

## ISDA Margin Survey 2001

### **Chapter 1 Introduction**

Collateralization has developed into a key component of the global interbank market for privately negotiated derivatives, providing a layer of protection against credit exposure incurred in undertaking day-to-day transactions, and enabling practitioners to enhance the amount of business they undertake with counterparties across different geographic regions, markets and sectors.

The Russian debt default, the Asian currency crisis and the events surrounding the failure of LTCM in the late 1990s, all contributed to an increased interest in tightening controls and bolstering credit risk mitigation tools among financial institutions on a global basis. The profile of the risk management process as a whole became heightened to elevated proportions and, as part of the risk mitigation arsenal of financial institutions, the benefits of collateralization were cast in sharp relief.

Earlier this year, in an effort to enhance the timeliness, efficiency and user-friendliness of the collateralization process, ISDA completed work on its 2001 Margin Provisions, as well as revised versions of the ISDA Credit Support Agreement (CSA) and Annexes under New York and English law. A User's Guide to the ISDA Margin Provisions was also published in the third quarter of 2001 (all of these documents are available from ISDA's Website: [www.isda.org](http://www.isda.org)).

The title of these new documents reflect the fact that the term 'margin' has become the most widely used market terminology in reference to cash or securities posted as collateral. Accordingly, ISDA has renamed this survey of the collateral marketplace the ISDA Margin Survey to reflect this practice.

The survey builds on the work initiated through ISDA's Collateral Committee in respect not only of legal documentation, but also of research and best practice recommendations. The ISDA Guidelines for Collateral Practitioners, published in 1998, provided the groundwork from which existing and aspiring collateral practitioners could work. The 1999 Collateral Review established a basis for evaluating use of collateral on a global basis and for allowing comparisons among those practitioners with other firms. The ISDA Collateral Survey 2000 continued this examination of the state of the global marketplace for collateral. It was a foundation for comparing growth of this market. The number of participants involved in this activity has burgeoned to current levels, upon which this survey builds.

ISDA commissioned the 2001 Margin Survey as a short-form version of its Collateral Survey 2000. It is ISDA's intention to produce the renamed Margin Survey on an annual basis.

## Executive Summary

### 1.1 ISDA Margin Survey 2001 Key Conclusions

In this 2001 Margin Survey we provide an update of the current state of collateral use in the OTC derivatives market. Our primary source is a detailed industry survey commissioned by ISDA, to which we have added analysis and commentary from several of the industry's leading collateral practitioners. The survey data was controlled and compiled by Arthur Andersen LLP and the findings reviewed by members of ISDA's Collateral Committee.

Readers may wish to refer to previous ISDA publications on this topic, which we reference in this year's survey in order to provide historical context and comparisons. Of particular interest are the ISDA Collateral Survey 2000 ("2000 Survey"), the ISDA 1999 Collateral Review ("1999 Review"), and the ISDA Guidelines for Collateral Practitioners ("1998 Guidelines").<sup>1</sup>

The highlights of ISDA's 2001 Survey, covering 43 banks and financial institutions, appear on the following pages.

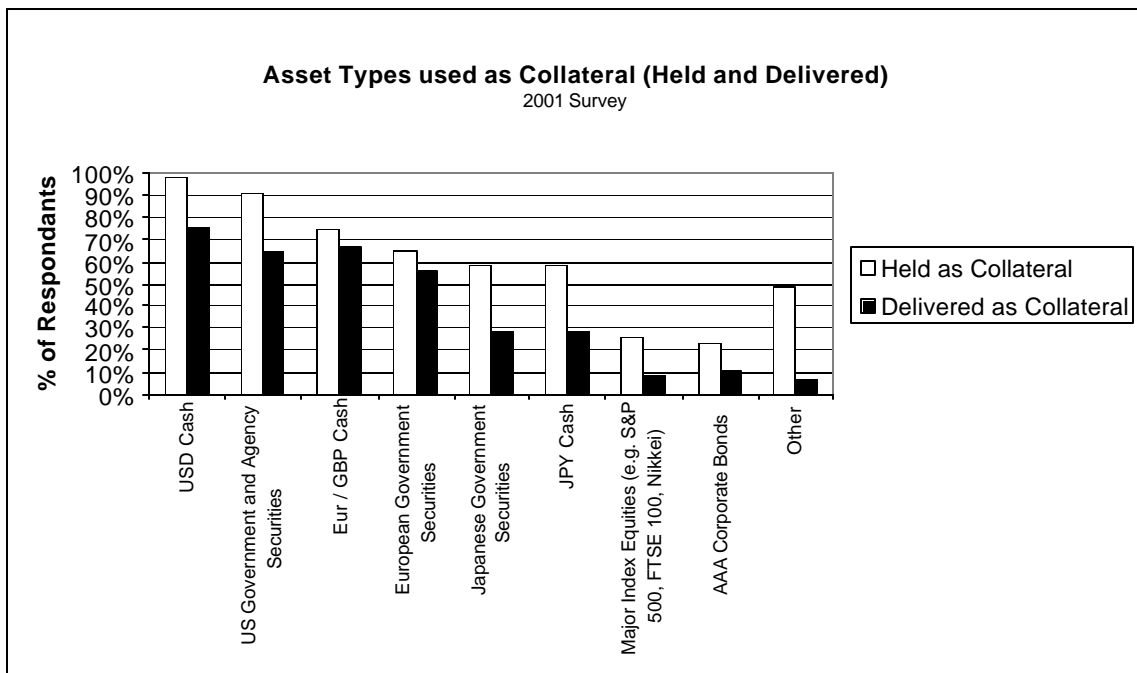
---

<sup>1</sup>[The ISDA Collateral Survey 2000, ISDA 1999 Collateral Review, and ISDA Guidelines for Collateral Practitioners are all available at the ISDA Website, www.isda.org.](http://www.isda.org)

## Survey Highlights

### Collateral in Circulation

1. ISDA estimates that the total amount of collateral in circulation in the derivatives markets now exceeds \$250 billion, an increase of 25% from one year ago.
2. The most common assets employed as collateral remain US government securities and cash. A broad trend towards greater use of cash continues to gather momentum, driven partly by the declining pool of US government securities and partly because of operational convenience.



3. Over 70% of institutions report that they actively re-use (or “rehypothecate”) incoming collateral assets in order to satisfy their own outgoing collateral obligations. Between 55% and 65% also report active repo of collateral assets, and re-use of collateral to support firm liquidity.

### Derivatives Protected by Collateral

4. ISDA estimates that the total number of collateral agreements in use in the derivative market exceeds 16,000, up 45% up from our estimate of last year’s level of use.
5. The proportion of institutions with “large” collateral programs (exceeding 500 agreements) more than doubled from 8% to 21% of respondents between 2000 and 2001.

6. At the opposite end of the size spectrum, smaller collateral programs are becoming larger. The percentage of firms in the smallest (0 to 50 agreements) category halved between 2000 and 2001, while the proportion in the next size category up (51 to 500 agreements) doubled.
7. Across the range of institutions surveyed, between 30% and 50% of derivatives trades are covered by a collateral agreement. The median reported level was 40%, and the highest degree of collateralization was 88% of the portfolio, as measured by transaction volume.
8. The geographic distribution of collateralized counterparties continues to show North America and Developed Europe as the dominant areas. Growth in South Africa was also observed. Looking forward, we anticipate continued growth in collateral use in Europe and also in Asia excluding Japan (e.g. Greater China, Australia).

### **Drivers for Collateralization**

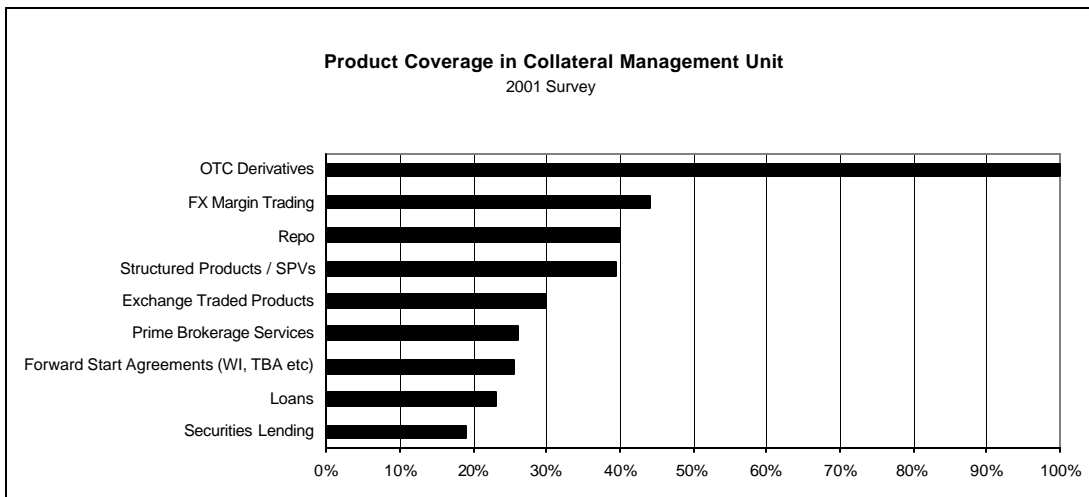
9. The overwhelming driver for use of collateral continues to be the desire to protect against credit risk.
10. Other factors such as reduction of regulatory capital, more competitive pricing of credit risk, and improved access to market liquidity continue to be important secondary drivers.

| Relative Rankings of Key Drivers for Collateralization<br>2000 Survey and 2001 Survey compared |              |              |       |
|--|--------------|--------------|-------|
|  | 2000 Ranking | 2001 Ranking | Trend |
| Credit risk reductions   | 1            | 1            | →     |
| Regulatory capital savings   | 3            | 2            | ↻     |
| Increased competitiveness  | 4            | 3            | ↻     |
| Improved market liquidity  | 2            | 4            | ↻↻    |
| Access to more exotic business   | 5            | 5            | →     |

### **Collateral Management Programs**

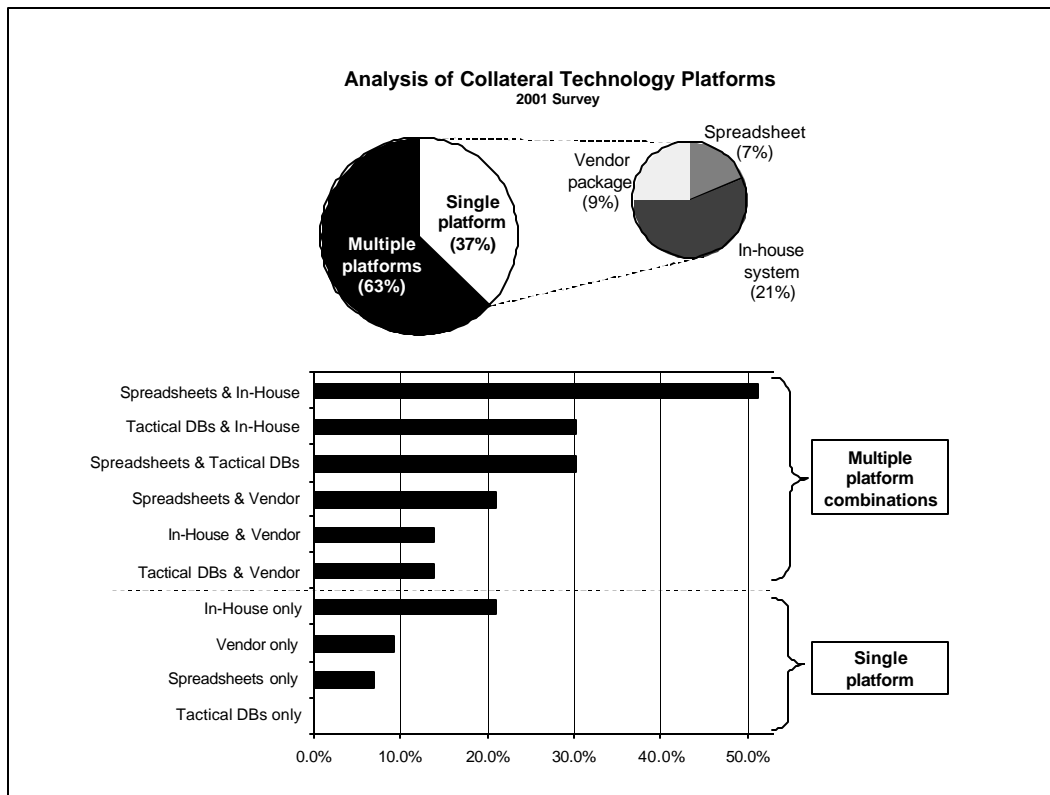
11. Spending on collateral programs (both people and technology) increased rapidly in the years up to and including 2000, but appears to have stabilized into 2001. Across the industry as a whole, expense projections for 2001 were almost identical to actuals for 2000.
12. Around 40% of firms spend more than \$1 million per year on their collateral programs. In excess of \$5 million is spent by 14% of firms, with a smaller number of respondents significantly exceeding this level.

13. Established collateral programs are most commonly located New York – London – Tokyo, with 55% of firms having a New York presence and 43% having a collateral function in London and an identical percentage in Tokyo. Although Tokyo and London rank equally at 43%, this does not capture the relative size of those presences; London leads Tokyo in terms of numbers of agreements, deal volume and staffing.
14. The fastest growth in size of collateral staff is seen among the largest firms. Between 2000 and 2001, firms reporting “more than 25 staff” expanded from 9% to 16% of firms.
15. One trend evident in the survey and supported by anecdotal observance of the ISDA Collateral Committee is the trend towards broad cross-product collateralization -- and taking this to an extreme of integrated people, process and technology, the emergence of the “enterprise collateral management” concept. Only a handful of firms truly manage collateral on a fully integrated basis across all of their product sets at present, although the aspiration to do this is strong. Among survey respondents, 100% were responsible for derivatives collateral management, but over 40% also have responsibility for margining of other products such as FX, repo, and structured products. ISDA believes that integrated enterprise-wide collateral management is a strong future trend, which will be realized over the next several years as further technology investments are made by firms.



**Collateral Technology**

16. Most (63%) collateral programs employ a mixture of several different technology platforms. These include spreadsheets, in-house developed collateral systems and vendor packages. The choice of a variety of solutions is reflective of the fact that a single system that is capable of addressing all aspects of a complex collateral program has not yet been developed, either in-house or by vendors.
17. The remaining 37% that are able to use a single technology platform are more closely associated with the smaller, less complex collateral programs. The ability to use a single platform is a significant advantage in operating efficiency and quality control. Of these 37%, only 9% use a vendor package as their exclusive platform, with 21% using in-house developed systems, and 7% relying on spreadsheets.
18. Collateral technology vendors have material involvement in the market, although they have only appeared in this field during the last two years. Across the entire set of respondents, 30% employed a vendor package in some capacity, and for 9% that system was their sole collateral technology platform. The growth in vendor system use from previous years indicates increasing acceptance of the use of external solutions within the industry.



**ISDA Margin Survey 2001**

**1. Background to the 2001 Survey**

ISDA conducted reviews of collateral management within the OTC derivatives market in both 1999 and 2000. Our intention in conducting this 2001 Survey was to provide an updated quantitative picture of how collateral is used in the market. To achieve this, ISDA retained Arthur Andersen LLP to conduct and analyze a wide-ranging questionnaire; the results are reproduced at Annex 4.

In addition, ISDA wanted to update the qualitative commentary on industry best practices and trends that was started with the publication of the ISDA Guidelines for Collateral Practitioners in 1998 and expanded in the ISDA 1999 Collateral Review, which was written in the immediate aftermath of the Asian and Hedge fund crises. To achieve this, ISDA staff together with several leading industry practitioners reviewed the survey results, and provided commentary on them in the context of their broader market perspective.

Responses were obtained from 43 institutions, representing every geographical region and a wide cross-section of banks, brokers, other financial institutions and end-users of derivatives.

The list of respondents appears at Annex 3

ISDA wishes to thank each of these institutions for their assistance in the preparation of the 2001 Survey.

In each case, we tried to direct our enquiry to the central collateral management unit, if there was one, and if not to the person responsible for collateralized derivatives support.

Regarding terminology, we have used the terms “margin” and “collateral” interchangeably in this report, which is in accordance with colloquial use in the industry.

## 2. Survey Results and Commentary

We have organized the results of the 2001 Survey into three sections:

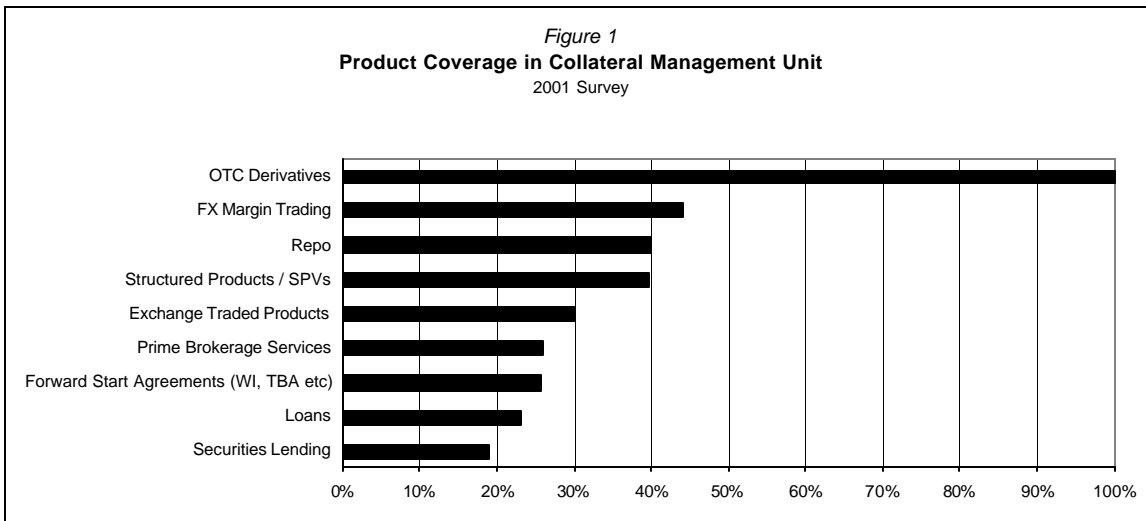
- Section 2.1 deals with the use of collateral in the OTC derivatives market, giving a sense of how and why derivatives are being collateralized;
- Section 2.2 is concerned with the collateral assets used to secure derivatives exposures; and,
- Section 2.3 describes the internal organization and investment made in their collateral programs by the respondent institutions.

### 2.1 Collateralization in the OTC Derivatives Market

In this section we provide an outline of the size and shape of collateral use, as of the date of the 2001 Survey. We also make comparisons to the previous year's data.

#### 2.1.1 Range of Product Types for which Collateralization is Supported

Collateral management is increasingly occurring on a cross-product basis, to which effect the range of individual product types becomes of secondary importance to the extent of the practice. It is no longer sufficient to think of collateralization as being tied to specific product types, such as OTC derivatives or repo.



In the 2001 Survey, we asked respondents to indicate the range of collateralized product types which they supported in their collateral management unit. All support collateralized OTC derivatives (figure 1). In addition, repo, structured products, collateralized special purpose vehicles, and FX margin trading were supported by well

over one third of respondents. A considerable proportion (between 19% and 30%) of organizations also reported providing collateral management for other product types, such as loans, exchange traded derivatives, and securities lending.

Although the respondents include a number of organizations that retain single-product collateral management functions (so-called “product silos”), the survey data strongly supports the observed industry trend of the past few years towards cross-product margin management.

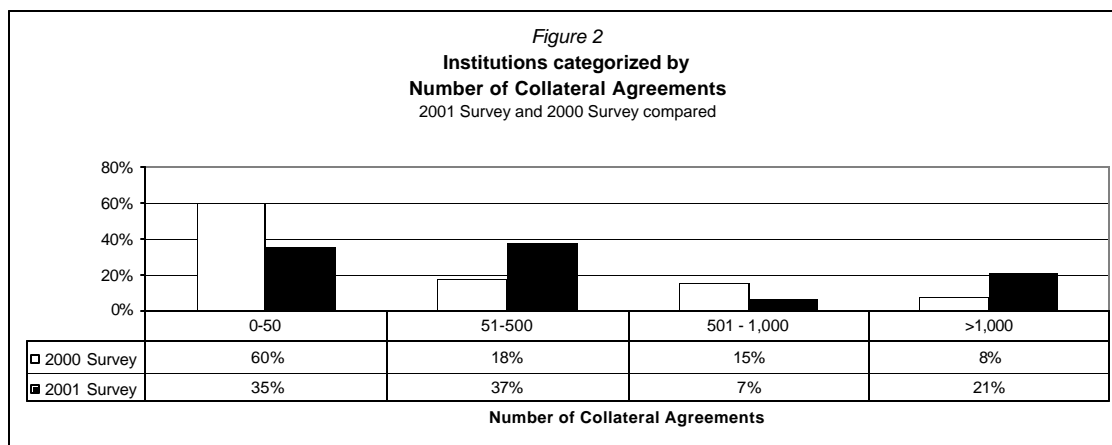
We first mentioned this in the 1998 Guidelines. Furthermore, Recommendations 20 and 21 of the 2000 Review were designed to promote cross-product collateralization as a best practice. The reason for this is simply that when considering exposure to a particular counterparty, it is prudent to measure the “whole counterparty” exposure since upon default the entire portfolio will be affected, not just one particular product silo. To the extent that exposures between product types offset each other (which they often will), collateralization of different portions of the portfolio separately can actually lead to increased loss upon default, which is the complete opposite of the intended effect of collateralization.

Many collateral management units that operate across product types do so by utilizing different process streams and technology for each product, but under a common management and reporting structure. This is a crucial advantage over independent product-specific collateral functions, especially in times of crisis, when it affords much greater clarity of command and control.

In the past year, a new term has entered the collateral management lexicon: “enterprise-wide collateral management”. This refers to the next step beyond common management of disparate product-aligned process and technology. A number of firms are working towards a vision of a single firm-wide collateral management unit with a single integrated technology and process set that can support the collateral management requirements of multiple product types. Normally this goes hand in hand with optimization of collateral requirements across product boundaries, and sometimes across legal entity and documentation boundaries (although cross-entity optimization in particular is challenging, with just 9% of firms achieving this in some degree).

### **2.1.2 Collateral Portfolio Size - Number of Agreements**

In this year’s survey we asked a number of other questions that help to “size” the market’s use of collateral. Focusing on OTC derivatives, we examined the number of collateral agreements that institutions supported, and tried to obtain an estimate of the proportion of their derivatives book that this represented.



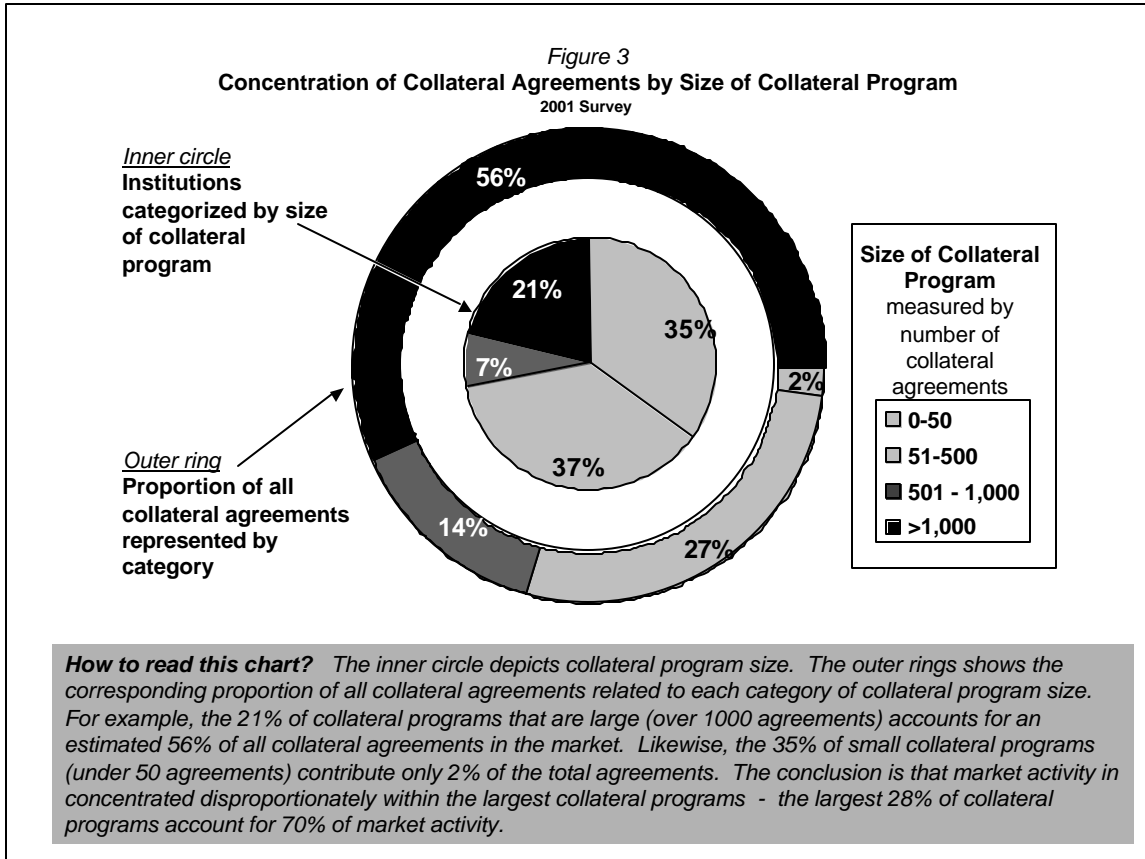
We saw that one fifth of respondents have over 1,000 collateral agreements (figure 2). These are very large collateral portfolios, typically built up over several years by the larger derivatives houses. Compared to the 2000 Survey, this category of over 1000 collateral agreements showed an increase from 7.5% to 20.9%. The next lower category of 501 to 1000 collateral agreements showed a drop from 15% to 7% over the same time period, leading us to conclude that a significant number of institutions have added several hundred agreements over the past year to break through the 1000 agreement level.

At the other end of the size spectrum, 35% of institutions reported fewer than 50 collateral agreements in 2001, down from 60% one year previously. Most of these show up in the 51 to 500 category, which grew from 17.5% to 37% between the 2000 and 2001 surveys, showing that new entrants continue to come in steadily, and that overall, while existing practitioners grow in size and that collateralization overall is growing in number of agreements.

As might be expected given the increasing use of collateral in the market, we are seeing growth in collateralized portfolio size across the spectrum. The results of the survey reveal the two areas of growth - the recent entrants with small portfolios are growing these organically; the large players are getting larger still. In the middle ground there is currently something of a gap in the distribution. We believe that this will disappear over time, as some of the institutions currently with a few hundred agreements grow into the high hundreds and then eventually into the largest category.

From this data we were able to make an approximation of the total number of collateral agreements within the portfolios of responding institutions. This was estimated by taking the mid-point of each portfolio size category and multiplying it by the number of firms within the applicable category. On this basis, we estimate the number of collateral agreements in 2001 to be approximately 16,000, up some 45% from 2000's estimate of circa 11,000 agreements. These values reflect only the responding institutions, of course, and across the industry as a whole the number of collateral agreements in operation will be substantially higher. The growth of 45% year-on-year is significant, and

correlates with anecdotal reports of growth within established collateral programs, and also the creation of many new collateral programs by institutions. But even more indicative of the development of collateral as a credit risk reduction mechanism is that well over half of all collateral agreements are concentrated within the collateral programs of the top one-fifth of firms (figure 3), compounding the notion that the market becomes increasingly expanded at the upper and lower levels

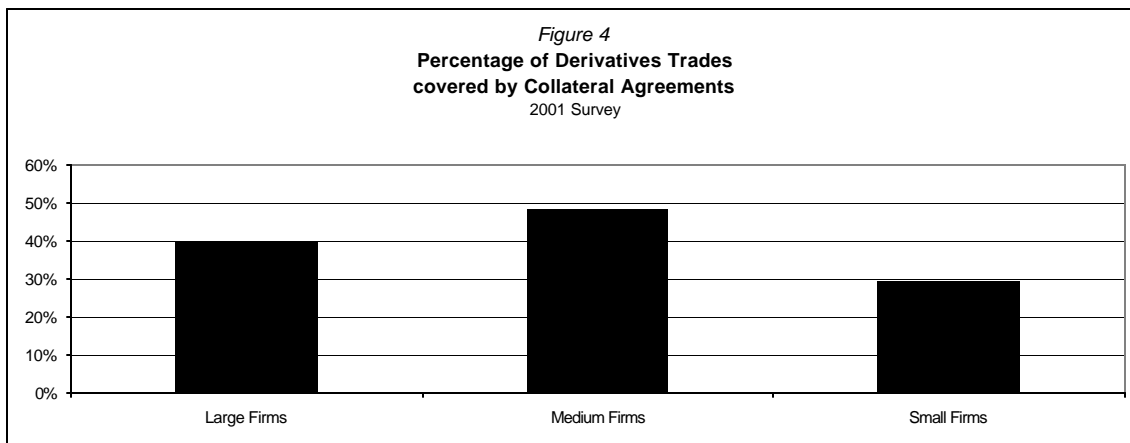


### 2.1.3 Collateral Portfolio Size - Percentage of Derivatives Collateralized

Another key metric of collateral portfolio size is the proportion of derivatives contracts that are protected by some form of collateral agreement. In the 2001 Survey we were able to measure the percentage of the OTC derivative portfolio which is collateralized in terms of the number of trades concerned.

Ideally it would be instructive to examine this same question in terms of the proportion of credit exposure that is collateralized, but this data is not readily available in many institutions, for several reasons including disparities in the way that "credit exposure" is defined and quantified.

However, even using the cruder measure of percentage of trades collateralized, we find meaningful results.



We have characterized firms on the metric: small, medium and large, based on holdings of 0-50 agreements; 51-1,000 agreements; and 501 agreements and upward.

Anecdotally, it appears that plain vanilla derivatives, especially interest rate swaps, are most commonly collateralized; certain among the larger institutions have collateralized upward of 65% of this subset of derivatives products. Derivatives involving other asset classes, such as equity derivatives, tend to have lower coverage by collateral. However, this may give a misleading picture, because often the credit exposure presented by these other derivatives is materially greater per trade than found with interest rate swaps, which factor in a AA or better counterparty rating into their pricing structure. This is one reason why a complementary analysis based on degree of collateralization of credit exposure (as opposed to trade numbers) would be most helpful.

While the qualitative indications received from collateral practitioners in the industry suggest a gradual upward trend - more and more of the derivatives portfolio is being protected by collateral as time goes by - it is far from clear where the end game lies. Predictions of "100% collateralization" certainly seem to be quite distant as a general industry condition, even though a few organizations are clearly using collateral as a near-universal credit protection within their particular portfolios. More likely, we feel, is a scenario where bilateral collateralization will continue to play a complementary role alongside single-name credit derivatives, portfolio credit risk reduction strategies, and credit insurance products. The determinants of which credit protection tool to use will depend on availability, pricing, liquidity, capital requirements and legal enforceability of credit derivative and insurance products, balanced against the operational and legal risks of collateralization.

#### 2.1.4 The Geography of Collateralization

In the 2001 Survey we sampled data concerning the location of collateralized counterparties. This is important for two reasons. The first concerns the enforceability of collateral agreements, which to a large degree depends on the law of the jurisdiction of the counterparty, in addition to the *lex situs* of the collateral assets themselves. Counterparty location is also a factor in where institutions locate their collateral management functions, in order to provide the required level of customer service and credit risk control.

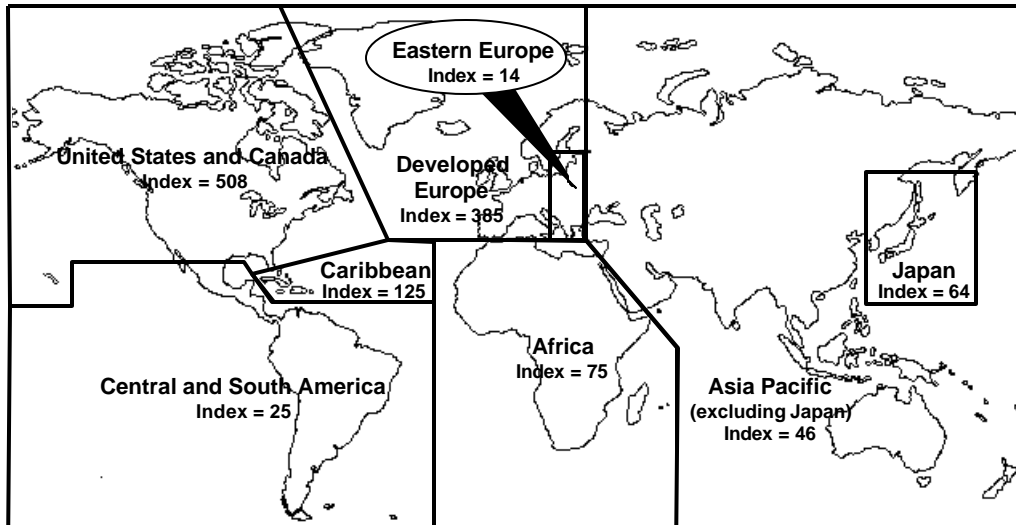
The results for this question are expressed in terms of an index which is derived from the responses of institutions that have any counterparties at all in the region concerned - many do not do business in regions outside their home jurisdictions and neighboring countries, which distorts the results. The use of an index corrects for this effect.

The results show that around 40% of all collateralized counterparties are located in North America, with an index value of 508. This shows a slight increase of 28 points from the restated 2000 Survey, which may be accounted for simply by the different demographics of respondent institutions. More significant though is the year on year reduction from 462 to 385 for counterparties in Developed Europe. We do not have an adequate explanation for this 77 point drop, unless it too is related to demographics, or conceivably accounted for in part by the mergers of multiple institutions. Other significant changes were observed in the Caribbean (rising 29 points to index 125) and Africa (up 60 points to index 75). These changes are related to a continued increase in collateralization with offshore hedge funds, and a strong increase in the degree of sophistication and use of collateral in the South African market, respectively.

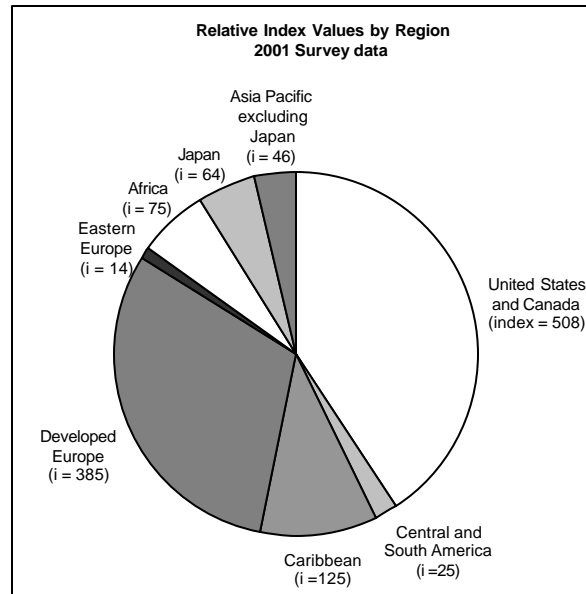
In contrast to the survey data, which did not reveal a significant change in the Asia Pacific region between 2000 and 2001, one insight provided by industry practitioners points towards an increased use of collateralization in Asia Pacific. This is said to be driven primarily by a weakening of perceived credit quality in the region, and is a trend to look out for in the results of the next ISDA survey of collateral use.

Comparing the results of the 2001 Survey with the jurisdictions covered by ISDA-sponsored legal opinions on collateral (either currently available or in process of being obtained) is interesting. As discussed in the 1999 Review (recommendation 18) it is generally accepted best practice that collateral takers should have some level of legal research for the location of their collateralized counterparties, in order to assure themselves that their collateral will be enforceable in the event of a default. This is reinforced by the latest proposed Basel capital adequacy rules, which require legal opinions in order to obtain regulatory capital relief for collateral. It should be remembered that many institutions have obtained their own legal opinions in jurisdictions not covered by ISDA opinions.

*Figure 5*  
**Geographic Distribution of Collateralized Counterparties**  
 2001 Survey



|                              | 2000 Index Value | 2001 Index Value | Change + or - |
|------------------------------|------------------|------------------|---------------|
| United States and Canada     | 480              | 508              | +28           |
| Central and South America    | 28               | 25               | -3            |
| Caribbean                    | 97               | 125              | +29           |
| Developed Europe             | 462              | 385              | -77           |
| Eastern Europe               | 17               | 14               | -3            |
| Africa                       | 16               | 75               | +60           |
| Japan                        | 60               | 64               | +5            |
| Asia Pacific excluding Japan | 41               | 46               | +6            |



### 2.1.5 Drivers for the Use of Collateralization

Finally in this section, we look at the reasons why institutions use collateral at all. The obvious reason is to protect against credit losses upon default, and indeed this was cited by respondents as the number one driver for collateral management at their firm in both 2000 and 2001.

However, there are a number of other reasons why collateralization may be beneficial. In the 2001 Survey, the ability to use collateralization to effect regulatory capital savings was ranked second, behind credit risk reduction. This was higher than the third position ranking for this driver in the 2000 Survey. We believe this is reflective of two factors: an increased willingness by some banking supervisors around the world to recognize the benefit of collateral for regulatory capital purposes, under the current Basel Capital Accord; and secondly, a generally heightened awareness of regulatory capital issues and the impact of collateral, which has been occasioned by the higher level of dialog in the market as a result of the new “Basel II” capital proposals, in which these matters figure centrally.

*Figure 5*  
**Relative Rankings of Key Drivers for Collateralization**  
2000 Survey and 2001 Survey compared

|                                       | 2000 Ranking | 2001 Ranking | Trend |
|---------------------------------------|--------------|--------------|-------|
| <b>Credit risk reductions</b>         | 1            | 1            |       |
| <b>Regulatory capital savings</b>     | 3            | 2            | ⬆     |
| <b>Increased competitiveness</b>      | 4            | 3            | ⬆     |
| <b>Improved market liquidity</b>      | 2            | 4            | ⬇⬇    |
| <b>Access to more exotic business</b> | 5            | 5            |       |

Third place in the 2001 Survey goes to “increased competitiveness”, which refers to the use of collateral by firms in order to reduce the charge for credit that many of them factor into derivative spreads. This directly affects deal pricing, and therefore makes these firms relatively more competitive than they would have been without using collateral. The improved ranking for this use of collateral over the previous year is significant. Only a minority of banks have implemented a “credit charge” of the type described, but anecdotally the trend seems to be towards broader acceptance of this concept, even though the implementations by different firms range from straightforward approximations to highly complex simulation-based computational methods. As more firms implement credit-related pricing, the risk-reducing effect of collateral can be expected to be used more widely as a pricing differentiator, and this seems to be borne out by the trend.

It is also significant that the use of collateral as a liquidity enhancer has declined in relative importance. Market liquidity is established by the willingness (or not) of derivatives dealers to trade with each other. This allows risk positions to be fluidly and inexpensively hedged. The risk positions arise through transactions executed with end-

users, and also of course the impact upon existing derivative portfolios of changing market parameters (absolute interest rate levels, the shape of the yield curve, and foreign exchange rates, to name but a few). If they can be effectively hedged, risk levels are reduced and more end-user business can be conducted. In the early to late 1990's, derivative dealers recognized that collateralizing inter-bank exposures can promote far greater liquidity. Many collateral programs were oriented towards this goal, and as a consequence very high proportions of derivative exposure between dealers have been secured by collateral for the past several years.

Clearly, all of these reasons for using collateral are inter-related. For example, reducing credit risk through collateralizing it should logically result in reduced economic and regulatory capital requirements; reduced capital requirements should result in the ability to improve the pricing of derivative trades, as they are less costly to carry on the books of an institution; and reduced credit risk should also permit more business to be conducted within each firm's finite risk appetite, leading to increased liquidity in the market, and the ability to do higher levels of more risky or more exotic business.

However, although inter-related, each of these drivers for collateralization carries a different flavor. In any given client situation, one driver may be the dominant reason for using collateral. For example, with lower-rated or un-rated entities such as hedge funds it is typically the traditional desire to reduce credit risk that leads to the decision to collateralize. However, in the small but ultra-competitive arena of banks dealing with hedge funds, the ability to cut a basis point or two from the price of a deal is often another reason to collateralize. By contrast, within the inter-dealer market, credit quality is not such an overt issue, but the ability to hedge large volumes of derivatives with other market professionals commonly leads to the use of collateral, acting here as a liquidity enhancer.

Because collateralization of credit risk is not a risk-free process, it is best practice, and a cornerstone of a sound collateral policy, to have a clear rationale for the use of collateral with different types of counterparty. The results from the 2001 survey give an interesting market-wide macro picture of the drivers behind the decision to collateralize.

## 2.2 Collateral Assets

In this second section of the 2001 Survey we examine the collateral itself - the assets that provide protection against the credit risk of the various product types that were discussed earlier.

In addition to reviewing what assets are used as collateral, and how much collateral is employed in the market, we also look at important ancillary issues such as the interplay between collateral management and liquidity management at banks.

### 2.2.1 Volume of Collateral Employed in the Market

One way to measure the importance of collateralization in the derivatives market is to track the gross amount of collateral in circulation. This is a crude measure in many respects, somewhat akin to describing the overall derivatives market in terms of the number of trillion dollars of notional principal of derivative contracts. However, like the notional principal metric, the gross amount of collateral in circulation is relatively easy to estimate, comprehend and compare, versus other possible measures, and it does reflect a growth trend over time.

We define "gross amount of collateral in circulation" as the simple summation of all collateral delivered out and all collateral received in by all of the survey respondents<sup>2</sup>, plus an estimated adjustment to reflect the fact that not all market participants took part in the survey, and that those that did tend to be mostly banks and market professionals. The ISDA Margin Survey is compiled from the responses of ISDA member firms, among which large end-users of derivatives, such as hedge funds, are not as comprehensively represented as the dealers, investment and commercial banks.

ISDA's estimate is that the gross amount of collateral in circulation in the derivatives market in early 2001 was in excess of \$250 billion. This is up 25% from the 2000 Survey estimate.

It is worthwhile to note that this method for assessing the gross amount of collateral in circulation will double (or even in some cases multiple) count collateral that is rehypothecated. As an illustration, consider a dollar of collateral taken in by Bank B from Bank A, rehypothecated and sent out by Bank B and received in by Bank C. This would be counted four times (Bank A outgoing, Bank B incoming, Bank B outgoing, and Bank C incoming) -- if we assume that Bank A originated the dollar (i.e. had not rehypothecated it from an incoming source of collateral), and further assume that Bank C segregated the dollar (i.e. does not in turn rehypothecate it).

---

<sup>2</sup> In a little more detail: each survey participant was asked to sum all of the collateral taken in from their counterparties where they are net in-the-money (and therefore a collateral receiver), and separately to do the equivalent summation for all counterparties where they are out-of-the-money (and therefore a net collateral giver). Thus each survey respondent provides two data points: collateral held and collateral delivered. For any particular respondent these two amounts may offset, or one may be much larger than the other. Which situation applies will depend on the type of collateral agreements in place and the term structure of the respondents derivative portfolio.

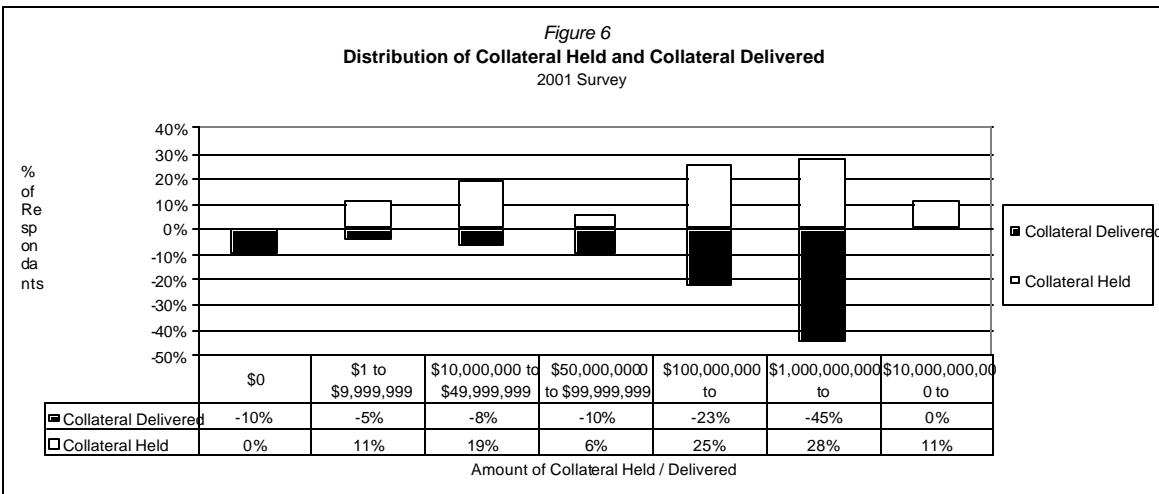
This is just another case of the “one dollar of collateral supports the whole banking system” scenario that interested banking supervisors a few years ago - **where** a single dollar of collateral gets infinitely rehypothecated over and over again until every market participant thinks they have every dollar of exposure collateralized, but really there is just the one original dollar underpinning the entire market.

The reality is that collateral re-use is nowhere near efficient enough to make this scenario feasible. The infinite re-use chain will be broken every time an agreement prohibits rehypothecation (many do, especially outside North America), every time a market participant has no re-use opportunity for excess incoming collateral, every time a settlement system closes at night thus locally stopping the flow of assets, and for many other reasons.

**2.2.2 Distribution of Collateral Held and Delivered**

In the 2001 Survey, in addition to asking respondents to indicate how much collateral they have taken in and delivered out, we obtained data on the distribution of collateral balances. Each survey respondent will have reported two collateral balances, representing the sum of collateral held under agreements that are net in-the-money to the institution, and also the sum of collateral delivered under out-of-the-money agreements (see footnote 2 on the previous page for more information).

Figure 6 shows how these incoming and outgoing collateral balances are distributed across the responding institutions.



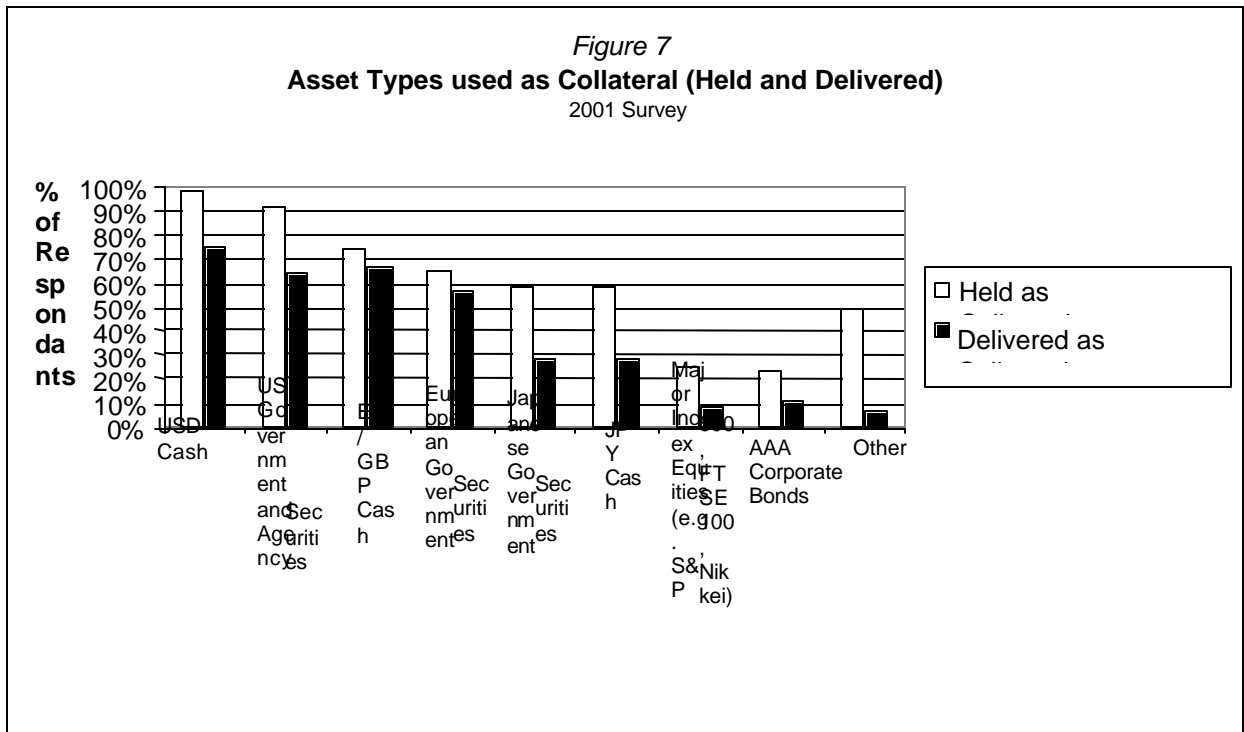
It is worth noting that the majority of collateral balances fall into the largest three categories: 64% of balances of outgoing collateral delivered was over \$100 million, and 68% of incoming collateral held balances exceeded this level too. Some 45% and 39% respectively of outgoing and incoming collateral balances at institutions exceeded a

billion dollars. These large balances obviously correlate strongly with the larger collateral programs; for example, figure 3 earlier showed that 70% of the collateral agreements in the marketplace are generated by just the top 28% of largest collateral programs. A similar concentration is evident in the collateral balance data, again reinforcing the idea mentioned in section 2.1.2 that the market shows some stratification between the large players and the smaller players, with currently a void between these two clusters. This is a phenomenon we believe to be transient, as smaller collateral programs establish themselves and then grow.

**2.2.3 Asset Types Used as Collateral**

The 2001 Survey figure 7 below) is consistent with previous surveys in showing that the most commonly used collateral assets are US dollar cash and US government and agency securities. Over 90% of collateral programs accept and are holding these types of asset as collateral. Eurozone cash and government securities (Euro and British pound denominated assets) are close behind, with 65%-75% of firms holding collateral in this form. Japanese yen denominated assets (typically JGBs and yen cash) are held by just under 60% of respondents.

As we move down the asset quality scale from the cash and government securities of some of the world's major jurisdictions, we see equities and corporate bonds employed as collateral. In the 2001 Survey we measured around 20-25% of participants as using the highest grade examples of these assets (e.g. equities which are member of major indices and AAA-rated corporate bonds). This illustrates the significant gap in acceptability between sovereign assets and even the best private sector assets, when it comes to their use as collateral.

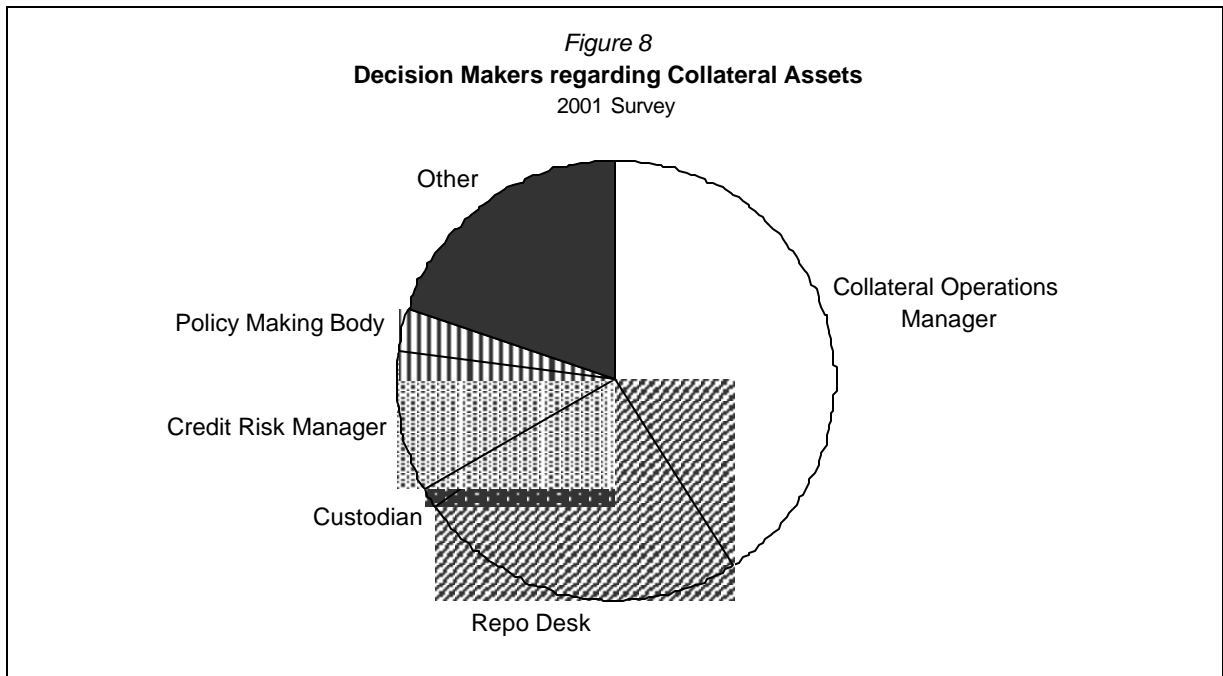


It is pertinent to note that 50% of collateral programs accept “other” assets. These could include lower quality equities and corporate bonds, the government bonds and cash of nations other than their own, commercial paper, and also a whole array of physical assets such as gold, artwork, and more exotic items. Although there has been a trend towards greater acceptability of these “other” assets over recent years, as banks move aggressively to execute business and secure it with whatever assets are available, it is the case that a relatively tiny proportion of all collateral taken is in the form of these asset types. With the common exception of gold, haircuts for these types of collateral are typically quite severe, reflecting the lower credit quality, liquidity, and more opaque price discovery associated with them.

#### 2.2.4 Deciding what Assets to use as Collateral, and Re-use.

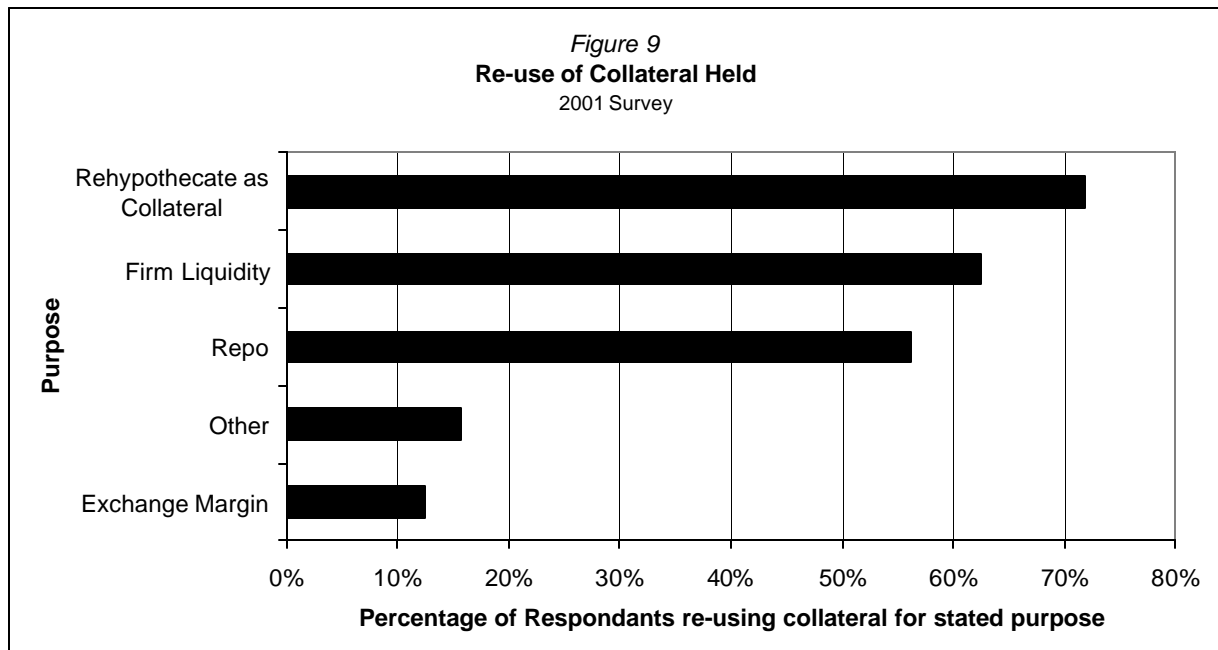
Figure 8 illustrates that the vast majority of respondents reported the locus of the decision makers in respect of which assets are used to post as collateral are in collateral operations. The next nearest significant area of decision making in this respect is the repo desk.

Figure 9 illustrates the degree to which collateral held is re-used or rehypothecated, and for what purposes.



## 2.3 Collateral Programs

In this section we discuss the chief characteristics of the collateral programs that market participants have established. The tremendous growth in collateral programs over the past several years has been well documented. For most institutions transacting derivatives, a robust, capable collateral program has become an essential business tool. Collateral managers have moved out of the shadows and become of central importance to firms' credit risk management strategies.



### 2.3.1 Location

There are several factors that underpin the decision as to where to locate a collateral management function. First and foremost are the twin questions of your location and the location of your counterparties. Banks or corporations with an overwhelming presence in only one geographical region will typically place their collateral functions in this center. Firms with several locations have the options of a centralized collateral management function, or of operating in several geographies.

If electing the latter option, then there will be a choice to make between independent functions in different regions, or distributed regional functions linked into a functionally and technologically combined unit (a "hub and spoke" model). Counterparty location has a role to play in determining this question. If counterparties covered by an institution's collateral program tend to operate out of a single location, then providing the institution has an operating base in a similar time zone, it is possible to operate through independent collateral units in different geographical regions. However, if counterparties

tend to span the globe, trading out of several different locations, then it may be necessary to have distributed collateral management functions that are linked together to be able to provide rolling coverage of the counterparty. An example of this would be a hedge fund trading out of Tokyo, London and San Francisco: as a bank, you may wish to have a collateral team in Asia make calls against the trading activity in Tokyo as it occurs, handing over the position to London later in the day, which would then make additional collateral calls as necessary given activity during the London trading day, before handing over in turn to a third collateral unit based in North America.

In reality, genuine examples of rolling collateral management, “passing the book” like this are rare. Only the largest institutions tend to have the technology and the need to do this, and even then only for a small subset of counterparties who are truly global traders, and for which risk management guidelines require near-real-time calls for initial margin to be made.

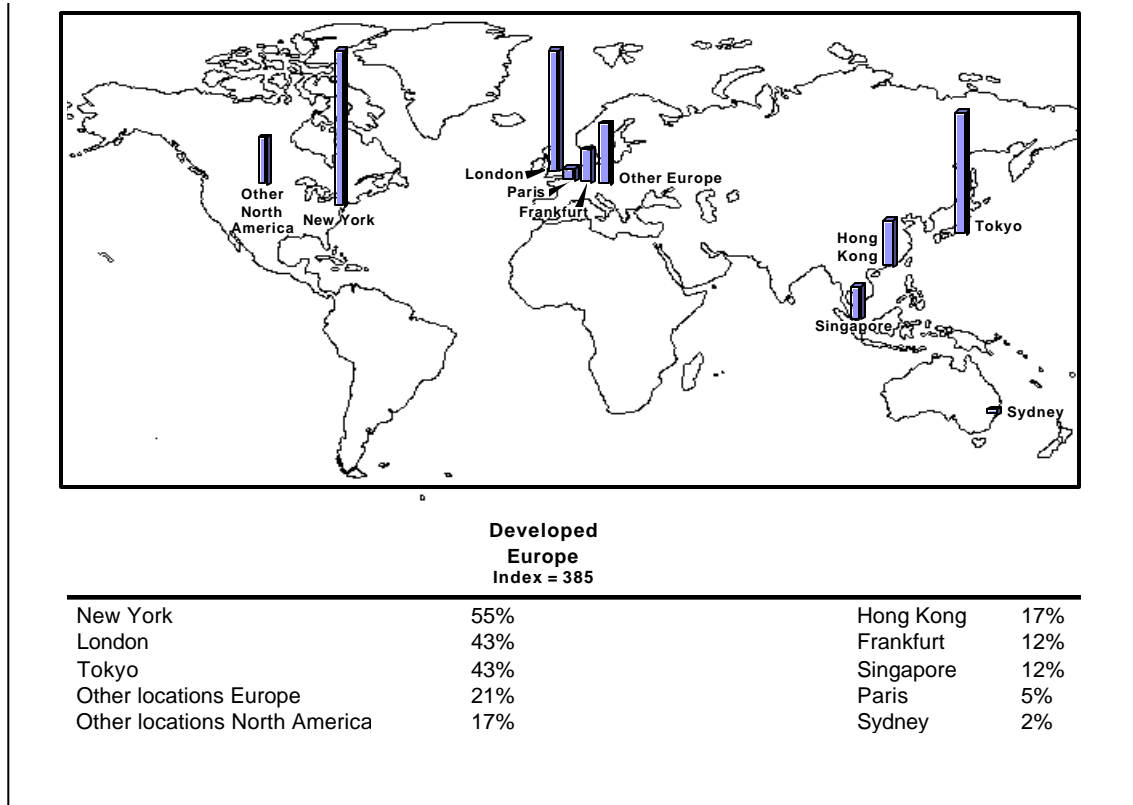
Another strong reason for linking diverse collateral management units together is to afford better, and more consistent, internal risk management reporting.

From discussions with collateral practitioners, it appears that most collateral programs today are based on either a single location, single geographic scope of operations model, or a hub-and-spoke arrangement with either common or inter-connected technology platforms linking the locations together.

Larger firms with a more international business mix tend to implement the hub-and-spoke model. Typically the hub will be London, New York or Tokyo, and spokes will radiate out to other local collateral operations in cities such as Hong Kong, Singapore and Sydney. Continental European banks with this model will sometimes base their hubs in their head office location, but often they are based in London, which is something of a collateral management center, partly because of its time zone that allows coverage and coordination with both Asia and the Americas, and partly for historical reasons.

Figure 10 below shows the results of the 2001 Survey with respect to location of collateral operations. The “other” locations in North America and Europe would include, for example, cities such as Atlanta, Chicago, San Francisco, Charlotte, Toronto, Stockholm, Brussels, Zurich, Munich, Essen and Madrid

Figure 10  
 Geographic Distribution of Collateral Management Functions  
 2001 Survey



While New York remains the most commonly located center of collateral operations with 55% of respondents reporting a location there, institutions also reported an equal geographic distribution between London and Tokyo, with 43% of firms having a presence in either location. Anecdotal evidence suggest that while there is an equally large number of firms with some presence in Tokyo, headcount among these two locations is much more significant in London.

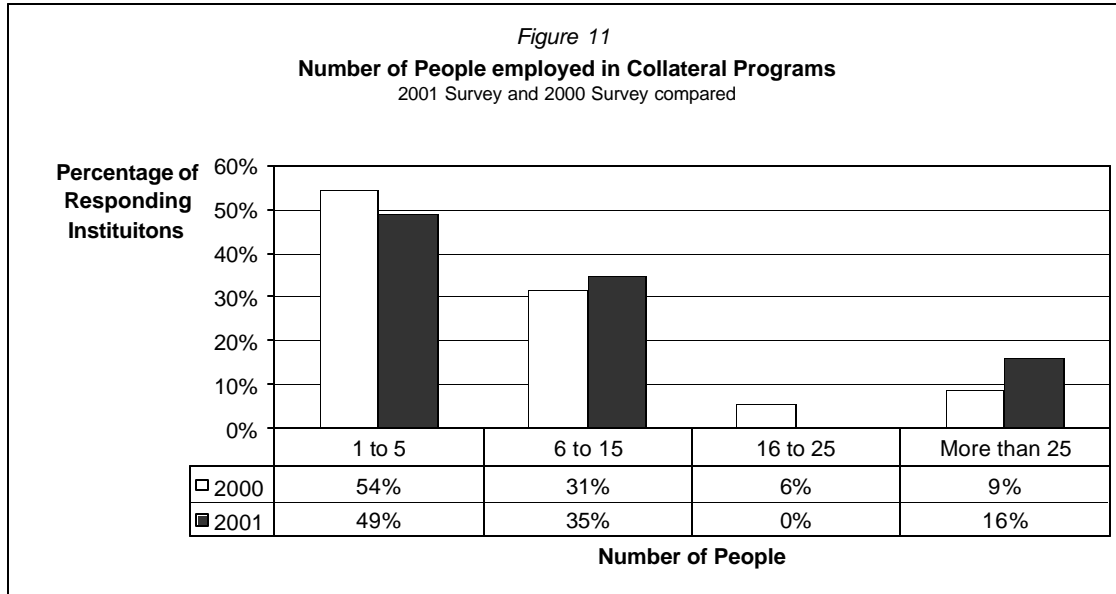
### Staffing

In what appears to be a predominant trend within the industry, the most significant growth area in the collateral function is among the group of major practitioners.

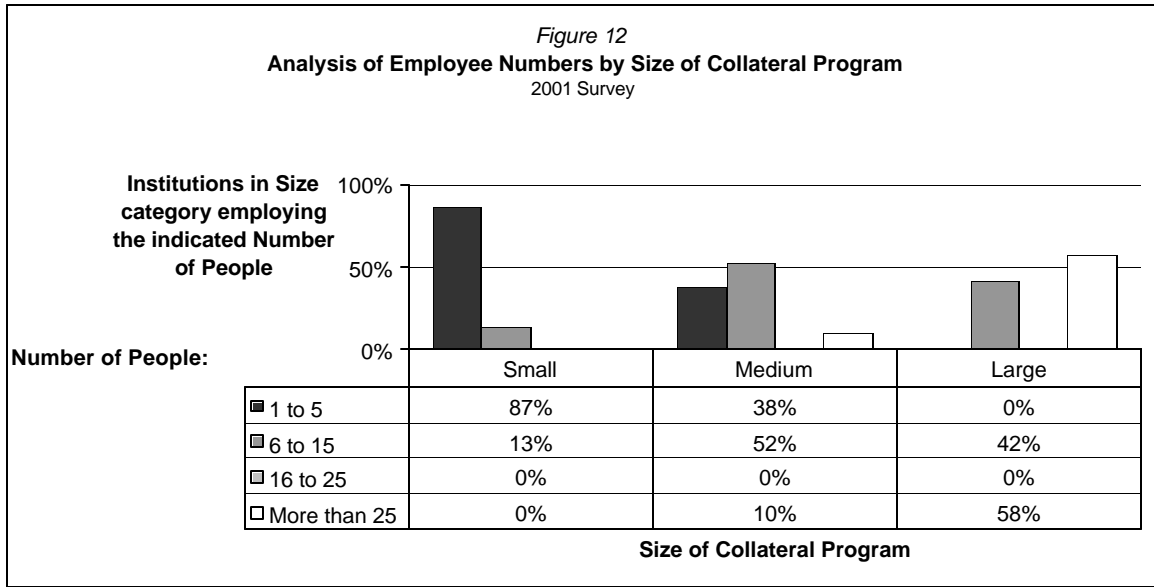
The keys to any successful collateral program are technology, data, and people. Whereas technology and data are the critical facilitators of the collateral management process, only people can actually make the collateral calls upon counterparties, and only people can make the crucial decisions --often in a crisis, often based on the first

available information -- that make the difference between effective credit protection through the use of collateral, or, or the other extreme, significant credit losses.

In both the 2000 and 2001 Surveys we asked institutions how many people were required to staff their collateral functions. The results, taken across all respondents, show that collateral management functions are getting larger, as measured by the number of people they employ (figure 11).



Just around half of all institutions responding had small collateral teams, under 5 people; around one third employed between 6 and 15 people. Between 2000 and 2001, we see a clear migration from the smallest 1 to 5 people category up into the 6 to 15 people grouping. As a collateral function begins to support more than a handful of agreements, the day-to-day workload combined with the typical need for cross-training and coverage of absence, plus the growing supervisory overhead as the function becomes larger, all contribute to a need for more people. Technology is able to mitigate this somewhat, but many small collateral programs involve a critical mass of 4 to 6 staff.



Looking just at the 2001 Survey data for Small Firms (figure 12), all of these collateral programs used fewer than 15 people, and 87% were under 6 people. Among Medium Firms, 90% employed fewer than 15 people, and 38% fewer than 6.

By contrast, within the Large Firms some 58% employed greater than 25 collateral specialists, with 42% in the range 6 to 15 people. This latter group is presumably the beneficiary of greater automation and possibly a less diverse or complex portfolio of collateralized counterparties. Anecdotally, in some of the largest and most sophisticated collateral management programs, well over 50 people are employed. These people work in functions as diverse as data validation, preparation of collateral calls, client service, collateral agreement marketing and negotiation, rehypothecation tracking and asset sourcing, portfolio reconciliation, collateral risk evaluation, capital management, technology development and policy drafting, not to mention the ubiquitous special projects teams.

One consequence of these larger team sizes is that they acquire greater “budget visibility” -- especially in times when financial constraints are becoming more common in the industry. This has led, and will continue to lead, to a more aggressive push to automate functions associated with collateral management. Some firms have a high degree of technology sophistication in this area, and a correspondingly more efficient use of headcount than others. The next section on Technology, gives more insight into this.

One final human resources-related issue, which we did not include in the 2001 Survey but which comes up often in discussion with collateral practitioners, is the question of organizational location for the collateral function. Traditionally seen as an operations function, collateral management has been positioned by some institutions as a credit function; by others as a profit-center business unit in its own right; by some as part of

liquidity management for the firm; and by others still as a part of the derivatives risk management function.

There is no single right answer to this organizational question. The most common internal affiliations are to operations and to credit. Indeed, looking at what goes on in a typical collateral function and the reasons why they exist, collateral management has clear affinities to both of these. However, the individual circumstances in each institution will be different -- the fundamental issue that needs to be satisfied is that the collateral function, wherever located organizationally, must be effective in protecting credit risk through making timely collateral calls, efficiently settling them, providing the right credit risk management and capital management inputs, and being a prompt and effective manager of crisis situations involving collateral.

### **Technology**

Technology is another critical component of any collateral program of material. It used to be the case that collateral technology had to be developed in house, since there were no commercial vendor packages available. That has changed dramatically in the past two years, although as the 2001 Survey results show below, vendor technology still only accounts for a fraction of the technology needs of the market.

For the purposes of the 2001 Survey, we categorized technology solutions for collateral management into the following categories:

- |                    |   |
|--------------------|---|
| Spreadsheets       | Typically MS Excel models designed to produce a collateral call statement, with limited computation embedded in the model. May also include separate models for tracking collateral asset inventory and rehypothecation.  |
| Tactical Databases | Typically built in MS Access or a tool with a similar level of sophistication. Normally used to replace or extend spreadsheet type functionality, in a slightly more robust technical environment, and permitting better cross-counterparty analysis and reporting.   |
| In-House Systems   | May be constructed in a wide variety of technologies. Normally large, custom-designed collateral systems with rich functionality and a strong control environment.  |
| Vendor Systems     | Several vendors offer specialist collateral management systems. The technology set used varies considerably. Functionality is rich, and in some cases has been developed to meet the sophisticated needs of a number of banks over time. However, most Vendor Systems are not currently as sophisticated as the most elaborate and highly |

developed In-House Systems, as used by a handful of the largest firms. This is gradually changing as vendors expand their technology to service larger firms.

The choice of vendor solutions remains relatively limited, a factor of the nascent nature of this sector of the market for technology solutions. While practitioners in the years up to and including 2000 witnessed a steady growth in budgets, the reported spend in this area did not increase between 2000 and 2001. Again, this would seem to be in line with the relative newness of this technology sector, as those who have not yet invested in an off-the-shelf solution adopt a wait-and-see approach.

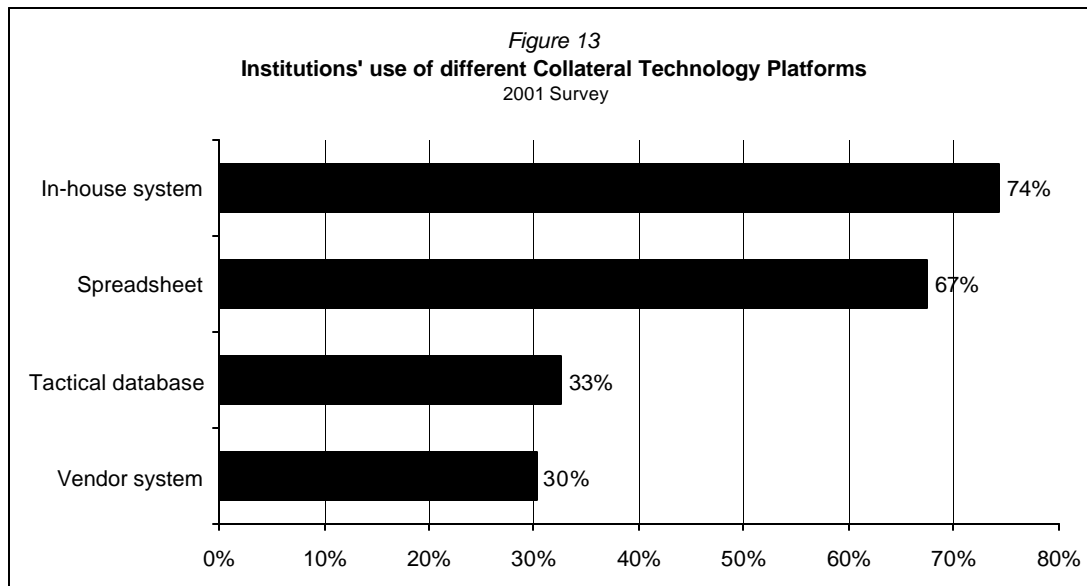
It would generally be the case that very small collateral programs employ spreadsheets, although anecdotally several new entrants to the market have purchased vendor products, citing the need for stronger controls and backup capabilities than spreadsheets typically provide.

Tactical databases tend to be employed to bridge the gap between a spreadsheet environment and an in-house system being developed.

Most medium- and large-sized collateral programs would be expected to center their technology support around an in-house or vendor solution. However, particularly in the case of more sophisticated programs, it is likely that more than one technology component will be needed to provide complete functionality.

We asked the survey respondents to indicate which classes of technology platform they were using, expecting that many firms would be employing a mix.

From figure 13 below, we see that overall nearly three-quarters of institutions use in-house systems. Almost as many (67%) use spreadsheets. Then there is a significant drop to levels just under one-third in respect of tactical database use and vendor packages. Clearly there are many firms using multiple technology platforms, so we analyzed the combinations further.

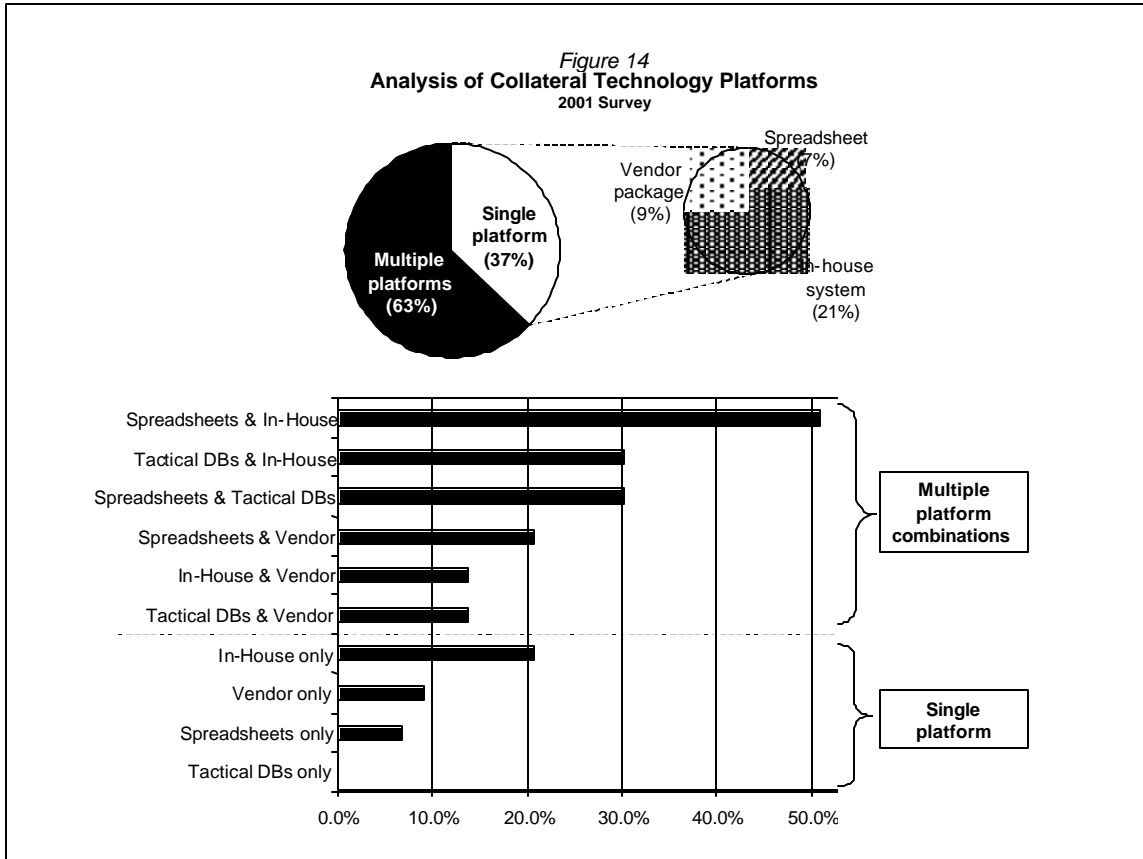


Looking at institutions which exclusively used just a single platform (figure 14 overleaf), we found 7% who did so with spreadsheets, 21% with in-house systems, and 9% with vendor packages; this is an aggregate of 37% of respondents using a single dedicated platform. This perhaps gives some sense of just how complex most collateral management environments are: even those using custom-designed in-house or vendor systems could avoid using any other augmenting platforms in an aggregate 30% of cases.

Among the remaining institutions using more than one platform, the most common combination was an in-house system plus spreadsheets. A number of institutions made use of three or even all four of the different platforms.

The conclusions we draw from this analysis and broader observation of the industry are that:

- Most (63%) institutions have fragmented technology platforms, which may lead to process inefficiency and potential data quality issues.
- Vendor and most in-house systems require functional enhancement in order to completely meet the needs of a higher proportion of institutions. While perfect functional coverage may never be available in a single package for every institution, the inefficiencies and data issues noted above, coupled with maturation of the collateral management function, are expected to lead towards a future trend towards de-fragmentation of technology and consolidation upon modern, more complete and higher efficiency platforms. Some of these may be built in-house, but many will probably be standard or customised versions of vendor solutions.
- Spreadsheets will likely continue to provide crucial flexibility to support product innovation and especially complex business environments, which may exceed the capabilities of current generation in-house and vendor systems.



Finally, before leaving this topic, it is worthwhile to look at the emergent trend between the 2000 and 2001 Surveys. Firms that reported using spreadsheets only were a roughly static proportion across the two years (approximately 7%). Those using in-house systems exclusively almost doubled from 2000 (11%) to 2001 (21%). A similar large rise was seen in those using vendor systems exclusively, from 2% to 9%. Amongst those using vendor systems or in-house systems in any form (ie: exclusively or in combination with other platforms) large rises were also recorded.

Vendor systems and in-house systems typically imply more sophisticated, more robust technology -- and a material dollar cost. Our conclusion is that across the industry there is a substantial investment continuing to be made in upgrading the automation of the collateral management process.

### Expenses and Investments

In the 1999 Review and also the Surveys of 2000 and 2001 we made enquiries about the level of expense associated with collateral at the respondent organizations. This is a problematic area of enquiry, fraught with difficulties of obtaining data and its subsequent interpretation.

In 2001, unlike previous years, nearly all (98%) of institutions provided expense data. This compares favorably with the 60% response rate in 2000 and the 50% response rate in 1999, reported in a small-scale survey ISDA conducted as part of the ISDA 1999 Collateral Review. Expense data is always sensitive, but it does appear that institutions are recognizing the value of contributing to an industry-wide picture of expenses and technology investments, to better gauge the level of their own response to collateral management priorities.

The other generic problem with expense analysis is the age old one of avoiding a situation of comparing apples with oranges. Different firms measure expenses in different ways. For example, one firm might claim to spend \$100 on collateral management technology, but this may refer to the investment in a central collateral system while ignoring technology investments made in various different businesses that need to extract and feed derivative position values to the central system. By contrast, other firms may collect the entire cost centrally. A similar issue arising in the classification of technology versus non-technology expense -- is a business person working on a technology implementation project a technology expense or not?

For the purpose of the 2001 Survey, we have requested data for the general expense of running the collateral function, and separately the technology investment related to collateral. Technology investments will tend to be one-off or cyclical, although in many firms with an on-going multi-year program of technology investment this may not be apparent across just two or three years' data. Where necessary we have re-stated previous years' data onto a comparable basis for the 2001 Survey.

## **Appendices**

### **Appendix 1**

#### **ISDA and ISDA's Collateral Committee**

The International Swaps and Derivatives Association, Inc. (ISDA) is the leading global trade association representing professional market participants in privately negotiated derivative transactions. Privately negotiated derivative transactions include interest rate, currency, equity, commodity and credit swaps, options, and forward transactions, as well as such related products as forward rate agreements (FRAs), caps, collars, floors and swaptions.

ISDA, chartered in 1985, today numbers approximately 540 members across six continents, of whom more than half are established in Europe. Of those established outside Europe, many, if not most, have significant operations in the European markets.

ISDA's members include most of the world's major financial institutions as well as leading end-users of privately negotiated derivatives and suppliers and consultants to the industry, including law firms, accountants and information technology companies.

ISDA's members have been using collateral to reduce credit risk in relation to privately negotiated derivatives for a number of years, during the course of which, thorough working groups composed of member experts ISDA:

- Drafted and published forms of collateral documentation (Credit Support Protocol, 2001 Margin Provisions, Credit Support Annex or Credit Support Deed) under English, New York and Japanese law, together with User's Guides to these documents;
- Commissioned and distributed to its members legal opinions from various jurisdictions on the enforceability of those documents and continues to seek opinions from additional jurisdictions;
- Prepared and published its original Guidelines for Collateral Practitioners in November 1998 and an update on issues relating to collateral management in the ISDA 1999 Collateral Review;
- Continues to study collateral management with a view to improving standards and efficiency in the market, including reviews of market standard documentation, with a view to updating, clarifying and streamlining the documentation to enhance its usability cross-border;
- Initiates and supports projects to harmonize legal and regulatory regimes, such as the ISDA European Collateral Law Reform Group and the ISDA Hague Convention Working Group

### **Annex 2**

#### **Participating Institutions**

ABN AMRO Bank NV  
Bank of America, NA  
Bank Brussels Lambert SA/NV Brussels  
Bank of Montreal  
The Bank of New York

Bank One, NA  
The Bank of Tokyo-Mitsubishi Ltd  
Barclays Capital  
Bear Stearns  
BNP Paribas  
Chase Manhattan Bank  
Citibank Margin Unit  
Commerzbank AG, Frankfurt  
Credit Suisse First Boston International  
Deutsche Bank AG  
DG Bank Deutsche Genossenschafts AG  
Dresdner Bank AG  
Gen Re Securities  
Goldman Sachs & Co and affiliated entities  
Hamburgische Landesbank Girozentrale  
Hong Kong and Shanghai Banking Corporation Ltd  
HSBC Bank plc  
The Industrial Bank of Japan Ltd  
KBC  
Lehman Brothers  
Merita Bank plc  
Merrill Lynch  
Mizuho Capital Markets Corporation (formerly Fuji Capital)  
JP Morgan  
Morgan Stanley  
Nomura International plc  
Reliant Energy Services, Inc  
Royal Bank of Canada  
RWE Trading GmbH  
Salomon Smith Barney  
The Sanwa Bank Ltd  
Sanwa International plc  
SEB (Skandinaviska Enskilda Banken)  
Societe Generale  
Standard Corporate and Merchant Bank (A division of the Standard Bank of South Africa Limited)  
Sumitomo Mitsui Banking Corporation  
UBS Warburg  
Zuercher Kantonal Bank

ISDA wishes to thank all of the firms who participated in the 2001 Collateral Survey.

### **Annex 3**

#### **Acknowledgements**

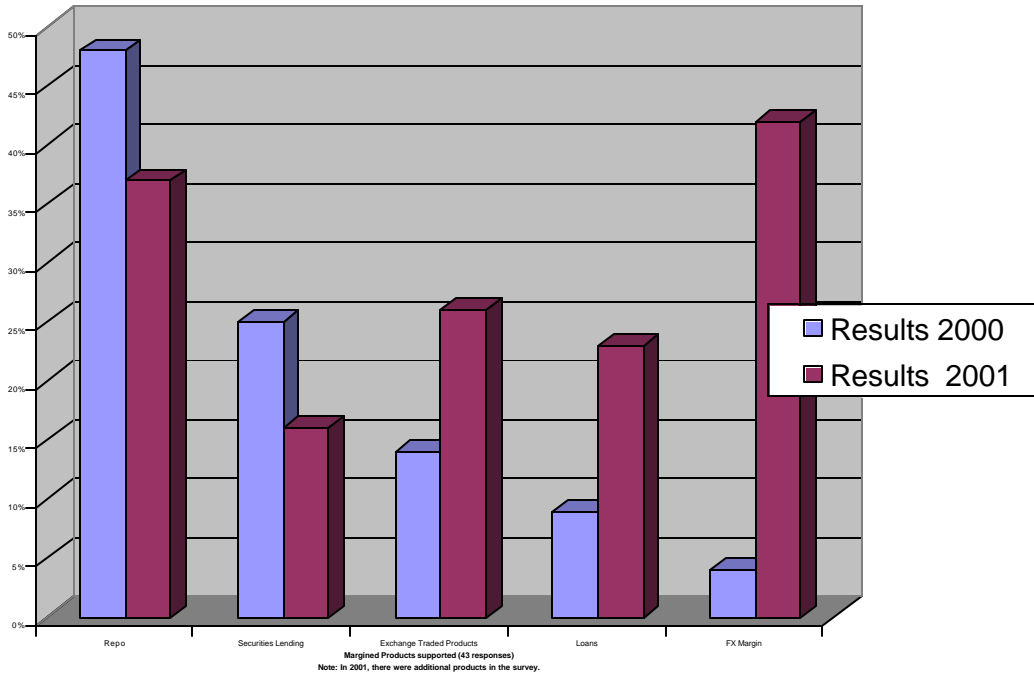
ISDA would like to thank the following for their contributions to the preparation of the 2001 Survey:

Nick Beharry, Arthur Andersen LLP

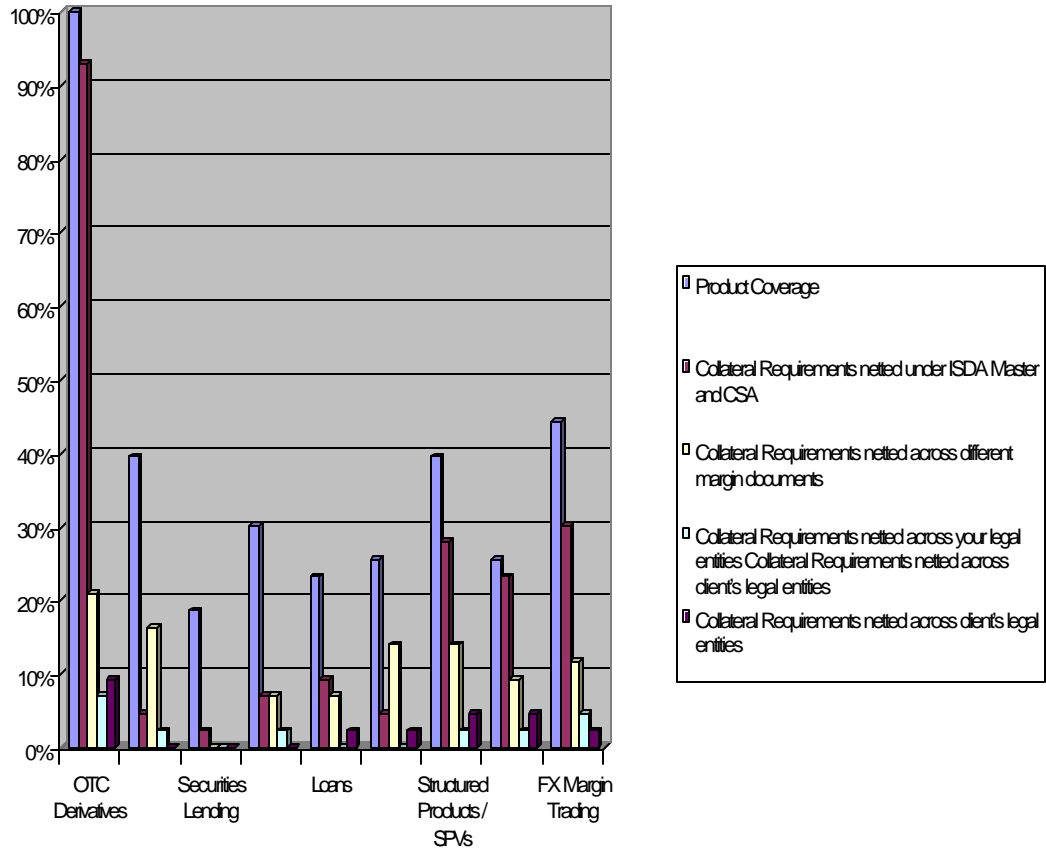
Michael Clarke, Cygnifi  
Penny Davenport, Lombard Risk  
Kathy Dietz, Arthur Andersen LLP  
David Maloy, UBS Warburg  
Robert McWilliam, ABN Amro  
Teruo Tanaka, IBJ

**Annex 4**  
**Results to Questionnaire**

Trend analysis 2000 thru 2001 of Margined Products Supported (1.05)

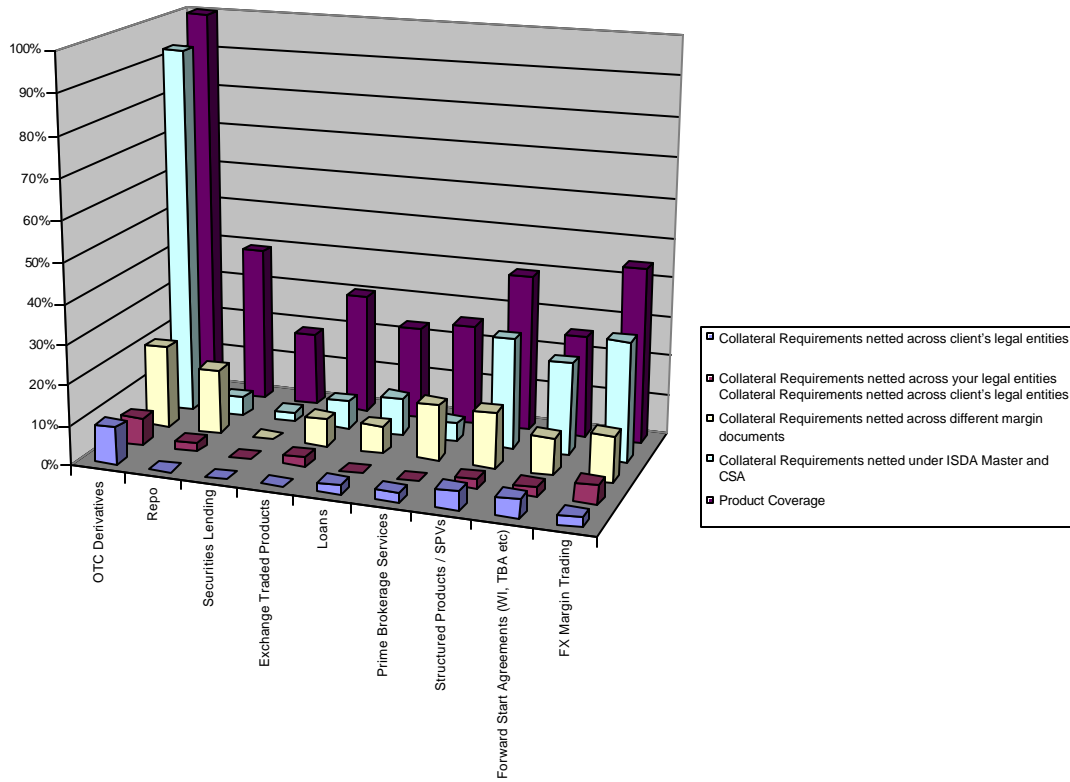


Supported Margin Products v1 (1.05)



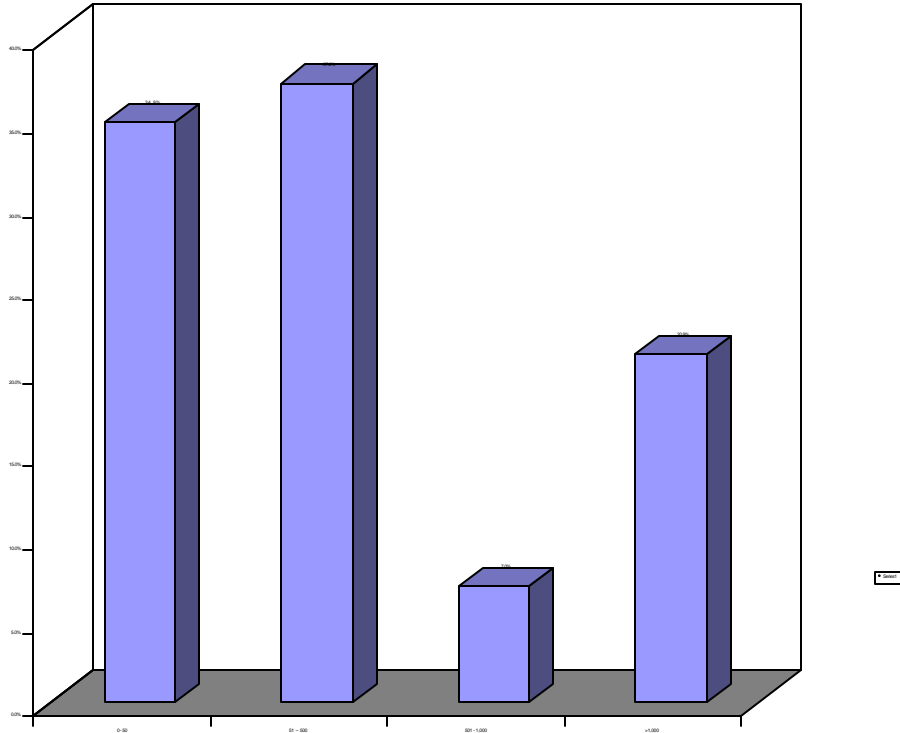
43 responses

Supported Margin Products v2 (1.05)

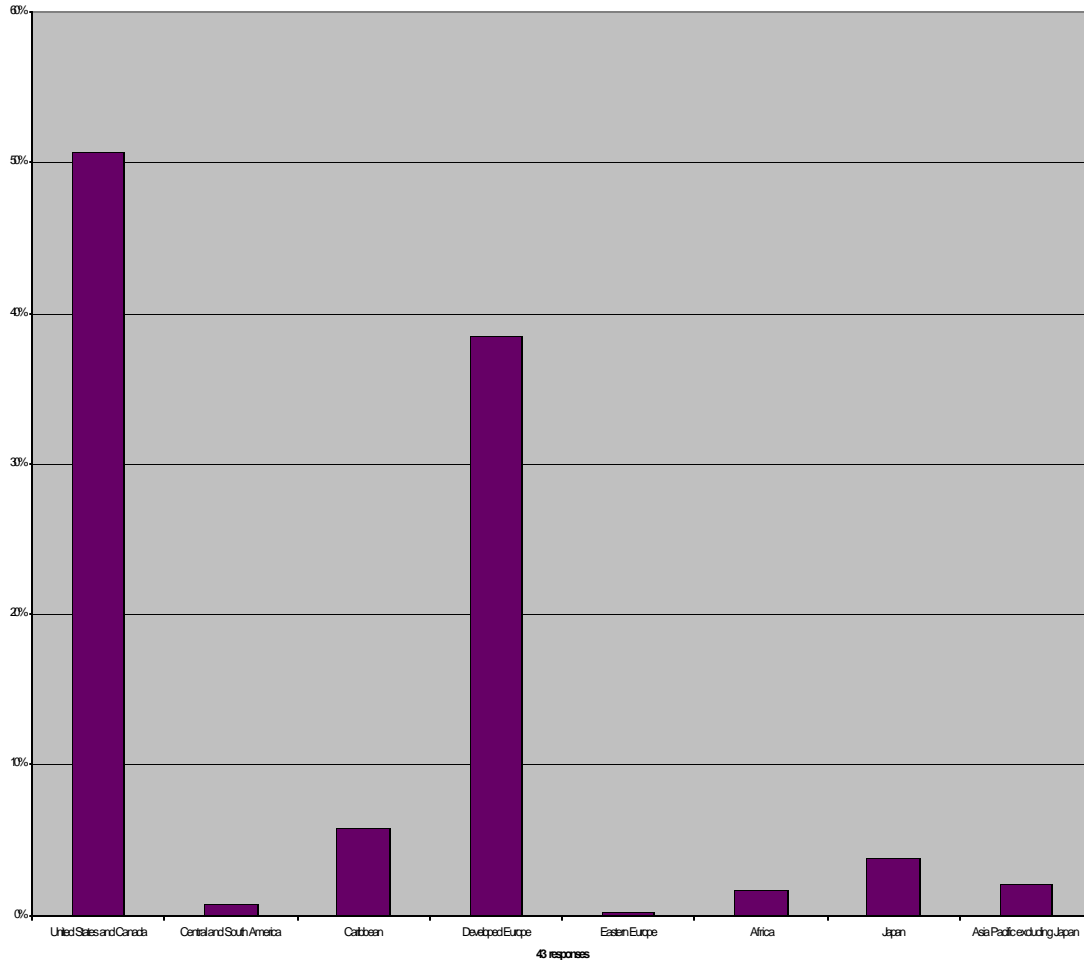


43 responses

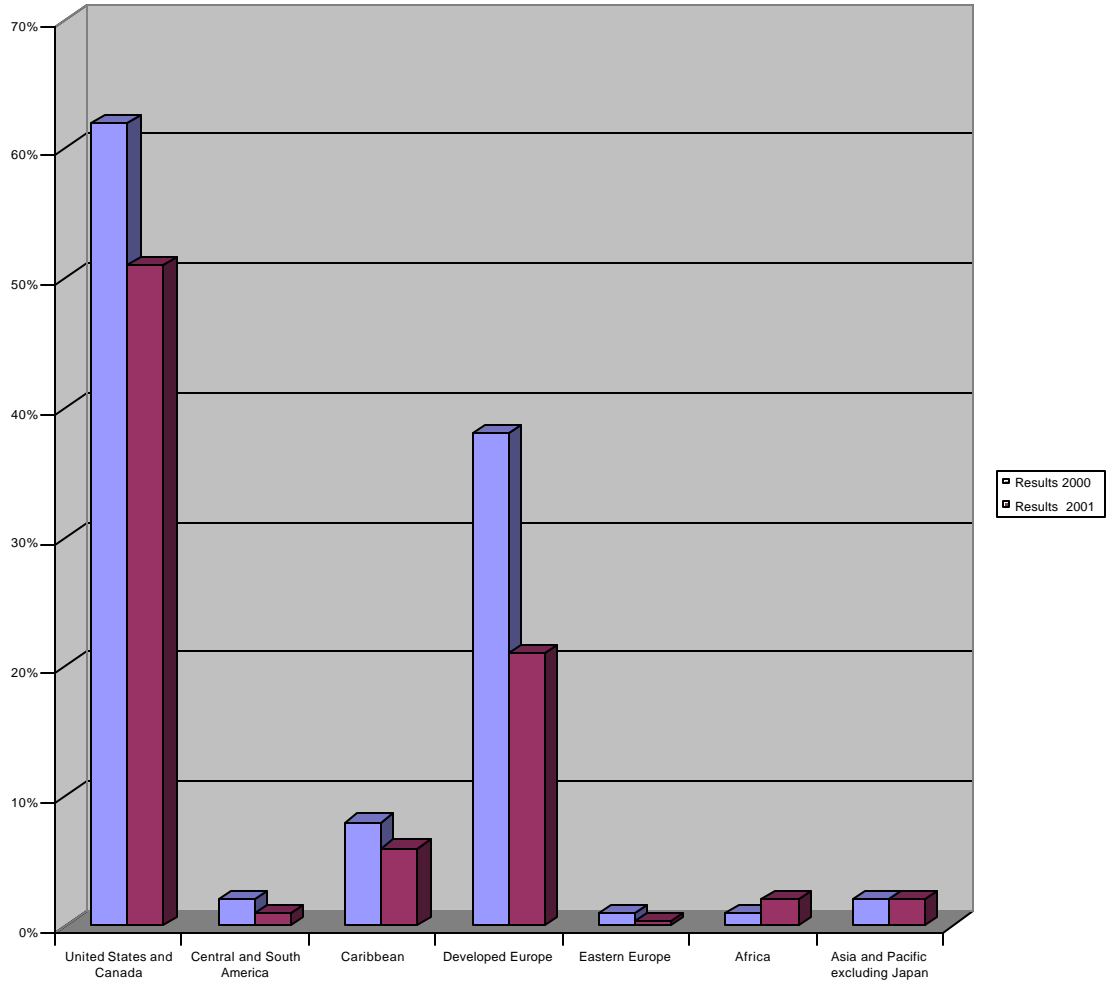
**Collateral Agreements for OTC Derivatives Supported (1.06)**  
43 responses



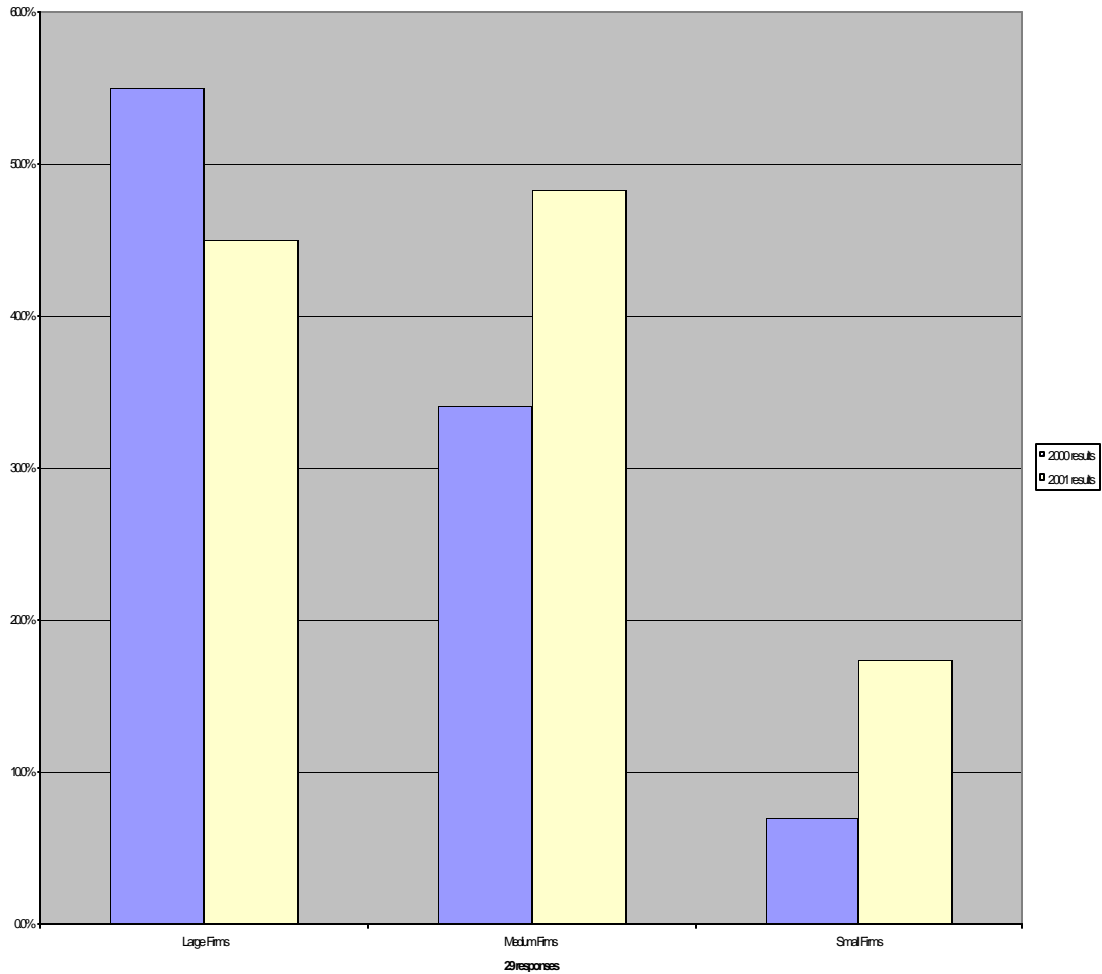
### Geographic Distribution of Collateralised Counterparties (1.07)



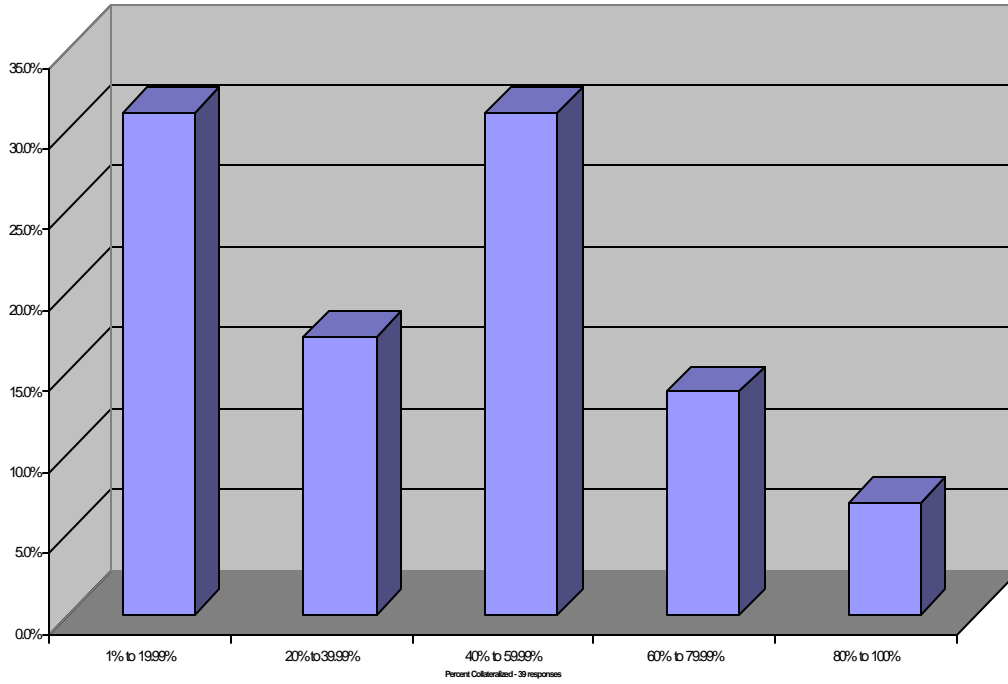
Geographic Distributions of counterparties (1.07)



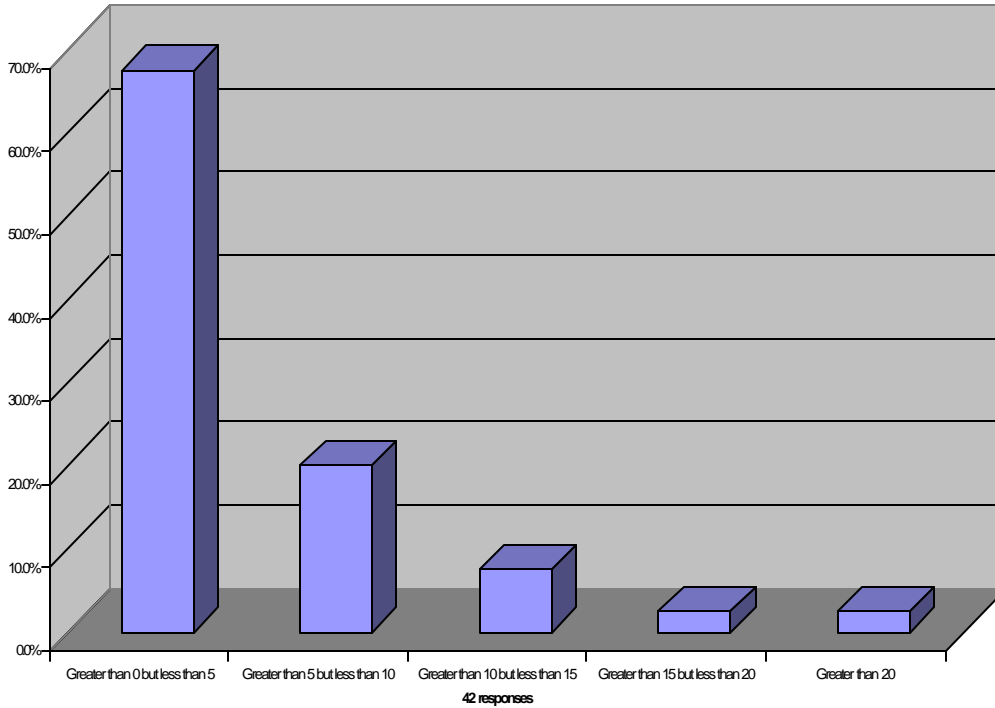
### Percentage of OTC Derivative Trading Book Collateralized (1.08)



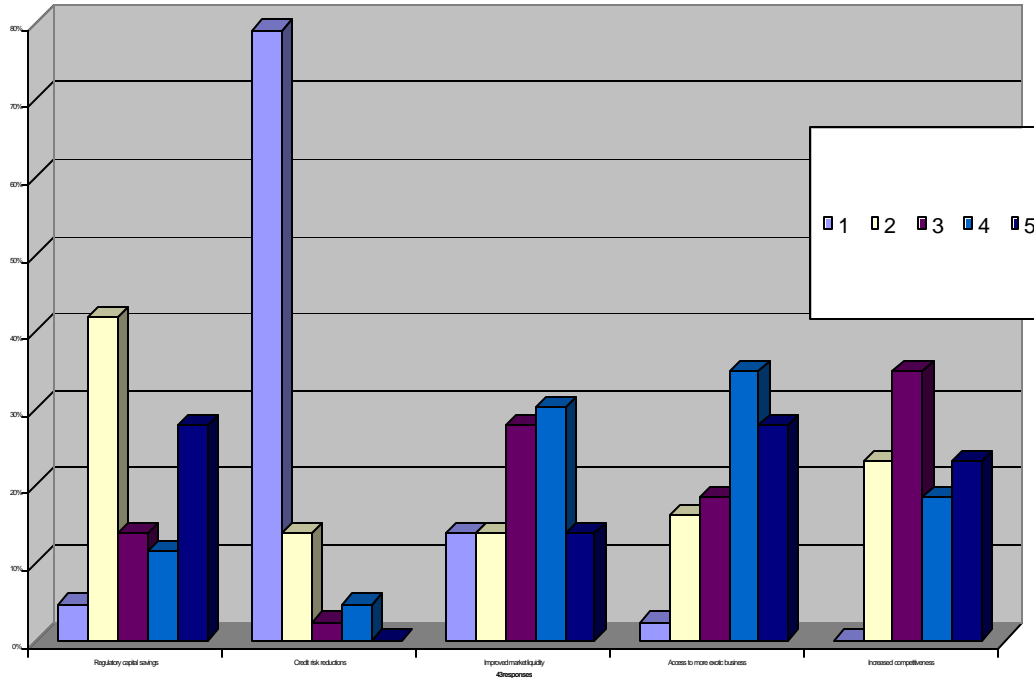
Percentage of Total OTC Derivatives Trading Book Collateralised (1.08)



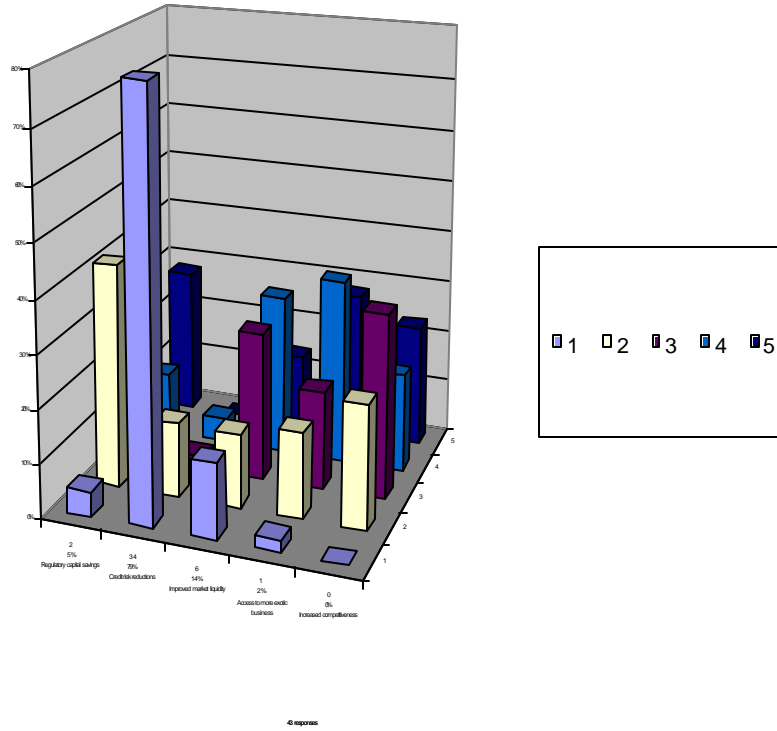
Number of Legal Entities Supported by Collateral Management (1.09)



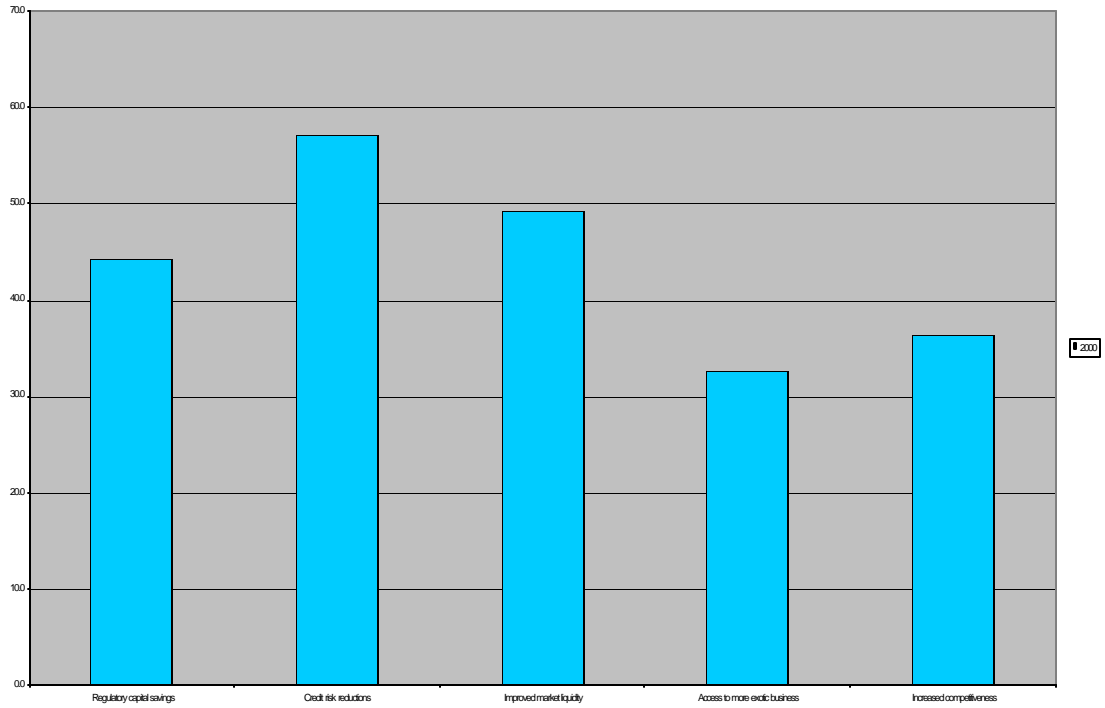
Rankings of Main Drivers for Collateral Management v1 (201)



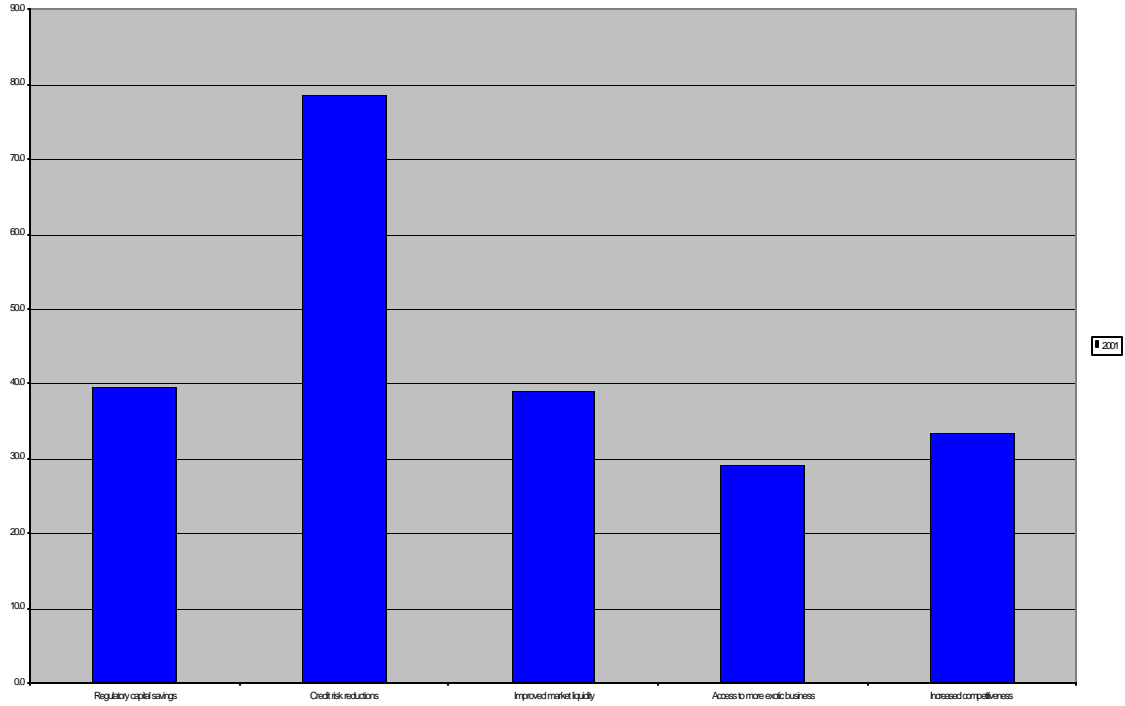
Rankings of Main Drivers for Collateral Management v2 (201)



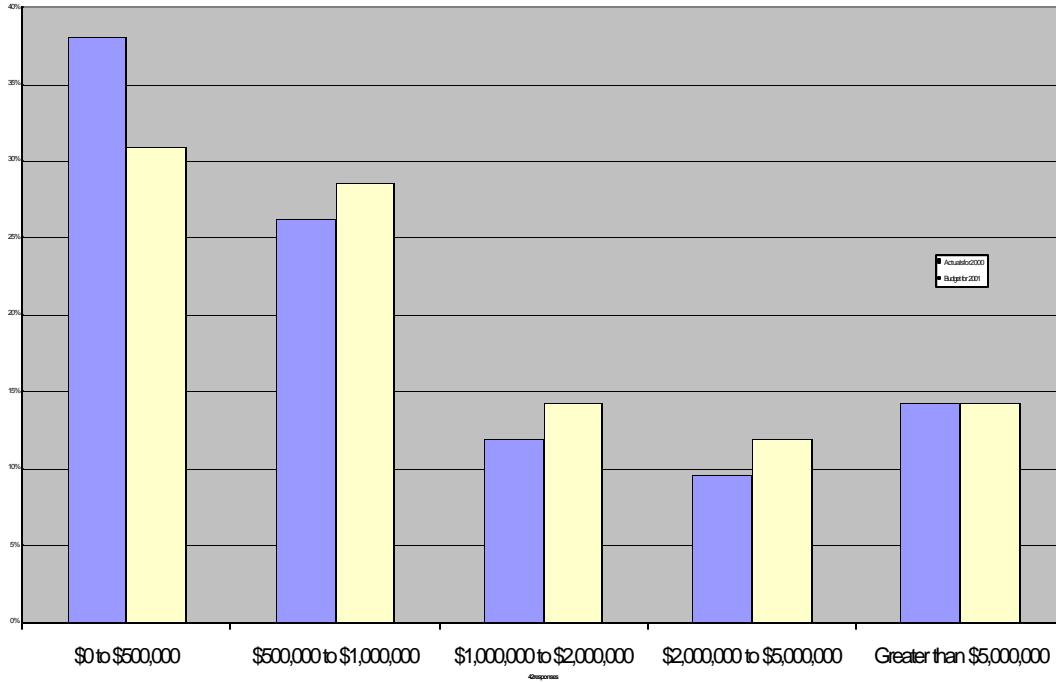
Drivers for Collateral Management 2000 relative to each other (201)



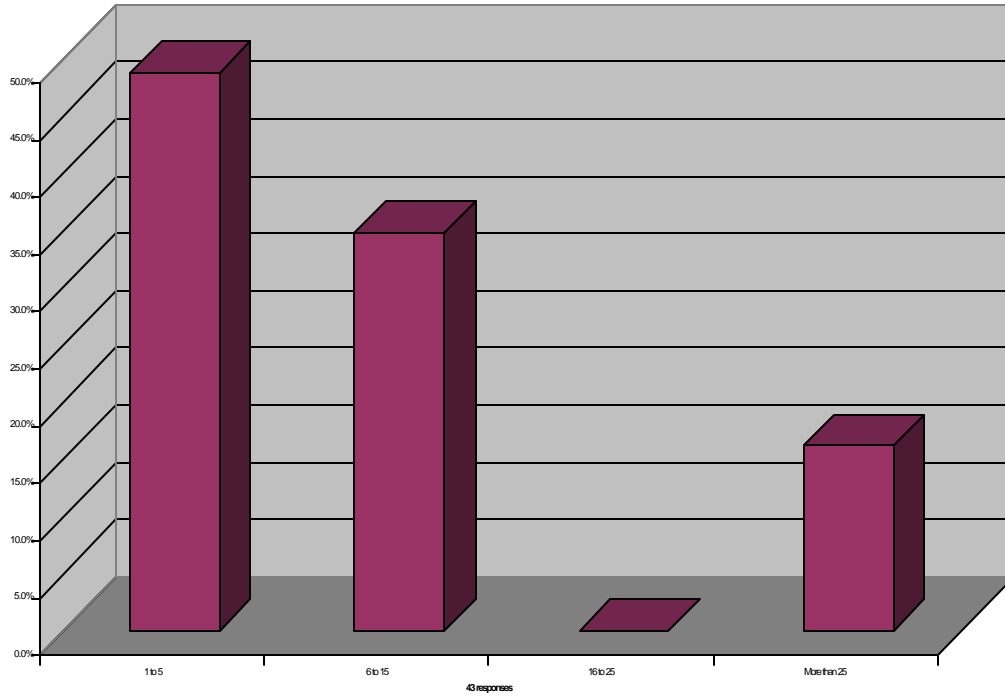
Drivers for Collateral Management 2001 relative to each other (201)



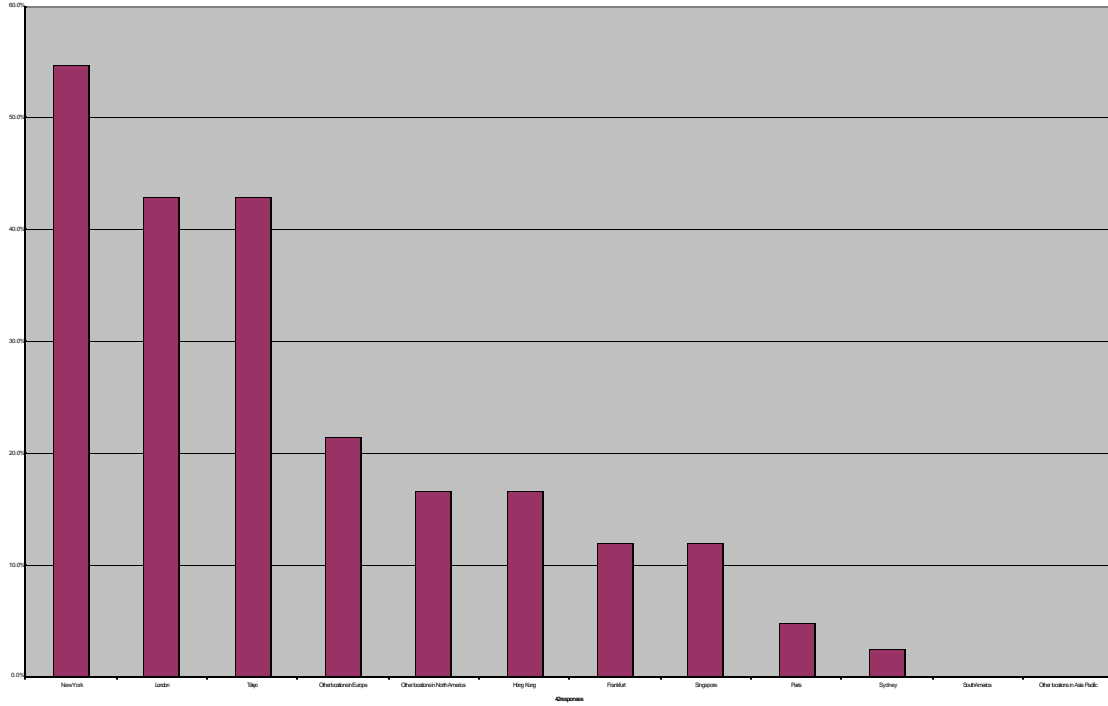
Expenditure on Collateral Management (3.01)



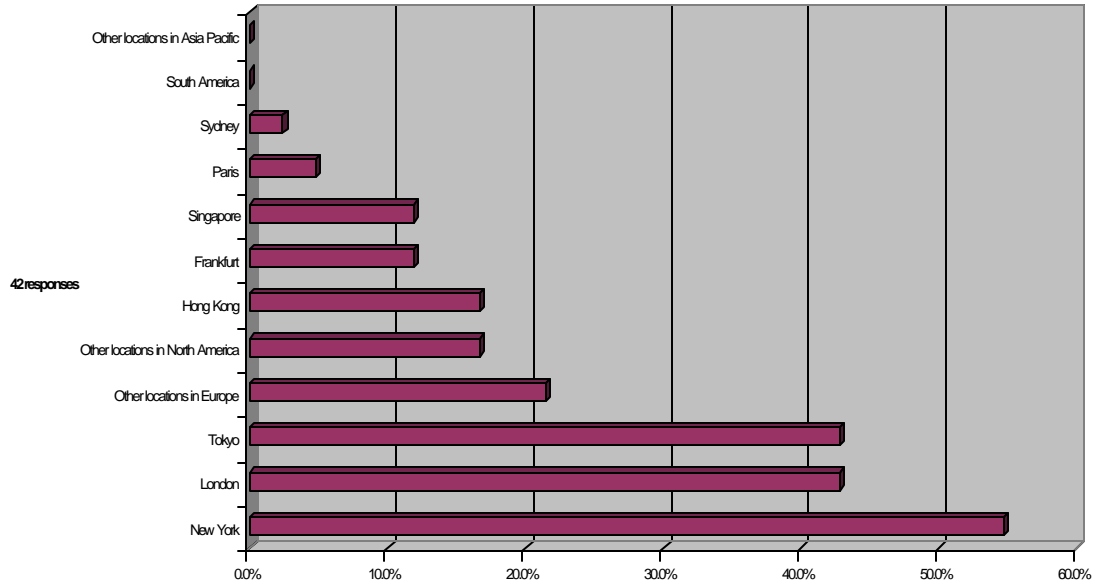
Size of Collateral Management Staff (3.02)



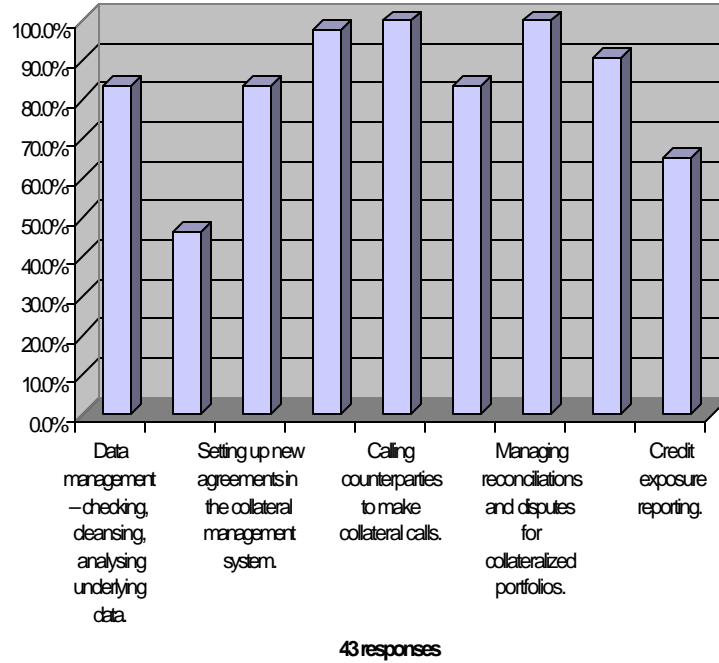
All Locations of Collateral Functions (303)



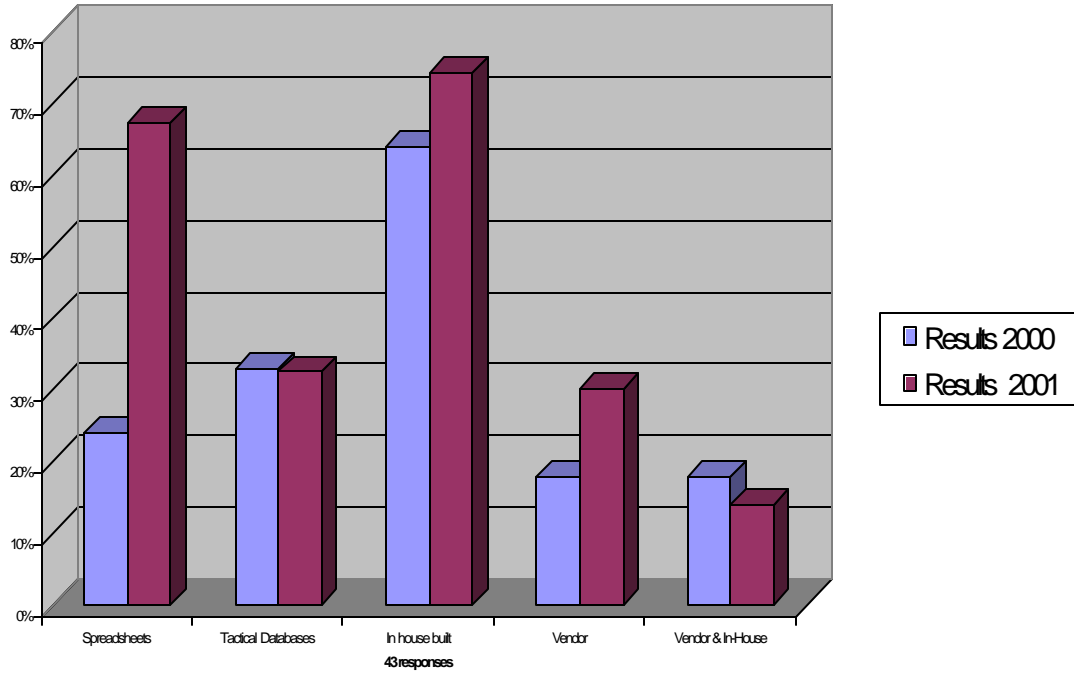
All Locations of Collateral Functions (3.03)



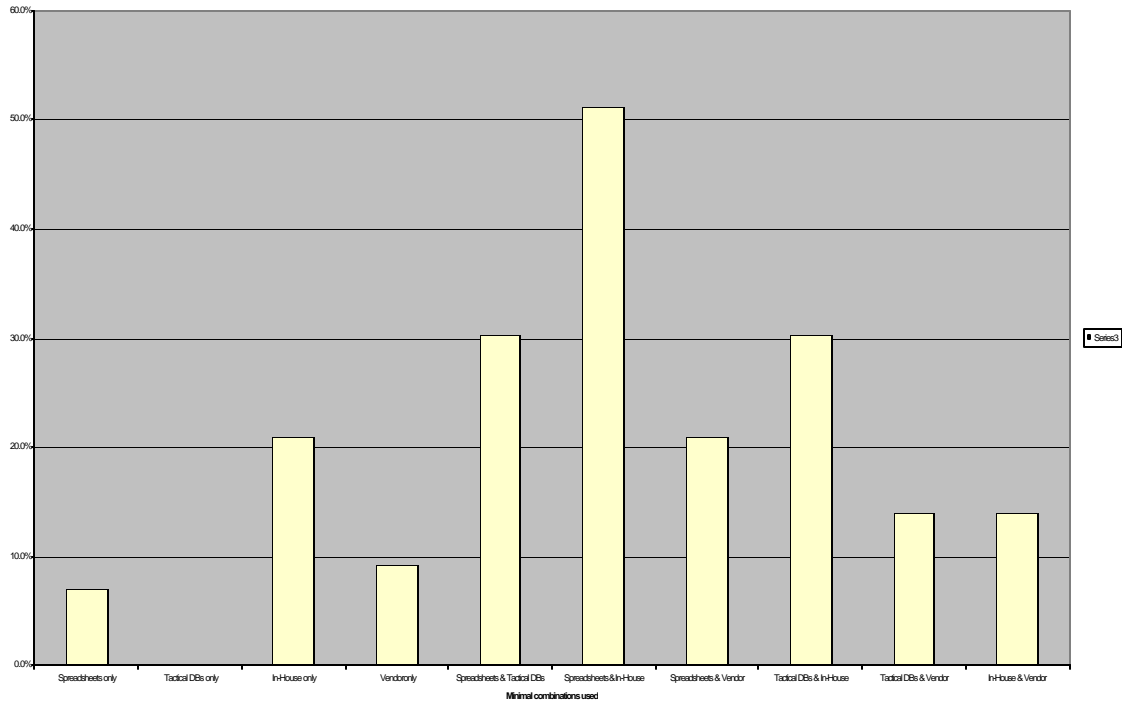
**Functions of Collateral Management Team (3.04)**



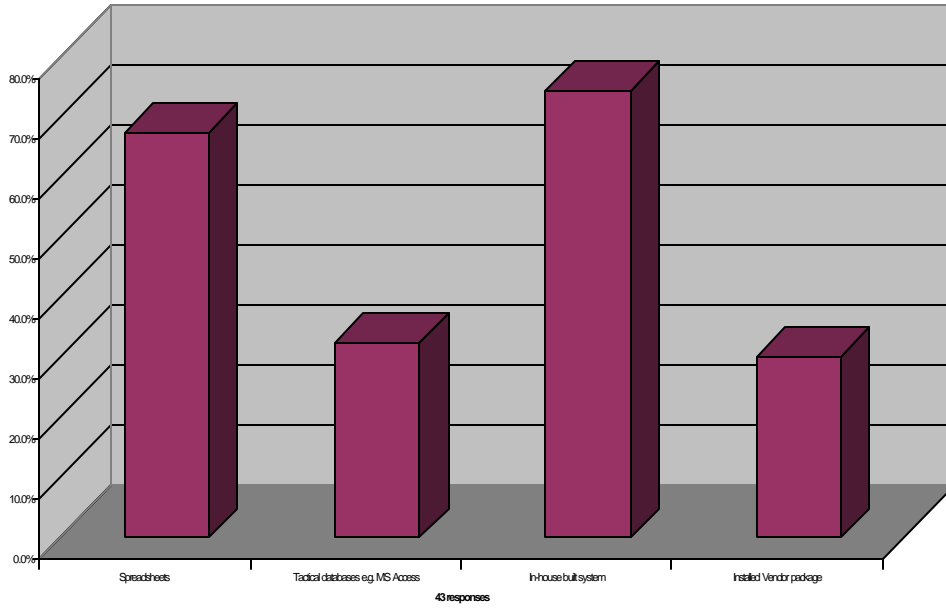
Technologies used to support Collateral Management (4.01)



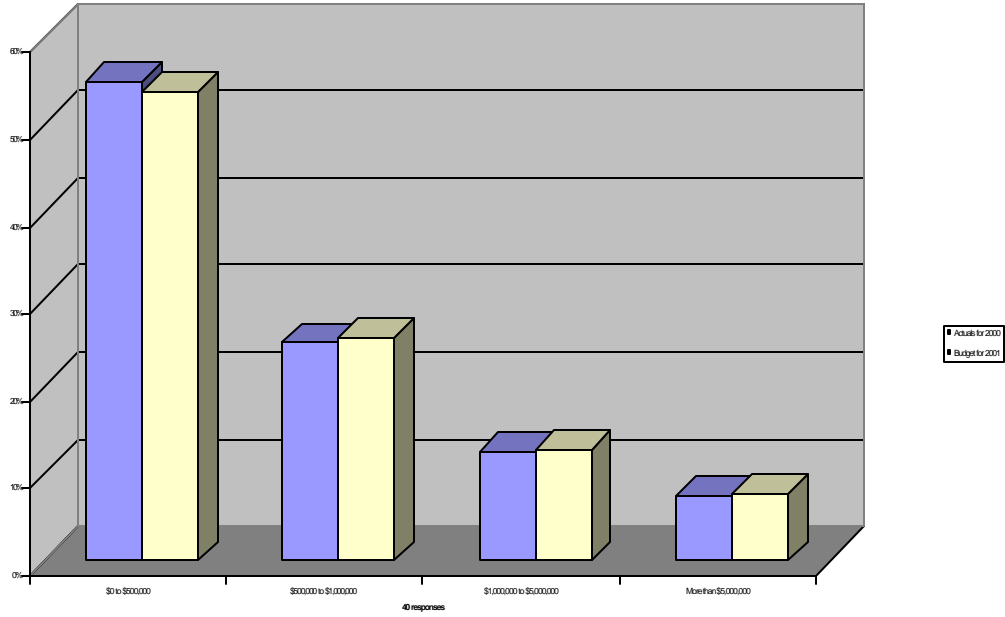
Technologies used to support Collateral Management Business (4.01)



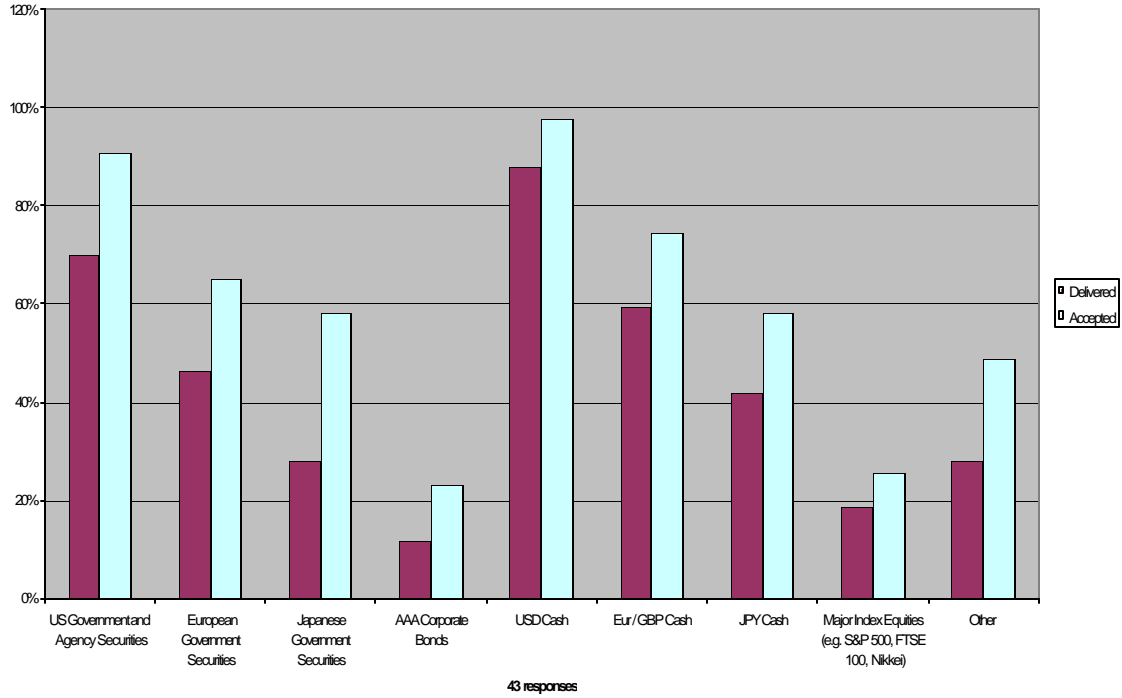
Different Technologies that Support Collateral Management Business (401)



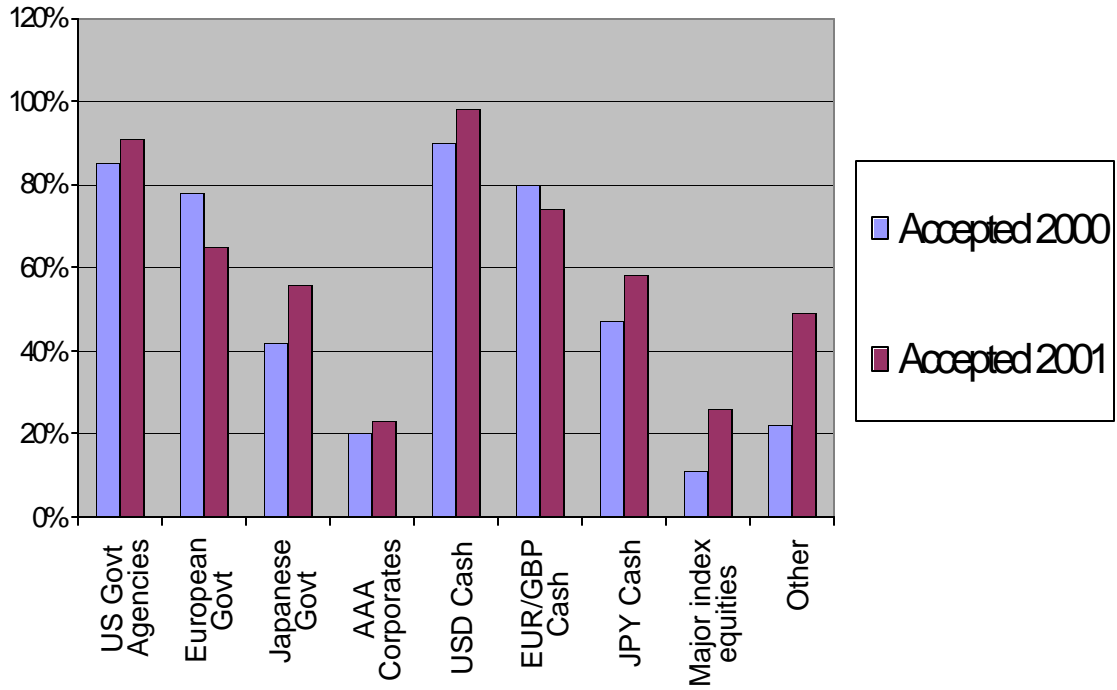
Expenditure on Collateral Technology (4.02)



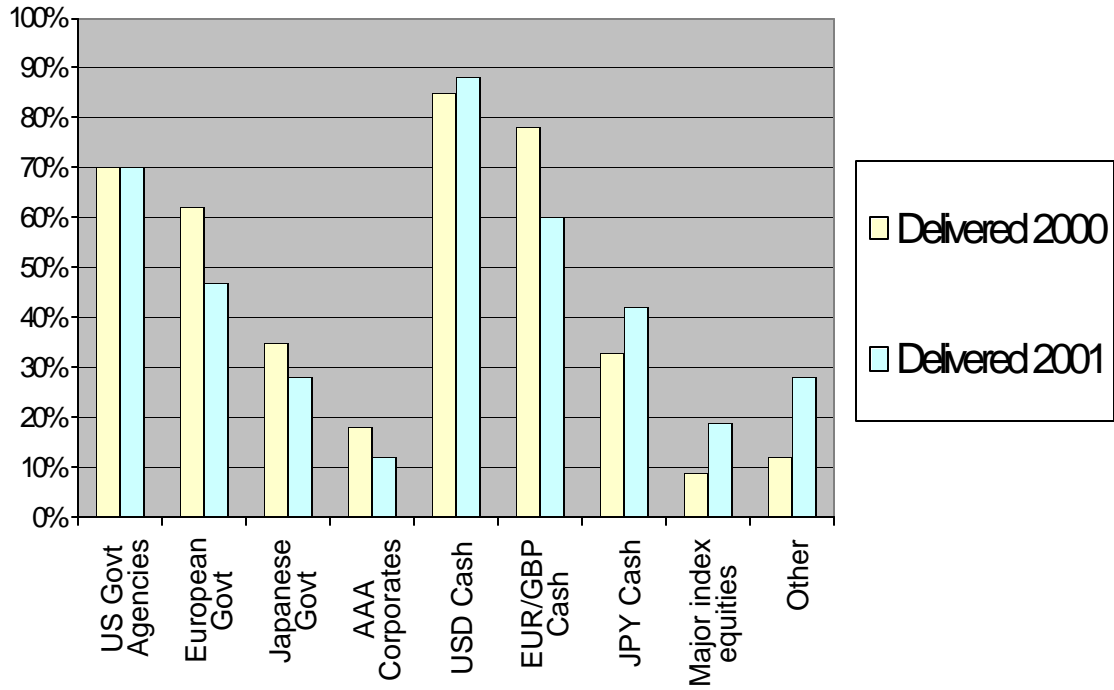
Collateral Types used by Institutions in First Quarter (5.01)



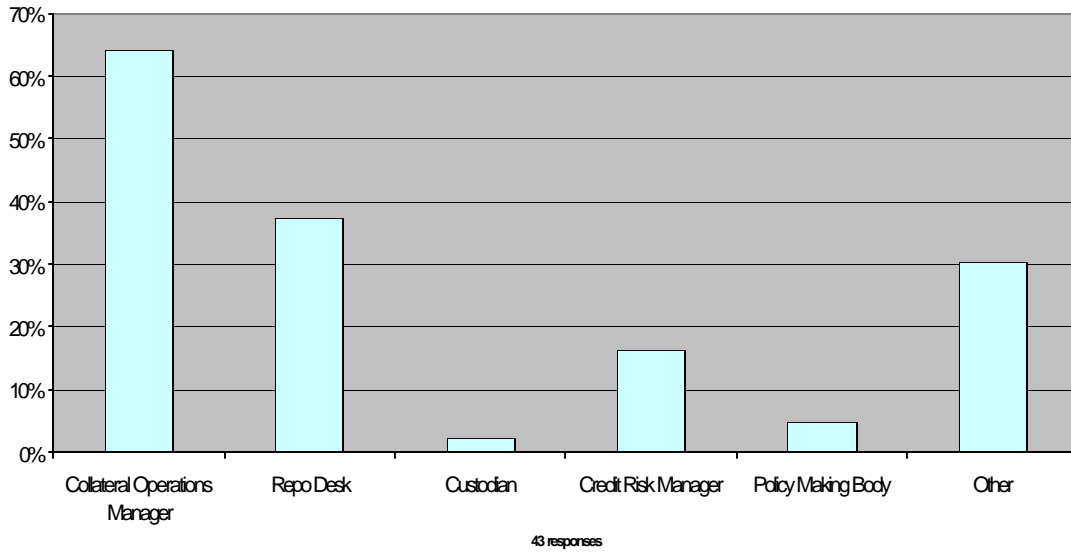
Collateral types Accepted 2000 & 2001 (5.01)



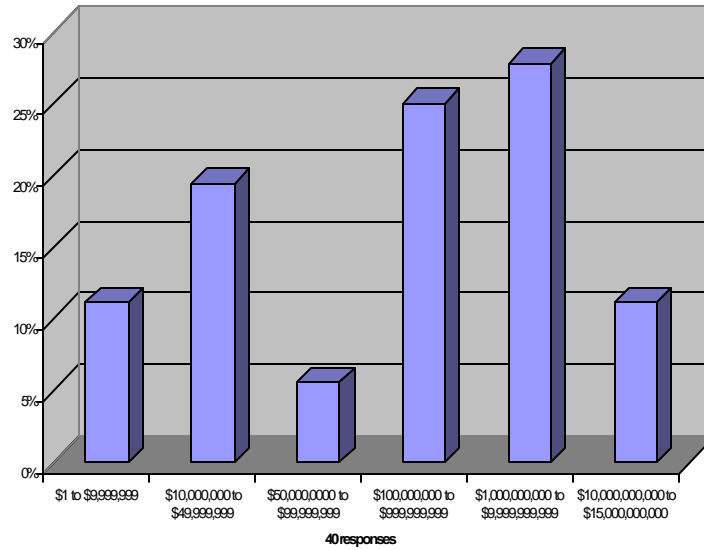
Collateral types Delivered 2000 & 2001 (5.01)



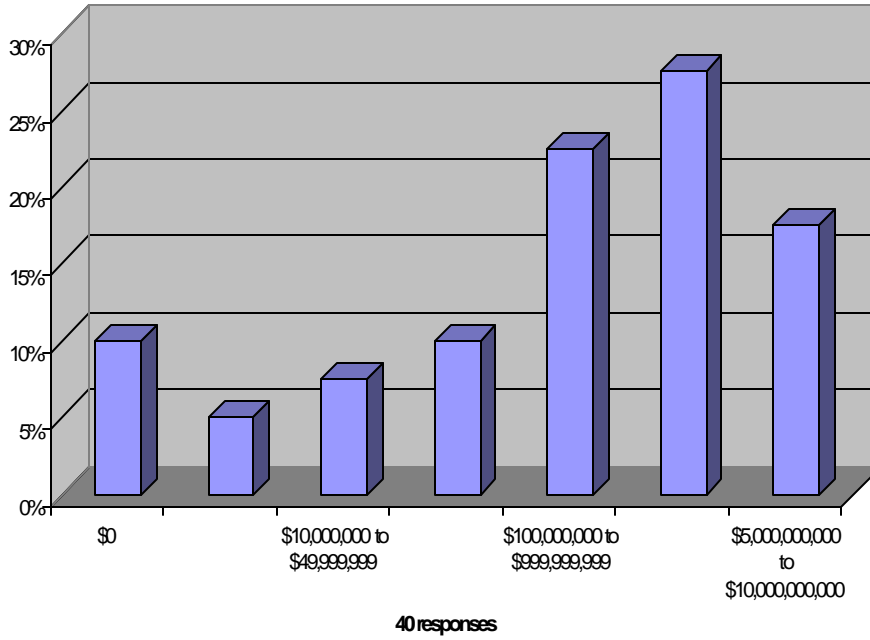
### Responsibility for Deciding which Assets will be Delivered out as Collateral (5.02)



Collateral On Hand With Respect to Derivatives Portfolio (5.03)



Collateral out to Collateralised Counterparties (5.04)



## **Annex 6**

### **Brief Glossary of Selected Terms as used in this Report**

#### **Agreement**

An arrangement between any two parties to post collateral where (the attainment of a pre-specified level of) credit exposure warrants this. Under an agreement, collateral may be liable to be posted mutually or as required by just one of the parties. Agreements are said to be 'active' once one or more transactions have been included in their scope. The totality of a firm's agreements constitute a collateral 'program'. In some instances, the collateral arrangement is managed by a third party, in which case the agreement is termed 'tripartite'.

#### **Collateral**

The generic term for property provided by one party to another to mitigate the transferee's credit risk on the transferor. Sometimes also referred to as 'margin'. The term collateral derives from 'collateral security' (as opposed to the principal security, which at one time would typically have been land and buildings). The term can be used to refer to security interest (see 'pledge') or title transfer arrangements. 'Credit support' is the term used in ISDA documentation for all forms of collateralization technique.

#### **Credit Risk Mitigation**

Any of a number of ways of systematically limiting the potential for loss due to credit risk. Collateral is a key form of credit risk mitigation, as are credit derivatives, guarantees and netting. See also 'potential future credit exposure', 'risk – correlation risk'.

#### **Credit Support Annex/Credit Support Documentation**

Credit support documentation is carefully designed to facilitate the establishment and maintenance of collateral agreements between parties in a legally robust and predictable manner. ISDA publishes four such forms of documentation, each appropriate for a different legal environment. These are the New York Law Pledge Annex, the English Law Transfer Annex, the English Law Credit Support Deed and the Japanese Law Annex. These are supported by annually updated reasoned legal opinions as to the enforceability of contracts relying on such documents in different jurisdictions around the world.

#### **Database**

Collateral operations require particular forms of data to support them, notably in relation to eligible and posted assets, underlying exposures and the details of any agreements. This data can be entered into a normal commercial spreadsheet or, in a more structured and readily manageable way (particularly if the amount or complexity of data is greater), into a 'tactical database'. (The denotation 'tactical' refers to the fact that the database is created especially for a particular business unit. 'Data warehouses' by contrast, are used as a central and more widely accessible repository of data, often taken from a variety of sources.) Some collateral units buy or build 'robust systems'. Like tactical databases, these are dedicated software solutions adapted to the particular needs of that unit, but typically are more efficient at the rapid processing of large volumes of data.

### **Data Warehouse**

A data warehouse fulfils a data management function, acting as a repository of potentially useful information, structured in such a way as to make that information accessible to all concerned parts of a firm. (It may, in addition, allow the development and maintenance of a historic time series, which may constitute part of that same database or else be stored separately.) A key advantage of a data warehouse is that it can gather together data from disparate sources and/or on a variety of issues that has been converted to a common format, and store it for use throughout a firm's various systems.

### **Haircut**

Any collateral that is eligible for posting is, as a result of market movements, liable to decrease in value relative to the exposure it is intended to secure. To counter this, dealers will typically assign less than full face value to that collateral. The amount by which the value assigned to the collateral is less than full face value is termed the 'haircut', usually expressed in percentage terms of the face value,

### **ISDA Instruments**

ISDA documentation covers a range of privately negotiated derivatives, collectively known as 'ISDA instruments'. This comprises interest rate swaps and options and derivatives referenced to credit, equity, energy and foreign exchange rates. A particular collateral arrangement may cover exposures arising from any or all of these and/or other financial transactions too.

### **Liquidity**

1. See 'risk'.
2. Strictly funding or the ability to source funding. The ability or willingness to post collateral can help secure access to funding. In the context of the current survey, the term is used to denote access to financial transactions more broadly.

### **Margin**

Loosely, a synonym for 'collateral'. Particular usages include the terms: 'initial margin', which is collateral required to be posted at the inception of a transaction or relationship; 'margin call', the process by which a party demands initial or further collateral, usually upon the passing of a credit 'threshold'; and 'cross-margining', referring to the joint collateralisation of several exposures or classes of exposure. Also, 'margin' is commonly used with reference to collateral required by an exchange clearing house.

### **Mark-to-market**

The process of valuing an exposure (arising from future obligations) based on current market prices; top-up collateral is additional collateral provided by one party to the other as a result of changes in the mark-to-market value of the exposure and/or the collateral.

### **Market stress**

A period when asset values are suddenly and significantly depressed or otherwise dislocated. In such a period, the benefits of effective collateral arrangements become increasingly important.

### **Pledge**

A form of security interest granted by a party (the pledgor) over its property to another party (the pledgee); cf 'title transfer'; see also 'collateral', rehypothecation'.

### **Population**

Since the determination of whether collateral needs to be posted depends on the valuation of exposures, and since a given collateral arrangement may cover a number of different exposures, an important preliminary step is that the two parties to an arrangement agree on the list of underlying transactions that are to be valued at any given point of time. The composition of that list is referred to as its 'population'.

### **Potential Future (Credit) Exposure**

Once an exposure has been marked to market, it is still naturally liable to increase in the future. At the same time, many collateral agreements are based on periodic transfers of security. Collateralization therefore often takes into account not only the current exposure but the potential for that exposure to increase between mark-to-market/transfer dates – the 'potential future credit exposure'.

### **Program**

See 'agreement'.

### **Reconciliation**

In the context of this survey, the process by which a firm checks that it agrees with a counterparty's 'population'.

### **Rehypothecation/Re-use**

In its strict sense, this means the use of pledged assets by the pledgee to give as a security for the pledgee's own obligations, this being subject to the original pledgor's rights to return of the property. It is also sometimes loosely used in the sense of pledged assets used by the pledgee as if it owned those assets, for example, sale of the pledged assets by the pledgee to a third party. Even more loosely, it is used as a synonym of 're-use', for instance re-sale by the recipient of collateral under a title transfer arrangement.

### **Repo**

A transaction where one party sells securities to the other at the outset and the parties agree the other will sell securities of the same type at the same price back to the other party at a specified date in the future. Where the party selling the securities at the outset chooses which securities these should be, the transaction is a repo or 'securities repurchase' transaction and has the commercial effect of a secured loan; where the party buying the securities at the outset chooses which securities these should be, the transaction is a 'securities lending' transaction and allows the buyer to cover a short position in those securities.

### **Risk**

There are a number of risks associated with the establishment and maintenance of collateral programs. Credit risk is the most obvious – see 'credit risk mitigation'. Some of the key risks also referred to in the survey are set out here.

**Correlation Risk:** In the context of this survey, the risk that the value of collateral will change substantially and directionally in line with that of the exposure it is intended to secure, thereby reducing its effectiveness as a form of credit risk mitigation.

**Custodian Risk:** A custodian is a third party appointed to safe-keep assets on behalf of account-holders, whose rights to those assets will be shown by entries in a register or similar set of records (typically in computerized form). Custodian risk is the risk of a failed or inadequate performance by the custodian.

**Issuer Risk:** The credit risk associated with securities posted as collateral.

**Legal Risk:** A sub-category of operational risk, this is the risk that a collateral arrangement will not be enforceable, for instance because of a failure to implement a properly documented contract.

**Liquidity Risk:** As distinct from liquidation risk, the risk that the value a party is able to realize on collateral held is diminished because of prevailing bid-offer spreads, particularly in relation to the amount of collateral to be realized.

**Liquidation Risk:** As distinct from liquidity risk, the risk that a party will not be able to realize in a timely fashion the value of collateral held.

**Operational Risk:** Any of a series of risks (including legal risk) which can reduce the effectiveness of a collateral arrangement. The definition of operational risk that ISDA uses is: 'the risk of direct or indirect loss resulting from inadequate or failed internal process, people and systems or from external events'.

### **Robust System**

See 'database'.

### **Threshold**

1. Collateral agreements will often stipulate that collateral must be posted only once credit exposure exceeds a specified level. This level is known as the 'threshold'.
2. In the interests of operational efficiency, agreements may stipulate a de minimise level of collateral required to be posted at any given point. This would be relevant when there has been only a small increase in the underlying credit exposure. This minimum transferable amount is known as the 'threshold amount'.

### **Title Transfer**

A form of collateral arrangement where absolute title to the underlying assets is transferred in exchange for a promise to return equivalent (fungible) assets, subject to a right of set-off; also referred to as 'outright' transfer.

### **Suggestions:**

If there are other data points you would be interested in knowing and consider would form a valid part of the ISDA Margin Survey, please contact your regional representative, as indicated on the ISDA Website at [www.isda.org](http://www.isda.org). Your participation in ISDA's efforts is much appreciated.