Amounts, Rounding conventions, haircuts on collateral (the "Valuation Percentage" described in this paragraph 3.1.1 below), eligible collateral types, valuation and timing of margin calls, interest rates to be paid on cash collateral and covered products.

If the Independent Amount is known upfront it will be captured within trades eligible to be confirmed through electronic platforms (for example, DTCC, Markitwire). However, for clients who negotiate initial margin outside predetermined schedules, fail to provide allocations at the point of execution (for example, through Markitwire) or look to benefit from Independent Amount netting from offsetting positions, Independent Amount is captured and reflected by way of a trade amendment subsequent to the initial confirmation. So, the Independent Amount is ultimately included on the confirmation, but in some instances not initially.

The calculations described here are done by the Valuation Agent, which may be either party (or even a third party) as described below.

The next phase in the preparation of the collateralization calculation is to aggregate all trades within a portfolio which are covered by a particular collateral agreement. Each trade must have a mark-to-market value associated with it which is computed in accordance with the definition of "Exposure" in the case of the ISDA Credit Support Documents or as otherwise required by the terms of collateral arrangement. This is done at the Valuation Date and Valuation Time (or equivalent specified time under the relevant collateral agreement). The aggregate value of all relevant collateralized trades is then determined to arrive at a party's Exposure.

As described in paragraph 2.1.2 above, a party's "Exposure" is at the heart of the calculation of collateral to be posted, though the other collated data inputs must of course also be incorporated.

The final phase in the preparation of the collateralization calculation is to value any collateral which is being held, has already been demanded, or is to be transferred. Collateral can be posted in either cash or securities. Collateral in a form other than cash that is posted pursuant to the ISDA Credit Support Documents is commonly subject to a 'haircut', i.e. the value attributed to it (the "**Value**") is less than its full market value: this is achieved under the Credit Support Documents by applying a "Valuation Percentage" to each type of collateral. If this is the case, the Collateral Provider will of course have to provide a greater amount of collateral than would otherwise have been the case.

The purpose of this extra posting requirement is to guard against the possible decline in the value of the collateral between valuations (or between enforcement of the collateral and the last preceding posting). More volatile or less liquid securities tend to have lower Valuation Percentages (producing greater haircuts as Value is calculated as the product of the full value of collateral and its Valuation Percentage). A haircut may also be applied to cash in currencies other than the "Base Currency" to protect against adverse movements in exchange rates, although this is not common in practice.

3.1.2. Computing Collateral Moves

Once the Credit Support Amount and Credit Support Balance are computed, they are applied to the terms of the collateral agreement and collateralization calculations are computed. This will result in a collateral call on a counterparty, or will enable the recipient of a collateral call to confirm its agreement with its counterparty's margin call. If no exposure or collateral value has changed the collateral requirement will remain unchanged and no collateral will be exchanged by either party. Because of the effect of any Thresholds and Independent Amounts (and, to a lesser extent, Minimum Transfer Amounts and Rounding) on the collateral calculations, it may of course be that no posting is required even if there has been movement in exposure or collateral value.

Each party is required to post collateral in an amount at least equal to the "Delivery Amount" in respect of it. As previously mentioned, the "Delivery Amount" in respect of a party is the amount by which that party's Credit Support Amount exceeds the Credit Support Balance. By contrast, where the Credit Support Balance in respect of a party exceeds the Credit Support Amount in respect of such party (for example, as a result of movements in the mark-to-market valuation of collateralized transactions), that party is entitled to demand the excess (a "Return Amount") be returned to it in accordance with the terms of the applicable collateral arrangement.

3.1.3. Example Collateral Call Calculation

Below is a collateral call calculation for illustrative purposes. The example separately displays Independent Amount collateral currently held from variation margin collateral currently held in order to more clearly display each type of margin due. In practice these collateral amounts held are frequently not required to be segregated in different accounts (as discussed elsewhere in this Paper).

Figure 4
Example of Computations for a Margin Call under the ISDA Credit Support Documents

Independent Amount Collateral Calculation	
Independent Amount required	$1,000,000
Independent Amount currently held	$550,000
Independent Amount due	$450,000
Variation Margin Collateral Calculation	
Exposure (Mark to market)	$5,000,000
Threshold	$500,000
Variation amount collateral currently held	$3,200,000
Variation margin due	$1,300,000
Aggregate Margin Calculation	
Independent Amount due	$450,000
Variation margin due	$1,300,000
Total Margin Due	$1,750,000
Other Key Terms	
Minimum Transfer amount	$100,000 (exceeded)
Rounding convention	$10,000

3.2 Administer Collateral Calls

3.2.1. Distribute the Collateral Call

Following notification of the calculations by the Valuation Agent (or after a Valuation Date but independently of this notification, if a party performs its own calculations), either party might be entitled to notify the other of a collateral requirement and therefore formally request the delivery or return of collateral. Collateral agreements generally establish one particular party as the Valuation Agent. The main reason for one party being the sole Valuation Agent is that the other party does not have the operational resources or desire to carry out this activity on a regular basis; market participants that typically request not to be the Valuation Agent are hedge funds, local authorities and SPVs, although in some circumstances, any market participant type, including major dealers, may prefer not to be the Valuation Agent. For the purposes of valuing collateral, there may be a third party Valuation Agent in the context of the third party collateral arrangements described in Section 5 below.

The timing of a demand for the delivery or return of collateral will affect the timing of the transfer of such collateral: for example, the New York CSA provides that if a demand is received prior to the "Notification Time" on any day, settlement is required before the close of business on the next business day (unless

modified by the parties, 1:00 pm is specified for this purpose). In the context of daily valuations, this effectively creates a deadline by which demands in respect of a given day must be communicated. There should be operational controls to ensure that all calls that should be issued by the Notification Time have been issued.

Currently, the usual method of communicating the margin call is by email, although written notice, telephone, fax and telex may also be permitted. The methods of exchanging margin calls have recently been subject to review as discussed in the Standardized Electronic Communication of Margin Calls and Interest Payments Paper published by ISDA on November 13, 2009.

Recommendation 5 : ISDA should continue the drive towards standardization of format and electronic communication of margin calls in the market, coordinating across market participant firms and vendors who should create fully interoperable solutions that improve market efficiency and reduce systemic risk.

3.2.2. Process Incoming Calls

When a party receives a margin call from the other party, it is best practice to review the calculations for error, and also to compare the results with internal system calculations. A response is then given, either agreeing the call and advising the assets to be moved, or disputing all or part of the call. More details of (i) the selection of assets and (ii) disputing margin calls are given in later sections.

3.2.3. Agree or Dispute Collateral Call

After the margin call notice has been sent, the counterparty will generally want to confirm its agreement to the margin call. There are three options for responding to a margin call: full agreement, partial agreement (where, for example, a party agrees to five million of a ten million call) and full dispute (where there is no agreement to the other party's call or indeed a counter call, for example, if both parties call for ten million, that gives a twenty million dispute).[12] If there is agreement on the terms of the margin call, for a full agreement or the undisputed amount of a partial agreement, the parties will agree the specific collateral types and amounts to be transferred in order to satisfy the margin call, as well as confirming the timing of those movements. Collateral movements are monitored to ensure the successful delivery of assets and, when received, collateral holding records are updated. If the counterparty disagrees with the margin call, it may dispute the call (see paragraphs 3.5.1 and 3.5.3 below) and the dispute resolution process described later will then begin.

3.2.4. Timing

Market practice is to respond to a margin call on the same day, even though this is not explicitly noted in the English CSA or New York CSA or English CSD. The 2001 ISDA Margin Provisions however do provide that should a party receive a margin call by the Notification Time, such party shall respond to the margin call, describing what type of collateral is to be moved and the timing of those movements by 5pm in the location of the call recipient. Where no response time is stated in the document, market practice is that a response is given that same day for the following reasons:

- One of the first signs of a counterparty in financial difficulty, especially during a credit crisis, can be a tendency to delay responding to margin calls. While there may be valid responses for not being able to respond to margin calls same day, for example system issues, parties should have

[12] Responses to margin calls and the ensuing actions for dispute resolution have recently been addressed in the ISDA Dispute Resolution Protocol. This section is intended to provide a very high level overview only.

an established end-of-day reporting process and escalation chain which details all responses to calls issued and received, including any non-responses which can be appropriately followed up.

- Parties should aim to resolve disputes by the Resolution Time (after which time, usually 1pm on the following business day, the collateral arrangement may provide for further specific steps to be taken): for this to be possible, there must be time for both parties to consider the response and investigate any dispute by the Resolution Time.

- With a daily margin call process, in order to be able to issue a margin call by the Notification Time, a firm needs to update its collateral records with the response to the previous day's call. If, however, such response is received just before the Resolution Time, systems cannot be updated before a new call is issued and, in the event of dispute, there is insufficient time to investigate the dispute.

- Where same day settlement is provided for in the applicable credit support arrangement, a response must be made in sufficient time on the same day to be able to settle on the same day

3.2.5. Send Other Reporting

Other reports, in addition to a margin call, can be sent out as part of a client service offering or for regulatory requirements (for example where the Client Asset Rules or Client Money Rules of the UK FSA Handbook apply). These may include a trade summary, and initial margin report or a collateral holdings summary.

3.3 Select / Book Collateral

3.3.1. Check Eligibility

The party delivering or requesting a return of collateral decides what collateral is to be moved. The party moving the collateral must ensure that what is offered is eligible and the recipient of a delivery should (from a practical perspective) also ensure that the collateral being proposed is eligible in accordance with the applicable collateral arrangements.

3.3.2. Select Optimal Collateral

The party that is delivering or recalling already posted collateral should move collateral which is optimal. There are many factors which will determine what is optimal (and these are discussed further in Section 6 below), although funding and client service considerations are likely to be the main factors for selecting collateral to deliver (from the range of Eligible Collateral).

3.3.3. Book Collateral

The collateral should be booked in order to not only feed into subsequent margin calculations, but also the books and records of the firm, which serves two main purposes. First, it ensures that collateral is correctly accounted for either on or off balance sheet for each firm. Second, it ensures that held collateral assets are used to reduce minimum capital requirements since under most regulatory capital regimes, including the Basel II Capital Accord, collateral assets are recognized against risk positions. Some firms have established very measurable reductions in regulatory capital as a result of their collateral programs. Exact details vary by regulatory regime, and there are typically stipulations concerning the type of collateral, frequency of margin calls, percentage coverage of exposure by collateral, legal certainty of collateral enforcement and other factors.

3.4 Management of Collateral

3.4.1. Confirm Settlement

The margin call calculation assumes that any collateral, which was agreed in a previous calculation but has not yet settled, will settle as agreed; this is to prevent calling twice on the same exposure. It is therefore vital to have a clear understanding of the settlement status of collateral due to be received or delivered. A firm must establish a robust settlement fails process, which is typically supported by reconciling to internal and external cash and securities accounts.

Just as a delay in responding to a margin call can be a signal of a counterparty in distress, so can settlement fails. It is therefore important that a robust escalation process is in place, along with knowledge of the relevant grace period, so an informed decision can be taken as to the seriousness of any fail: whether at one end of the spectrum an Event of Default may have occurred, or at the other a simple administrative error such as the trade date for a security settlement being mismatched between the parties, which is corrected the following morning.

3.4.2. Perform Substitutions

The relevant credit support arrangement may allow for one or both parties to call back previously delivered collateral in order to substitute other eligible collateral types. A requirement that the consent of the party holding the collateral be obtained may be included for a number of reasons: for example, to minimize the risk of characterization of the security interest pursuant to the English CSD as a floating charge, rather than a fixed charge, under English law; or where substitution without consent might lead to registration requirements.

A number of considerations, both operational and financial need to be factored into a decision to substitute collateral. Further, consideration may need to be given to issues arising in other specific scenarios, including around the time of a corporate action (where a party may want to avoid the operational effort of dealing with the action with an extra party) or when a security may be maturing (if substitution would avoid moving cash after maturity where cash may be ineligible or operationally difficult).

In determining whether consent to substitution should be required (and given), it is also important to review a number of considerations which will be applicable when such consent is sought[13]. These include that collateral is taken to secure credit risk; as long as the proposed substitute collateral is eligible, the substitution should be accepted.

Recommendation 6: The requirement to receive consent ahead of agreeing to a substitution differs dependant on the choice of ISDA Credit Support Document and the terms of the particular document. ISDA should investigate whether the treatment of consent can be standardized between the English CSA and the New York CSA and determine whether a template English CSA or New York CSA can be developed that treats substitution requests as non-consensual (for new collateral agreements or existing agreements that are subject to re-negotiation).

[13] It should be recognized that in certain instances a request to substitute out cash collateral for securities could result in accounting treatment that effectively leads to a balance sheet gross up.

The timing of both the request and exchange of substitute collateral are included in the collateral agreement. The following is an example of a typical substitution request:

- the party requesting substitution of collateral will send a notification to the other party asking for the return of a specific asset and amount by the notification time as outlined in the collateral agreement. Communication is typically either by phone, fax or email – if known at the time of the substitution request, the party requesting the substitution will identify the substitute collateral;
- the market value after haircut of the substitute collateral must be either equal to or greater than the market value of the recalled collateral and must also qualify as eligible collateral under the terms of the relevant credit support arrangement; and
- any consent that may be required of the party for the substitution should be given or declined in accordance with the collateral agreement.

On the day following the substitution request:

- the party asking to substitute collateral will confirm details of the substitute collateral and then make the delivery;
- the party who accepted the substitute collateral will confirm settlement and then return the original collateral; and
- the value of the replacement collateral is then factored into the margin call statement going forward.

Typically the relevant credit support arrangement allows for the release of original collateral on the business day following settlement of the substitute collateral; however it is common for the Collateral Taker to release the original collateral on the same day it receives the substitute collateral, upon verification of settlement of the substitute collateral. Both parties need to be clear as to when the original collateral will be released. For example, Asia-Pacific counterparties using a European or United States settlement or clearing system will not be able to verify settlement until at least a day later.

3.4.3. Process Corporate Actions

The main corporate action that firms will deal with is the payment of coupons on securities. The coupon will be paid back to the Collateral Provider. Consideration should be given to tax on certain securities, where the tax treatment (for example for withholding or substitution tax) of the Collateral Provider may be different to the Collateral Taker. Each Credit Support Document provides a default position for this, but any issues should be identified in the negotiation process and the resolution agreed upon at that stage. If equities are used as collateral, which is relatively rare and often as part of a bespoke structure, there may be voting rights associated and so there must be a process to deal with this aspect.

3.4.4. Calculate and Process Interest

For cash collateral, interest at the rate agreed in the relevant credit support arrangement is paid from the Collateral Taker to the Collateral Provider. Typically the interest period is a calendar month, with interest accrued daily but paid at the beginning of the following month, and is simple rather than compound interest. Generally the rate index applied to cash collateral is the overnight funding rate for the applicable currency concerned, reflecting the fact that collateral is liable to be called or recalled on any given day in response to fluctuation in mark to market value of the underlying transactions. The most common market rates that are paid on the three main cash collateral currencies are Federal Funds H-15 for USD, EONIA for EUR and SONIA for GBP. Typically these rates are earned on cash collateral without any additional spreads, although like all collateral terms bilateral negotiation is possible to respond flexibly to particular situations.

The Credit Support Documents provide that interest is to be converted into the Base Currency before being transferred, though in some cases market participants amend their documentation to remove this additional operational step.

3.5 Dispute Resolution

In the event of a dispute (of the types identified in paragraph 3.2.3), the processes described below are currently carried out.[14]

3.5.1. Initial Steps

Some level of investigation of the dispute will be carried out immediately. Depending on the size and complexity of a portfolio, this may be done by the margin manager generating the disputed margin call or may be handed over to a dedicated portfolio reconciliation or dispute resolution team. Although the level of investigation may differ, some of the areas that are usually examined for obvious discrepancies are:

- differences in trade population;
- Threshold differences;
- collateral asset differences;
- significant differences in valuations of specific trades; and
- Independent Amount differences.

If the parties are still unable to agree upon the valuations of certain trades or other aspects of the collateral calculation, the dispute resolution mechanism outlined in the applicable collateral agreement will become effective.

In the event a margin call is disputed, the parties will initially have their collateral operations functions liaise with each other to determine the cause of a dispute. The method of resolving disputes can vary, depending on the type of dispute, the size of portfolio, the sophistication of dispute resolution or portfolio reconciliation technology (i.e. comparison of trade files with mark-to-market) technology and frequency with which the portfolio reconciliation is performed.

3.5.2. ISDA Credit Support Documents Process

The process of resolving a collateral dispute will follow a sequence of events and will pass through a number of different functions within an organization. At all points of a dispute, it is best practice to ensure communication between collateral operations and appropriate control and risk functions (product controllers and credit risk control) is maintained. The below process represents market practice rather than documentary requirement as none of the steps, other than part 3 of Step 3, is defined in the ISDA Credit Support Documents.

Step 1 - Exchange of portfolios and determine the type of dispute:

After the agreement to settle any undisputed amount, the immediate next step would be for parties to exchange margin call calculations and portfolio details. Initially, high-level comparisons will be performed on aggregate values to identify whether the dispute is driven by exposure (MTM or portfolio composition), collateral value (position, pricing or haircut differences), Independent Amount, or call calculations (predominantly derived from the terms of the applicable Credit Support Document, such as Thresholds and Minimum Transfer Amount, as described elsewhere in this Paper).

[14] As discussed elsewhere, market practice in relation to dispute resolution is being currently addressed in the Dispute Resolution Protocol.

Step 2 - Perform a reconciliation:

Depending on the type of dispute, parties will target their reconciliation to determine actual positions or calculations driving a dispute. This process can vary in duration and complexity when taking into account the size of a portfolio and the sophistication of reconciliation and dispute resolution processes and technology. Some organizations have dedicated dispute resolution and portfolio reconciliation functions who perform this process and utilize third party vendor services and applications to undertake frequent automated two way reconciliations. These can considerably reduce both the effort and time to identify the cause of the dispute.

Recommendation 7 : A party receiving a reasonable request from their counterparty to provide their view of portfolio content and valuation in order to facilitate a portfolio reconciliation for the purpose of the collateralization process or resolution of a margin dispute should provide the requested data on a timely basis, according to the relevant documentation and consistent with the ISDA Portfolio Reconciliation Best Practices and Minimum Market Standards papers.

Recommendation 8 : A party in receipt of portfolio content and valuation details from its counterparty to facilitate the collateralization process or resolution of a margin dispute should take commercially reasonable measures so that its sales and trading personnel do not have access in the ordinary course of business to trade details or valuations, except for the purpose of margin dispute resolution, investigation of portfolio differences and similar issue-driven situations, and then only to the limited extent necessary in the circumstances[15].

Step 3 - Resolving the dispute:

The types of dispute are categorized in order of complexity below. Parties will typically prioritize the resolution disputes depending on size and counterparty risk. In addition, within a large portfolio, multiple transactions may positively contribute to a dispute and these will generally be prioritized by size:

1) Capable of remedy through contractual evidence.

The most immediately resolvable type of dispute tends to be where some form of clear and binding evidence such as a confirmation or a credit support document will determine the outcome of a disputed call. These disputes are generally caused by booking and system timing differences and/or reference data irregularities. Once identified, they result in either party adjusting their calculations and reducing or eliminating the disputed amount.

2) Capable of remedy through market or empirical evidence, resolved through internal re-assessment, correction or negotiation.

The value of a trade is typically derived by independently developed proprietary pricing models along with market observations. The mid-market value that firms collateralize from will generally be a function of the bid/offer spread that each respective firm would expect to transact at in the market. This may differ from party to party, based on a number of factors, including divergence

[15] Such procedures may create an unequal playing field, in that it is likely that larger firms, due to their size and greater degree of regulatory scrutiny, are perhaps more likely to have robust procedures in place than other entity types. In implementing this recommendation the market should consider how a consistent treatment can be assured.

in models and illiquid markets. As a result, parties may apply certain tolerances (acceptable differences) depending on the bid/offer spread of the particular contract or instrument and, depending on their prudent risk management policies, may decide not to pursue a dispute. Along with performing a verification of mark to market values, product controllers and risk management generally perform this process or set this guidance.

If a party's calculation is deemed to be erroneous by its controllers, it should be corrected, contributing to a resolution of the collateral dispute. In the event that both parties deem their calculations appropriate, bilateral discussions would commence between the parties' controllers and trading desks in order to reach an agreement that may result in one or both parties adjusting their mark to market calculations, agreeing an acceptable difference, as referred to above, or some other bilaterally agreed remedial action.

3) Capable of remedy through documented formal and legally binding dispute resolution.

If parties cannot come to an agreement, the dispute resolution mechanism outlined in the relevant Credit Support Document will become effective. These are bilaterally negotiated terms, but will typically follow a course of seeking a number of market quotations for the positions in dispute from other market participants. If quotations can be located, an average of these quotations will be applied to the subject transaction and collateral moved appropriately. There are some situations where a market quotation cannot be obtained, then the Valuation Agent, defined in the Credit Support Document, will determine the value for that day only. The process resets the following business day.

Current ISDA Credit Support Documents do not explicitly define operational performance in resolving disputes, stating "parties will consult with each other to resolve disputes", then pursue "actual quotations at mid-market from Reference Market-Makers". It was determined by ISDA members that the industry would benefit greatly from a procedure whereby market participants agree to reasonable timeframes, consistent operational practices and renewed commitment to the critical part of the difference resolution process during the first one to five business days. Further discussion resulted in sharing best practices for resolving price/model based differences. In an effort to improve the current market poll based approach to intractable differences (or true disputes), detailed definition was added around what prices should be used for each market and liquidity situation.

Market participants through 2009 were actively engaged in and formalizing market practice and re-designing the processes currently defined under current ISDA Credit Support Documents, addressing some of the challenges and inconsistencies experienced in appropriately resolving disputes. As part of the ISDA Collateral Roadmap, the "Dispute Resolution Procedure", currently in draft form and undergoing testing and refinement, seeks to clearly define each step and determine minimum standards of performance in the event of margin call disputes. Market adoption of the "Dispute Resolution Procedure" is currently planned for a date to be determined following the conclusion of testing. Market participants will need to focus intensely in order to meet this deadline as there are many issues still to resolve.

The Dispute Resolution Procedure is intended to:

- ensure transparency and engagement in resolving disputes;
- demonstrate market-makers acting as market-makers, committing to providing firm executable prices to be used in the resolution of disputes; and
- establish a clear hierarchy of prices, ensuring that firm executable prices supersede indicative quotes for dispute resolution

3.5.3. Portfolio Reconciliations

Portfolio Reconciliations are used not just in response to a dispute but as part of a proactive daily process to avoid disputes. From 30 June 2009, major dealers now execute daily collateralized portfolio reconciliations for collateralized portfolios in excess of 500 trades between OMG dealers. This was enhanced from a process that executed weekly reconciliations only on portfolios larger than 5,000 trades between major dealers. This covers the majority of the collateralized global OTC derivatives market[16].

In the ISDA Margin Survey 2010 Preliminary Results, respondents reported that they reconciled 56% of their total OTC derivatives portfolios daily[17], with 5% reconciled weekly and 3% reconciled on a monthly basis. Respondents reported approximately 37% of portfolios are reconciled on an ad-hoc basis or in response to disputes.

[16] Source: TriOptima estimates as of May 2009. The TriResolve portfolio matching service is used across 1750 legal entities to reconcile approximately 5 million trades regularly, of which 3 million are between the Fed 15 dealers and subject to daily reconciliation. Of the remainder, which are mostly between dealers and other parties, roughly half are reconciled daily and the other half typically weekly. It is estimated that the OTC derivative market size is around 7 million trades in total, based on DTCC and BIS reported data. Thus, overall, 70% of the market by trade count is subject to weekly or better reconciliation; 60% of the market by trade count is subject to daily reconciliation.

[17] It is important to note that the ISDA Margin Survey 2010 Preliminary Results are based on the number of counterparties reconciled at the stated frequency, not the count of trades. This contrasts with the estimate given in the preceding note, which is based on trade count. The similarity of the numbers arrived at by both methods is notable : 56% reconciled daily by number of counterparties versus 60% reconciled daily by trade count, although note the difference in sampling dates (the former is Dec 31 2009 data, the latter is a May 2009 estimate). Across the portfolio as a whole one would not expect a homogeneous distribution of trade count across counterparties.

4. CONSIDERATIONS FOR COLLATERALIZATION

A review of considerations for collateralization (and non-collateralization), including different rationales per type of counterparty as well as the significance of risks associated with each.

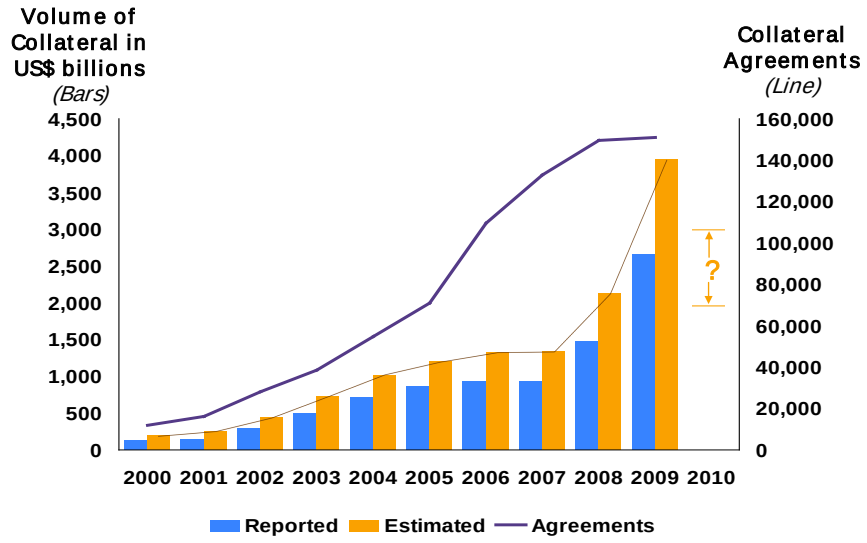
4.1 Considerations for non-collateralization

Collateralization of credit exposures generated by bilateral OTC Derivatives is a key risk mitigant broadly used in the market. The benefits are broadly acknowledged and affect dealers and end users, as well as the financial system generally.

However, it is worth noting that in the very early stages of their development, the OTC derivative markets operated on a largely uncollateralized basis. The number of collateralized arrangements as a proportion of the market has evolved as the market itself has grown.

Figure 5
Collateral in Circulation *(bars and dotted line, LHS)* **and Collateral Agreements in Use** *(solid line, RHS)* **in the Bilateral OTC Derivatives Market, 2000 to 2009**

Note: Data for 2010 (as of December 31, 2009) cannot be computed until all survey results are developed, which will be during April 2010. It is estimated that the 2010 volume of Collateral in Circulation will lie in the range USD 2 to 3 trillion and the number of Collateral Agreements will lie between 160,000 and 180,000. Collateral in Circulation is expected to decline relative to 2009 levels because of portfolio compression and significantly lower market volatility leading to lower mark-to-market values for derivative portfolios.



Source : ISDA Margin Survey 2009 and earlier years

Although market participants generally welcome an increasing use of robust, standardized collateralization arrangements, it is important to recognize the legitimate reasons that some counterparties have for not collateralizing trades and the ability of OTC dealers to risk manage that activity.

OTC derivative dealers have sophisticated resources available to price and risk manage uncollateralized credit and funding risks through their credit departments and CVA desks. At the time of pricing these areas will vet proposed trades and accompanying collateralization arrangements, evaluate the impact or credit capacity and generally attach charges that reflect the costs (or benefits) of the specific collateralization arrangement, as a function of the resulting credit and funding profile. As such it should be clear that the same underlying derivative trade may attract a different cost depending on the terms of collateralization between the dealer and the counterparty.

In addition, OTC derivative dealers are also lending institutions who view the extension of credit through OTC transactions without collateral arrangements as another facet of their overall lending activities, with the result that such extension of credit is priced and risk-managed appropriately.

The purpose of this section is to outline the considerations behind non-collateralization, grouping them by categories and by type of counterparty so that any risks and potential solutions can be derived. The analysis focuses on why market participants might not consider posting collateral to be necessary but it also explores the reasons for which dealers might accept non-collateralization.

The sources used for the analysis below are input and feedback from participants in the ISDA collateral working groups, i.e. including both primary dealers and end users.

4.1.1. Operational and Procedural Burdens

The first type of consideration for non-collateralization is the operational complexity associated with collateralization (negotiating a legal document, monitoring exposures, making cash transfers, etc.), which imposes a minimum requirement of volume of activity to make it economical for infrequent market participants. Counterparties affected by those considerations may include corporate clients, local authorities, and generally smaller institutions.

At a different level, the complexity of some products or organizational structures and processes (e.g. investment advisor acting on behalf of hundreds of funds/accounts) may also significantly increase the cost and resource requirements.

4.1.2. Liquidity Management

The second type of consideration refers to the requirement for parties to be able to access cash or securities to be posted as collateral in addition to their payment and delivery obligations under the terms of the derivative transactions. As an example of how this type of liquidity management issue might affect a specific group of market participants, it is worth noting references to this issue in the "Corporate concerns about OTC Derivative Regulation" paper published by the European Association of Corporate Treasurers in September 2009.[18]

Very often, particularly for long-term hedging transactions, there is a significant mismatch between the timing of the underlying cash flows that are being hedged and the timing of collateral calls associated with potential movements in the mark-to-market value of the OTC derivatives that hedge them. This could apply, for example, to commodity producers hedging the value of their reserves.

Some market participants do not have readily available the type of assets (typically cash of a G7 currency or high quality government bonds as described in Section 7 below) in a size or at a cost that make it

[18] This paper of the EACT includes the following bullet point on page 3: "Increased cashflow risk from margining or alternatively not hedging identified risks would require companies to hold more risk capital and available lines of credit. Corporate activity would be reduced with obvious consequences for the real economy, employment etc"

attractive for them to use or reserve for the purpose of collateralizing bilateral OTC derivatives. For example, a life insurance company in an Eastern European country outside the eurozone may only handle small amounts, if any, of foreign currency cash/assets with limited liquidity at hand, given the long-term nature of its liabilities.

4.1.3. External Restrictions

The third type of consideration is "external" restrictions that are imposed on market participants in the interest of protecting other stakeholders. This could include:

- Credit agreements protecting other creditors. For example, many loan agreements have negative pledge language with only limited carve outs[19] or may have cash flow sweeps for the benefit of the providers of revolving credit facilities.

- Regulators protecting investors in retail investment products. For example, in certain jurisdictions some types of regulated funds cannot post collateral due to limits on concentration risk or as an absolute prohibition.

- Budget or other constraints imposed on local authorities or other public or sovereign entities to control their indebtedness and expenses in order to protect the broader public. This type of mechanism is designed to protect public finances and/or ensure prudent spending but may indirectly force dealers to only trade on an entirely unsecured basis.

- Legal concerns may also inhibit the provision of collateral in relation to particular types of institution in certain jurisdictions where the enforceability of collateral arrangements is not assured.

- Tax issues arising in certain jurisdictions may prevent more widespread adoption of collateral arrangements.

- Structured investment vehicles that give priority to other creditor classes. Due to investor and/or rating agency requirements, many types of SPVs used for distribution of investment products require one way collateralization from the dealers and/or, in any case, are prevented from posting collateral.

4.1.4. Cost Effectiveness and Arbitrage

The fourth type of motivation is simply cost effectiveness.

Counterparties will not collateralize if it is "cheaper" to obtain credit lines from OTC derivative counterparties than it is to pay the cost of securing the additional liquidity lines or, in the case of private equity funds for example, drawing on investors' capital (and, therefore reducing return targets for the "equity" capital).

[19] Many loan covenants include so-called "negative pledge" language which may prohibit the borrower from pledging its assets to secure debt, obviously with the intention that the lender not be left in the situation where the assets of the borrower have been pledged away leaving the lender without recourse to those assets. Generally these negative pledges refer to "indebtedness in respect of borrowed money", meaning other loans; however, some language may have broader applicability and prohibit the pledging of collateral against derivative transactions (bilateral or indeed cleared).

It should be noted that when an OTC dealer enters into an under-collateralised relationship with a trading counterparty the dealer will generally seek to retain some form of symmetry in the collateralization arrangements – i.e. the extent of under-collateralisation will be similar for both counterparties. The reasoning behind this approach is to try to mitigate the asymmetric credit and funding costs that may arise if the counterparty is under-collateralized and the OTC dealer is fully collateralized.

Table 6 below is intended to capture the considerations set out above and outline the different rationales and practices per type of counterparts as well as the significance of the risks associated with each. Operational comments on Independent Amounts, Thresholds, Minimum Transfer Amounts and margin call frequency (which are discussed in Section 6 below), are included in the column headed “Comments”.

It should be noted that Figure 6 (which is based on information from dealers and other market participants as well as, where indicated, results from the ISDA Margin Survey 2010 Preliminary Results) provides a generic treatment; the specific facts and circumstances applicable to any particular market participant could well lead to differing conclusions, and caution should therefore be used when considering this material in other than a generic application.

Figure 6
Summary of Market Practice and Considerations Regarding Collateralization of OTC Derivatives

Counterparty Type	Relative Size	Degree of Collateralization	ISDA Margin Survey Data	Reasons for Providing Collateral	Reasons for Non-Collateralization	Additional Considerations
Dealers	significant	Very high	Banks/Broker Dealers were dealt with together in this respect in the ISDA Margin Survey 2010. 57 percent of respondents in the Preliminary Results reported having collateral agreements in place with between 50 and 89 percent of their bank/ broker-dealer counterparties. A further 21 percent of those responding have collateral agreements in place with between 90 and 99 percent of bank/ broker dealer counterparties and 14 percent stated they had collateral agreements in place with all such counterparties.	Mutual credit risk mitigation Liquidity	System limitations in certain products Accrual rather than mtm positions	Independent Amounts typically not posted, margining frequency typically is daily, low Thresholds and MTAs.
Non-dealer Banks (incl EM)	small	High FX most frequent product not collateralized		Mutual credit risk mitigation Liquidity	System limitations Operational complexity (including liquidity management)	Higher relevance of ratings based thresholds, higher MTAs and less than daily call frequencies independent amounts below certain ratings are common for the smaller or emerging markets institutions
Corporates (incl EM)	small	low	86 percent of respondents in the Preliminary Results reported having collateral agreements in place with between 1 and 49 percent of their corporate counterparties. A survey of members of the Association of Corporate Treasurers was also carried out: all 20 respondents answered "No" to the question "Generally speaking, are your institutions' OTC derivative transactions collateralized?"	Mutual Credit risk mitigation Limited risk appetite by dealers	Restricted by credit agreements Liquidity mismatch when hedging long-term cash flows Systems limitations Cost and complexity of establishing documentary relationship. Operational complexity	Often subject to infrequent posting (e.g. weekly/monthly calls and/or high Thresholds/ MTAs)
Insurance	moderate	high	57 percent of respondents in the Preliminary Results reported having collateral agreements in place with between 50 and 89 percent of their insurance company counterparties.	Mutual credit risk mitigation	System limitations Operational complexity (incl liquidity management)	Eligible collateral often includes a wide range of securities

Table continues overleaf >>>

>>>Figure 6 continued

Counterparty Type	Relative Size	Degree of Collateralization	ISDA Margin Survey Data	Reasons for Providing Collateral	Reasons for Non-Collateralization	Additional Considerations
Sovereign	significant	very low; agreements often one-way where dealers post	54 percent of respondents in the Preliminary Results reported having collateral agreements in place with between 1 and 49 percent of their sovereign counterparties.	Capacity constraints by the dealers	System limitations Operational complexity	Lower rated sovereigns collateralize b/c of dealer requirements Higher Thresholds, no Independent Amounts and less than daily call frequencies may be in place where margin agreements exist.
Supra-nationals	significant	low agreements often one-way agreements where dealers post	54 percent of respondents in the Preliminary Results reported having collateral agreements in place with between 50 and 89 percent of their supranational counterparties.	Capacity constraints by the dealers	High creditworthiness / others not asking System limitations Operational burden	Often have rating based agreements where collateral would be posted following a downgrade. Higher Thresholds, no Independent Amounts and less than daily call frequencies may be in place.
Local Authorities	small	low	57 percent of respondents in the Preliminary Results reported having collateral agreements in place with between 1 and 49 percent of their local authority counterparties.	Capacity constraints by the dealers	[High creditworthiness / others not asking] System limitations Operational burden Limited liquidity Budgetary constraints through use of cash accounting	Higher Thresholds, no Independent Amounts and less than daily call frequencies may be in place where margin agreements exist.

Table continues overleaf >>>

>>>Figure 6 continued

Counterparty Type	Relative Size	Degree of Collateralization	ISDA Margin Survey Data	Reasons for Providing Collateral	Reasons for Non-Collateralization	Additional Considerations
Hedge Funds	significant	very high	43 percent of respondents in the ISDA Margin Survey 2010 Preliminary Results indicated that they had collateral agreements in place with 90-99 percent of hedge funds. Another 31 percent indicated that they had agreements in place with all hedge funds.	Limited risk appetite by dealers	Large asset managers that combine HF and non-HF vehicles would block trade and prefer to avoid operational burden (exceptional)	Margining frequency is typically daily, Independent Amounts usually required to be posted from hedge funds to dealers, Often utilize MTAs but not Thresholds. Ratings triggers do not apply.
Mutual / Pension Funds (through Asset Managers)	significant	high	50 percent of respondents in the Preliminary Results reported having collateral agreements in place with between 50 and 89 percent of their mutual fund / pension fund counterparties.	Capacity constraints by the dealers Mutual credit risk mitigation (sometimes forced by regulation)	High creditworthiness / others not asking System limitations Operational burden Regulation does not allow (e.g. Spain) Limited eligible liquidity	Eligible collateral often includes a wide range of securities
Private Equity Funds	small	low	This category wasn't specifically addressed in the ISDA Margin Survey	Limited risk appetite by dealers (particularly for long dated hedges)	Exposure within risk appetite (incl effect of alternative mitigants) Competitive pressures Commercial pressures Hedging/right way trades	
SPVs	[small]	Dealers rely on ranking relative to assets in SPV and structure SPVs may require one-way posting	57 percent of respondents in the Preliminary Results reported having collateral agreements in place with between 1 and 49 percent of their SPV counterparties.	Requirement from dealers given structural features	Structure offers significant protection resulting in no risk given hedging/right way trades	

Table ends

5. OPERATING MODELS

An analysis of the different operating models for collateral management that can be used by market participants, including those performed in-house versus different outsourcing models.

There are two general models that can be followed when collateral management is outsourced and these are illustrated below. The first shows the flow when the collateral agent and the custodian are different entities, the second shows the flow when they are the same entity, as is often the case. Please note that in these models, "Client" is the entity that is outsourcing their collateral operations, "Collateral Agent" is the entity that is performing the collateral operations on behalf of the client, and "Counterparties" are the client's counterparties to the margin agreement. In both models it is important to have service level agreements that clearly outline roles and responsibilities between the parties. Some of the critical interactions between the Client and their Collateral Agent which need to be managed include setup of correct static data (such as any Thresholds or MTAs) at the beginning of the margining relationship, ongoing transaction flows for daily margining and management/sourcing of the collateral pool.

Figure 7
Collateral Management with a Separate Custodian

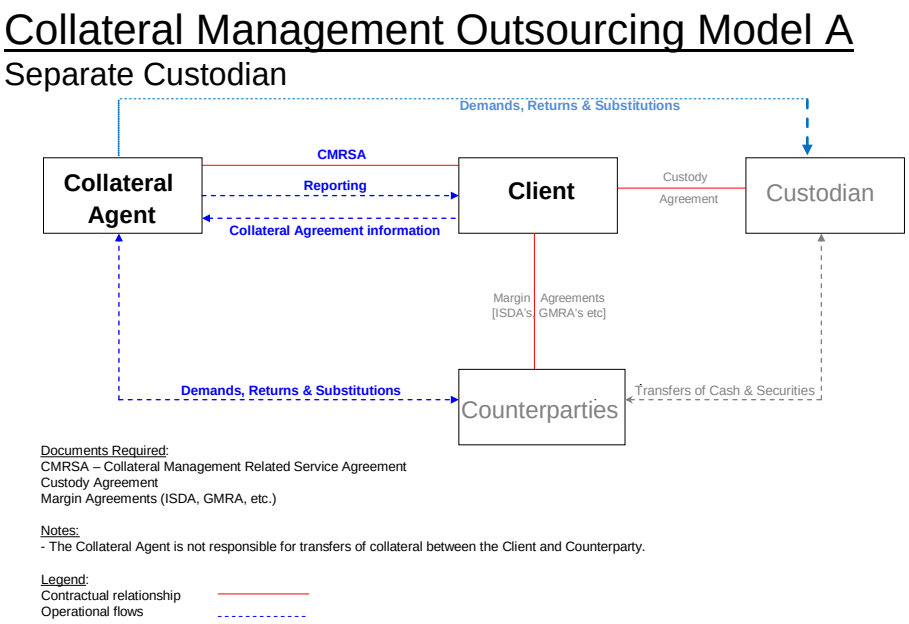
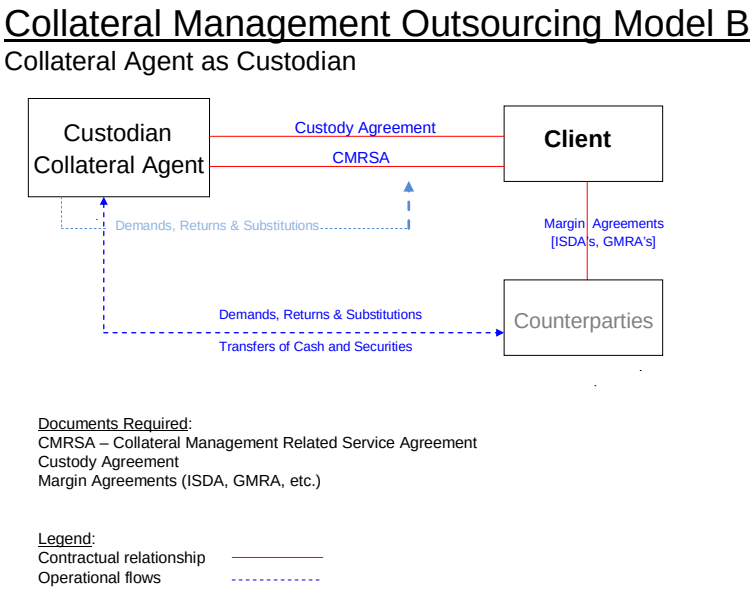


Figure 8
Collateral Management with a Collateral Agent



Only 20% of the respondents in the ISDA Margin Survey Preliminary Results reported using a third-party service provider such as a collateral agent to manage collateral on their behalf; this is likely not exclusive for all trades. If the collateral management function is not outsourced, then the function will be carried out in-house. The main requirements for delivering an in-house solution are a high level of internal business knowledge, or experienced collateral management practitioners working in conjunction with internal development teams. This does lead to a continued cost and the requirement to keep up with market and regulatory initiatives and developments. The size and structure of an in-house capability will be determined by the scale and complexity of the transactions that are being supported. This could vary from a requirement for a small corporate entity to support one trade with one client, perhaps on a spreadsheet, to a dealer which will have hundreds in the team in global locations with multiple technologies. In general, the following considerations will be made for determining the scale and type of operations:

- Organization. Collateral Management is a function that supports the conversion of credit risk into operational and other risks and manages them appropriately. Therefore, collateral management functions frequently are part of an Operations department, although they can also be part of a Credit Risk department, or Finance[20]. Depending on the global reach required to support clients, the organization can be in one location, or across the globe, and for the large dealers, often supported by an outsourced or offshore capability.

[20] At the larger, more sophisticated end of the collateral management market some firms may actually sub-divide their collateral functions recognizing different specializations and the need for stronger alignment of certain activities with other functions such as liquidity management and credit risk management. One resulting operating model may have a collateral operations function and then separate functions supporting collateralized counterparty risk analysis and reporting, collateral risk management, and treasury or liquidity management. By no means do all firms adopt such models, although they are becoming more common over time.

- Technology. The technology should support the sophistication required. A spreadsheet could suffice for very simple operations, but a collateral management system would likely be deployed for simple solutions through to the most complex requirements. Systems are either developed in house, or commercial solutions are available. There are a number of commercially available solutions, which cover both the collateral management functions, and also the portfolio reconciliations, sometimes within the same system. The Portfolio Reconciliations Feasibility Study published by ISDA on 18 December 2009 deals with recommendations for a coherent approach with multiple solution providers.

- Custodian network. Even if the collateral management function is carried out in-house, it is likely that the custodian network used may include custodians for different currencies that are both in-house and external. Market participants should work with their network management teams to ensure that an appropriate custodian structure is in place to support the operations.

For carrying out the function in-house, all of the tasks described under the main operational process flow will need to be supported. For an outsourced model, the four key requirements that need to be supported in-house are:

- collate data inputs - set up legal and client data;
- collate date inputs – receive trades and valuations;
- select / book collateral, select optimal collateral, to ensure that the service provider has the right collateral from which to choose or utilize; and
- manage collateral, to perform substitutions, the client will determine most of the occasions when a substitution is required.

Concerning the type of technology used by market participants to manage the collateral process, there are a range of solutions in place, including in-house, outsourced, vendor platforms and hybrid solutions. As a general rule, for collateral management systems developed before 2000, in-house solutions were developed, and from 2000 onwards, commercial vendor solutions were more commonly available and were used more extensively. For portfolio reconciliations, the Portfolio Reconciliation Feasibility Study published on 18 December 2009 evaluates different options for how reconciliations using different systems may be undertaken. One observation of note is that the Fed 15 dealers all use TriResolve for portfolio reconciliation.

It is important that industry developments are advanced in a manner that is scalable and advances straight-through processing (“STP”). This will ensure that operational risk is not increased to a disproportionate degree to the credit risk which is decreased. Central client clearing is an important industry development that is being pursued through multiple clearing houses each using different standards.

While there is currently an ISDA Collateral Infrastructure Working Group that has been facilitating discussions around the implementation of central client clearing, the operational processes and requirements can vary significantly between clearers and markets.

Recommendation 9 : In order to promote market efficiency and to reduce systemic risk through standardization, ISDA should nominate a Working Group to develop in partnership with clearing house operators a set of guiding principles and practical recommendations for common Straight Through Processing to be adopted by all entities that interact with the bilateral collateralization process (including central clearing houses).

Following the completion of the Roadmap for Collateral Management, a working group was formed to address Collateral Management Best Practices. The Best Practice Group will be publishing best practices for various operational processes necessary for collateralization. These operational processes are described in Section 3 of this Paper.

6. MARKET PRACTICE

A description of the consistency/predictability of application of the collateral structures and processes used by market participants

Collateral agreements are negotiated on a bilateral basis between parties to the derivatives transaction. This can typically begin with the relevant sales person or business manager, and involve the credit, legal and operations areas. Collectively, these areas work together to help negotiate the detailed terms of the collateral agreement.

Some of the key terms relating to collateralization that may vary by counterparty include Independent Amounts, Thresholds, inclusion of downgrade triggers, Minimum Transfer Amounts and call frequency.

A summary of how some of these terms may be applied to different categories of market participants is included in the collateralization and motivations table (Figure 6) in Section 4 above. A description of considerations for utilizing these terms and how they may inter-relate to each other is outlined below.

6.1 Independent Amounts and Thresholds

Independent Amount

The use of Independent Amounts has typically been a one way obligation for an end user (typically a hedge fund) to post additional collateral to a dealer. The decision to require posting of Independent Amounts is based on a number of factors, including, but not limited to:

- The credit quality of the end user, and the nature of their relationship with the dealer. If the end user is significantly more creditworthy than the dealer, the Independent Amount may be paid by the dealer to the end user, though this is rare.

- The type of account or vehicle that is entering into the derivative transactions (e.g. whether or not leverage is used, the percentage of liquid assets held in relation to swap notional value, etc.)

- The type of underlying exposure being taken – the riskier the exposure, the greater the Independent Amount requirement will be.

- The volatility of a particular transaction or the derivatives portfolio.

Threshold

The underlying commercial reason for Thresholds is that often parties will be willing to take a certain amount of credit risk to each other (equal to the Threshold) before requiring collateral to cover any additional risk. Banks, in particular, are in the business of extending credit and may (to some degree) think about a Threshold as being similar to the idea of extending a loan - both are forms of unsecured credit exposure.

When considering the operation of Independent Amounts and Thresholds in practice, it is important to note two points:

- As can be readily seen, Independent Amounts and Thresholds tend to work in opposition to one another in relation to any specific party under an agreement, which is why a particular collateral agreement will typically employ one or the other in relation to each party.

- In respect of Independent Amounts, it is also obvious that if both parties are subject to an Independent Amount they will tend to cancel each other out, which is why a particular collateral agreement will require Independent Amounts from neither party or one party, but not both parties.

Some Thresholds will also vary based on credit ratings. As mentioned above, this may be resisted to avoid an obligation to post potentially large amounts of collateral at times of economic difficulty for the downgraded party. However, we note that all the respondents to the ISDA Margin Survey 2010 Preliminary Results reported basing Thresholds on credit ratings in some circumstances, while 27% also based thresholds on credit default swap spreads in some circumstances.

As has been mentioned, for hedge funds, where Independent Amounts are often required, they will nevertheless have Minimum Transfer Amounts (rather than Thresholds) applicable to them. This avoids the need for a transfer of small amounts of collateral.

Minimum Transfer Amounts

Collateral agreements will also specify other collateralization terms on the basis of costs and benefits from both an operational and credit perspective. One example is Minimum Transfer Amounts, which serve the purpose of eliminating the need to exchange margin if the margin call calculations result in a margin call which falls below the Minimum Transfer Amount. An important distinction from Thresholds is that, if the MTA is exceeded, the whole collateral amount is posted (whereas for Thresholds, only the excess over the Threshold is posted). The benefit of applying a MTA is that the number of margin calls (and therefore some operational burden) can be reduced on amounts where firms may consider the credit risk to be acceptable.

6.2 Margin Call Frequency

Margin call frequencies are another key area of collateralization with significant operational and credit risk implications. Most collateral agreements will require daily calculations and collecting/returning of collateral. However, some collateral agreements can specify weekly or monthly calculations which can result in increased credit risk with reduced operational requirements. The common provision with respect to frequency of valuations for each of a number of different market participants is set out in the table (Figure 6) in Section 4 above.

6.3 Notes on Market Practice

When a firm decides on its strategy for mitigating credit risk, even if collateralization is selected as part of a suite of risk mitigation techniques, then there will still be some credit risk that remains uncollateralized due to a combination of Thresholds, Independent Amounts, Minimum Transfer Amounts, call frequency, and disputes. If a firm is relying on collateralization to reduce credit risk to a minimum, then a combination of zero or low Thresholds, lower Minimum Transfer Amounts, Independent Amounts (for a one way application of Independent Amount – bilateral would cancel the other side out) and daily calls will help to reduce the credit risk caused by amounts falling outside the collateralized figures.

As previously highlighted, having ratings-based Thresholds can impose additional liquidity constraints at a time when a firm is experiencing potential difficulties on a downgrade, and the increased posting amounts could exacerbate this distress. Hence not having downgrade triggers would remove an additional source of immediate pressure during a time of increased financial stress.

The decision to include any ratings-based Thresholds or other triggers should be taken as part of complex interactions involving collateral, liquidity and credit risk managers, as well as the business areas

and legal. The key objective is to select a structure that addresses the risk management needs of the counterparties, ensures that any liquidity stress that is created as a result is well characterized, predictable and well-managed, and is operationally feasible.

Recommendation 10 : The use of credit-based Thresholds that reduce as credit ratings decline or credit spreads widen should be carefully considered. Parties that elect to use these elements in collateral arrangements should recognize that they may have a ratcheting effect that reduces credit risk to one party while simultaneously increasing liquidity demands on the other party if the latter suffers credit deterioration. Accordingly, both parties should ensure that they have in place appropriate monitoring to (a) detect and respond to credit deterioration in their counterparty and (b) forecast and manage the liquidity impact of their own credit deterioration. Alternatively, the use of fixed thresholds and/or frequent margin calls should also be considered, and all collateral structures should be considered in the context of guarantees and other credit risk mitigants that may be available.

7. COLLATERAL ASSET CONSIDERATIONS

A discussion of the current management of collateral as it relates to collateral quality and liquidity, including control processes, consideration of where and how collateral is held and liquidity risk posed by rehypothecation.

This section will review considerations for collateral quality, collateral inventory management and rehypothecation liquidity risk.

7.1 Collateral Quality

The type of collateral any firm will receive is based upon the stated eligible collateral within the applicable credit support arrangement. The following considerations of the collateral should be considered when determining eligible collateral:

- Volatility. There is a risk that when a firm needs to liquidate or sell collateral, the price realized for the collateral asset may not be similar to the price used earlier to assess the value of the asset.

- Liquidity. There is a risk that if it becomes necessary to sell a collateral asset, it may not be sufficiently liquid so that the sale can be accomplished in a reasonable period and at a reasonable price.

- Credit Quality. There is issuer risk if the issuer of the collateral asset does not have a sufficiently strong credit rating, becomes subject to credit distress or defaults. Although issuer risk is primarily an issue for the Collateral Taker, the Collateral Provider should also consider the potential to have to replace or augment at short notice collateral previously pledged that becomes impaired in value due to issuer risk.

- Custody and Settlement Efficiency. If the collateral is not easy and cost effective to hold and settle through a central securities depository, then there is increased operational risk, and potentially settlement risk due to often longer settlement cycles and local depositary operating times. Examples of central securities depositories are Euroclear, Clearstream and DTC.

- Pricing Ease and Transparency. If the price of the collateral is not readily available through external market data sources such as Bloomberg or Reuters, this is likely to lead to disputes in the margin calculation, and can indicate a lack of liquidity in the particular security. There are many diverse practices where some collateral can be valued internally, some from external sources, or if a TriParty arrangement is used, often that third party will provide the valuation.

- Collateral Asset Correlation. There is correlation risk if the collateral is highly correlated to the counterparty. The main risk is for “wrong way” collateral, but “right way” collateral on certain trades can be beneficial.

- Collateral Asset Concentration. If collateral held is highly concentrated to any one issuer, sector or country, then the associated issuer, sector or country risk may arise.

- Legal Considerations. There is legal risk if local formalities regarding the creation and perfection of security interests cannot easily be satisfied.

Using the above considerations, historically firms have developed a standard collateral list to ensure that the collateral assets are of sufficient quality and sufficiently liquid (with haircuts) to mitigate some of the above risks. Deviation from these lists during the negotiation process in relation to a particular counterparty would be by exception. Whereas dealers would look to have a larger standard list, non dealers may only have a small selection of available collateral. For example, a Euro Bond Fund may only have Euro bonds readily available as collateral. It is a key consideration during the negotiation of collateral agreements to tailor the specific list of eligible collateral to be suitable for both parties.

Most large dealers have standard list of eligible collateral and a defined process for reviewing suitability of proposed collateral. While a primary consideration is the ability of the parties to both source the collateral assets selected and to hold them in custody, it is also important for both parties to consider the liquidity and funding impact of holding such assets. How will a collateral pledgor source eligible collateral? What will the cost of funding be? And also, how will a collateral receiver dispose of (eg, hold, invest, rehypothecate or use) incoming collateral? Will both sourcing and disposition of the selected collateral assets continue to be viable in stressed market conditions?

According to the ISDA Margin Survey 2010 Preliminary Results approximately 82% percent of collateral posted is cash and a further 15% is in the form of government securities (Figure 9).

Figure 9
Assets Types Employed as Collateral in the Bilateral OTC Derivative Market

		Collateral Received Percent	Collateral Delivered Percent
Cash	USD	42.9	47.0
	EUR	34.2	26.5
	GBP	2.4	4.1
	JPY	1.4	1.1
	Other	1.1	3.2
	Subtotal	***81.9***	***81.8***
Government Securities	United States	2.8	4.3
	European Union	3.0	6.7
	United Kingdom	1.0	2.3
	Japan	1.5	0.9
	Other	1.2	0.3
	Subtotal	***9.6***	***14.5***
Others	Govt. agency securities	1.6	0.9
	Supranational bonds	0.2	0.0
	Covered bonds	0.1	0.1
	Corporate bonds	2.6	0.8
	Letters of credit	1.0	0.1
	Equities	2.2	1.2
	Metals and commodities	0.0	0.0
	Other	1.0	0.6
	Subtotal	***8.5***	***3.7***

Driven by the considerations described above, modern market practice may include a focused review not only of the credit quality of collateral assets, but of their sourcing, liquidity and funding cost. Where

eligible collateral is negotiated to include such 'non standard' (i.e. not G7 debt / major currency) arrangements, this is often subject to senior risk and business approval; funding considerations will be taken into account and increasingly likely priced into any transactions executed.

The appraisal of collateral liquidity and pricing should be subject to very frequent review. This may be done by ratings checks on the asset and also its current repo cost in the marketplace for a gauge on how liquid the asset is. Any concentration limit breaches should be captured and the substitution process carried out when the asset rating changes or becomes illiquid.

Certain types of collateral such as cash and G7 government bonds have low levels of liquidity and pricing risk. This can be beneficial when it becomes necessary to close out transactions with a counterparty and liquidate the relevant collateral. During this process there can be a change in the value of the collateral between the default of a party and the close-out of positions and collateral with that party.

Recommendation 11 : Firms should consider the quality and liquidity of collateral when including assets as eligible collateral for each credit support arrangement. In particular, in the case of new collateral agreements and as existing agreements are subject to substantial re-negotiation, for non-cash collateral firms should perform analysis and apply appropriate haircuts and concentration limits such that post-liquidation proceeds of collateral will likely be sufficient to cover expected credit exposure and can be realized in a reasonable period even in distressed market conditions.

It is often important commercially for the Collateral Taker to have the unrestricted right to use securities received as collateral until the collateral must be returned to the Collateral Provider under the terms of the relevant collateral arrangement[21]. This unrestricted use includes the ability to sell the securities to a third party in the market, free and clear of any interest of the Collateral Provider.

Other uses would include lending the securities or selling them under a securities repurchase (repo) agreement or repledging (or recharging) them. In this context, the term "rehypothecation" is used, although it should be noted that its commercial meaning differs from its legal meaning, which can give rise to confusion in some cases. Commercially, the term "rehypothecation" is generally used to signify *any* use of collateral by a collateral holder (including sale and repo) whereas its strict meaning is merely to repledge. Please note that the term is used in the broader commercial sense in this Paper.

In many jurisdictions, repledging is permitted, under certain conditions, while a broader use of the collateral by the Collateral Taker is not.

If the Collateral Taker needs unrestricted use of the collateral, the Collateral Taker will not want to use the English CSD as it contains a complete ban on sale, loan, rehypothecation or other use (as this would risk extinguishing the security interest).

Under the English CSA, the Collateral Taker owns any assets transferred to it under the Annex, and therefore is completely free to do what it likes with such assets. Although it is not a title transfer mechanism (as described in Section 2 above), the New York CSA also permits the Collateral Taker to use posted collateral. The Collateral Taker is able to sell, pledge, rehypothecate, assign, invest, use, commingle or otherwise dispose of, or otherwise use in its business any posted collateral it holds and to register any posted collateral in the name of itself, its Custodian or a nominee.

[21] For a discussion of the risks associated with permitting rehypothecation of Independent Amounts, please see "Independent Amounts", ISDA/MFA/SIFMA 2010.

For clarity, it should be noted that under most collateral arrangements the right to receive collateral is bilateral (although specific terms may asymmetrical within that bilateral framework), and either party may at times be the Collateral Taker.

7.2 Collateral Inventory Management

In assessing where and how collateral is to be held, there are two main considerations:

- first, whether collateral assets are held in accounts segregated from the Collateral Taker's own assets (either mixed with proprietary assets or with assets over which there is a right to rehypothecate or reuse); and

- second, whether collateral assets are held in domestic settlement accounts or in central securities depositories.

Regarding segregation, as a general rule, assets over which there is no right of rehypothecation or use should be segregated from a firm's own assets and assets which can be rehypothecated or, more broadly, used, and may be subject to local regulatory rules, for example the UK FSA Client Asset Rules, need not necessarily be.

Collateral will either be held with a custodian or directly by the receiving party. Each firm must decide which assets can be rehypothecated (where a security interest applies) or used (for title transfer), and provide appropriate documentation and recording in the books and records to identify which counterpart has delivered what collateral.

Further consideration of the different means of holding Independent Amount collateral (and particularly issues in relation to segregation) is set out in the Independent Amounts White Paper.

While certain agreements may allow rehypothecation, consideration should also be given to domestic settlement rules, which may operationally prevent further re-use. Therefore the operational re-use of the asset may influence where you hold the collateral, if a choice exists between a domestic and a central securities depository.

7.3 Rehypothecation Liquidity Risk

This section will consider the liquidity risk generated by rehypothecation of collateral (termed "rehypothecation liquidity risk").

All but one of the respondents in the ISDA Margin Survey 2010 Preliminary Results reported rehypothecating collateral. As a group, the dealers in this subsample rehypothecated 82% percent of collateral received. For this subsample, 39% of the Independent Amount delivered and 3% of variation amount delivered was posted to a central counterparty.

It should be noted that approximately 82% of all collateral delivered and received is in the form of cash, which is inherently fungible and therefore reported within the rehypothecation data above[22] (See Figure 9). It is to be expected that the rehypothecation rate of securities collateral is likely lower.

[22] Technically cash collateral that is re-used cannot be said to be "rehypothecated", which term strictly speaking applies only to pledge (security interest) securities collateral. However, in common usage the term "rehypothecation" is used loosely to apply to both.

Rehypothecation liquidity risk exists where a particular non-cash collateral asset may be re-used by a succession of counterparties in a chain. If there was requirement to return that collateral to the original pledgor of the asset, each of the successive Collateral Takers would be obliged to retrieve and then remit the asset back down the chain; if one member of the chain were unable to retrieve the particular asset and it was also "special", meaning hard to acquire in the market, this could in theory cause failure in the collateral recall process lower down the chain. However, although rehypothecation of collateral clearly does occur in the market, this multiple re-use chained scenario is believed to be rare for chains of any significant length beyond a few counterparties. This is the result of inefficiencies in the operational and settlement process that mean it is not practical to build long chains within any particular settlement cycle, coupled with the fact that most collateral is cash or securities that are readily available in fungible form in the market. Parties receiving more exotic collateral assets that might be hard to retrieve will typically not re-use them to avoid this risk.

However, it is important that parties maintain a reasonable range or alternative eligible collateral assets in their collateral agreements, because in extreme circumstances even normally liquid securities may become relatively scarce. For example, US Treasuries became expensive during the credit crisis as they were seen as very safe collateral by parties, hence the demand for them increased. Where they were the only eligible collateral in some collateral arrangements, they became difficult to source. Parties should therefore include a range of alternative collateral types as eligible under their agreements and monitor concentration limits where appropriate.

Recommendation 12 : All parties should, subject to local law requirements, continue to be able to hold collateral to cover Variation Margin (VM) free of any segregation requirement, restriction on rehypothecation or other limitation. (See the "ISDA Independent Amounts White Paper" for additional information)

The Independent Amounts White Paper has considered bankruptcy-remote solutions for Independent Amounts, where rehypothecation is not permitted, but also recommended that variation margin is not segregated (for further detail, please see the "ISDA Independent Amounts White Paper", which is expected to be published shortly). The variation margin represents, as the sum of the mid-market mark to market values of transaction, an approximation of the gain or loss that would arise on the unwind of the trade at a particular time. It is approximate due to a number of factors, described elsewhere in this Paper, including the cure period (where the value of the trade may change from the time of default to time of the unwind,) and that the unwind is likely to be at the bid price, not the mid price. The mid price is used for routine collateral calculations as either party could default. On default, the variation margin would approximately equal the amount of gain or loss on a trade and be subject to netting and/or set-off. Therefore there is no need from a risk perspective to segregate variation margin, and furthermore to do so would have a material detrimental economic impact on all market participants (banks, asset managers, corporates, governments and others). ISDA's 2009 Margin Survey estimated the total collateral in circulation at approximately USD 4 trillion, much of that variation margin.

In addition, it should be noted that, as a technical legal matter, segregation of any collateral taken under a title transfer form of collateral agreement would raise significant risk of recharacterization of the agreement, with consequences as described elsewhere in this Paper.

The re-use of assets is therefore a key factor in both managing a firm's margin financing costs and in managing recharacterization risk. Daily processes at large firms typically include monitoring the liquidity and credit quality of the assets received from and delivered to all counterparties. Although performed less frequently perhaps, all other market participants should also be cognizant of the liquidity risks associated with collateral and potential margin calls, and manage their overall liquidity profile accordingly.

Increasingly dealers are assessing the cost of their collateral more regularly and incorporating it into the pricing of any trade. This naturally leads to the review of eligible collateral types and will shape what the list of preferred collateral would be. Deviations from this may result in a higher cost of trading to the client or a higher internal charge to be absorbed within the dealer. These dynamics are advantageous to the market as a whole because they promote more accurate, comprehensive pricing of risk. This in turn allows better client pricing, reducing the cost to clients where a lower risk profile is presented and increasing it in an explainable, logical manner where a higher risk profile is presented.

Annex

Summary of Recommendations

The Market Review has taken a broad based perspective on current practices and risks relating to the use of collateralization. Accordingly the recommendations presented in the Paper are similarly broad and call for responses from a wide range of market participants including individual firms, industry associations, regulators, and legislators. Each recommendation should be read in the context of the discussion in which it appears, but for convenience of reference all of the recommendations in the Paper are summarized here.

Recommendation 1 : Subject to relevant capital standards and supervisory oversight (where applicable) parties active in the bilateral OTC derivative markets should have the responsibility and the authority to make decisions regarding the credit risk they assume, including the potential use of credit risk mitigation measures such as collateralization, insurance or other credit enhancement techniques. *(See page 7)*

Recommendation 2[23] : National, Regional, and State legislative bodies should review applicable laws within their jurisdiction and take steps to ensure that netting and collateral provisions, (including those relating to security interests), typically used in the bilateral OTC derivative market are promptly enforceable in the event of insolvency, bankruptcy, administration, conservatorship and other similar proceedings affecting all market participants. *(See page 10)*

Recommendation 3 : Consideration should be given to ensure there is a level playing field across the market in legislation and regulation with minimal variation due to geography and entity type[24]. *(See page 10)*

Recommendation 4 : ISDA, SIFMA, MFA, and market participants should work together to develop standard provisions that may be incorporated into documents for Third Party Custodian and Tri-Party Collateral Agent IA holding arrangements. See also the "ISDA Independent Amounts White Paper" for additional information. *(See page 12)*

Recommendation 5 : ISDA should continue the drive towards standardization of format and electronic communication of margin calls in the market, coordinating across market participant firms and vendors who should create fully interoperable solutions that improve market efficiency. *(See page 24)*

Recommendation 6: The requirement to receive consent ahead of agreeing to a substitution differs dependant on the choice of ISDA Credit Support Document and the terms of the particular document. ISDA should investigate whether the treatment of consent can be standardized between the English CSA and the New York CSA and determine whether a template English CSA or New York CSA can be developed that treats substitution requests as non-consensual (for new collateral agreements or existing agreements that are subject to re-negotiation). *(See page 26)*

[23] See note 7
[24] See note 8

Recommendation 7 : A party receiving a reasonable request from their counterparty to provide their view of portfolio content and valuation in order to facilitate a portfolio reconciliation for the purpose of the collateralization process or resolution of a margin dispute should provide the requested data on a timely basis, according to the relevant documentation and consistent with the ISDA Portfolio Reconciliation Best Practices and Minimum Market Standards papers. *(See page 29)*

Recommendation 8 : A party in receipt of portfolio content and valuation details from its counterparty to facilitate the collateralization process or resolution of a margin dispute should take commercially reasonable measures so that its sales and trading personnel do not have access in the ordinary course of business to trade details or valuations, except for the purpose of margin dispute resolution, investigation of portfolio differences and similar issue-driven situations, and then only to the limited extent necessary in the circumstances. *(See page 29)*

Recommendation 9 : In order to promote market efficiency and to reduce systemic risk through standardization, ISDA should nominate a Working Group to develop in partnership with clearing house operators a set of guiding principles and practical recommendations for common Straight Through Processing to be adopted by all entities that interact with the bilateral collateralization process (including central clearing houses). *(See page 41)*

Recommendation 10 : The use of credit-based Thresholds that reduce as credit ratings decline or credit spreads widen should be carefully considered. Parties that elect to use these elements in collateral arrangements should recognize that they may have a ratcheting effect that reduces credit risk to one party while simultaneously increasing liquidity demands on the other party if the latter suffers credit deterioration. Accordingly, both parties should ensure that they have in place appropriate monitoring to (a) detect and respond to credit deterioration in their counterparty and (b) forecast and manage the liquidity impact of their own credit deterioration. Alternatively, the use of fixed thresholds and/or frequent margin calls should also be considered, and all collateral structures should be considered in the context of guarantees and other credit risk mitigants that may be available. *(See page 45)*

Recommendation 11 : Firms should consider the quality and liquidity of collateral when including assets in the eligible collateral schedule for each credit support arrangement. In particular, in the case of new collateral agreements and as existing agreements are subject to substantial re-negotiation, for non-cash collateral firms should perform analysis and apply appropriate haircuts and concentration limits such that post-liquidation proceeds of collateral will likely be sufficient to cover expected credit exposure and can be realized in a reasonable period even in distressed market conditions. *(See page 48)*

Recommendation 12 : All parties should, subject to local law requirements, continue to be able to hold collateral to cover Variation Margin (VM) free of any segregation requirement, restriction on rehypothecation or other limitation. See also the “ISDA Independent Amounts White Paper” for additional information. *(See page 50)*

Appendix I

ISDA sources referred to in the Paper

- "Independent Amounts" (Part I / Release 1.0), ISDA, SIFMA, MFA, October 2009
- "Independent Amounts" (Release 2.0), ISDA, SIFMA, MFA, March 2010
- "Roadmap for Collateral Management", ISDA, June 2009
- "Standards for the Electronic Exchange of OTC Derivative Margin Calls", ISDA, November 2009
- "2009 Collateral Dispute Resolution Procedure", ISDA, September 2009
- "User's Guide to the ISDA Credit Support Documents under English law", ISDA
- "User's Guide to the 1994 ISDA Credit Support Annex", ISDA
- "User's Guide to the 2001 ISDA Margin Provisions", ISDA
- "Feasibility Study: Extending Collateralized Portfolio Reconciliations", ISDA, December 2009

Appendix II

About the ISDA Collateral Steering Committee

Introduction and Background

The financial crisis has driven an increase in the use of collateralization as a risk mitigation tool. Amid the volatility in the financial markets, collateral management programs continue to expand, covering increased trade volumes and credit exposures. During this time, the ISDA Collateral Steering Committee has worked with banking supervisors, ISDA member firms and vendors to enhance market resilience through a proactive program of collateral management practice and infrastructure improvements. These initiatives reflect, in part, recommendations set out by the Counterparty Risk Management Group III ("CRMPG III"), in particular relating to portfolio reconciliation and dispute resolution. The ISDA Collateral Steering Committee continues to drive an ambitious agenda of future improvements to market practice and infrastructure relating to counterparty risk management and collateralization.

The ISDA Collateral Steering Committee and its Working Groups

ISDA and its member firms have made a significant commitment of resources to collateral management over the past decade, but in particular in response to the credit market crisis of 2007-2009. Some recent initiatives concluded by the ISDA Collateral Steering Committee include:

Jul 31 2008	First regulatory commitments regarding collateral included in the July 3 regulatory commitments letter
Aug 2008	ISDA published the Portfolio Reconciliation in Practice white paper
Dec 31 2008	Major Dealers achieved weekly inter-dealer reconciliation of portfolios exceeding 5,000 trades
Dec 31 2008	Major Dealers established adequate resources to identify and resolve portfolio differences
Dec 31 2008	Major Dealers created escalation procedures for resolution of material differences
Feb 13 2009	Major Dealers started to report monthly portfolio reconciliation activities to the supervisors
Mar 31 2009	Major Dealers developed a risk-based tolerance to replace the fixed $20mm level
May 31 2009	Major Dealers execute daily collateralized portfolio reconciliations
Jun 2 2009	ISDA published the Roadmap for Collateral Management
Jun 2 2009	ISDA published the first phase of the Dispute Resolution Procedure
Jul 15 2009	ISDA published the second phase of the Dispute Resolution Procedure for public comment
Sep 30 2009	ISDA published the complete Dispute Resolution Procedure and Implementation Guideline
Oct 22 2009	ISDA published Part 1 (Release 1.0) of the Independent Amount white paper
Nov 13 2009	ISDA published Standards for Electronic Communication of Margin Calls
Dec 18 2009	ISDA published Portfolio Reconciliation Extension Feasibility Study
January 2010	ISDA published Best Practices and Market Minimum Standards for Portfolio Reconciliation

Projects in progress and anticipated publication dates include:

March 2010	Release 2.0 of the Independent Amount white paper

March 2010	Portfolio Reconciliation Implementation Plan
March 2010	Market Review of OTC Derivative Bilateral Collateralization Practices
June 2010	Collateralization Best Practices

The ISDA Collateral Steering Committee comprises signatory firms to the 2009 ISDA Collateral Roadmap, principally the major broker-dealers and buyside firms. The ongoing work of the committee is taken up through its working groups which are open for voluntary membership by buy and sell side firms (including in some cases, vendors). Activities of the committee are communicated via periodic Collateral Market Update conference calls to for all members of ISDA's Collateral Management mailing list of circa 1100 members. Firms should evaluate their contributon to market participation and ensure that they are appropriately represented in the various working groups.

Collateral Steering Committee Working Groups – Terms of Reference and Activities

The Collateral Steering Committee working groups take their terms of reference from the relevant regulatory commitments set out in the letters of July 31 and October 31 2008, and the Roadmap letter of June 2, 2009. The groups are comprised of ISDA collateral practitioners registering interest and having expertise in the subject-matter of the group remit. Working groups exist for the purpose of implementing specific mandates and (where applicable) for recommending future targets within their activities detailed below:

1. **Potential Industry Improvements Working Group**

   Created in early 2009, this group was formed to consider infrastructure and process improvements in Collateral Management and led to the commitments set out in the June 2, 2009 Roadmap for Collateral Management. Having completed its original remit, the group disbanded in June 2009.

2. **Collateral Infrastructure Working Group** (formerly known as the Collateral Framework Group)

   From 2006, a group of OTC derivative dealers formed the Collateral Framework Group (CFG) to address challenges facing their collateral operations including increasing trade volume and diversity of portfolios; increasing numbers of collateral disputes, and increasing need to reduce operational risk. The group recognised that an effective margin process depended on transforming portfolio reconciliation from a reactive to a proactive activity. In this context, they supported the development of several vendor initiatives, including: the first portfolio reconciliation service offered by TriOptima; an automated exposure management service offered by Euroclear; and a standardised electronic messaging service for collateral calls offered by AcadiaSoft[25]. The CFG also worked on a range of other measures including defining core collateral processes through a generic risk and control model, creating a programme of collateral practitioner training, and developing electronic messaging for collateral calls.

   In mid 2009, the CFG became the Collateral Infrastructure Working Group ("CIWG") under the ISDA Collateral Steering Committee, which now continues to focus on implementation through influencing development of strategic vendor services and vendor inter-operability. The CIWG is open to buy and sell side participants. The current focus of the CIWG is inter-operability requirements between market vendors across a range of collateral management services.

[25] It should be noted that although ISDA committees may work with vendors to support the development of products and services of utility to market participants, ISDA does not have any business interest in, and nor does it endorse, any vendor products unless specifically stated to the contrary.

3. Portfolio Reconciliations Working Group

Originally formed as a sub-group of the CFG and subsequently brought under the ISDA Collateral Steering Committee, the Portfolio Reconciliations Working Group comprises some 200 members. It has completed a number of deliverables comprising daily portfolio reconciliation between the major broker-dealers, regulatory reporting, analysis of dependencies for wider reconciliation rollout to the OTC market, best practices and data standards. Its work is ongoing in relation to regulatory commitments. Currently the Portfolio Reconciliations Working Group is focussed on developing an Implementation Plan for wider rollout of collateralized portfolio reconciliation in 2010 which is due at the end of February.

4. Independent Amount Working Group

The IA Working Group was formed in early 2009 to address concerns relating to the risk of Independent Amounts. It comprises practitioners from buyside and dealer firms, plus law firms, and includes representatives from a wide array of disciplines including risk, trading, operations, controlling and legal. Examining current practice in the OTC industry, a paper was published in October 2009. A further paper is currently being agreed with industry practitioners, which will describe a number of alternatives for future industry practice.

5. Dispute Resolution Procedures Working Group

The DR Working Group was formed in late 2008 to develop a new structured framework for Dispute Resolution, which was issued in draft by ISDA in June, July and Sep 2009. Following publication, a pilot amongst a limited group of 13 firms has since taken place between November to December 2009. The pilot has reported its findings and has made a number of ongoing recommendations. A further testing and development phase is due to start in February 2010 as part of a wider market test of the Dispute Resolution Procedure, prior to anticipated implementation at a date to be determined post July 2010.

6. Electronic Messaging Working Group

The Electronic Messaging Working Group was formed in early 2009 specifically to develop industry-wide electronic messaging standards for collateral management, which were issued in November 2009. These are currently being supplemented by work with FpML to develop message specifications, and with vendors to develop inter-operability requirements.

7. Collateral Management Best Practices Working Group

Following the completion of the Roadmap for Collateral Management, a working group was formed to address Collateral Management Best Practices. Ranging across the full breadth of the collateral management field, new industry-wide Best Practices are being developed by the working group. They are due to be published in June 2010.

8. Asia Pacific Collateral Working Group

Formed in April 2009, the APAC Collateral Working Group is focused on interpreting and implementing collateral management initiatives in the unique context of the APAC markets. The group is currently focused on developing market practice relating to portfolio reconciliations between firms within the region.