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Derivatives: Practices and Principles
Appendix I: Working Papers

Global Derivatives Study Group

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Section 1
Working Paper of the Valuation and Market Risk Management Subcommittee
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Recommendations are numbered as they appear in the Recommendations section of the Global Derivatives Study.
The recommendations of this Working Paper of the Valuation and Market Risk Management Subcommittee focus primarily on derivatives, although many of the approaches are applicable to other financial instruments. Dealers and end-users undertake derivatives transactions for a number of purposes related to derivatives dealing, proprietary trading, risk management, and funding and investing.

Section I presents the challenges participants face in valuing derivatives transactions or portfolios, measuring their market risk, and handling other related risks. It assesses and discusses current and planned market practices, drawing on the results of the Survey of Industry Practice. Section II sets forth principles of good management practice with respect to valuation and the management of market risk.

I. Management Challenges

Valuing Derivatives Portfolios

The challenge of market risk management begins with proper valuation of derivatives portfolios. It is essential for market participants to apply appropriate methodologies in valuing their derivatives portfolios. Incorrect valuation leads not only to inaccurate income recognition, but also to inaccurate hedging. For instance, incorrect valuation of an option can lead to an incorrect measure of its price sensitivity (i.e., delta) and consequently an inadequate hedge. Similarly, other risk components of the option also might be improperly estimated.

Derivatives participants overwhelmingly recognize this need for correct valuation and mark their portfolios to market for management purposes even if they use a different valuation method for external reporting. Of the dealers responding to the Survey, 85% indicate that, for risk management purposes, they mark their derivatives portfolios to market as opposed to other valuation techniques, such as lower-of-cost-or-market or accruals accounting. Of the dealers that currently do not mark to market, the majority have plans to begin marking to market in the future. Dealers that the Survey classifies as “large” or “global, full range” tend to mark to market to a greater extent than dealers with a more limited scope of activity.

The Survey results suggest that 36% of responding dealers mark to mid-market, less specific adjustments, while 46% mark to mid-market without adjustments; the remainder use a bid/offer method. Examination by category of dealers reveals that of those with global, full range derivatives activities, almost 79% either do, or plan to, value at mid-market, less adjustments (although they may take credit reserves in other parts of their income statements). Sixty percent of large dealers indicate that they use adjustments currently, while 21% of smaller dealers claim the same.

Many dealers do not run perfectly matched derivatives portfolios. For those dealers, rebalancing and rehedging their portfolios with market moves and the passage of time requires the ability to value portfolios frequently, even intraday in the case of some option portfolios. Seventy-seven percent of responding dealers indicate that they value their portfolios on a daily basis. A higher percentage of large and global dealers mark daily, compared with smaller or purely domestic dealers. Among end-users that use derivatives for position taking, 54% value their positions daily and 38% monthly. When this group is broken down by geographic regions, all North American and U.K. respondents mark daily, Continental
European end-users mark monthly, and Japanese and Australian firms vary in their frequency of marks.

Understanding and controlling market risk require quantification of the profit and loss impact of market movements. The first step, described below, is to isolate the profit and loss effect of taking market risk from other activities such as credit-risk taking and origination. The second step, also described below, is to break down the profit and loss derived from market risk, taking into account its component parts. It is common for traders at large dealers to define components that correspond to the individual risk measures used for market risk measurement. However, few dealers identify individual sources of revenue.

**Measuring Market Risk**

While valuation examines past movements in the value of a derivatives portfolio and the performance of risk components, measuring market risk examines similar issues with respect to the future. It helps answer questions as to what may happen and whether too much risk is being taken relative to the limits established. Risk managers within the derivatives industry are developing various ways to quantify market risks. The Survey results suggest that, when measuring market risk, 43% of dealers quantify the maximum loss for an arbitrary specified scenario, while 30% responded that they employ a value-at-risk measurement. About 50% of large dealers employ a value-at-risk measurement.

Measuring market risk under all but the simplest method raises certain technical challenges. First, dealers must establish a measure of risk that can be applied to a wide variety of derivatives. This is especially relevant for large and more diverse dealers, which must aggregate and assess risks across a wide array of derivatives and markets. Second, dealers must make assumptions about underlying volatility and correlations for both instruments and markets. In addition, they must address issues such as the appropriate time horizon to use in determining historical or implied volatility and correlations and whether this data suitably predicts future levels.

Dealers using a methodology that captures risks across instruments and markets find that significant operational challenges of systems capability and compatibility emerge. For instance, to attain an accurate assessment of market risk on a total portfolio basis, dealers should make the risk measurement systems of an interest rate swap portfolio compatible with the systems of an interest rate options portfolio. For large and more diverse dealers, this issue increases in importance and requires even greater integration of systems across different derivatives.

These practical challenges are made somewhat easier by the strong consensus regarding the choice of basic risk measures. A large majority of dealers consider absolute price or rate change (delta), convexity (gamma), volatility (vega), time decay (theta), basis or correlation, and discount rate (rho) in their risk analysis. Three-quarters of the responding dealers examine these parameters across the term structure.

Another challenge involves quantifying and preparing for the consequences of abnormal market conditions when the assumptions that are valid under normal markets no longer apply. The Survey indicates that 61% of all dealers—80% of large
dealers—address this challenge through some kind of stress simulation of their portfolios.

Other Challenges
Reduced liquidity creates significant challenges for risk measurement and management. For illiquid positions, estimating mid-market value and appropriate adjustments or bid/offer levels can be difficult. Of the dealer respondents, 89% indicate that they consider market liquidity implicitly in risk limits or consider it on a case-by-case basis.

Every derivatives portfolio has implicit cash investment or funding requirements arising from mismatches of future cash flows, and from credit arrangements that may produce cash or collateral receipts or payments. For example, if a firm involved in an interest rate swap pays LIBOR quarterly but receives fixed interest rate payments semiannually, it will need to fund the mismatch of cash flows. The magnitude and direction of net cash positions fluctuate with changes in markets and portfolio activity. Estimates must be made concerning the correct rates at which these expected future cash positions will be funded or invested. Among responding dealers, half indicate that they estimate the future cash investing or funding needs from their portfolios. Large dealers and global, full range dealers tend to pay more attention to this risk than do smaller and domestic dealers.

The challenges described in this section must be analyzed thoroughly before appropriate procedures and systems are implemented. Ensuring that the procedures and systems are appropriate is in itself a major challenge. A common solution is to develop an independent risk management function. In practice, over 90% of the responding dealers across all categories either have, or plan to have in the next 18 months, an independent risk management function to implement and oversee valuation and risk management techniques.

II. How to Meet the Challenges

Marking to Market

Recommendation 2: Marking to Market
Dealers should mark their derivatives positions to market, on at least a daily basis, for risk management purposes.

A valuation methodology for derivatives portfolios should meet two key criteria: first, it should reflect the current value of the portfolio cash flows to be managed, and second, it should provide information about market risk and appropriate hedging actions. Marking to market is a valuation technique that meets both criteria. Other valuation methods such as lower-of-cost-or-market and accrual accounting are not appropriate since they do not provide the information needed for risk management.

Dealers should mark their derivatives portfolios to market at least daily. This is because marking to market provides risk managers with critical information concerning both past performance of hedges and current risks. Intraday or even real time valuation can be of great assistance especially to option risk managers,
and often justifies the expense and complexity of the tools necessary to carry out this process.

**Market Valuation Methods**

*Recommendation 3: Market Valuation Methods*

Derivatives portfolios of dealers should be valued based on mid-market levels less specific adjustments, or on appropriate bid or offer levels. Mid-market valuation adjustments should allow for expected future costs such as unearned credit spread, close-out costs, investing and funding costs, and administrative costs.

Mid-market valuation is a marking practice that values a derivatives portfolio at the middle of the current market (the average of bid and offer prices) less specific adjustments. In bid/offer marking, the portfolio is marked to the bid or offer side of the market. Marking to mid-market less adjustments specifically defines and quantifies adjustments that are implicitly assumed in the bid/offer method.

Once mid-market rates or prices have been determined, future cash flows are generated based on implied forward curves and prices. These cash flows are then discounted back using a zero coupon curve which is generated from the mid-market interest rate curve. The net present value of the cash flows represents the mid-market value of the portfolio. Similar calculations are made under the bid/offer method.

Even in a perfectly matched portfolio, mid-market valuation does not reflect the true value of the portfolio. Although a matched portfolio has no market risk, the failure of one counterparty to perform its contractual obligations can result in a loss. Furthermore, even a matched portfolio must be managed from an administrative and operational standpoint. Therefore, two adjustments have to be made, reflecting expected future credit costs and administrative costs. As the assumption of a matched portfolio is dropped and more complex portfolios are examined, two additional adjustments should be made: one for close-out costs and another for borrowing and investing costs. These four adjustments are explained in detail below.

**Unearned Credit Spread Adjustment**

Unearned credit spread represents amounts set aside to cover expected credit losses and provide a return on credit exposure. Expected credit losses should be based upon expected exposure to counterparties, taking into account netting arrangements; expected default experience for the credit rating of the counterparties; and overall diversification of the portfolio. Unearned credit spread should be adjusted dynamically to reflect changes in the factors listed above, *i.e.*, in effect, marked to market. Participants using a more static measure of unearned credit spread may include in that measure an allowance for probable credit losses. Unearned credit spread can be calculated on a transaction basis, on a portfolio basis, or across all activities with a given client.

**Close-Out Costs Adjustment**

This adjustment represents the cost that would be incurred if all unmatched positions were closed out or hedged. The risks to be closed out should include not
only absolute price risk but all other components of market risk. There are a number of approaches to adjusting for close-out costs. They range from a simple transaction-by-transaction bid/offer adjustment to a single aggregate adjustment for a portfolio taking into account offsetting risks. Intermediate approaches take into account offsets within certain maturity or market sectors but may arbitrarily limit the offsets between them.

A recommended approach is to assume that close-out costs of a given portfolio are roughly proportional to price risk. In the case of an individual position, this represents the bid/offer that a dealer quotes based on the dealer's view of its value at risk (see "Measuring Market Risk" below). In a large portfolio that is liquid as to its market risk, one could instead use a measure of value at risk based on a one-day time horizon and one standard deviation adverse-rate move (incorporating correlations of volatilities of variables). If the positions and hedges available are less liquid, it is appropriate to increase the time horizon.

**Investing and Funding Costs Adjustment**

All but perfectly matched derivatives portfolios have future cash surpluses or deficits embedded in them—at some point in the future, the book will be required to invest or borrow cash as a result of cash flow mismatches. Many models implicitly assume that future cash positions are lent or funded at LIBOR flat.

This simplifying assumption can lead to significant inaccuracy in the valuation of portfolios with large actual or implied cash flow mismatches. Each firm must adjust the value of its book to reflect its access to and cost of funds (investing/funding rate) in various markets and currencies. Adjustments to mid-market for cost of funding should be dynamic, reflecting changes in the magnitude of expected investing/funding requirements and in each firm's cost of funds.

**Administrative Costs Adjustment**

Administrative and operating costs must be projected for the life of the existing portfolio. This would include, for example, systems costs, operational costs, and allocated costs of other functions affecting the derivatives activity.

Those adjustments should be determined using consistent and objective methodologies, and reviewed independently from the dealing function.

The Survey shows no set industry standard concerning which adjustments to use, if any; however, many large dealers employ the adjustments listed above, notably those for credit and administrative costs.

**Profit and Loss Component Analysis**

*Recommendation 4: Identifying Revenue Sources*

Dealers should measure the components of revenue regularly and in sufficient detail to understand the sources of risk.

Measuring the components of profit helps participants to understand the profitability of various activities over time relative to the risks undertaken, as well
as to gain insight into the performance of hedges. Components of revenue generally include:

- **Origination Revenue**
  The component of revenue that is generated by valuing new transactions at mid-market after deducting appropriate adjustments, or at the bid or offer value if that method is used.

- **Credit Spread Revenue, if applicable**
  The change in unearned credit spread over the period.

- **Other Trading Revenue**
  The profit and loss resulting from changes in the portfolio value as a result of market changes and the passage of time. It is useful, though complex, to split this among component risk measures used by traders (e.g., delta, gamma, vega, theta, basis or correlation, and rho).

**Measuring Market Risk**

**Recommendation 5: Measuring Market Risk**

Dealers should use a consistent measure to calculate daily the market risk of their derivatives positions and compare it to market risk limits.

- **Market risk is best measured as “value at risk” using probability analysis based upon a common confidence interval (e.g., two standard deviations) and time horizon (e.g., a one-day exposure).**

- **Components of market risk that should be considered across the term structure include: absolute price or rate change (delta); convexity (gamma); volatility (vega); time decay (theta); basis or correlation; and discount rate (rho).**

As a general principle, decisions on derivatives should be based on an objective assessment of risk and risk capital, not on arbitrary limits for asset classes, transaction maturities, or notional amounts.

The methodology of assessing risk and implementation of risk management functions and risk controls should be as consistent across various risk types as possible. Preferably, all market risks across derivatives should be reduced to a single common denominator called “value at risk.” This facilitates aggregation and makes comparison and risk control easier.

**Value at Risk**

Value at risk is the expected loss from an adverse market movement with a specified probability over a period of time. For example, participants can determine with 97.5% probability (corresponding to calculations using about two standard deviations) that any adverse change in portfolio value over one day will not exceed a calculated amount. Conversely, the probability of an adverse change in excess of the calculated amount is 2.5%. Value at risk should encompass changes in all major market risk components and be calculated to a common confidence interval and time horizon.
Elements of Market Risk
Calculations of value at risk should consider:

**Absolute Price (Delta) Risk**  The change in the value of the portfolio due to changes in the prices of the underlying instruments.

**Convexity (Gamma) Risk**  The change in the delta arising from changes in the prices of the underlying instruments. Hedging gamma risk requires dynamic adjustments as prices move.

**Volatility (Vega) Risk**  The change in the value of the portfolio arising from changes in the implied volatility of the underlying instrument.

**Time Decay (Theta) Risk**  The change in the value of the portfolio arising from the passage of time.

**Basis or Correlation Risk**  The change in the value of the portfolio arising from changes in correlated variables. Correlated variables include those within the same maturity band as well as those across the maturity spectrum.

**Discount Rate (Rho) Risk**  The change in value of the portfolio arising from changes in the interest rates used to discount future cash flows.

Each of these risk components should be analyzed across the term structure. For instance, the net sensitivity of the portfolio value to changes in implied volatility is useful from an aggregated standpoint; however, analysis of volatility sensitivities across maturities is important in managing risk. In addition to value at risk based on each of these static risk measures, complex options portfolios require an additional, more dynamic approach. This recognizes that risk measures recorded at a particular market level or point in time provide only a partial picture of risk. The revaluation of the portfolio in multiple scenarios is recommended to identify vulnerability to specific market levels of underlying markets and volatility at a particular date.

**Standard Deviation and Confidence Interval**
Making assumptions as to likely rate moves and therefore risk scenarios is a somewhat arbitrary process, but consistency across activities is important. Using two or three standard derivations to assess value at risk corresponds approximately to the expectation that assessed risk will be exceeded only one trading day out of 40 or one out of 500, respectively. Of those dealers that use a value-at-risk measure, 64% indicate they use 95% confidence intervals (1.65 standard deviations) for their calculations.

For forward-based portfolios, the relationship between value at risk and the number of standard deviations is linear. Thus, a dealer with a $20-million position limit measured to two standard deviations is taking the same risk as one with a $30-million limit measured to three standard deviations. Therefore, for such a dealer, the choice of confidence interval is of no great significance.

For option-based portfolios, however, the relationship between value at risk and the number of standard deviations is non-linear. In the case of portfolios dominated by
a single option position, higher confidence intervals for market variables will give rise to the most extreme portfolio value changes. In the case of a more diverse options portfolio, the largest exposure to loss may occur at some quite modest move in the underlying market. Therefore, the choice of confidence interval or intervals to be used should be left to management in light of the particular characteristics of its option portfolio.

Assumptions concerning the appropriate distribution to best describe future price movement of the underlying instrument are also important. Such distributions could be normal, log normal, mean reverting, or historical. The choice can affect both pricing and risk measurement.

**Time Horizon**
What time period should be used when assessing value at risk? Some dealers use a variable time horizon based on liquidity, but this practice makes sensible comparisons across businesses difficult. To aggregate risk and assess aggregate risks in a meaningful way, risk measurements must be comparable across activities and products. This implies that consistent assumptions such as time horizon must be employed. One day is recommended, corresponding to the recommendation for daily marking to market.

**Market Risk Limits**
Once a method of risk measurement is in place, market risk limits must be chosen; this is primarily based on judgment. The risk component of risk/reward analysis has been well defined for a number of standard deviations. But the question of how much value should be at risk remains. The answer depends on such issues as: management tolerance for low-probability, extreme losses versus higher-probability, modest losses; capital resources; market liquidity; expected profitability; trader experience; and business strategy.

**Stress Testing**

*Recommendation 6: Stress Simulations*
*Dealers should regularly perform simulations to determine how their portfolios would perform under stress conditions.*

Simulations of improbable market environments are important in risk analysis because many assumptions that are valid for normal markets may no longer hold true in abnormal markets. Since confidence intervals by definition do not encompass all unlikely scenarios, contingency plans for such occasions can best be developed through such simulations. Testing the extremes, or tails, of probability distributions is especially important for option-based derivatives, because portfolio values will not change in a linear fashion and, depending on the structure of the portfolio, may move by large amounts in the tails.

These simulations should reflect both historical events and potential future events and include not only large and non-standard directional market moves but also periods of prolonged market inactivity. The tests should consider the effect of price changes on the mid-market value of the portfolio, as well as changes in the assumptions about the adjustments to mid-market, such as the impact on close-out
costs of decreased liquidity in times of market stress. The results of stress tests should be evaluated and contingency plans developed accordingly.

According to the Survey of Industry Practice, most large dealers conduct some kind of stress tests on their portfolios and more plan to do so in the future. Practice among smaller dealers is, for the most part, not to conduct such tests. Most smaller dealers, however, do recognize the importance of stress tests and plan to run some in the future.

Handling Market Liquidity Risk

Liquidity of a product or an entire market can be reduced substantially as a result of some market event or change in market psychology, or the actions of individual participants. If, for whatever reason, liquidity in a product or market is reduced or increased substantially, changes in the underlying assumptions about close-out costs may be needed. Similarly, assumptions about close-out costs and market access depend upon the firm’s market presence. Size of positions should be tracked relative to the total size of the market. When position sizes grow substantially as a percentage of the daily market turnover or size of the market, previous assumptions about close-out costs may need to be changed. If close-out costs are measured based on value at risk, such change can be effected by lengthening the time horizon to the number of days necessary to neutralize a position without significantly moving the market.

The liquidity of risk positions should be monitored and aggregated on a firmwide basis. This would provide an answer to questions such as: How long would it take to halve the aggregate market risk of the firm? Just as it may be appropriate for a firm to invest in illiquid assets such as real estate and term lending, so it may be appropriate to enter into some illiquid derivatives transactions. Prudence dictates, however, that a firm should be cognizant of its mix of liquid and illiquid risk positions.

Projecting Cash Investing and Funding Requirements

**Recommendation 7: Investing and Funding Forecasts**

*Dealers should periodically forecast the cash investing and funding requirements arising from their derivatives portfolios.*

The frequency and precision of forecasts should be determined by the size and nature of mismatches. A detailed forecast should determine surpluses and funding needs by currency over time. It also should examine the potential impact of contractual unwind provisions or other credit provisions that produce cash or collateral receipts or payments.
Independent Market Risk Management

Recommendation 8: Independent Market Risk Management
Dealers should have a market risk management function, with clear independence and authority, to ensure that the following responsibilities are carried out:

- The development of risk limit policies and the monitoring of transactions and positions for adherence to these policies. (See Recommendation 5.)
- The design of stress scenarios to measure the impact of market conditions, however improbable, that might cause market gaps, volatility swings, or disruptions of major relationships, or might reduce liquidity in the face of unfavorable market linkages, concentrated market making, or credit exhaustion. (See Recommendation 6.)
- The design of revenue reports quantifying the contribution of various risk components, and of market risk measures such as value at risk. (See Recommendations 4 and 5.)
- The monitoring of variance between the actual volatility of portfolio value and that predicted by the measure of market risk.
- The review and approval of pricing models and valuation systems used by front- and back-office personnel, and the development of reconciliation procedures if different systems are used.

The growth of activities in derivatives and other financial instruments has led many firms to establish market (and credit) risk management functions to assist senior management in establishing consistent policies and procedures applicable to various activities. The market risk management function typically is headed by a board level or near board level executive.

The market risk management function acts as a catalyst for the development of sound market risk management systems, models, and procedures. Its review of trading performance occurs typically in the context of answering a question such as: Are results consistent with those suggested by the analysis of value at risk? The risk management function is rarely involved in actual risk-taking decisions.

According to the Survey, a large majority of dealers already have such a function in place and, of those that do not, over 50% plan to establish one in the near future.
Practices by End-Users

**Recommendation 9: Practices by End-Users**

As appropriate to the nature, size, and complexity of their derivatives activities, end-users should adopt the same valuation and market risk management practices that are recommended for dealers. Specifically, they should consider: regularly marking to market their derivatives transactions for risk management purposes; periodically forecasting the cash investing and funding requirements arising from their derivatives transactions; and establishing a clearly independent and authoritative function to design and assure adherence to prudent risk limits.

From an end-user's perspective, derivatives are customer-specific transactions often designed to offset precisely the market risk of corresponding business positions. While many end-users do not expect significant change in the combined value of their derivatives positions and the underlying positions, others do. End-users are encouraged to implement performance assessment and control procedures that are appropriate for their derivatives activities.

**III. Conclusion**

The implementation of individual recommendations by a participant should not be based solely on its nature (dealer versus end-user) but should be decided and adjusted in the context of the participant's volume of derivatives activity, the complexity of transactions, and the commensurate commitment of human capital and systems resources to support the activity.

Whatever the nature of the participant, however, the importance of accurate and frequent valuation of derivatives portfolios and the implications on proper risk management should be emphasized. Mark-to-market valuation reflects true portfolio value which in turn implies proper hedging techniques. More frequent marking practices produce more up-to-date risk-measurement information and therefore enable precise risk management practices. Daily marking to market is essential for dealers. As indicated from the Survey results, most dealers recognize the importance of daily marks, while fewer end-users practice daily marks.

For participants using mid-market valuation, the determination of an accurate portfolio value requires adjustments. Derivatives participants vary in their extent of usage of adjustments to mid-market. More progress and uniformity in this practice should occur over time.

Practices and methods of risk management of derivatives portfolios have evolved and are still doing so. Risk measures such as value at risk are replacing more rudimentary risk measurements such as those based on notional amounts, as more participants recognize the benefits of their accuracy. Similarly, dealers are also examining non-standard market moves to determine how their portfolios would perform under stress conditions. These simulations, which enhance the understanding of the risks of managing derivatives portfolios, should be encouraged. Another important risk management tool that should become more broadly and frequently used is the forecasting of cash investment and funding requirements.
Market risk management functions that establish and monitor valuation and risk management procedures are now common among dealers. Many of those without one are planning to set up such a function in the near future.

The recommendations of this Global Derivatives Study provide guidelines for techniques in valuing and managing risk in derivatives portfolios. They do not make judgments concerning the amount of risk which should be taken or the amount of capital to be allocated. These issues should be dealt with by senior management and should be based on individual objectives and circumstances.
Section 2
Working Paper of the Credit Risk Measurement and Management Subcommittee
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Recommendations are numbered as they appear in the Recommendations section of the Global Derivatives Study.
Credit risk is the risk that a loss will be incurred if a counterparty defaults on a derivatives contract. The loss due to a default is the cost of replacing the contract, less any recovery. The replacement cost represents the present value, at the time of default, of the expected future net cash flows. It is important to emphasize that a credit loss will only occur if the counterparty defaults and the derivatives contract has a positive mark-to-market value to the nondefaulting party. Both conditions have to be satisfied simultaneously for a loss to be incurred.

While the measurement of exposures resulting from derivatives transactions is more complicated than the exposure measurement of many traditional banking products, the principles that govern the assumption and management of credit risk remain the same. Credit exposure management should be procedurally consistent across an organization and, where appropriate, should be fully integrated. Specifically, the evaluation of the credit exposures for derivatives transactions should be made comparable with that of exposures for on-balance-sheet activities. This consistency allows for the integration of derivatives with other on-balance-sheet activities in the credit allocation and review process.

In this Working Paper, the Credit Risk Measurement and Management Subcommittee provides an overview of how credit risk can be measured and monitored. The first half focuses on the measurement of credit risk. It discusses the credit components of exposure on a derivatives contract and presents concepts of current and potential exposure. The following section addresses the calculation of credit exposure on a portfolio of derivatives transactions. Next, the paper discusses the expected credit loss measurements, which are measurements useful for calculating risk-adjusted returns on capital and for allocating capital.

The second half of this Working Paper addresses the management of credit risk. Practices that are helpful in assessing, monitoring, and limiting credit risk are discussed. In this context, the paper analyzes how internal controls, documentation provisions, and credit support arrangements can be used to control credit risk.

I. Credit Risk Measurement

Credit Exposure on a Derivatives Transaction

**Recommendation 10: Measuring Credit Exposure**

Dealers and end-users should measure credit exposure on derivatives in two ways:

- **Current exposure**, which is the replacement cost of derivatives transactions, that is, their market value.
- **Potential exposure**, which is an estimate of the future replacement cost of derivatives transactions. It should be calculated using probability analysis based upon broad confidence intervals (e.g., two standard deviations) over the remaining terms of the transactions.

Credit risk fluctuates over time with the variables that determine the value of the underlying contract. In assessing credit risk, one needs to ask two questions: If a counterparty was to default today, what would it cost to replace the derivatives transaction (i.e., what is the current exposure)? If a counterparty defaults at some
point in the future, what is a reasonable estimate of the potential replacement cost (i.e., what is the potential exposure)?

The first question is fairly straightforward, as it simply asks for the current mark-to-market price of the underlying contract. This price can be positive or negative. As an example, consider a $100-million, 5-year swap executed at the prevailing market condition in which one party pays a fixed rate of 6.00% and the other party pays a floating rate of LIBOR. The mark-to-market value of such a swap (i.e., its current replacement cost) is zero at the time the swap is executed; however, as time passes and interest rates move, the mark-to-market value of the swap will also move. Suppose that in six months, the prevailing swap rate for a 4.5-year swap is 5.50%. If the counterparty paying the fixed rate of 6.00% defaults, the nondefaulting counterparty receiving the fixed rate (and paying the floating rate) will be forced to replace it with a 5.50% swap and will thereby suffer a replacement cost equal to 0.50% per annum for the remaining 4.5 years plus whatever net unpaid swap payment has accrued.

The second question is more difficult to answer in that it asks for an assessment of what the replacement cost could be in the future if the variables that determine the value of the underlying contract were to move adversely. Returning to the swap example, the value for the $100-million, 5-year swap could attain a significant positive or negative value over the life of the swap. The extent to which the value of the swap could become positive is the potential exposure.

Dealers use Monte Carlo or historical simulation studies, option valuation models, and other statistical techniques to assess potential exposure. The analysis generally involves modeling the volatility of the underlying variables (such as interest rates, exchange rates, equity prices, or commodity prices) and the effect of movements of these variables on the value of the derivatives contract. These techniques are often used to generate two measures of potential exposure: expected exposure; and maximum or “worst case” exposure.

Expected exposure at any point during the life of the swap is the mean of all possible probability-weighted replacement costs, where the replacement cost in any outcome is equal to the mark-to-market present value if positive and zero if negative. Loosely speaking, expected exposure is the best estimate of the present value of the positive exposure that is likely to materialize. As such, expected exposure is an important measure in derivatives dealers’ capital-allocation and pricing decisions.

The maximum potential exposure is calculated as an estimate of “worst case” exposure at any point in time. These calculations are based on adverse movements in the underlying variables that are extreme enough that they are unlikely to be exceeded. For example, if two standard deviations in a one-tail test are used to calculate maximum potential exposure, there is statistically only a 2.5% chance the actual exposure will be greater than the calculated maximum exposure. This “worst case” exposure is important in assessing the maximum amount that could possibly be at risk to a given counterparty. As such, it is important in the dealer’s credit-allocation decisions.
The expected and maximum potential exposure profiles for an interest rate swap executed at current market levels is shown in Figure 1. The “hump-back” profile is due to the offsetting effects that the passage of time has on the magnitude of the potential movement in the underlying variables, and the number of cash flows that need to be replaced if a default should occur. The first effect of the passage of time on potential exposure is that it increases the probability that the underlying variable will drift substantially away from its initial value. This “diffusion effect” is determined by the volatility of the underlying variable and its other stochastic properties. The second effect of the passage of time, called the “amortization effect,” is the reduction in the number of years of cash flows that need to be replaced. The offsetting influences of the diffusion effect and the amortization effect create the concave shape in Figure 1 as the passage of time increases the potential for large per annum replacement costs, but reduces the number of years of cash flows that need to be replaced.

Figure 1 can be deduced by looking at the present value of the replacement cost if a default occurs immediately after the swap is executed and immediately prior to its maturity. If a default occurs immediately after the swap is executed, five years of cash flows will need to be replaced but it is unlikely that the swap rate will have moved very far from its initial level in such a brief period. Consequently, the expected and maximum potential exposures are low because the diffusion effect is low. At the other extreme, if a default occurs just prior to the swap’s last payment date, the market swap rate could be substantially different from its initial level, but because only one semiannual cash flow will need to be replaced, the expected and maximum potential exposures are low. The peak exposure (top of the “hump”) occurs at an intermediate point during the swap’s life when sufficient time has passed for the per-annum replacement cost to be high, and sufficient time still remains for the impact of a high per annum replacement cost to be meaningful.
The potential exposure profile depends on the cash flow pattern of the underlying asset class and on the type of derivatives transaction. Standard interest rate swaps and other derivatives with periodic payments and no final exchange of principal tend to have the hump-backed shape depicted in Figure 1. If the derivatives transaction calls for a final exchange of principal, as currency swaps do, the potential exposure profile tends to be upward sloping, as in Figure 2. The final exchange of principal increases the importance of the diffusion effect and reduces the amount by which the currency swap amortizes, thereby creating the upward slope of the exposure profile.

The exposure profile of purchased options tends to be greater than the credit risk for comparable swaps. Options do not generally have periodic payments but are characterized by an up-front payment of the option premium and a final option payoff payment. Accordingly, the amortization effect is limited to the time decay of the option price and is outweighed by the diffusion effect. That is, the longer the time period, the greater is the scope for movements in the underlying variable, which can generate a large exposure on the option payoff. Moreover, in contrast to swaps, purchased options with the premium paid up front initially create an immediate mark-to-market exposure equal to the option premium. If the option seller defaults immediately, the option buyer must pay another option premium to replace the option even if there has been no movement in the underlying variables.

Finally, and again in contrast to swaps, credit risk is always asymmetric for options. The counterparty purchasing the option always has some exposure to the

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1 Interest rate swaps that are deep "in the money" will have potential exposure profiles with much less pronounced "humps" or which can be monotonically downward sloping.
counterparty selling the option, regardless of how far the underlying variables move.

The calculation of expected and maximum exposure profiles, such as those in Figures 1 and 2, provides management with an important tool to assess how credit risk can evolve over the life of the transaction. In Figure 1, the maximum exposure profile peaks at about 6.00% of notional amount after two years and declines steadily thereafter. This is known as the "peak maximum exposure." Similarly, the peak expected exposure is the highpoint of the expected exposure profile, or 1.50% of notional amount, and occurs after one year.

Another useful summary measurement of the potential exposure profiles is based on the average of the potential exposures over the life of the contract. Returning again to Figure 1, the maximum exposure profile starts at zero and rises rapidly to about 6.00% during the first year and declines steadily to zero over the final four years. The average of these exposures over the life of the contract is 3.25%, known as the "average maximum exposure." The average of the expected exposure profile is calculated in an identical fashion and is 0.90%.

As Figure 1 and Figure 2 demonstrate, the maximum ("worst case") exposures on derivatives transactions are typically equal to a relatively small fraction of the notional amount of the contract; expected exposures are much smaller than maximum exposures. This is important to keep in mind when discussing the aggregate notional amount of the derivatives business. Aggregating derivatives transactions by notional amounts indicates the volume and growth of the business, but it provides virtually no information on the underlying credit risk in the system.

The analysis of potential exposure profiles enables management to evaluate credit exposures on derivatives transactions on a comparable basis with credit exposures for on-balance-sheet transactions, such as loans. Many institutions use measures such as the peak of the maximum or expected exposure profiles or the average of the maximum exposure profiles for aggregating and comparing credit exposure on derivatives transactions with on-balance-sheet transactions for a given counterparty.

The Survey of Industry Practice reveals that approximately two-thirds of dealers use internally developed methods to assess credit risk that are based on maximum exposure calculations using historical volatilities. Of this group, the majority of dealers assign counterparty exposures to individual transactions that are based on tables calculated for a variety of generic transactions (e.g., interest rate swaps, currency swaps, etc.). In the future, most dealers intend to refine this method by calculating the exposure of individual transactions rather than relying on generic tables. Only 22% of dealers surveyed use the Original Exposure Method (OEM), which is a static model of credit risk, and only 12% of dealers surveyed intend to use the OEM in the future.

The Survey asked dealers to indicate the initial exposure that would be assigned to a variety of derivatives transactions with varying maturities. The results reveal that most dealers differentiate sharply by the type of transaction and the maturity of the transaction. For instance, the average dealer assigns an initial exposure of about 22% of notional amount for a 3-year currency swap and about 5% of notional amount for a 3-year interest rate swap. This differentiation according to the type of
transaction would be expected by the analysis presented above for Figure 1 and Figure 2.

The practices of end-users differ from those of dealers. A majority of the end-users indicate that they use some method based on notional amount to measure the exposure of an individual transaction. Twenty-six percent of end-users measure exposure according to the notional amount alone. An additional 39% of end-users measure the exposure as a percent of notional amount, but differentiate by type and maturity of transaction. (This is similar to OEM.) Fourteen percent of end-users measure exposure on a mark-to-market basis.

Credit Exposure on a Portfolio of Derivatives Transactions
The discussion thus far has focused on calculating the credit exposure for a single transaction. It becomes more complicated, but extremely important, to obtain an accurate assessment of the total credit exposure on a portfolio of transactions with the same counterparty.

Recommendation 11: Aggregating Credit Exposures
Credit exposures on derivatives, and all other credit exposures to a counterparty, should be aggregated taking into consideration enforceable netting arrangements. Credit exposures should be calculated regularly and compared to credit limits.

In calculating the current replacement costs for a portfolio of transactions with a counterparty, it is important to know whether netting applies (and is enforceable). If netting applies, the current credit exposure is simply the sum of the positive and negative mark-to-market values of the transactions in the portfolio. If netting does not apply, only the positive mark-to-market transactions should be added in calculating current exposure because the positive mark-to-market positions could not be offset against negative mark-to-market positions in the event of default.

It is more difficult to calculate measures of the potential exposure for a portfolio of transactions. The simplest method is again to simply add the measure of potential exposure of each transaction in the portfolio. Unfortunately, this procedure will in most cases dramatically overstate the potential exposure because it does not take into account transactions in the portfolio with offsetting exposures or with peak potential exposures that occur at different times.

Consider a counterparty with which two interest rate swaps have been executed. The swaps are identical in all respects except that in one swap the counterparty is receiving the fixed rate and in the other swap the counterparty is paying the fixed rate. Obviously there is no net exposure. Suppose we correctly calculate the total maximum exposure as $5 million for each transaction. If we add the exposures, the total maximum exposure on the portfolio would be $10 million. This is clearly an overstatement. If the counterparty was to default, only one of the swaps would result in a loss because both swaps could not have a positive mark-to-market value at the same time. The proper exposure in this portfolio is $5 million if netting does not apply and is zero if netting does apply.

Another shortcoming of adding the maximum exposures on a transaction-by-transaction basis in a portfolio relates to the timing of the default if one was to
occur. Consider a portfolio in which there is a purchased interest rate cap and a long-term swap. Assume the last rate setting on the cap has taken place and that a final cap payment of $5 million is due in two months. The credit risk on the cap is $5 million. Assume that the swap was executed recently and the swap currently has a zero mark-to-market value and a peak maximum exposure of $6 million which will occur in two years (according to the hump-backed schedule discussed earlier). If we add the peak maximum exposures, the peak maximum exposure on the portfolio is $11 million.

This is clearly an overstatement. The peak maximum exposure on the cap occurs in two months and the peak maximum exposure on the swap occurs in two years. It is not appropriate to add the peak exposures of transactions that occur on different dates. In this situation, we should calculate the maximum exposure on the swap that could occur in two months. If that peak exposure is $2 million, we should conclude that the peak maximum exposure on the portfolio is $7 million, not $11 million.

The potential exposure of a portfolio of transactions with a given counterparty can be analyzed more thoroughly by simulation analysis. This requires sophisticated mathematical modeling and systems capability. In this approach, a statistical model generates multiple scenarios and investigates the stochastic properties of the derivatives portfolio. At each point in time under a given scenario, the mark-to-market value of each transaction in the portfolio is computed and the present value of the replacement cost of the entire portfolio is calculated, taking account of netting provisions where applicable.

This process is repeated for a large number of scenarios to generate a probability distribution of the present value of the replacement cost of the portfolio at each point in time. This information can be used to calculate the expected and maximum exposure profiles for the portfolio over its life span. The main advantage of this portfolio-level simulation is that it directly measures complex portfolio effects and thereby provides a much more accurate measure of expected and maximum potential exposure to a counterparty than would be obtained by aggregating exposures on individual transactions or by making an (educated) guess.

Market participants who do not have and cannot justify having the necessary simulation and statistical systems to perform such potential exposure calculations should use tables of factors developed under the same principles, making sure that the factors used differentiate appropriately by type of transactions and are adjusted periodically to reflect changes in market conditions and the passage of time.

It is extremely important to recognize that, much like current exposure, potential exposure also is constantly changing due to the passage of time and movements in the underlying variables (i.e., amortization and diffusion effects). Accordingly, calculations of potential maximum and expected exposures should be reviewed and updated to reflect these factors. Firms that aggregate potential exposures without quantifying portfolio effects through simulation analysis will generally overstate their counterparty exposure. Therefore, they do not need to perform calculations as frequently as firms that use simulation analysis to measure portfolio exposure more precisely. In any event, the frequency of calculation should be increased when credit limits are approached or exceeded.
rated companies tend to issue bonds with tighter credit spreads than lower rated companies, and tend to default less; credit spreads tend to increase with the maturity of the bond, and the incidence of default tends to increase similarly.

II. Credit Risk Management

The first half of this Working Paper focused on measuring credit risk. It now addresses policies and procedures that can be taken to manage counterparty credit risk. These policies and procedures can be broken down into: internal controls to ensure that credit risk is assessed before entering into a transaction with a counterparty, and that credit risk is monitored over the life of the transaction; documentation provisions to control credit risk and to ensure transaction enforceability; and credit enhancement structures to further reduce or limit the credit exposure of dealing with a particular counterparty. The standard practices used to control counterparty credit risk in each of these areas are discussed below.

Internal Controls

Recommendation 12: Independent Credit Risk Management

Dealers and end-users should have a credit risk management function with clear independence and authority, and with analytical capabilities in derivatives, responsible for:

- Approving credit exposure measurement standards.
- Setting credit limits and monitoring their use.
- Reviewing credits and concentrations of credit risk.
- Reviewing and monitoring risk reduction arrangements.

The most effective method for minimizing credit risk relating to over-the-counter derivatives transactions is to establish appropriate internal guidelines and practices to assess and manage credit risk. The internal controls should be applied prior to the execution of a transaction and during all stages of the transaction’s life. For derivatives dealers, the establishment of credit lines and the monitoring of credit exposures should be done by an independent credit analysis group, rather than by people directly involved in the execution of the transaction (e.g., marketing or trading personnel). End-users also should follow comparable procedures. Separation of responsibility is intended to prevent conflicts of interest and to ensure that the assessment of credit exposure is done objectively.

Before Executing Transactions

An independent credit group should conduct an internal credit review prior to engaging in transactions with a counterparty and should guide the use of documentation and credit support tools. Specifically, credit guidelines should be employed to ensure that only potential counterparties that meet the appropriate creditworthiness criteria, with or without any relevant credit support, become actual counterparties. Measures typically employed include: determining an acceptable credit rating (external, such as Moody’s or Standard & Poor’s, or internal), developing a thorough understanding of the industries and the
performance within such industries of potential counterparties, and reviewing the financial history and prospects of potential counterparties.

Dealers may also consider the potential for correlation between market levels and the credit quality of their counterparties. If an end-user is using derivatives to hedge a business exposure, the dealers' exposure to an end-user will occur when the end-user's business operating results improve. In other cases, however, the opposite may be true: an extreme example would be the purchase of an over-the-counter put option on the common stock of the seller of the option. The exposure to the seller will be greatest when the credit quality of the seller is at its worst.

Credit levels should be established which generally reflect the maximum potential exposure to a counterparty that is authorized by management. Dealers should set documentation and credit support strategies for different levels of counterparty exposures and maturities of transactions.

Almost 90% of end-users rely on credit ratings as a primary factor to approve counterparties. Of those that rely on credit ratings, 60% require uniform minimum credit ratings for all counterparties; a substantial number (approximately 30%) of respondents also impose minimum ratings that vary according to the types of transactions, their maturities, and the country in which the counterparty is domiciled. As a general rule, the counterparties are approved by either the treasurer or the chief financial officer of private sector corporations; in public sector entities and financial institutions, the counterparty approval also is often provided by the board of directors or a risk committee.

As discussed above, the potential exposure of a specific transaction depends on the transaction and the underlying instrument (e.g., interest rates, currencies, equities, or commodities). Before executing a new transaction with a counterparty, it is necessary to quantify the incremental risk that the transaction adds to the portfolio of transactions with that counterparty. There may be a natural offset to a proposed transaction within the existing portfolio of transactions, or a natural offset may be created.

Participants should also review exit strategies and liquidity implications prior to executing a transaction. Exit strategies that can be used to manage counterparty credit exposure include the outright termination of a transaction, the assignment of the transaction to another counterparty, and entering into an offsetting transaction with the counterparty to lock in the current credit exposure. Each of these exit strategies has different liquidity implications. For example, it may be difficult to assign or terminate a transaction with a troubled counterparty if the rest of the market is also trying to reduce their exposure to that counterparty. Liquidity can also be a factor in turbulent or thin markets. Finally, unusually complex transaction structures will have a limited number of potential assignees.

Parties should, whenever possible, execute a master agreement prior to entering into a transaction. This practice is designed to avoid potentially costly mistakes by ensuring that both parties fully understand the terms of the transaction prior to its execution. If time does not permit, parties should at least agree on all essential elements of the agreement first, particularly credit and tax matters. When transactions are executed, a dealer confirmation specifying the essential terms of the transaction should be sent out to the counterparty as soon as possible after the
transaction and should be promptly signed and returned by the counterparty. When transactions are executed without a master agreement in place, strenuous efforts should be made to negotiate and execute the master agreement as soon as possible. In this regard, management should ensure that the backlog of deals lacking complete documentation is monitored. A report on aging, showing how long each transaction has been in place without a master agreement, should be prepared regularly and reviewed by management.

Monitoring the Counterparty Transaction Over Time

The credit-risk-exposure measurements and methodology discussed in previous sections of this report need to be applied on an ongoing basis. Current and potential exposures change with both the passage of time and movements in the underlying variables and therefore need to be checked periodically. The frequency with which credit exposures are monitored depends on the size of the derivatives portfolio and the nature of the derivatives activity. Derivatives dealers should monitor current counterparty credit exposure on a daily or weekly basis depending on the size of the portfolios and the type and volatility of the underlying transactions. The frequency should be increased as limits are approached or exceeded. Measurements of potential exposure should be made as frequently as possible or as appropriate for the nature of the activity.

End-users should also periodically review their own credit exposures to counterparties. The frequency depends on the size of the portfolio, the number of counterparties, and the extent to which credit exposures can be material.

In addition to monitoring the current and potential exposures of derivatives transactions, it is extremely important to monitor the creditworthiness of the counterparty and its compliance with any documentary financial standards. This practice enables dealers and end-users to take full advantage of any risk management tools available to them.

Credit risk exposure should be managed in relation to specified credit limits. Most institutions have a credit department that reviews the creditworthiness of its counterparties on an ongoing basis and increases or decreases the credit limits for these counterparties as appropriate. Systems should be in place to identify exposures to counterparties that are approaching or exceeding their credit limits. When these warning signals are triggered, policies aimed at bringing existing exposures within their credit limits and preventing exposures from increasing further should be implemented. For instance, such policies would include the following: no new transactions with that counterparty should be executed that increase exposures; active efforts should be made to assign or reverse existing transactions or to execute new transactions that reduce total credit exposure; and negotiations relating to collateral or other credit enhancements should be initiated.

Credit losses can occur. Accordingly, it is important that derivatives dealers appropriately reflect their credit exposures when measuring the results of their derivatives activity. Credit risk of derivatives transactions should be treated in the same manner as credit risk of on-balance-sheet transactions. There are two components of credit risk which should be recognized: the unearned credit spread or general credit allowance which will be earned over time as compensation for being exposed to credit risk; and an amount, if appropriate, to cover probable
credit losses. The magnitude of these adjustments should be based on a prudent estimate of the credit losses the portfolio could experience, and can be related to the overall credit reserve of the dealer.

Factors that should influence the credit allowance include the creditworthiness of the counterparties, the magnitude of the potential exposure on the underlying transactions, netting arrangements, collateral arrangements, and the maturity of the underlying transactions. As stressed in this Working Paper, credit risk is a dynamic concept that changes with the passage of time and movements in the underlying variables. The credit adjustment to the value of derivatives portfolios should be based on procedures that reflect this dynamic nature and that provide for an increase or reduction in credit adjustments as the credit risk parameters in the portfolio change.

The Survey asked dealers how they calculate unearned credit spread. Almost half say they currently use a transaction-by-transaction approach. In contrast, only 18% follow a counterparty-by-counterparty approach at the present time, but 33% intend to do so in the future. Provisions for unearned credit spreads typically are taken into earnings over time. The most common approach is on a straight-line basis over the life of the transaction(s). Only 16% reported that the credit spread earned over time is made as a function of the counterparty exposure.

The Survey indicated that dealers are adopting a conservative approach with respect to providing for probable credit losses. Approximately two-thirds of the dealers surveyed currently allow for probable credit losses in addition to unearned credit spread. Specifically, 39% of the dealers surveyed have a general allowance (reserve) and about 25% have an allowance (reserve) for specific probable losses. In the future, approximately 80% of those surveyed intend to have reserves with about half of them opting for general reserves and about half planning for reserves against probable losses.

Documentation
While sound internal control practices and guidelines are the first step in managing credit risk, proper documentation also will help reduce and control credit exposure to counterparties. Standard form agreements have been developed by several trade organizations. Most of the standard master agreements address risks relating to counterparty credit and transaction enforceability in similar ways.

Recommendation 13: Master Agreements
Dealers and end-users are encouraged to use one master agreement as widely as possible with each counterparty to document existing and future derivatives transactions, including foreign exchange forwards and options. Master agreements should provide for payments netting and close-out netting, using a full two-way payments approach.

The greatest legal certainty that credit exposure will be determined on a net basis exists when transactions between two parties are documented under a single master agreement. The use of multiple master agreements between two parties may introduce in some jurisdictions the risk of “cherry-picking” between or among master agreements (rather than between or among individual transactions) or that
the right to set off amounts due under different master agreements will be subject to a stay or otherwise delayed. While legislative developments in the United States have helped to diminish some of the concerns associated with the use of multiple master agreements with certain counterparties, in general dealers will be well served by using a single master agreement with counterparties to document as many transactions as is prudent in light of any applicable legal or regulatory constraints.

Settlement of payments on a net basis (settlement or payment netting) is an important provision that should be included in the master agreement. Each time a dealer and its counterparty are required to make a payment to the other on the same day and in the same currency, whether under a single transaction or multiple transactions, settlement risk is present. The ability to net these payment obligations under a large number of transactions thus will minimize settlement risk by reducing the amount, and sometimes the number, of payments required to be made. The use by a dealer of a single master agreement with a counterparty for as many transactions as possible thus will reduce the settlement risk of payments made in the same currency, but will not eliminate cross currency settlement risk—the so-called Herstatt risk, named after the 1974 failure of Bankhaus Herstatt.

Generally, the relevant documentation provisions to reduce and control credit risk fall into three interrelated categories: up-front risk assessment; ongoing monitoring and risk reduction; and early termination to limit exposure. The standard documentation provisions cover common concerns and often are tailored further to address special needs.

**Up-Front Risk Assessment**

The “conditions precedent” section of a derivatives agreement provides an important tool for assuring that the general credit risk is considered and that the counterparty supports the underlying financial data on which an assessment is made. Provision is made for updating the up-front assessment by requiring satisfaction of the relevant conditions precedent in all subsequent transactions. Common conditions precedent include the following:

- **Document Delivery to Address Credit Risk** This condition requires delivery of documents relating to the counterparty’s financial condition, including financial statements and any related audit reports, Securities and Exchange Commission or other regulatory filings, and documents tailored to particular concerns such as credit exposure to third parties (e.g., bank loan agreements) or material litigation.

- **Representations Addressing Credit Risk** This condition requires that the counterparty’s representations and warranties are accurate (and are deemed made or repeated) at the time of entering into a transaction. The relevant representations and warranties include the accuracy and completeness of documents delivered regarding the counterparty’s financial condition, absence of material adverse changes, and absence of events that would constitute defaults.

- **Representations Addressing Enforceability** Representations also address enforceability risk through representations relating to (1) the counterparty’s existence and power (internal and pursuant to applicable laws) to conduct the business and engage in the transaction; (2) authorization, execution, and delivery of the agreement; (3) the
validity, binding nature, and enforceability of the agreement as against the counterparty; and (4) absence of conflicts with the counterparty's constituent documents, material contracts, or applicable laws. It should be noted that if a party does not have the power to enter into a derivatives transaction because the transaction is *ultra vires*, a representation cannot cure the problem.

**Document Delivery to Address Enforceability** Conditions precedent relating to document delivery also address enforceability risks. Commonly, this is done through requirements that a counterparty deliver a secretary's certificate (covering authorization, constituent documents, etc.), an incumbency certificate, and a legal opinion (which may be internal or external). Although these documents are typically required up front by master agreements, such documents typically are not required to be updated for subsequent transactions.

**Ongoing Monitoring and Credit Risk Reduction**

Four documentary tools are available to monitor and reduce counterparty credit risk:

**Reporting** Agreements frequently provide for periodic delivery of financial information, required notice of defaults and material financial events, or an obligation to respond to "reasonable" requests for information. The product of the reporting obligations then is employed pursuant to internal credit policies.

**Covenants** Financial covenants can be imposed, but rarely are, to limit credit exposure to a counterparty.

**Netting or Novation** Bilateral netting is intended to reduce counterparty exposure by automatically offsetting the concurrent payment obligations that each party has to the other. Bilateral netting agreements typically provide for both payment netting and close-out netting. Payment netting provides that if payments in the same currency are due on the same day from the same designated offices of both parties, those payment obligations will be netted so that the party with the larger payment obligation will pay to the party with the smaller payment obligation an amount equal to the excess of the larger payment over the smaller payment. Close-out netting applies in the event one or both of the counterparties defaults under the agreement or another event triggering close-out occurs, such as a termination event. Under close-out netting, all outstanding transactions under the agreement are terminated and are valued based on their replacement cost. These termination values are then netted or set off with the result that only a single amount is due by one counterparty to the other in respect of all of the terminated transactions. The recent Consultative Paper by the Basle Committee of the BIS (April 1993) includes a proposal for the recognition of the effectiveness of close-out netting as an important credit risk reduction technique. Several netting variations exist, including:

- **Cross-Currency and Cross-Product Netting** Cross-currency netting provides for netting of payments as described above, whether or not such payments are denominated in the same currency. To net different currency payment obligations, the payments are, to the extent necessary, converted into a base currency at the then prevailing spot rate. Cross-currency netting is common only with respect to close-outs. Cross-product netting permits netting of
payments across derivative categories or between derivatives and non-derivatives.

- **Designated Offices**  In some cases, payment obligations between counterparties are netted as described above, whether or not the payment obligations are between the same designated offices of the counterparties. Such would be the case where, for example, a counterparty is permitted to book a transaction in a different office for accounting or regulatory reasons. This type of multibranch netting is discussed in the Working Paper of the Enforceability Subcommittee.

- **Novation**  A variation of payment netting exists whereby two or more transactions in the same currency, between the same designated offices, and with common payment dates are deemed terminated and replaced by a single transaction requiring a payment equal to the difference of the payments of the novated transactions. Novation does not operate as simply where the transactions involve a series of payments as opposed to a single payment. Transactions may be novated as of the trade date of the second transaction or as of the day immediately preceding the common payment date. The latter may have the adverse effect of changing the character of the novated transactions into a single spot contract.

**Payment Deferral**  A party may suspend payments to its counterparty if a default exists with respect to the counterparty. Often, the deferral can last only a specified period before the party must declare a default or release the deferred payment. Sometimes, one party will be given the right at any time to defer a payment to the other (with interest at a market rate accruing during the deferral).

**Early Termination**
Events permitting early termination may be used to limit exposure to a deteriorating credit or problematic counterparty (events of default) or to changes in applicable regulation (termination events). Although events of default and termination events both may result in early termination, the calculation of the early termination payment may take into account the no-fault nature of termination events. Where a third party provides credit support, the effects of default also will apply to that third party and its credit support document. Other affiliates of a counterparty also may be covered with respect to certain defaults (e.g., bankruptcy) if it suggests a problem with the counterparty.

**Events of Default**
Events of default, which permit early termination of all outstanding transactions (some agreements allow for termination of some but not all transactions), typically include:

- **Failure to Pay or Deliver**  This is typically a signal of extreme counterparty distress requiring almost immediate termination. A short grace period (e.g., two business days) is sometimes given to allow for payment in cases of error or oversight.

- **Nonpayment Breach of the Agreement**  Except with respect to certain sensitive obligations, a cure period is usually given (e.g., 30 days after notice). Longer cure periods sometimes are negotiated where cure is sought diligently and is reasonably promptly forthcoming.
• Material Inaccuracy of any Representations or Warranty as of the Date Made
  A short cure period sometimes is granted if the matter is capable of a cure.

• Credit Support Failure  This is the failure to supply any required credit support
  (including payment of collateral or effectiveness of a guarantee), or the failure
  of a security interest to be perfected.

• Specified Transaction Default  The master agreement may provide that a default
  in any specified transaction (a swap, forward, option, or other transaction)
  between two parties will be deemed a default in another transaction between
  the parties. Similarly, the agreement may also provide that if one party finds
  itself in a situation in which the terms of any specified transaction either
  become subject to acceleration, or actually are accelerated, then a default will
  automatically be triggered in another transaction. These provisions may apply
  not only to the two parties, but also to any third parties providing credit
  support, or any other specified entity.

• General Cross-Default Provisions  This refers to the occurrence of a default
  (payment, covenant, or other) by the counterparty, its credit support provider,
  or a related specified entity under certain agreements with third parties. Often
  this is limited to agreements for borrowed money in excess of a specified
  principal amount. This may be written as a cross-default, cross-accelerable, or
  cross-acceleration provision.

• Merger Events  This may be triggered by a merger or transfer of all or
  substantially all assets if (a) the merging party’s or transferee’s obligations
  under the agreement (or credit support document) are not assumed either by
  operation of law or by written instrument reasonably satisfactory to the other
  party, or (b) the creditworthiness of the counterparty is affected negatively by
  the event (an objective or a subjective measurement can be used).

• Bankruptcy or Insolvency Events  The provision is usually broadly written to
  cover inability to pay debts as they become due, bankruptcy petitions or
  proceedings, receiverships, or other variations that may be applicable based on
  the country or industry of the counterparty. Involuntary events may provide
  some grace period.

• Other  Other events of default that are sometimes used are based on a
  downgrade in the counterparty’s credit rating, a change in control, or material
  adverse change in the financial condition (or prospects) of the counterparty.

Termination Events  Termination events, which allow for early termination of only
the affected transactions, often include:

• Illegality  An illegality occurs if a change in law or regulation (or an official
  interpretation thereof) makes it illegal for either party to perform its obligations
  under a transaction.

• Tax Event  A tax event occurs if a withholding tax is imposed on a transaction.
- **Tax Event Upon Merger** A tax event upon merger occurs if a merger results in the imposition of a withholding tax on a transaction.

- **Credit Event Upon Merger** A credit event upon merger is sometimes a termination event rather than an event of default.

**Payments After Early Termination**

In recent years, participants have debated the merits of two different approaches, limited and full two-way payments, to determine the net payments made after an early termination through close-out netting.

In 1987, the first approach, limited two-way payments, was embodied in the ISDA Master Agreement. That approach distinguished between early termination caused by a default and one caused by a termination event, such as illegality. In essence, it provided that, when a party defaulted, it should not be entitled to any net payments, even if the net value of the position between it and its non-defaulting party was in its favor. If there was no default but there was a termination event, however, then the net value would have to be paid, regardless of who paid whom—that is, full two-way payments.

The idea behind not requiring payments to a defaulter was not that the other party should enjoy a windfall gain, but that it should be able to set off any losses to the defaulter, or to its affiliates not covered by the master agreement, before paying any balance.

Since 1987, the limited two-way payments approach has worked well enough, but critics have identified two possible problems: counterparties to a defaulter could walk away with a windfall; and, more subtly, the existence of limited two-way payments may introduce undesirable uncertainty when assessing the position of an insolvent institution.

To meet this concern, the 1992 ISDA Master Agreement allows both limited and full two-way payments to be applied to defaulters and non-defaulters alike. It states that full two-way payments will apply, unless counterparties elect limited two-way payments. This accommodates the Basle Accord proposal published for comment in May 1993, which suggests full two-way payments should be generally applied, and with the Recommendation in this Study to the same effect.

**Strategies For Credit Enhancement and Risk Reduction**

Participants draw on a variety of credit enhancement strategies to reduce the credit risk associated with one or both parties in a derivatives transaction. These strategies tend to follow one of two approaches. The first approach is to reduce the probability of default. The most common strategies taken under this approach are third-party letters of credit and guarantees to enhance creditworthiness. Some derivatives dealers have recently enhanced their credit ratings by establishing special purpose vehicles (SPV) or special operating subsidiaries with a credit rating that is higher than that of the parent. The second approach is to reduce the exposure on the underlying transactions. The most common example of this approach is the collateral arrangement whereby one party (or both) periodically posts collateral based on the mark-to-market exposure on the underlying transaction(s).
As derivatives activity evolves, participants will continue to develop new strategies to manage and reduce credit risk. The new strategies will be market-driven solutions to the problems facing participants. Some participants will seek new ways to bolster their creditworthiness with capital-based structures, while others will pursue solutions that are based less on capital and more on limiting exposure on a periodic basis through such devices as collateral arrangements. Under either approach, increased netting arrangements that are legally enforceable will play a major role in reducing credit risk throughout derivatives markets. Multilateral netting arrangements potentially could reduce the exposure further, but raise other issues regarding systemic risk.

Credit Enhancement by Reducing Probability of Default
Third-party guarantees and letters of credit are the most common strategies that market participants use to bolster their creditworthiness. Guarantees, or weaker variants such as keepwell, support, or comfort letters, often are required from a counterparty’s parent company or affiliate. Less frequently, an unaffiliated third party will agree to guarantee a counterparty’s performance in a derivatives transaction for a fee. Usually the guarantee will be required to be an absolute and unconditional obligation and the guarantor will be required to waive ordinary rights of surety.

For credit enhancement, a counterparty can also obtain letters of credit (from a bank acceptable to both parties) in an amount large enough to support the maximum potential exposure on the underlying swap. If the counterparty supported by the letter of credit fails to perform its obligations under the terms of the derivatives transaction(s), the other counterparty has the right to draw upon the letter of credit to remedy whatever shortfall exists.

Several dealers motivated by the participants’ requirements with respect to counterparty credit risk recently have developed special vehicles for OTC derivatives (“AAA subsidiaries”) which are structured and operate in a manner that removes the direct credit risk of the parent and provides enhanced credit protection to counterparties. Several features are common in the AAA subsidiary structures which have been established to date:

**Capitalization**  The primary form of AAA subsidiary credit support is the use of a cushion of excess capital. Credit rating agencies tend to require that the capital of an AAA subsidiary be able to withstand the most extreme stress scenario involving severe market movements.

**Bankruptcy Remote**  Another important requirement is that the AAA subsidiary must be legally separate from its parent so that it will not be combined or consolidated with the parent in the case of the bankruptcy or insolvency of the latter.

**Operating Guidelines**  AAA subsidiaries manage credit risk by managing their portfolios in accordance with specific operating guidelines. The guidelines comprise a range of ratios, triggers, and limits to achieve diversification. They can include absolute dollar or percent of capital limitations on counterparties, including the parent. Other alternatives may limit total exposure to counterparties in certain
rating categories at a fixed dollar amount or a percentage of capital. Industry or
country limitations may also be used to diversify the portfolio.

\textbf{Matching and Affiliate Transactions} This feature restricts the AAA subsidiary from
taking any open or unmatched positions. They must be continuously hedged. This
often is accomplished by requiring that the AAA subsidiary enter into a mirror
transaction with its parent or an affiliate for every transaction it enters into with a
third party. The AAA subsidiary’s exposure to the parent or affiliate may need to
be fully collateralized. In some structures, the parent or affiliate also is obliged to
collateralize any excess exposures of the AAA subsidiary. The AAA subsidiary also
may assign to the parent or affiliate any transaction with a counterparty that has
caused it to breach its operating guidelines (e.g., because of a downgrade, excess
exposure of counterparty default).

\textbf{Credit Enhancement by Reducing Underlying Exposure}
A counterparty can provide its own credit enhancement by agreeing to post
collateral to reduce or offset the exposure in the derivatives transaction. In an
enforceable collateral arrangement, if the counterparty that pledged collateral was
to default, the other counterparty would be entitled to use the collateral in or
towards payment of the defaulted obligation.

Collateral arrangements can be unilateral or bilateral. Unilateral agreements require
one counterparty to deliver collateral on trades in which it has a negative mark-to-
market value. The other counterparty in the transaction is not required to post
collateral. Unilateral collateral arrangements generally are used when one of the
counterparties is less creditworthy. Bilateral collateral arrangements require two-
way movement of collateral whereby the counterparty with the negative mark-to-
market value collateralizes the exposure to the other party.

If netting applies and is enforceable, the collateral generally is based on the net
negative mark-to-market value. If netting does not apply, the collateral arrangement
is often on a gross basis. The most common form of collateral is cash and
Government securities. The security interest on the collateral typically is required to
be perfected with delivery mechanics and further assurances as demanded by the
secured party.

\textbf{Recommendation 14: Credit Enhancement}
Dealers and end-users should assess both the benefits and costs of credit
enhancement and related risk-reduction arrangements. Where it is proposed that
credit downgrades would trigger early termination or collateral requirements,
participants should carefully consider their own capacity and that of their
counterparties to meet the potentially substantial funding needs that might result.

Collateral arrangements are negotiated by the counterparties to address the
concerns of both parties. As such, collateral arrangements differ according to the
conditions under which collateral must be provided, the amount of up-front
collateral required (if any), and the frequency with which collateral calculations are
made. Specifically, some collateral arrangements are structured so that the
obligation of a counterparty to post collateral is triggered by an event such as a
credit downgrade or material adverse change in financial condition whereby the
other party has "reasonable grounds for insecurity," or a specified threshold level of exposure has been reached. It should be noted that trigger provisions based on credit downgrade or other adverse changes have the potential to create sudden and sizeable liquidity requirements. Derivatives dealers and end-users should carefully consider their capacity and the capacity of their counterparty to meet such potential liquidity requirements when they negotiate such provisions.

To enhance the enforceability of collateral agreements, a security agreement addendum may be attached to the customer master agreement. The agreements generally are customized. If all trades made between the two counterparties within a particular product group—that is, all cities, branches, subsidiaries, or affiliates—are netted, then the collateral agreement would reflect this and thus avoid sending collateral to one location while receiving collateral from another. Similarly, cross-product netting agreements may be considered in the collateral agreement.

An alternative to collateral arrangements is periodic cash settlement of the underlying positions. In this structure, two counterparties agree to periodically send cash to cover any negative mark-to-market position that exists. The counterparty with the positive mark-to-market position takes actual ownership of the cash and the terms of the transaction are reset at market rates to have a zero mark-to-market value. These arrangements also often permit the early termination of the derivatives contract on a predetermined cash settlement date if either party so desires.

The Survey indicates that the most common forms of credit enhancement accepted by dealers are cash, government securities, and third party guarantees or letters of credit. Most dealers report collateral arrangements whereby the amount of collateral is adjusted up or down over the life of the derivative according to the level of current exposure. While most dealers will accept the credit enhancement arrangement discussed above from end-users, 48% of dealers surveyed do not provide credit enhancement of any form to counterparties.

Collateral arrangements represent a small portion of gross credit exposure. Most dealers report that less than 5% of their gross credit exposure to counterparties is collateralized; similarly, less than 5% of their counterparties' gross exposure to the dealers is reported to be collateralized.

With respect to end-users, the Survey reported that 42% of end-users accept third party guarantees, 22% accept cash collateral, and 22% accept government securities as collateral. In the future, end-users plan to increase their acceptance of cash and securities collateral. Thirty-nine percent of respondents do not accept any forms of credit enhancement, presumably preferring to deal with relatively strong counterparties. End-users that accept credit enhancement tend to require it from counterparties on a case-by-case basis rather than refer to a minimum acceptable credit rating.

The majority (60%) of end-users surveyed are not prepared to provide any form of credit enhancement in derivatives transactions. About 20% of respondents provide cash as collateral and 20% provide securities as collateral. The responses to this question are remarkably uniform across countries and types of end-user.
Multilateral Netting

In November 1990, the Report of the Committee on Interbank Netting Schemes of the central banks of the Group of Ten countries (the "Lamfalussy Report") was published by the BIS. The Lamfalussy Report provided a balanced view of multilateral netting, pointing out its potential to reduce credit exposure in the system as well as its potential to increase systemic risk. While multilateral netting arrangements exist for exchange traded products, there are currently no major multilateral netting arrangements in operation for over-the-counter derivatives transactions. The issues raised in the Lamfalussy Report continue to be the important issues surrounding potential multilateral netting arrangements.

Netting on a multilateral basis is an extension of bilateral netting. Multilateral netting is achieved arithmetically by taking the sum of each participant’s bilateral net positions with each of the other participants. This sum is called the “net-net” position and represents the participant’s net position with the system as a whole. When the netting is conducted through a central entity which is legally substituted for the original counterparty to each derivatives transaction, the net-net position will constitute a bilateral net position between each participant and the central counterparty. The sum of the net-credit and net-debit bilateral positions with the central counterparty is always zero.

Multilateral netting arrangements could be constructed on a “centralized” or “decentralized” approach to credit losses. In a centralized approach, the central counterparty assumes all credit risks and the responsibility for managing those risks. In such arrangements, the central counterparty usually requires participants to post collateral to fully secure any exposure. The ability of the system as a whole to withstand the default of individual participants, or other adverse developments, depends entirely on the risk management procedures of the central counterparty and its capacity to absorb financial losses.

In decentralized multilateral netting arrangements, the participants would retain significant responsibilities and incentives for credit risk management. Specifically, in the event of a participant’s default, credit losses would be allocated on a pro-rata basis among the surviving participants based on their bilateral exposures to the defaulter. The viability of this system depends on the ability of the participants to manage and satisfy their “contingent liabilities” under the loss-sharing formula. Collateral requirements could be used to secure these contingent liabilities.

Multilateral netting arrangements could provide three primary benefits. First, other things being equal, multilateral netting could incrementally reduce credit risk in the system beyond the reduction that could be obtained by bilateral netting. Second, multilateral netting could provide efficiencies by releasing capital currently used to support derivatives transactions and by generating savings in the settlement and risk management processes. Third, multilateral netting may serve to broaden the access to the derivatives market to include weaker credits and smaller participants on a collateralized basis. Such arrangements could be particularly useful for transactions among derivatives dealers and for participants willing to collateralize exposures.

Multilateral netting arrangements also have the potential to produce some systemic risks. The Lamfalussy Report discussed two such risks. First, multilateral netting
arrangements have the potential to concentrate risk by funneling transactions through a central counterparty, thereby making the system vulnerable to the central counterparty’s (or central counterparties’ in a risk-sharing arrangement) ability to manage risk and absorb losses. Second, the existence of a multilateral netting arrangement could actually increase, rather than reduce, credit risk if it induced participants to expand their derivatives activities or if it weakened their incentive for bilateral credit discipline.

III. Conclusion

Derivatives participants have developed a range of alternatives to evaluate and manage credit risk. Different bilateral credit enhancement and risk reduction techniques exist to meet the particular needs of participants. Multilateral netting arrangements constitute another technique that may develop in response to the needs of certain participants.
Section 3
Working Paper of the Enforceability Subcommittee
## Working Paper of the Enforceability Subcommittee

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As the Global Derivatives Study Overview explains, the four principal risks of derivatives activities (i.e., credit, market, operational, and legal) resemble those that financial institutions encounter in their day-to-day lending and trading businesses. With the development of derivatives, however, these old risks came in new forms, and legal analysis often turns on form as well as substance.

In the early days of derivatives, lawyers confronted a host of issues (e.g., corporate, constitutional, tax, regulatory) that were beyond the scope of existing laws and regulations.

In numerous contexts lawyers dealt with two basic questions: What is it? How does it fit into a given legislative or regulatory scheme? Answers have emerged from a better understanding of the components of derivatives and of derivatives transactions. Widely used standard documentation also has eased legal concerns in many jurisdictions. Changes in the legal environment in various jurisdictions have responded to certain enforceability issues. Nevertheless, there remain issues related to the enforceability of over-the-counter (OTC) derivatives transactions that need to be clarified to provide the requisite legal framework for these growing activities.

I. Management Challenges

Background
Enforceability presents the greatest risk participants face in derivatives transactions. The International Swaps and Derivatives Association (ISDA) recently sponsored a survey of default experiences among a diverse group of its members. At those institutions, cumulative losses over the 10-year history of their involvement in swaps totaled $358 million. Almost half of these losses was attributable to English local authorities—the result of the decision of the U.K. House of Lords in the Hammersmith and Fulham case (discussed below) which held that English local authorities did not have the capacity to enter swap and other derivatives transactions.

Standard Documentation
Several organizations around the world have developed standard documentation for global derivatives transactions which helps deal with and reduce enforceability risks. These organizations include the British Bankers Association (BBA), the Australian Financial Markets Association (AFMA), a group of German banks, the Association Francaise des Banques (AFB), ISDA, and others.

These organizations direct their efforts at reducing risks, as well as identifying the most effective methods to approach technical documentation issues. Such efforts have led to the development of industry standards for documentation, which includes not only standard agreements and confirmations, but definitional booklets and users' guides as well. ISDA, for example, has produced one such body of standard documentation, which includes standard form master agreements published in 1987 and 1992 (ISDA Master Agreements). The Survey of Industry Practice asked dealers what they use most often to document their transactions:

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1 The group surveyed represented over 70% of the $4.34 trillion volume (measured by notional principal amount) of swaps, caps, collars, and floors as reported by the year-end 1991 ISDA market survey.
Seventy-four percent of all responding dealers answered that the method they currently use most frequently is the "ISDA Master Agreement with little or no modification," and 76% said they plan to use this approach in the future. The next most frequently used form of documentation, "ISDA Master Agreement with major modifications," was cited by 25% of all responding dealers.

Enforceability
The Survey asked dealers' senior management to identify which documentation issues from a list of nine present the most serious concern. The two principal areas of "serious concern" both involved netting (62% of all dealer and end-user respondents). The remaining 38% is spread across seven other issues, with the next most common response involving the uncertainty over the legal status of transactions with certain types of counterparties (13%).

The Changing Legal Environment
Amendments to existing legislation, the enactment of new legislation, and other measures also have contributed to the reduction of legal risks. In the United States, legislative actions have greatly reduced legal uncertainty in derivatives activity. These include: the passage of the Financial Institutions Reform, Recovery, and Enforcement Act of 1989 (FIRREA); amendments to the U.S. Bankruptcy Code; the enactment of the Federal Deposit Insurance Corporation Improvement Act of 1991 (FDICIA); and the passage of the Futures Trading Practices Act of 1992 (FTPA) and subsequent passage in 1993 of a regulation under the Commodity Exchange Act exempting swap agreements.

Canada's legislative efforts to reduce uncertainty include an amendment to the Province of Quebec's Financial Administration Act and to its Act respecting municipal debts and loans. Passed in June 1992, the amendment clarifies the powers of the public sector in Quebec to enter into financial instruments, including currency exchange agreements, interest rate exchange agreements, and options and futures contracts, to manage financial risks. Other Canadian provinces have undertaken, or are considering, similar initiatives. In addition, Canada recently amended its Bankruptcy and Insolvency Act and the Canada Deposit Insurance Corporation Act to confirm early termination and netting rights under swap agreements and other similar financial contracts in certain insolvency contexts.

Belgian efforts include a new banking law adopted in 1993, which provides Belgian financial institutions with greater set off and netting rights.

In France, the Ministry of Finance and Budget and the Secretary of State for Local Authorities (Ministry of Interior) released a ministerial circular, entitled "Interest Rate Hedge Contracts Offered Local Authorities and Local Public Utilities," in September 1992. This joint paper clarifies, to a certain extent, the legal regime applicable to the use of swaps and other derivatives by French local authorities and their public utilities. It confirms that they may enter into derivatives transactions, subject to certain restrictions. For instance, local authorities may not enter derivatives transactions for speculative purposes, and they must enter into such transactions exclusively with credit institutions (établissements de crédit), as defined in the French Banking Law of 1984, in order to reduce counterparty risk. With respect to illegality, various legislative amendments (most recently in 1991) specifically excluded derivatives from the scope of Article 1965 of the French Civil
Code and removed the risk that such transactions could be deemed gambling contracts and rendered unenforceable under French law.

In Australia, the law regulating futures contracts may apply to some OTC derivatives; however, legislative change is expected to result from a current inquiry into the operation of the futures contract provisions.

In England, the Financial Law Panel has been established under the aegis of the Bank of England to be the central forum for resolving legal uncertainties and anomalies affecting wholesale financial markets and services in the United Kingdom. This Panel is likely to concentrate on a number of the enforceability issues summarized in this Working Paper.

When selecting the applicable law to govern their agreements, derivatives dealers are most likely to select the jurisdiction that provides the greatest legal certainty. The Survey asked dealers which governing law they use most frequently for documentation. Not surprisingly, 53% say English law and 31% say U.S. law, since these two jurisdictions have well-developed systems of commercial law and a party may select either as the governing law under the ISDA Master Agreements. Dealers also were asked which jurisdictions, if any, cause them significant concern. While 53% of all dealers say there are jurisdictions that cause such concern, only 5% cite the United States and only 2.5% cite the United Kingdom. The jurisdiction causing the greatest concern is France (16%). This concern appears to focus on the enforceability of close-out netting with French counterparties.

Jurisdictions that do not cause dealers much enforceability concern nonetheless are subject to legal risks, as is demonstrated clearly by the English Hammersmith and Fulham case. This fact supports further educational and legislative efforts despite the achievements to date.

Five Main Enforceability Risks
Five main enforceability risks can occur at different stages of an OTC derivatives transaction.

Contract Formation: The Statute of Frauds
Background Due to the growth over the last 10 years in derivatives activity, documentation often was delayed—a problem that dealers identified as documentation “backlog.” In the early days of derivatives, documentation backlog became commonplace. Some transactions went undocumented for long periods of time. The issue thus arose whether an oral agreement made prior to a signed writing represented a binding contract. This created a legal risk that a counterparty with unrealized losses could disaffirm the transaction before a writing was executed.

Laws in England, France, Germany, and the Canadian provinces of British Columbia and Quebec, for example, do not require that a contract for a derivatives transaction take any particular form (i.e., an oral agreement is sufficient).²

² While this may present certain evidentiary issues as to the terms of the agreement, the issue of contract formation seems certain.
New York, however, has two different provisions that require a writing (i.e., two
different statute of frauds provisions). As an example of the uncertainties that can
arise under laws written before OTC derivatives were developed, New York case
law has created some uncertainty as to which statute of frauds provision applies to
various types of derivatives transactions. Because the requirements of the two
provisions differ somewhat, counterparties dealing under New York law may
wonder whether they have adequately satisfied the applicable statute of frauds and
created an enforceable agreement.

**Survey Results**

It is reassuring to learn from the Survey that documentation
backlog is not nearly as severe a problem as it once was. Among dealers, the most
common area of “little concern” (as compared to “some concern” or “serious
concern”) is the risk of undertaking transactions without subsequently being able to
complete documentation. Dealers and end-users also were asked to characterize
documentation backlog. Among dealers, 5% say severe backlog is getting better, 4%
say it has stayed the same and none says it has become worse; 49% say moderate
backlog is getting better, 19% say it has stayed the same and 4% say it has become
worse. Among end-users, 6% say severe backlog is getting better, 1% say it has
stayed the same and 3% say it has become worse; 22% say moderate backlog is
getting better, 14% say it has stayed the same and none says it has become worse.

**Capacity**

**Background**

Major corporations, financial institutions, governmental entities,
insurance companies, pension funds, and others use derivatives transactions to
manage financial risk. Transactions with major corporations and financial
institutions do not create capacity issues as frequently as do transactions with the
other entities named above. Specifically, the issue that may arise in relation to
agreements with a governmental entity, for example, is whether that entity has the
capacity to enter into such a transaction or whether the transaction is beyond its
capacity (i.e., ultra vires).

The concerns revealed by the Survey with respect to municipalities and sovereigns
are undoubtedly the result of the decision of the U.K. House of Lords in the
Hammersmith and Fulham case decided in January 1991. In that case, the House of
Lords restored the judgment of the first instance court, ruling that the London
Borough of Hammersmith and Fulham, a local government authority in the United
Kingdom that had been an active participant in the market for sterling interest rate
derivatives during the mid-1980s, lacked the capacity to enter into those
transactions. Therefore, the many swap and related transactions it had entered into
were ruled void.

The effect of the ruling of the House of Lords was to render void agreements
between over 130 councils and over 75 of the world’s largest banks. It involved
more than 600 business relationships stretching back as far as 1981. Swap market
participants seeking restitution have brought a number of lawsuits in England.
Ironically, in addition to losses experienced by the financial institutions, local
authorities lost valuable hedging positions as well as unrealized gains.

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As a result of the Hammersmith and Fulham decision, dealers have become cautious about entering into swaps and other derivatives with governmental entities in jurisdictions where these entities' capacity to enter into the transactions in question is not clearly set forth in statute.

In France, for example, the capacity for French local authorities to enter into derivatives transactions for hedging purposes was never questioned; however, uncertainties arose with respect to the types of instruments capable of being used, limitations on such use, method of authorization, and application of public accounting rules.

In Singapore, as well as other jurisdictions, there was the possibility that the power to enter swap transactions could be inferred from a governmental entity's power to borrow (a power that most governmental entities have); however, Hammersmith and Fulham, which is considered persuasive authority in Singapore, set the precedent that a governmental entity in Singapore does not have such implied powers to enter into swap transactions as a consequence of its express power to borrow. Similar concerns exist in a number of jurisdictions in relation to certain other entities, and express authority for them to enter into OTC derivatives is desirable.

Survey Results The third most commonly cited serious concern among all dealer respondents is uncertainty over the legal status of transactions with certain counterparties. Dealers also were asked the extent of their concern with respect to various counterparties. The entities causing "serious concern" are municipalities (41%), followed by sovereigns (100%), and pension funds (9%). The three entities most commonly causing "some concern" are unit trusts, pension funds, and insurance companies.

Early Termination: Bankruptcy/Insolvency/Liquidation

Background Another area presenting major enforceability concerns is early termination. The specific issue is whether the nondefaulting party to a derivatives master agreement would be able to enforce the provisions entitling it to terminate the agreement and net out or offset termination values and payment amounts (i.e., close-out netting) upon the bankruptcy/insolvency/liquidation of its counterparty.

In dealing with a counterparty organized in the United States, participants in the derivatives market once faced an element of uncertainty in assessing the bankruptcy and insolvency risks involved. The risks could vary depending upon the type of counterparty—bank, savings institution, or corporation—with which one was dealing, since each was subject to a separate set of laws and regulations.

The most significant area of concern was that, in a proceeding under the U.S. Bankruptcy Code, termination rights under master swap agreements were subject to an automatic stay. Thus the ability to terminate the master agreement and enforce the close-out netting provisions could be delayed for a long time. Moreover, although it generally was believed that a U.S. bankruptcy court should give effect to essential elements of a master agreement, such as netting of transaction values upon early termination, there was no guarantee that this would be the result. The considerable degree of legal certainty, however, that can be achieved in this area is illustrated by legislative amendments and new legislation
that have been adopted in certain jurisdictions, including the United States (see Section II).

Survey Results Netting remains a persistent concern among derivatives dealers as illustrated by the Survey. Both areas of serious concern receiving the greatest response rate involve netting: 43% of all dealers state that the enforceability of netting provisions in the jurisdiction(s) of the counterparty in the event of default caused them "serious concern," and 19% state that the difficulty in achieving a high degree of cross-product counterparty exposure netting through master agreements causes such concern.

Close-out netting is the most common form of netting (as opposed to netting by novation) for various derivatives transactions. The Survey asked dealers for what products they use close-out netting. In response, 80% say interest rate derivatives (excluding FRAs) (compared with 30% of dealers using netting by novation), 68% say currency derivatives (excluding foreign exchange forwards and options) (compared with 18% of dealers using netting by novation), and 34% say forward rate agreements (compared with 15% of dealers using netting by novation).

Multibranch Netting Arrangements
Banks use multibranch master agreements to "book" individual derivatives transactions through any branch designated in the agreement. The use of such master agreements involves a netting issue that has not received sufficient attention from participants and regulators: whether upon the insolvency of a counterparty, parties to a multibranch master agreement can terminate that agreement and net across branches to achieve one net amount owed by or to a counterparty.

The Survey asked dealers and end-users if they typically allow their counterparties to contract as a multibranch party. In response, 88% of all dealers and 38% of all end-users say they are open-minded about this issue; 5% of dealers and 22% of end-users say only if their counterparties insist; and 5% of dealers and 35% of end-users say they do not allow this. This suggests that multibranch master agreements may be used more than occasionally.

Legality/Enforceability of Derivatives Transactions
In some jurisdictions, issues exist relating to the legality or enforceability of derivatives transactions generally. Brazil, Canada, Japan, and Singapore each indicates that issues exist whether swaps or other derivatives transactions could be deemed gambling contracts, and thus illegal or unenforceable. In Australia, it is a recognized concern that a derivatives contract may be classified as a gaming or wagering contract and thus invalid, because the state and territory legislation does not define the terms "gaming" or "wagering."

In the United States, specifically in New York, three statutes bear on the legality issue with respect to gambling. The first, a criminal statute, proscribes the act of "promoting gambling," the second, also a criminal statute, proscribes operating a

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4 N Y. Penal Law § 225.00 (McKinney 1989).
"bucket shop" (i.e., selling cash-settled option contracts); and the third statute voids all contracts for wagering on a contingent event. There was once a risk that a court might use one of these three statutes to invalidate a swap agreement; however, the exemptions from the Commodity Exchange Act provided to swap agreements and hybrid instruments substantially reduce this concern (see Section II).

Another legality issue involves whether derivatives transactions could be held subject to the laws applicable to futures contracts. If parties fail to comply with such laws, these transactions may be deemed illegal and unenforceable. Reports from some jurisdictions also indicate that certain laws that regulate entering into a futures contract may apply to derivatives transactions. Again, this concern once existed in the United States; however, the exemption for swap agreements and hybrid instruments noted above reduces this risk as well.

**II. How to Meet the Challenges**

**Five Main Enforceability Risks**

**Contract Formation: The Statute of Frauds**

To resolve the uncertainty in New York regarding the formation of derivatives contracts, a working group is making efforts to amend New York's statute of frauds. An amendment recently was introduced in the New York State Senate. This would remove legal uncertainty for transactions governed by New York law by allowing one statute of frauds provision to apply to all "qualifying financial contracts," a term defined more broadly than the definition of "swap agreement" in the U.S. Bankruptcy Code. The proposal also attempts to take account of new technologies to record or document derivatives transactions by providing that a telex, facsimile, computer retrieval, or other process by which electronic signals are transmitted by telephone or otherwise would qualify as a "writing" for statute of frauds purposes.

Occasionally, there are calls in some Canadian provinces for reform or repeal of the statute of frauds, although no legislative efforts are currently under way. To create uniformity across the Canadian provinces, legislatures should consider repealing the statute of frauds where it exists (i.e., Ontario, Alberta) for certain financial contracts such as derivatives contracts (as noted earlier, British Columbia already repealed its statute of frauds and Quebec has no legislative equivalent to a statute of frauds).

**Capacity**

Legislation should authorize governmental and other entities to enter into derivatives transactions in jurisdictions where authority is not express.

Numerous states in the United States currently have statutes authorizing governmental entities to engage in swap transactions. The statutes range from permitting swap transactions only in connection with the issuance of bonds, to

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permitting such transactions in connection with or incidental to investing or raising money.

As noted earlier, the Hammersmith and Fulham decision has led to the view that local authorities in England lack the necessary capacity to enter into derivatives transactions. On the assumption that local authorities should be able to use this risk management tool, legislation should clearly authorize such entities to enter into derivatives transactions. The uncertainties about the capacity of other entities could be removed either by clear and unambiguous legislation or, alternatively, by abolishing the concept of ultra vires in relation to such entities.

This abolition has already been accepted in practice for certain entities. For instance, the practical effect of Section 35 of the Companies Act 1985 is to abolish, for the benefit of third parties, the doctrine of ultra vires in relation to companies incorporated under the Companies Act. This Section prevents the validity of an act done by such a company being called into question on the grounds of lack of capacity by reason of anything in the company's memorandum of association (i.e., its constitutive document). It is unlikely that one single approach, however, will be appropriate for all such entities; each must be considered in the context of its own legislative and regulatory environment. In addition, unit trusts and pension funds clearly require a different approach.

Issues to be addressed in any legislation dealing with the capacity of governmental entities should include:

- Which governmental entities may enter into derivatives transactions.
- What types of derivatives transactions such entities may engage in.
- Under what circumstances these entities may engage in derivatives transactions.
- What procedures a governmental entity must follow and what restrictions they must adhere to.
- Which party bears the risk in the event the entity lacks the necessary capacity to enter into derivatives transactions or fails to follow statutory or regulatory procedures when engaging in derivatives transactions.
- With whom such entities may enter into derivatives transactions.

Similar issues arise in relation to the capacity of various other types of entities to enter into derivatives transactions.

If governmental and other entities are to use derivatives transactions effectively in the management of financial risk, their authority to enter into such transactions should be unambiguous. Among other things, clear authority to enter into derivatives transactions should produce a greater number of potential counterparties, thereby increasing competition and reducing transaction costs.

Early Termination: Bankruptcy/Insolvency/Liquidity

As the Survey indicates, derivatives participants are concerned about the enforceability of netting, yet recognize its substantial benefits (as demonstrated by its widespread use). One reason for the concern probably stems from the resistance by national banking regulators to recognize in capital adequacy rules the effects of
close-out netting provisions contained in master agreements where and to the extent those provisions are enforceable (although netting by novation has been so recognized). On April 30, 1993, the Basle Committee on Banking Supervision of the Bank for International Settlements (BIS) released a Consultative Paper. That paper proposes recognizing bilateral close-out netting as an amendment to the agreed framework for measuring bank capital adequacy (the "Basle Accord") published by the Basle Committee in July 1988. The Governors of the BIS have accepted and endorsed the proposals in the Consultative Paper as a basis for wider consultations with interested parties over the remainder of 1993.

**Recommendation 21: Recognizing Netting**

Regulators and supervisors should recognize the benefits of netting arrangements where and to the full extent that they are enforceable, and encourage their use by reflecting these arrangements in capital adequacy standards. Specifically, they should promptly implement the recognition of the effectiveness of bilateral close-out netting in bank capital regulations.

The Consultative Paper represents an important first step in the recognition for capital purposes of bilateral close-out netting. Central bank regulators in all the countries represented on the Basle Committee, however, will need to recognize such netting for capital purposes once the proposal is adopted by the Basle Committee. The approach to the proposed amendment during the comment period should be to do the work necessary to permit prompt implementation by these national regulators. This effort would include obtaining legal opinions from counsel in each of the countries represented on the Basle Committee indicating that bilateral close-out netting provisions will be upheld in insolvency proceedings in each of those countries.7

Legislation adopted in the United States offers a high degree of legal certainty that bilateral close-out termination provisions will be upheld in insolvency proceedings. In 1990, amendments were adopted to the U.S. Bankruptcy Code that provide certainty for parties dealing with U.S. corporations through provisions applicable to "swap agreements"; these amendments create an exception to the automatic stay to allow a nonbankrupt party to set off any mutual obligations arising under or in connection with any "swap agreement" following a bankruptcy filing, and to use any collateral held to satisfy amounts due from the bankrupt.8 They also expressly recognize that parties will be entitled to exercise contractual rights to terminate a "swap agreement" and net or offset termination values and payment amounts under that agreement.9

In 1989, FIRREA provided to U.S. banks and savings institutions benefits similar to those provided to U.S. corporations. Finally, in 1991 FDICIA was enacted.

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7 Legal opinions from 10 jurisdictions (Belgium, Canada, England, France, Germany, Italy, Japan, the Netherlands, Sweden, and the United States) have been obtained that support such netting under the 1987 ISDA Master Agreements, and are currently being updated with respect to the 1992 ISDA Master Agreements.


providing certainty for “financial institutions” that are parties to a “netting contract” (such as the ISDA Master Agreements), regardless of the types of derivatives transactions it documents.

Much legal certainty also exists in Canada. Insolvency legislation in Canada includes the Bankruptcy and Insolvency Act (BIA), the Winding-Up Act (WUA), the Companies’ Creditors Arrangement Act (CCAA), and the Canada Deposit Insurance Corporation Act (CDIC Act). With respect to termination, the BIA and the WUA would permit a counterparty to terminate the agreement upon a liquidation of a Canadian counterparty. In the context of filing a proposal for a creditor reorganization, the BIA and the CDIC Act contain statutory stays and render unenforceable any contractual provisions that allow termination of the contract solely on the basis of insolvency, but carve out from this restriction “eligible financial contracts,” which would include most, if not all, derivatives contracts. The CCAA, however, contains no such carve out for court-ordered stays made under its provisions. With respect to close-out netting, no reported judicial authority deals directly with its enforceability, but a strong body of opinion holds that the enforceability of the close-out netting provisions of a master agreement would be recognized in proceedings governed by the above legislation other than, perhaps, the CCAA. Indeed, close-out netting is now recognized by statute in the context of the filing of a proposal for creditor reorganization under the BIA and the CDIC Act. Although the CCAA is flexible enough to allow the parties to work out various arrangements, it remains an area of significant uncertainty.

In approximately three years, the Canadian government is supposed to reconsider the need for the CCAA. Before then—in fact, as soon as possible—an amendment should be adopted that, like the BIA and the CDIC Act, permits the termination and close-out netting of “eligible financial contracts” upon the filing of a proposal under the CCAA.

With respect to England and in the context of two entities incorporated in England under the Companies Act, no reported judicial or statutory authority deals directly with the enforceability of close-out netting; however, a very strong body of opinion holds that such netting is enforceable based upon general principles of English law.

In Australia, statutory provisions impose mandatory set-off following insolvency. A very strong body of opinion holds that a master netting agreement between companies or natural persons is enforceable. No specific law in Australia, however, provides for the netting of obligations following the insolvency of entities other than companies or natural persons; in that case, general contract law strongly suggests that such entities would be bound under a contractual netting arrangement.

Japan has no court precedent supporting netting, although it is unanimously accepted as valid under Japanese law.

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10 A proposal to expand the definition of “financial institution” was published on May 19, 1993, for comment by August 20, 1993. The expansion would increase efficiency and decrease systemic risk in the financial markets, and therefore should be adopted (see Section IV of the “Enforceability Survey: United States” in Appendix II to this Study).
The most likely reason that respondents to the Survey indicate concern with enforceability in France is the uncertainty surrounding the effectiveness of close-out netting. However, academics and practitioners generally support the enforceability of such provisions. General contract law principles and the specific treatment by bankruptcy courts of closely-connected obligations also provide a generally favorable background for official recognition of close-out netting provisions and unanimous acceptance provide some certainty, but debate about remaining uncertainties may prompt a legislative solution.

In some quarters it has been suggested that the recognition of close-out netting clauses should be delayed until they have been tested in legal proceedings in all the countries involved. This approach would leave participants very uncertain as to timing because they would be dependent upon the occurrence and resolution of litigation. This hardly seems desirable if the existing legal framework is sufficient and master agreements are supported by appropriate legal opinions. If serious doubts do exist, legislation, not litigation, is the appropriate answer.

Multibranche Netting Arrangements
Most of the legal work done to date on close-out netting concerns the enforceability of bilateral close-out netting between two legal entities and not across two or more branches of a single bank. Hence, once close-out netting is recognized for capital purposes, it should not be implemented across branches under a single master agreement until these issues have been resolved. Resolution will come only if and when it is clear that the insolvency of a bank with several branches in different countries will be handled as a single proceeding and not as separate proceedings for the bank and each branch. Derivatives participants and regulators should consult on the regulatory and legislative changes necessary to achieve this goal.

If a bank with branches in countries outside its home country becomes insolvent, complex legal and practical problems can arise when there is an insolvency proceeding in the home country of the bank as well as separate proceedings for one or more branches in other countries. These problems were graphically illustrated in the aftermath of the collapse of the Bank of Credit and Commerce International (BCCI) when English and U.S. banking regulators, among others, clashed over the proper disposition of the bank’s assets that were scattered around the globe.

In June 1993, the State of New York Banking Department submitted revised legislation to the New York State Legislature to address this uncertainty in situations where a Federal insurer (e.g., the Federal Deposit Insurance Corporation) is not the receiver or liquidator of a New York branch. In the case of the liquidation of a New York branch or agency of a non-U.S. bank by the New York Superintendent of Banks, the proposal allows the home country regulator of the non-U.S. bank to assume or repudiate qualified financial contracts (including swaps and other OTC derivatives) entered into by that bank or the New York branch or agency that are subject to a multibranch netting agreement or arrangement. Under the proposal, the counterparty also may terminate a multibranch master agreement in accordance with its terms. Upon such repudiation or termination, the liability of the Superintendent to the counterparty will be the lesser of the amount owed by the non-U.S. bank after netting under the multibranch master agreement (the “Global Net Payment Obligation”), and the amount owed by the non-U.S. bank to a counterparty after netting only those transactions entered into by the New York
branch or agency. The definition of qualified financial contract resembles that set forth in FIRREA and enables the Superintendent to define or expand by regulation the transactions covered by the definition.

Counterparties also are protected by a provision permitting collateral held in New York to secure obligations under a qualified financial contract to be applied toward outstanding claims up to the Global Net Payment Obligation.

This legislation has been submitted to the New York State Legislature for consideration during the current term. The proposed legislation, if enacted, will enhance significantly the enforceability of multibranch netting agreements that involve New York branches or agencies of non-U.S. banks. It also establishes a constructive pattern for the future of international banking regulation by recognizing for OTC derivatives the global as well as the local interests at stake following an international bank insolvency.

**Legality/Enforceability of Derivatives Transactions**

In those jurisdictions where derivatives transactions may be considered gambling contracts or off-exchange futures contracts, participants should seek legislative action to ensure that such transactions will not be deemed illegal and unenforceable.

In Japan, derivatives participants should seek legislation clarifying the criminal provisions of the Securities Exchange Law (SEL) and the Commodity Exchange Law (CEL). The provisions should not deem derivatives transactions to be gambling and thus void as against public policy.

In Australia, widespread support exists for amending the Corporations Law to exempt over-the-counter derivatives from the gaming and wagering legislation of each state and territory of Australia. This support stems from the concern noted earlier that the failure by legislation to define the terms “gaming” and “wagering” may subject derivatives to the law that invalidates gaming or wagering contracts.

Through legislation, France removed uncertainty concerning the legality of derivatives transactions. As a result of concerns that derivatives transactions could constitute gambling contracts under French law and thus be deemed unenforceable pursuant to Article 1965 of the French Civil Code, Article 1 of a law of March 28, 1885 was amended on two occasions (most recently on July 26, 1991) to specifically exclude derivatives transactions from the scope of Article 1965 of the French Civil Code.

In the United States, there was once the risk that all swap transactions with U.S. counterparties would be deemed off-exchange traded commodity futures contracts, which would have made them unenforceable. On January 14, 1993, the Commodity Futures Trading Commission (CFTC) adopted two separate sets of regulations that exempt swap agreements (as defined in Section 101 of the U.S. Bankruptcy Code) and hybrid instruments\(^1\) from the Commodity Exchange Act. The regulations were

\(^1\) The regulations define “hybrid instrument” as an instrument that is an “equity or debt security or depository instrument . . . with one or more commodity-dependent components that have payment features similar to commodity futures or commodity option contracts or combinations thereof.”
adopted pursuant to authority granted to the CFTC under the FTPA to provide exemptions from the Commodity Exchange Act for futures contracts and transactions that may have futures-like elements, including swap agreements, hybrid instruments, forward contracts, and bank deposits. The FTPA also provides an express preemption of state "bucket shop" and gaming laws for transactions covered by the terms of the exemption. Therefore, the exemptions provide valuable legal certainty which should be sought in jurisdictions where the legality of derivatives transactions remains an issue.12

Recommendation 22: Legal and Regulatory Uncertainties
Legislators, regulators, and supervisors, including central banks, should work in concert with dealers and end-users to identify and remove any remaining legal and regulatory uncertainties with respect to:

- The form of documentation required to create legally enforceable agreements (statute of frauds).
- The capacity of parties, such as governmental entities, insurance companies, pension funds, and building societies, to enter into transactions (ultra vires).
- The enforceability of bilateral close-out netting and collateral arrangements in bankruptcy.
- The enforceability of multibranch netting arrangements in bankruptcy.
- The legality/enforceability of derivatives transactions.

Summary of Enforceability Issues from Nine Jurisdictions
The following briefly summarizes enforceability issues (many of which have been previously discussed) identified by law firms in nine important jurisdictions. The complete report of each law firm may be found in Appendix I to this Study.

Australia
Netting A "master netting agreement" containing certain provisions can result in a party being entitled to net its obligations under derivatives with a counterparty. Legislation dealing expressly with the ability of a party to net its obligations under derivatives, however, would help. Having such legislation would mean that both the Reserve Bank of Australia and derivatives participants would have an express legislative framework in which to authorize and create netting arrangements.

Capacity Similar issues arise in Australia as arise in other jurisdictions in relation to the capacity and power of certain bodies (in particular, government and semi-government authorities) to enter into derivatives transactions. A third party will often be put on inquiry as to the purpose for which a counterparty is exercising a power. Legislation is required providing express power for certain entities to enter into derivatives, and providing that a third party need not inquire as to the purpose for the exercise of the powers.

12 These exemptions would not appear to apply to derivatives transactions that are equity indexed. While limiting the CFTC's exemptive authority, the U.S. Congress stated that it did not intend to call into question the legality of equity-indexed products; however, some legal uncertainty remains and further clarification should be sought.
Wagering/Insurance Contracts Some derivatives may be classified as wagering or insurance contracts. The Corporations Law only provides limited exceptions from that classification. Legislative change providing that derivatives do not fall within the laws regulating wagering or insurance contracts is desirable.

Futures Contracts/Unauthorized Futures Markets The legislation regulating futures contracts contains wide definitions (and limited exceptions to those definitions) with the result that a number of commonly traded OTC derivatives are arguably subject to the regulatory provisions contained in that legislation. Legislative change is expected to result from a current inquiry into the operation of the futures contract provisions.

Brazil Netting Derivatives participants must evaluate enforceability issues with respect to the early termination and netting provisions in bankruptcy proceedings applicable to corporations and in special bankruptcy proceedings applicable to public-sector companies or private-sector companies in regulated industries.

Capacity Certain laws and regulations may create uncertainties regarding the ability of some institutions to enter derivatives transactions; these include capital market laws (e.g., regulations relating to stock and commodities exchanges as applied to equity- and commodity-linked transactions), financial institutions laws and regulations, laws and regulations relating to transactions in foreign currency, insurance laws and regulations, and commodities regulations.

Authority The form of corporate authorization to enter into derivatives transactions raises enforceability issues, as do special internal or governmental formalities for public-sector entities. Such public-sector entities include: the federal government; states; municipalities; federal or state mixed-capital companies; federal or state autonomous entities; the Central Bank of Brazil; and federal or state public companies. Special internal or governmental formalities may be required for private-sector entities to enter derivatives transactions, such as: commercial banks; investment banks; insurance companies; other financial institutions; pension funds; public utilities; agricultural cooperatives; and mutual funds.

Contract Formation The enforceability of oral agreements and the formalities, such as signatures by witnesses, raise contractual formation concerns and should be evaluated.

Gambling Contracts Clarification should be sought concerning the applicability of prohibitions against gambling contracts to derivatives transactions.

Collateralization Many enforceability issues arise with respect to credit support (e.g., guaranties, collateralization agreements, letters of credit), which require efforts to achieve greater certainty. Some of these issues are: contract law and authorization requirements for credit support; approvals by the Central Bank of Brazil or other agencies to render credit support documents in favor of foreign counterparties enforceable; posting collateral outside Brazil to support obligations of Brazilian parties; and internal or governmental formalities for public- and private-sector entities.
Canada

Netting Some uncertainty remains with respect to the enforceability of close-out netting under the CCAA. Recent statutory amendments and a strong body of legal opinion have clarified this issue in other insolvency contexts.

Capacity Issues involving the capacity and scope of authority with respect to the following entities currently exist: federal and provincial sovereigns; crown corporations and other “Special Act” corporations; municipalities; insurance companies; trust companies and loan corporations; and pension funds. It is encouraging that federal and provincial legislators have recognized the uncertainty surrounding the capacity of certain entities and have promulgated legislation to address this uncertainty; however, the existing “patchwork” legislative approach has proved inadequate and a more uniform statutory approach could be desirable.

Statute of Frauds Participants should encourage legislative amendments that repeal the statute of frauds for derivatives transactions in the provinces where it exists.

Collateralization Legislative and regulatory initiatives are required to confirm the validity of pledges of collateral by Canadian banks, trust companies, loan corporations, insurance companies, and pension funds.

Legality Some uncertainty exists whether Canadian gaming and wagering laws apply to derivatives transactions. Uncertainty also exists as to whether certain derivatives transactions constitute securities or off-exchange commodity futures contracts. Legislative clarification would be desirable in both these areas.

England

Netting Despite the absence of any specific statutory or case law authority, a very strong body of opinion confirms the enforceability of close-out netting. Efforts should be continued to permit regulators to recognize the proposals contained in the recent Basle Committee Consultative Paper.

Capacity An analysis of relevant legislation and regulations should isolate uncertainties regarding the capacity to enter derivatives transactions for the following types of entities: building societies; insurance companies; unit trusts; and pension funds and similar entities. Information has been gathered for proposals to alleviate capacity problems (e.g., the Legal Risk Review Committee, which was established in London under the aegis of the Bank of England in April 1991, proposed the abolition of the ultra vires concept, as well as the establishment of the Financial Law Panel).

Collateralization Certain aspects of English law relating to the taking of security or the entering into of arrangements, which were designed to provide an equivalent effect, pose some difficulties in arranging collateralization for derivatives transactions (although these difficulties are not unique to derivatives transactions).

France

Netting Difficulties exist, principally in relation to the ability to terminate a swap or other derivatives transaction following the making of a “redressement judiciaire” (i.e., judicial reorganization) order and the power of a French administrator to demand continuation of outstanding contracts. In addition, enforceability of cross-
product netting through the use of a master agreement documenting various transactions must be evaluated against the requirement that set-off is permissible between "closely connected" debts after the initiation of bankruptcy proceedings. The AFB and the French Treasury currently are discussing amendments to existing legislation in connection with these difficulties and may make certain proposals to Parliament shortly.

**Collateralization** Collateralization of derivatives transactions through conventional pledges raises enforceability issues, particularly as regards the effectiveness of the collateral should an insolvency occur. Legislative action would be desirable both to simplify the methods of collateralization and to overcome such enforceability issues. Recent legislation adopted in France to facilitate the collateralization of stock lending transactions could serve as a precedent for derivatives transactions.

**Germany**

*Netting* Although there is no legislation or case law on point, close-out netting should be enforceable under German law. Clarification on a number of issues related to close-out netting may follow from a reform of the German insolvency laws. The proposed legislation may be passed this or next year, but to date no definite timetable has been set.

*Capacity* Public law entities, as a general rule, are subject to the *ultra vires* doctrine. Such entities include the Landesbanken, savings banks, the German Railways, the Treuhandanstalt, public law insurance carriers, and social security carriers. For each such entity, the applicable laws and charter documents must be carefully examined to determine the respective capacity. The Federal Republic of Germany and the States (Länder) arguably are not subject to the *ultra vires* doctrine.

**Japan**

*Netting* Although no court precedent exists, the close-out termination provisions of the ISDA Master Agreements are almost unanimously accepted as valid and enforceable under Japanese law.

*Capacity* No legislation directly covers the issue of capacity with respect to derivatives transactions, although a review of relevant legislation and regulations isolates, to a large extent, uncertainties regarding the capacity of municipalities/regional entities, banks, securities houses, insurance companies, and pension funds. Currently, municipalities/regional entities enter into swap transactions only for the legitimate purpose of hedging when they issue bonds in foreign currency pursuant to the approval of the Ministry of Home Affairs. In addition, even if such entities enter into swap transactions for purposes other than hedging, it would be very difficult to apply the doctrine of *ultra vires*.

The permitted business conducted by banks, securities houses, and insurance companies is set forth in authorizing statutes. None of these statutes expressly includes swap transactions although such transactions may fall under the heading "incidental business." Accordingly, uncertainty still remains about the authority of such entities to enter into swap transactions for purposes other than hedging. Further, research reveals no reason why banks and securities houses, as financial institutions and with legitimate business reasons, should not engage in swap
transactions of various kinds and for various purposes other than for hedging purposes. As a result of the application of the Foreign Exchange and Foreign Trade Control Law, only authorized foreign exchange banks may be a party to currency swap transactions or swap transactions with non-residents of Japan.

Gambling Contracts If any transaction is adjudicated as a violation of the criminal gambling provision of the Penal Code, it is very difficult to argue that transaction is not against public policy and thus void under the Japanese Civil Code. In addition, gambling through the use of prices or indices quoted at authorized exchanges constitutes a crime under the SEL or the CEL. Although none of the foregoing criminal provisions has been applied to swap transactions, a question remains as to whether a swap transaction may be deemed to be "gambling." It is generally accepted that hedging purposes would justify such "gambling" and it is highly unlikely that governmental authorities would argue that swap transactions are a criminal violation unless they are linked to money laundering or underground criminal organizations. Clarifying legislation, however, should be sought.

Commodities and Stock Exchange Regulations Provisions in the SEL and the CEL prohibit the private establishment of an exchange. The text of the CEL is broader than that of the SEL. Therefore, current OTC equity swaps will not fall in the category of "exchange" under the SEL, but there is some question whether the CEL would apply to current OTC commodity swaps. A facility where swaps are continually and repeatedly transacted is deemed to be a private market under these regulations. The Ministry of International Trade and Industry, the major enforcement authority of the CEL, has provided its tacit approval and support for the development of OTC commodity swaps. The Ministry of Finance, the major enforcement authority of the SEL, also probably would not apply such provisions to swap transactions.

Singapore Capacity With respect to governmental entities, a model statute should be drafted authorizing such entities to enter into derivatives transactions (or credit enhancement agreements) to manage financial risk. With respect to corporate entities, relevant legislation, regulations, and case law must be reviewed in Singapore and other Commonwealth countries (i.e., Australia and England) to uncover and resolve existing uncertainties.

Statute of Frauds An analysis of the statute of frauds and case law in Singapore and England is required to determine whether "alternative" documentation will satisfy such legal requirements.

Gaming Contracts Issues exist whether swap transactions are gaming or wagering contracts under Section 6(1) of the Singapore Civil Law Act (i.e., null and void), and whether exceptions in the Singapore Civil Law Act applicable to contracts for future delivery of commodities apply to swap transactions.

Financial/Commodities Futures Issues of concern include the standardization of practice and terms and whether they will render swap transactions, insofar as they relate to financial instruments and commodities, the subject matter of futures contracts. This would put them within the governance of the statutory and regulatory regime governing futures transactions.
United States

Netting  In line with the Consultative Paper recently issued by the Basle Committee, legislators in the United States should permit national regulators to recognize in capital adequacy rules the effect of close-out netting provisions contained in master agreements where and to the extent those provisions are enforceable.

In addition, a high level of certainty currently exists in the United States regarding the ability to terminate a master derivatives agreement and exercise its close-out netting provisions where the transactions documented thereunder are all “swap agreements” as defined by the U.S. Bankruptcy Code and FIRREA. Even though the level of certainty is similar, the analysis is more complex in cases where some of the transactions documented are not expressly enumerated in the “swap agreement” definitions.

As derivatives participants increasingly use master agreements to document a variety of transactions—some expressly enumerated and some not so enumerated yet similar—legislators and regulators should, when the opportunity arises, remove this complexity. A legislative amendment to the U.S. Bankruptcy Code (and either legislation or a regulation adopted by the Federal Deposit Insurance Corporation under FIRREA), which would expand the definition of “swap agreement” to include other transactions in OTC derivatives (e.g., equity derivatives, bond options, and spot foreign exchange transactions), would provide the requisite simplicity.

Capacity  As previously mentioned, numerous states in the United States currently have statutes authorizing governmental entities to engage in swap transactions. To achieve greater certainty and uniformity, a model statute has been prepared to authorize governmental entities to enter into swap transactions (and credit enhancement agreements) to manage financial risk. This model statute should be reviewed and revised, and adopted where clear legislation does not currently exist.

In addition, Section 901 of the U.S. Bankruptcy Code should be amended to ensure that contractual rights to terminate a “swap agreement” will not be stayed, avoided, or otherwise limited as a result of a proceeding in bankruptcy filed by a U.S. municipality. The National Association of Insurance Commissioners also is working on a model statute for insurance companies that includes provisions for OTC derivatives. Once completed, efforts should be made to amend state insurance laws to adopt this model legislation.

Statute of Frauds  Efforts should be continued on the draft amendment to the New York General Obligations Law and the New York Uniform Commercial Code to clarify the applicable statute of frauds and offer needed legal certainty and flexibility to accommodate new technologies.

Collateralization  Legislators should consider an amendment to Section 13(e) of the Federal Deposit Insurance Act to confirm the validity of bank pledges of collateral and permit mark-to-market arrangements in transactions involving “qualified financial contracts.” This is in addition to certain advisory opinions and policy statements, such as the policy statement published by the Federal Deposit Insurance Corporation on March 31, 1993, supporting the validity of such pledges despite the failure to meet strictly all the requirements of Section 13(e).
III. Conclusion

Recommendation 15: Promoting Enforceability

Dealers and end-users should work together on a continuing basis to identify and recommend solutions for issues of legal enforceability, both within and across jurisdictions, as activities evolve and new types of transactions are developed.

Significant progress has been made toward establishing legal certainty for OTC derivatives. Legal risks, however, remain. A jurisdiction that offers as much legal certainty as England nonetheless can produce a Hammersmith and Fulham result, shattering reasonable business expectations and leaving many participants with large losses.

Participants broadly share these concerns, as indicated by the common themes in the Survey. Statements by regulators also have evidenced general concern with enforceability issues. In addition, the enforceability issues identified in nine jurisdictions have many common elements. There is no set formula for achieving legal certainty. Participants, legislators, and regulators can work together on an informal basis or through more formal structures such as the Financial Law Panel in London. Such efforts, regardless of the form, are strongly encouraged. In addition to the issues identified in the nine jurisdictions discussed above, similar efforts should be made in other jurisdictions. Finally, the process should be an ongoing one in all major jurisdictions as new transactions evolve and new participants enter the markets.
Section 4
Working Paper of the Systems, Operations, and Controls Subcommittee
# Working Paper of the Systems, Operations, and Controls Subcommittee

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Global Derivatives
Study Group

Derivatives: Practices and Principles
Working Paper of the Systems, Operations, and Controls Subcommittee

The credit, market, and legal risks of derivatives capture most of the attention in public discussion. The successful implementation of systems, operations, and controls, however, is equally important for the management of derivatives activities. Although the risks of derivatives are of the same nature as the risks of traditional banking and securities products, the complexity and diversity of derivatives activities make the measurement and control of those risks more difficult. This difficulty increases the importance of sophisticated risk management systems and sound management and operating practices. This Working Paper of the Systems, Operations, and Controls Subcommittee discusses the human resource requirements and reviews issues related to the adequacy of firms' procedures, systems, and controls. These are vital to a firm's ability to execute, record, and monitor derivatives transactions, and to provide the information needed by management to manage the risks associated with these activities.

I. Management Challenges

The Evolution of Complexity

In their early days, most over-the-counter derivatives transactions were interest-rate or currency swaps that were immediately offset with opposing transactions. This activity was fairly simple to record and monitor. Similar to a security that was bought and then sold or a loan that was match funded, each transaction was dealt with separately. Therefore, management review, accounting, and controls could easily encompass the discrete transactions.

The next major step in the evolution of the activity was to inventory, or "warehouse," derivatives transactions. Instead of immediately offsetting each transaction, dealers would temporarily hedge a swap—typically with a cash, security, or futures position—until an offsetting transaction could be found and the hedge removed. The transactions that dealers carried out to hedge and unhedge positions complicated the recording and accounting, but the process could be likened to additions and subtractions from a warehouse of derivatives. The biggest complication was caused by the accumulation of offsetting, yet still discrete, transactions; dealers developed computer-based systems to record and monitor the activity.

The most significant step in the evolution of the activity, increasing the need for management control systems, was the transition from a warehouse environment to a portfolio approach. In this new approach, each transaction was decomposed into its component cash flows, which were aggregated with the cash flows from all previous transactions. The dealer changed the focus from transaction management to portfolio management. More powerful computer systems became necessary for the evaluation.

The portfolio approach was a marked improvement, giving dealers the ability to accommodate a broad spectrum of customer transactions. It also improved the ability of a trading manager to monitor various components of market risk, regardless of the transaction from which it was derived. (For example, managers could aggregate the interest-rate risk in a foreign-exchange option with other interest-rate risks.) The models also were of critical importance to the evaluation of aggregate counterparty credit risk.
While a portfolio approach improves the ability of dealers to manage derivatives risks, it requires sophisticated systems. A dealer depends on these systems to evaluate its risk positions and validate its results. They must provide timely and reliable information. The portfolio approach also requires sophisticated methods of hedging, so systems must be flexible, with the capacity to evaluate all the instruments used. Finally, the viability of a derivatives activity requires timely and accurate administration and settlement of derivatives and the full range of underlying instruments used as hedges. The systems, operations, and control area is, therefore, vital to the management of derivatives activities, and the development of the necessary execution and control environment is essential.

Managing Operational Risk
Developing a systems, operations, and control capability that meets the requirements of a derivatives activity calls for attention at three levels: the people involved in the business, the systems they use, and the operations, control, and audit framework that underpins the activity. Dealers, large and small, and end-users face this common challenge of developing the right control culture for their derivatives activity.

The Survey of Industry Practice examines the involvement in the derivatives activity of people at all levels of the organization. Most dealers (93%) indicate at least some understanding at the board level. Seventy-one percent of end-users indicate that they have at least a sufficient board-level understanding relative to the use of derivatives in their organizations. Thirty to forty percent of dealers and end-users have at least one board member with relevant derivatives experience. Participants recognize the importance of training; most dealers address this need through in-house seminars and on-the-job training.

The Survey indicates a need for further development of staff involved in back-office administration, accounts, and audit functions. Respondents believe that the skill levels required for operational staff in derivatives activities are higher than those required for operational staff in other product areas. In short, a new breed of specialist, qualified operational staff, is required.

In emphasizing the ability of people to work in cross-functional teams, the Survey makes a most important observation on the people and organization required for derivatives activity. Many issues that arise require input from a number of disciplines (e.g., trading, legal, and accounting) and demand this type of approach.

The Survey confirms the view that dealing in derivatives can demand functionally rich, integrated systems to ensure adequate information and operational control. The main challenge the Survey indicates with respect to systems is reflected in strong intentions among dealers toward more integrated systems, between front- and back-office functions and across types of transactions.

With respect to operational controls, the main trend the Survey indicates is the increasing use of independent risk management functions to monitor procedures and risks.
II. How to Meet the Challenges

People

*Recommendation 16: Professional Expertise*

*Dealers and end-users must ensure that their derivatives activities are undertaken by professionals in sufficient number and with the appropriate experience, skill levels, and degrees of specialization. These professionals include specialists who transact and manage the risks involved, their supervisors, and those responsible for processing, reporting, controlling, and auditing the activities.*

In every securities or banking enterprise, the role of senior management is crucial to the control of operational risk. The conduct of the dealing personnel, the exercise of risk-taking, and the interplay between the dealing personnel and the support staff all require day-to-day supervision by knowledgeable senior management. A large number of managers who gained their experience in securities, treasury, or credit functions have applied management controls of those areas to derivatives.

Boards of directors in many cases need to be involved and to continue to learn about derivatives, given the scale of some of the derivatives activities of their institutions.

Derivatives activities require professionals in many functions, including trading, marketing, the law, accounting, research, and technology. Further, the ability to work in cross-functional teams is vital in addressing a wide array of issues including the development of products, systems, and controls and the management of market, credit, and operational risks. Derivatives were developed by professionals from diverse backgrounds. Early derivatives participants tended to staff these areas with professionals from other areas including securities trading, corporate finance, and treasury functions, as well as by adding new trainees. Derivatives activity, given its technical nature, also attracted a diverse array of talent from higher education in finance and related mathematics, science, and engineering.

In the past decade, a large talent pool has been built. Top-quality professionals in many areas have applied their related experience to this new field. A large number of academics have also become knowledgeable, and have begun providing seminars and become teaching consultants. Most business schools now teach the use of derivatives as one of the basics of finance.

There is a danger in relying on too few specialists in any new or specialized business area and derivatives are no exception. But today, an experienced talent pool and the availability of training opportunities have begun to put this concern to rest. The Survey indicates that most dealers consider that today the availability of experienced talent and training programs is adequate to meet the needs of the industry, at least with regard to front-office personnel.

The Survey indicates a different situation with regard to back-office personnel. Dealers recognize that support activities such as the back or middle offices and the audit function must be staffed by people with the appropriate blend of skills. It is
essential to have people with specialized knowledge to process, confirm, control,
and settle transactions as well as to conduct risk management functions and carry
out internal audits. Respondents to the Survey expressed some concern that the
development of staff in support areas lags behind front-office personnel. More
attention generally needs to be given to the training and development of
specialized support personnel.

Systems

Recommendation 17: Systems

Dealers and end-users must ensure that adequate systems for data capture,
processing, settlement, and management reporting are in place so that derivatives
transactions are conducted in an orderly and efficient manner in compliance with
management policies. Dealers should have risk management systems that measure
the risks incurred in their derivatives activities including market and credit risks. End-
users should have risk management systems that measure the risks incurred in their
derivatives activities based upon their nature, size, and complexity.

Each organization involved in derivatives activities must consider carefully the
nature and scale of its activity or use to determine the size and scope of the
systems it needs.

The industry has made a huge investment in systems, and today almost all large
dealers are extensive users of advanced technology. Many have their own research
and technology teams which develop the mathematical algorithms and systems
necessary to price new transactions and to monitor their derivatives portfolios. This
investment in technology and personnel is benefitting related businesses as well.
Many dealers consider their ability to manage the development of systems
capabilities an important source of competitive strength. Not surprisingly, while
most of the early systems were developed in-house by dealers, a new industry
providing computer systems specifically for derivatives applications also has
emerged.

For large dealers, the development of systems that minimize manual intervention
enhances operating efficiency and reliability. This is due to the volume of activity,
customization of transactions, number of calculations to be performed, and overall
complexity.

Systems that integrate the various tasks to be performed for derivatives are
complex. Because of the rapid development of the business, even the most
sophisticated dealers and users often rely on a variety of systems which may be
difficult to integrate in a satisfactory manner. While this situation is inevitable in
many organizations, it is not ideal and requires careful monitoring to ensure
sufficient consistency to allow reconciliation of results and aggregation of risks
where required.

The Survey results indicate that the largest dealers, recognizing the control risks
that separate systems pose and the expense of substantial daily reconciliations, are
making extensive investments to integrate back-office systems for derivatives with
front-office systems for derivatives as well as other management information
systems of their firms. The complexity of the integration process has led many large dealers to develop their own systems. Dealers that have integrated their derivatives risk management system with their back-office systems have found that the integration enhances operating efficiency and reliability. The Subcommittee encourages dealers with significant derivatives activities to invest in such systems.

The systems should drive not only the market risk controls of the firm, but also the credit risk controls. The marking to market of outstanding transactions with appropriate netting should be an important feature of counterparty risk systems.

End-users may invest less extensively in systems than dealers do, but their investment should still be sufficient to consolidate exposures and analyze aggregated risk in a meaningful and useful way.

Operations, Controls, and Audit

Operations

Like other credit or securities businesses, derivatives businesses give the back office the principal function of recording, documenting, and confirming the actions of the dealers. As happened in other parts of the derivatives business, there has been significant evolution in the competence of staff and the adequacy of procedures and systems in the back office. The wide range of volume and complexity that exists among dealers and end-users has led to a range of acceptable solutions.

The role of the back office is to perform the following functions in a timely fashion:

- Record transactions.
- Issue and monitor confirmations.
- Ensure legal documentation for transactions is completed.
- Settle transactions.
- Produce information for management and control purposes, including
  - reports of positions against trading and counterparty limits
  - reports on profitability
  - reports on exceptions requiring action to be taken (e.g., outstanding confirmations, limit excesses, etc.).

These functions are the same as for treasury activities, but the rapid development of the derivatives business has created the challenge of ensuring that the back-office systems develop along with those of the front office. Particular features of derivatives that challenge the back office include the following:

- Continued product development creates the need for systems of great flexibility to cope with the variety of instruments—especially, as is usually the case, when back-office systems are integrated with the rest of the business.
- The complexity of the products requires considerable care in the input of trades and in the confirmation-matching process to ensure errors are detected.
The long time scales between the trade date and the date on which settlement first occurs, which is a feature of some products, means that errors not detected by the confirmation process may not be discovered for some time.

While it is necessary to ensure that the systems are adequate for the organization’s volume and complexity of derivatives activities, there can be no single prescriptive solution to the management challenges that derivatives pose the back office. This reflects the diversity in activity between different market participants.

Controls
Derivatives activities by their nature cross many boundaries of traditional financial activity. Therefore the control function must necessarily be broad, covering all aspects of activity.

Organization
The primary element of control lies in the organization itself. Allocation of responsibilities for derivatives activities, with segregation of authority where appropriate, should be reflected in job descriptions and organization charts.

Recommendation 18: Authority
Management of dealers and end-users should designate who is authorized to commit their institutions to derivatives transactions.

Authority to commit the institution to transactions is normally defined by level or position. It is the role of management to ensure the conduct of activity consistent with delegated authority. There is no substitute for internal controls; however, dealers and end-users should communicate information that clearly indicates which individuals within the organization have the authority to make commitments. At the same time, all participants should fully recognize that the legal doctrine of “apparent authority” may govern the transactions to which individuals within their organization commit.

Definition of authority within an organization should also address issues of suitability of use of derivatives. End-users of derivatives transactions typically are institutional borrowers and investors and as such should possess capabilities to analyze derivatives and determine the appropriateness of their use. In fact, derivatives can help institutions understand and quantify risks inherent in their business. Institutional investors may also be buyers of structured securities exhibiting features of derivatives. While the exposures associated with derivatives will normally be similar to those on institutional balance sheets, it is possible that in some cases the complexity of such derivatives use might exceed the ability of an entity to understand fully the associated risks. The recommendations outlining guidelines for management practice provide any firm considering the appropriate use of derivatives a useful framework for assessing suitability and developing policy consistent with its overall risk management and capital policies. Organizational controls can then be established to ensure activities consistent with a firm’s needs and objectives.

Limits
A critical component of management control is a system of risk limits for dealing personnel which reflect the market and credit risk capacity and objectives of the institution. The systems can then produce daily reports which compare
actual positions or commitments to the limits. An important development with respect to market risk limits has been a move toward use of the concept of “value at risk.” This provides a consistent measure of risk across the full range of forward-based and option transactions, greatly facilitating aggregation of risks. Similarly, for credit risk the focus has shifted to more precise measures of current and potential exposures to counterparties.

The Survey shows that most dealers’ management review market risk positions daily. End-users tend to review positions on a monthly basis. Participants commonly review counterparty credit reports on a monthly basis.

Risk Management  Banks have historically relied upon a credit review function and asset/liability management group to control credit and market risks. Likewise, securities firms typically have established procedures to review underwriting commitments and other principal risks. The growth of the derivatives business (along with the growing complexity of the securities business, especially mortgage-backed securities) has placed additional demands on those control mechanisms. By the early 1990s, many derivatives dealers had reinforced their risk management capabilities and had set up independent risk management functions for market and credit risk, typically headed by board level or near board level executives. Additional controls are often provided by the legal and compliance function and by the financial control function. Examples of the types of issues which are often addressed in each of these areas include the following:

Market Risk
- Risk limit policies.
- Risk measures, P&L analysis, and cash flow forecasts.
- Review of valuation models.
- Review of new products.

Credit Risk
- Exposure measurement standards.
- Credit limit policies.
- Review of the credit provisions of agreements.

Legal and Compliance
- Confirmation and documentation procedures.
- Exceptions to standard documentation.
- Documentation backlog.
- Compliance with internal standards and external regulations.
Financial Control

- Data input verification (and reconciliation, if necessary) for
  - risk management
  - accounting
  - payments and receipts, rate resets, and collateral.
- Review of fails.
- Spot checks of transactions.
- Accounting treatment.
- P&L reconciliation, if necessary.

Recommendation

Independent functions for market risk management (see Recommendation 8) and credit risk management (see Recommendation 12) are recommended by this Study. The specific roles and responsibilities are set out in the Working Papers covering these areas.

In most large dealers surveyed, market and credit risk management functions are performed by separate organizational units. At many dealers, however, these functions are combined with existing functions such as financial control or asset/liability management groups which can provide controls while preserving the clear independence from the dealers. Indeed, at smaller dealers or end-users, where an autonomous group may be more difficult to justify, it may be preferable to have the risk management functions provided by an existing group.

Audit

Internal audit plays an important role in the procedures and control framework by providing an independent, internal assessment of the effectiveness of this framework. To carry out its role effectively, it is important that the internal audit function meet certain key criteria:

- It should be demonstrably independent of line management, with a direct reporting line to senior management.
- It should possess adequate resources with people of appropriate knowledge and calibre.
- It should use appropriate audit methodologies for planning, performing, controlling, and reporting the results of their work.
- It should examine the critical areas of the business with appropriate frequency.

The principal challenge for management is to ensure that the internal audit staff has sufficient expertise to carry out work in both the front and back offices. Able individuals with the appropriate financial and systems skills are required to carry out the specialist aspects of the work. Considerable investment in training is needed to ensure that staff understands the nature and characteristics of the instruments being transacted and the models that are used to price them.
Although not part of the formal control framework of the organization, external auditors and regulatory examiners provide a check of procedures and controls. They also face the challenge of developing and maintaining the appropriate degree of expertise in this area.
Section 5
Working Paper of the Accounting and Reporting Subcommittee
Working Paper of the Accounting and Reporting Subcommittee

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Recommendations are numbered as they appear in the Recommendations section of the Global Derivatives Study.
Organizations around the world vary widely in their accounting policies and reporting practices. No country has comprehensive accounting standards addressing the accounting and reporting of all types of financial instruments, both cash-market and derivatives. Even in those countries with extensive accounting regulations, gaps and inconsistencies exist between different regulations, and disclosure has been patchy and often uninformative. This makes it difficult for users of financial statements to understand an organization's use of derivatives and the accounting bases upon which its financial statements have been drawn up. Because of this lack of transparency, users of financial statements may be misled into making credit and investment judgments they might not otherwise have made. Concern about this issue is widespread, even among dealers who are most knowledgeable about the effects of derivatives. The Survey of Industry Practice indicates a majority of dealers is concerned about the inadequate financial reporting of off-balance-sheet exposures of counterparties.

Section I of this Working Paper of the Accounting and Reporting Subcommittee provides an overview of management challenges in accounting and reporting for derivatives and concerns about their tax treatment; Section II sets forth the background to the recommendations the Subcommittee formulated to meet the challenges.

A general conclusion of this Working Paper is that action needs to be taken to improve the quality of financial statement disclosure, and to achieve greater international harmonization of accounting standards and disclosure for all types of financial instruments.

I. Management Challenges

This section of the Working Paper addresses the management challenges in accounting and reporting for transactions in financial instruments and concerns over their tax treatment. It focuses particular attention on derivatives but much of the analysis also applies to cash-market instruments.

Derivatives Risks and Rewards
Derivatives transfer or exchange certain risks—typically interest rate risk, currency risk, equity price risk, and commodity price risk—between two parties.

The cash flows that can arise from derivatives comprise any up-front compensation for assuming the risk (e.g., option premium) and the settlement payments that result from movements in interest or foreign exchange rates, or in equity or commodity prices. Sometimes these cash flows are settled net as in the case of an interest rate swap. In certain types of transactions, financial instruments are delivered instead of cash (e.g., equity options).

Because derivatives transactions create mutual payment obligations over time, they create a credit risk in that one party may fail to discharge its obligations.

Issues in Accounting for Derivatives
The objective of financial statements is to provide useful information about the financial position, performance, and cash flow of an organization for shareholders and other interested parties to use in making economic decisions. In pursuit of that
objective, accounting has been evolving as economic activity has become more complex.

Historically, all accounting was cash based, with transactions recognized only when cash was received or paid. In some countries, cash-based accounting is still widely accepted, but in most countries accounting principles have evolved into accruals-based accounting, which recognizes transactions on an original-cost basis and matches income and expenditure over time. Accruals-based accounting is by far the most widely used system internationally, but is evolving in a number of countries into a system that, in certain circumstances, revalues assets from original cost to market value.

The issues in accounting for derivatives can most easily be illustrated by considering each of the three accounting frameworks: cash based; accruals based; and market-value based.

Cash-Based Accounting
Cash accounting is the simplest of the accounting methods because it recognizes transactions only when amounts are received or paid. This accounting method can be applied to any derivatives transaction irrespective of the purpose for which it was undertaken. Although cash accounting is straightforward it does not produce meaningful information about profitability and assets and liabilities. It is also potentially misleading because advancing or deferring receipts or payments produces a very different picture.

Accruals-Based Accounting
Accruals-based accounting overcomes many, but not all, of the disadvantages of cash accounting. It matches revenue and expense by allocating them over time and goes a long way towards solving the problems caused by the timing of cash receipts and payments. This accounting framework too can be applied to any derivatives transaction irrespective of the purpose for which it was undertaken. Although cash accounting is straightforward it does not produce meaningful information about profitability and assets and liabilities. It is also potentially misleading because advancing or deferring receipts or payments produces a very different picture.

In addition, accruals accounting can be criticized for not providing meaningful information about a dealer because it reports only realized gains and losses. It takes no account of unrealized gains and losses from movements in market rates between the transaction date and the date at which financial statements are drawn up. Accruals accounting, therefore, provides only a limited picture of performance, one subject to distortion based on the timing of transactions that realize gains and losses.

Market-Value-Based Accounting
These difficulties have led a number of countries to move toward an accounting method that records trading assets and liabilities at market value in the balance sheet and unrealized gains and losses in income for the period. This method produces accurate and timely information about the performance of trading...
activities and provides more meaningful information about the true credit exposure to counterparties (since it reflects the amount at stake should the counterparty fail).

Some countries use an accounting method that uses mark-to-market accounting but only to the extent of recognizing unrealized losses. Unrealized gains are not recorded until they are realized. Proponents claim that this accounting method is more conservative than one that permits recognition of unrealized gains. The method suffers from the disadvantage that by not recognizing unrealized gains on assets and liabilities held for trading, it does not provide a realistic assessment of trading performance.

Is Market-Value-Based Accounting the Optimum Solution?
Mark-to-market accounting is simple to understand and, theoretically, leaves less room for manipulating reported income. The perceived benefits of an accounting method that makes wider use of marking to market and that is consistent with recommended practice for internal risk management have led some commentators to suggest that it should become standard practice for all (or substantially all) assets and liabilities with unrealized gains and losses taken to income or to revaluation reserves. There are, however, a number of practical difficulties to universal adoption of a mark-to-market accounting framework for all assets and liabilities:

- Accounting systems that handle mark-to-market transactions have to deal with both the revaluation of securities and the accruals information needed for settlement purposes. Hence they may cost more than a "simple" accruals accounting system. This could place a heavy burden on smaller companies.
- No ready market exists for many non-financial assets and liabilities. Valuations may be subjective and may be expensive to obtain.
- A company may well acquire assets (and liabilities) intending to keep them, not resell them. In these circumstances reporting changes in market values is less meaningful.
- Marking to market can create some curious anomalies. For example, if a company marking all of its assets and liabilities to market experiences a credit downgrade, it can record a gain in income as the market value of its debt and its derivatives obligations decrease. This would be an illusory gain unless the company actually settled its liabilities at these lower amounts.

The Hybrid Accruals-Based and Market-Value-Based Framework
The practical difficulties of applying market-value-based accounting to all assets and liabilities mean that universal adoption of mark-to-market accounting is unlikely in the near future. A hybrid accounting framework that draws on accruals accounting and uses marking to market "in appropriate circumstances" probably represents the optimum solution today.

It is generally accepted that holding financial instruments for trading purposes falls within the circumstances for which marking to market is appropriate under this accounting framework, but should a similar treatment be applied to financial instruments held for investment and risk management purposes? Traditionally, companies have not marked investment transactions to market on the basis that the positions are taken on for the long term. The accounting treatment of risk management transactions has typically mirrored the treatment of the underlying
transactions. For example, if a hedged item has been held at cost, no profit or loss has been recognized on the hedge; if the hedged item has been marked to market, then so has the hedge.

Practical difficulties may arise in distinguishing between trading and risk management positions. The usual procedure is to look at the management intent at the time the transaction was undertaken, which may be a very subjective judgment. For example, take the case of an organization that has a treasury department charged with minimizing the organization’s cost of funding. If the organization was to enter into interest rate swaps in connection with specifically identified borrowings, it would be relatively simple to designate the swaps as hedges.

The treasury department might, however, achieve the same economic effect with a series of futures, FRA’s, caps, and collars, buying and selling instruments as market circumstances change. Although the economic effect of the transactions could still be argued to be hedging, it equally could be argued that the organization is trading financial instruments. Even if a transaction is undertaken as a hedge, it may be tempting for an organization to cherry-pick and to sell a hedging instrument at a profit, claiming in justification that the hedge has been taken off.

While this may seem arcane, the difference between treating transactions on an accruals basis and marking them to market can materially affect an organization’s reported profitability.

The practical difficulty in positively identifying transactions as investments or risk management positions, and the scope for abuse in recognizing gains and deferring losses, have led some policy makers (including the staff and former Chairman of the U.S. Securities and Exchange Commission) to support wider use of mark-to-market accounting, especially for holdings of marketable securities by banks and insurance companies.

Partly in response to those policy makers, the U.S. Financial Accounting Standards Board (FASB) issued in May 1993 its Statement No. 115 on Accounting for Certain Investments in Debt and Equity Securities. This will require all U.S. companies to measure at fair value all debt and equity security assets except for debt securities that the company has the positive intent and ability to hold to maturity. Under the Statement, trading securities continue to be marked to market with gains or losses in earnings, while debt securities available for sale—for example, as part of a bank’s or insurance company’s asset-liability management strategy—now have to be reported at fair value, with unrealized gains or losses reported not in earnings but in a separate component of equity. Therefore, the practical difficulty in classifying instruments based on intent is less important but still something of a problem in the United States.

Examples of Inappropriate Accounting Treatments
In addition to the problems of lack of transparency of financial statements caused by the absence of harmonized international standards of accounting, the present
situation in some countries has permitted certain accounting treatments that have been widely criticized as inappropriate, for example:

- The recognition of premiums received on options written in total at the inception of a transaction. This treatment is inappropriate since it fails to allocate income over the full period that the option writer is exposed to market risk.

- The recognition of the entire profit arising from marking dealing positions to mid-market without making adequate provision to cover credit risk and the costs of administering the instruments, and, in the case of mismatched portfolios, close-out costs and borrowing and investing costs resulting from cash flow mismatches. This accounting treatment is inappropriate because it fails to allocate income over the full period that the organization is exposed to credit and market risk, and because it fails to allow for future administrative and other costs.

- The selective selling of securities out of an investment portfolio, supposedly held for the long term and accounted for at cost, to realize gains that could be included in income. This practice allows organizations to manipulate their reported profits.

- The deferral of losses (which would otherwise have been recognized) by building them into a derivatives transaction at off-market rates. This accounting treatment is inappropriate since it results in the deferral of realized losses. Organizations have used this device to roll forward losses that stem from movements of interest rates, foreign exchange rates, or equity or commodity prices. In effect, the counterparty makes good the loss realized and charges it back over the life of the transaction. This practice was formerly used extensively by thrift institutions in the United States and continues to be used in Japan.

**Issues in Reporting of Derivatives**

There is perhaps even wider variation in the quality of financial statement disclosure about financial instruments than in the accounting policies. Many organizations disclose too little information about their cash-market and derivatives transactions to present a fair picture of the nature and extent of their activities or the risks to which they are exposed.

Derivatives can give rise to risks and rewards that may be substantially greater than the amounts, if any, recognized on the balance sheet. For example, a $100-million interest-rate swap with an obligation to pay interest at floating rate and to receive interest at a fixed rate exposes an organization to the same risk of loss on an increase in interest rates as a $100-million, fixed-rate loan funded by a $100-million, floating-rate deposit. The risk of the loan and deposit position is apparent on the balance sheet. Since the swap is a single contract, however, it is recognized in financial statements at only a small net amount. This type of risk of loss is termed "off balance sheet" risk. The organization has a contingent asset or liability that will depend, in this example, on future movements in interest rates and the ability of the counterparty to meet its obligations under the swap. Although accounting regulations in many countries require footnote disclosure of capital commitments and contingent liabilities, standards-setting bodies have provided too little guidance on disclosures about the off-balance-sheet risk inherent in derivatives.
Taxation
Concern over the uncertainty or inconsistency of the tax treatment of derivatives is a major factor in organizations' risk management decisions. Over 40% of end-users surveyed indicate that this is a concern and over 45% indicate that the tax treatment of derivatives differs from the tax treatment of the underlying instrument. The problems derivatives transactions give rise to are as follows:

- Uncertainty as to withholding taxes on payment streams.
- The characterization of receipts and payments both domestically and for the purpose of double taxation treaties.
- The tax effect of receipts and payments in calculating taxable income.
- The basis on which income and expense should be recognized for tax purposes and whether this follows accounting income or otherwise.
- The tax treatment of up-front or termination payments or receipts.
- The tax treatment of hedging transactions.

Some examples of these types of tax problems are as follows:

Hedging
In the United States, the Supreme Court's decision in the case of Arkansas Best has narrowed and limited the scope of ordinary, rather than capital, tax treatment for hedging transactions. Very considerable uncertainty has emerged about the tax treatment of a variety of different transactions. The June 1993 Tax Court decision in the FNMA case has provided some guidance, but also left unanswered many questions concerning the taxation of hedging in the United States. Guidance in this area or clarifying legislation is urgently required.

Withholding Taxes
In the United Kingdom, payments and receipts under swap transactions are not legally interest under the tax regulations, so that their tax treatment is not covered by the regulations. Furthermore, the interest article of double taxation agreements does not apply to them. Hence, such payments are potentially subject to withholding tax. The potential tax problems have been alleviated by a tax concession for swap dealers pending the introduction of amending legislation which is expected in the near future.

Double Taxation
Frequently, more than one branch of an international bank will be involved in a derivatives transaction; their respective tax jurisdictions need to agree on a mechanism for attributing profits between the branches. The United States has taken steps to develop a system of Advance Pricing Agreements designed to avoid exposure to double taxation, but part of the difficulty arises because U.S. tax regulations do not recognize the economic effect of inter-branch transactions.
II. How To Meet The Challenges

This section of the Working Paper recommends ways to account for and report on derivatives and to remove some of the tax uncertainties surrounding their use.

Recommendation for Accounting Standards-Setting Bodies

Recommendation 24: Accounting Standards

Accounting standards-setting bodies in each country should, as a matter of priority, provide comprehensive guidance on accounting and reporting of transactions in financial instruments, including derivatives, and should work towards international harmonization of standards on this subject. Also, the International Accounting Standards Committee should finalize its accounting standard on Financial Instruments.

As noted in Section I of this Working Paper, accounting standards for financial instruments have not kept pace with innovations in the instruments and the uses to which they are put. No country has comprehensive accounting standards that address the accounting and reporting of transactions in all types of derivatives and cash market instruments. The lack of comprehensive standards means that different accounting treatments may be permissible for transactions with comparable economic substance. Indeed, in some countries inconsistencies arise between different accounting regulations for financial instruments. For example, in the United States there are differences in the definition of hedging transactions between FAS 52 (Foreign Currency Translation) and FAS 80 (Financial Futures).

In each country where there is significant activity in financial instruments, the Subcommittee urges the local accounting standards-setting bodies to review their standards to determine the extent to which these do not currently provide comprehensive and consistent guidance on both accounting and reporting for financial instruments including derivatives.

In some countries this process has commenced and accounting standards-setters have projects under way to enhance their existing standards. The International Accounting Standards Committee (IASC) is also finalizing an accounting standard on this subject.

It is important that the actions being taken by accounting standards-setting bodies lead to standards that are:

- **Comprehensive:** Accounting standards for financial instruments need to be comprehensive enough to provide a framework which can address both cash market and derivatives instruments. They also need to be able to cope with new types of derivatives and hybrid instruments as they are developed.
- **Definitive on both accounting and reporting:** They need to address both how to account for financial instruments and how to report their use. Both topics currently provide cause for concern.
- **Internationally harmonized:** The need for international harmonization presents additional challenges. There are considerable differences between the accounting standards in various countries on a wide variety of topics. Despite
the undoubted international benefits of harmonization, it will not be easy to achieve.

- Consistent with the economic reality of modern risk management techniques: Accounting standards have not kept pace with modern risk management techniques which focus on risk transformation rather than simply risk reduction and which increasingly seek to manage anticipated future exposures. Concern over the effect of the accounting regulations that would be applied to transactions is deterring some organizations from pursuing commercially sensible risk management strategies.

The work of the IASC represents a helpful move towards international harmonization.

The IASC has a membership of 88 accountancy bodies representing 65 countries. The IASC has a membership of 88 accountancy bodies representing 65 countries. The voting board of the IASC responsible for approving its accounting standards includes representatives from all countries with significant international financial markets. The objective of the IASC is to promote the worldwide acceptance and observance of accounting standards. The IASC's standards do not have any authority unless individual countries choose to adopt the standards in their territories. National standards in many countries, including the Group of Seven, are generally in conformity with the IASC's standards.

The IASC's proposals on accounting and reporting for financial instruments, which are being revised in light of some of the comments received on the Exposure Draft, apply to cash market instruments as well as to derivatives (excluding commodities). The proposals address how issuers and holders recognize and measure financial instruments for financial reporting purposes. Financial instruments held for the long term or to maturity would be measured on a historical cost basis. Financial instruments not held for the long term or to maturity would be measured at fair value (effectively marked to market) and changes in fair value recognized in income as they arise. Financial instruments designated as hedges would be measured on the same basis as the positions that they hedge and changes in fair value would be recognized in income at the same time as changes in the fair value of the hedged position. As an alternative, the Exposure Draft (E40) permits all financial instruments to be stated at fair value with changes in fair value recognized in income as they arise. The Exposure Draft also requires disclosure about the terms and conditions of financial instruments, exposure to interest rate and credit risk to which they give rise, and the fair value of financial instruments carried on a historical cost basis.

The Subcommittee encourages the IASC to meet its planned deadline of finalizing an accounting standard on Financial Instruments by the end of 1993. IASC's May 1993 Insight publication indicates that it is making good progress toward that goal while addressing concerns raised by the commentators to E40.

The Subcommittee urges the IASC and other accounting standards-setters to address some of the problems of risk management accounting referred to in this Working Paper. It will take time to develop comprehensive harmonized accounting standards addressing both accounting and reporting, although urgent action is encouraged. The Subcommittee has made recommendations for action to be taken
by dealers and end-users in the interim. These guidelines are an attempt to provide
a framework that can achieve a broad measure of international consensus. They are
broadly consistent with accepted accounting principles in a number of countries
and with the likely provisions of the IASC's accounting standard. In some areas
they go further, especially in the area of risk management accounting and financial
risk disclosure.

**Interim Recommendation for Accounting by Dealers and End-Users**

**Recommendation 19: Accounting Practices**

*International harmonization of accounting standards for derivatives is desirable.*
*Pending the adoption of harmonized standards, the following accounting practices
are recommended:*

- **Dealers** should account for derivatives transactions by marking them to market,
taking changes in value to income each period.
- **End-users** should account for derivatives used to manage risks so as to achieve
a consistency of income recognition treatment between those instruments and
the risks being managed. Thus, if the risk being managed is accounted for at
cost (or, in the case of an anticipatory hedge, not yet recognized), changes in
the value of a qualifying risk management instrument should be deferred until a
gain or loss is recognized on the risk being managed. Or, if the risk being
managed is marked to market with changes in value being taken to income, a
qualifying risk management instrument should be treated in a comparable
fashion.
- **End-users** should account for derivatives not qualifying for risk management
treatment on a mark-to-market basis.
- **Amounts due to and from counterparties** should only be offset when there is a
legal right to set off or when enforceable netting arrangements are in place.

*Where local regulations prevent adoption of these practices, disclosure along these
lines is nevertheless recommended.*

As this paper has shown, dealers and end-users are subject to a wide variation in
accounting standards. Pending the introduction of consistent international
accounting standards, progress could be made if dealers and end-users of financial
instruments voluntarily adopted this interim recommendation both for cash market
and derivatives transactions to the extent that adoption is not prohibited by local
regulations.

Aspects of the interim recommendation are addressed in more detail below.

**Dealers Should Account for Derivatives by Marking Them to Market**

deals with factors to be taken into account in determining market value.
End-Users Should Account for Derivatives Used to Manage Risks so as to Achieve a Consistency of Income Recognition Treatment between those Instruments and the Risks Being Managed.

This approach is referred to in this Working Paper as “risk management accounting.” The most common application is hedging and the accounting approach is usually termed hedge accounting.

For a transaction to qualify as a hedge, the following criteria are usually applied:

- The position to be hedged and the hedging instrument are specifically identified and the relationship between them designated.
- The hedging instrument is reasonably expected to be effective in reducing the risk of loss from changes in the value of the hedged instrument.

The effectiveness of the hedge should be monitored over time and if it ceases to be effective, hedge accounting should cease.

A variety of issues makes it necessary to exercise judgment in determining how hedge accounting should apply:

- Whether the “risk of loss” that is to be hedged is measured at an enterprise level or at a transaction level. In general, participants should measure risk at an enterprise level. Many organizations, however, because of their size, diversity of operations, or geographic spread, carry out risk management on a decentralized basis. For this reason, the highest business-unit level having access to risk management accounting information and authority to make decisions should determine the risk of loss to be hedged.

- Whether the position to be hedged is a particular asset or liability or a “gap” exposure. Traditionally, risk management accounting has been applied transaction by transaction. Many dealers and end-users now believe that this approach is inconsistent with the modern portfolio approach to risk management in which an organization hedges its overall net exposure. Risk management accounting should be permitted in these circumstances if appropriate controls can be established. This area is one to which accounting standards-setters should give attention.

- Whether anticipatory transactions are eligible for hedge accounting treatment and if so how far in the future can they be anticipated. The hedging of anticipated future transactions is an appropriate and prudent response by organizations seeking to reduce the risk of loss as a result of future price fluctuations. The application of risk management accounting to anticipated future transactions is another subject not without controversy. Some would prefer to limit risk management accounting to hedges of existing assets, liabilities, and firm commitments. Others favor extending it to hedges of uncommitted but highly probable future transactions. Risk management accounting in these circumstances should be permitted provided appropriate controls can be exercised to avoid abuse. This too is an area where accounting standards-setting bodies will need to provide guidance.

- The degree of correlation required between the instrument to be hedged and the hedging instrument for the transaction to be treated as a hedge.
• How a partial hedge should be dealt with. Is a hedge of half the exposure to be treated as a partial hedge of the full exposure or a full hedge of half the exposure?

While hedging is the most common risk management device, modern risk management techniques increasingly focus on changing the risk profile to achieve a planned level of risk but not necessarily a lower level of risk. Participants commonly use derivatives to adjust risk profiles because derivatives offer greater efficiency than using the cash market.

The Subcommittee recommends that in these circumstances, organizations should be able to apply risk management accounting. Indeed, not to apply risk management accounting could result in different effects on income depending upon whether the result was achieved in the cash market or by using derivatives.

For example, consider a financial institution whose usual interest rate gap between fixed and floating interest rates had been reduced. It could restore its usual exposure either by borrowing and lending in the cash market or by using an interest rate swap. The cash market transactions would be accounted for on the accruals basis, but should a comparable treatment be applied to the interest rate swap or should it be treated as a speculative position and marked to market? Applying risk management accounting in these circumstances and accounting for the swap on the accruals basis reflects the similarity of the transactions. It would be illogical to regard the derivatives transaction as a speculative position demanding an accounting treatment different from the one applied to the cash market instruments.

Risk management accounting could be abused in these circumstances and careful control is needed. Accounting standards-setting bodies should define when a risk management instrument qualifies for risk management accounting treatment.

Risk management accounting also is relevant in accounting for synthetic instruments. Synthetic instruments result from two or more financial instruments (one of which is usually a derivative) that are collectively projected to behave like some other financial instrument. Although synthetic financial instruments are often associated with hedging, avoidance of risks is not always the objective in creating a synthetic instrument. The objective may well be the transformation of risk from one form to another, more acceptable form.

As an example, consider the case of an organization that has fixed-rate debt and wants to convert this to floating-rate debt. If it takes out an interest rate swap from fixed to floating, it synthesizes floating-rate debt. In these circumstances, it has become common practice to account for the debt as if it were floating-rate debt even if the traditional risk-reduction test of hedging is not met. Risk management accounting is appropriate provided the components of the synthetic instrument are clearly designated and identified and that the synthetic instrument approximates a familiar nonsynthetic instrument.

Until standards-setting bodies provide clearer accounting guidance defining when risk management accounting is appropriate, management will have to use its judgment. In the footnotes to the financial statements, management should explain
in detail its reasons for designating transactions eligible for risk management accounting.

Rationale for Recommending an Accounting Framework Using Management Intent as a Basis for Classifying Transactions for Accounting Purposes

As explained in Section I, as a basis for determining the choice of accounting treatment, reliance on management intent has increasingly been criticized as being too subjective. Critics argue that the subjectivity can be removed only by applying the same accounting methodology to all transactions in financial instruments. Marking all financial instruments to market value is the methodology usually proposed.

Most accountants do not currently see the application of market-value-based accounting to all financial instruments as an ideal solution to all of the problems of accounting for financial instruments. In addition, in those countries where market-value-based accounting even for dealing or speculative transactions is not yet generally accepted, it would be unrealistic to expect a quantum leap to market-value-based accounting for all transactions in financial instruments.

As a result, while an accounting framework using accruals-based and market-value-based accounting for transactions depending upon management intent is not beyond criticism, it represents a pragmatic basis of accounting that is widely understood and that could achieve a broad measure of consensus.

Organizations Making Wider Use of Market-Value-Based Accounting

In some countries, organizations conducting certain types of investment business (such as pension funds and mutual funds) normally adopt an accounting policy of marking their financial instruments to market. This practice is well established and organizations should be free to apply it if they so wish.

Amounts Due to and from Counterparties Should Only Be Offset When There Is a Legal Right of Set-Off or When Enforceable Netting Arrangements Are in Place.

It has been common practice for many years to report in the balance sheet the net position for each category of financial instrument. The increasing attention paid to capital adequacy has focused attention on the credit exposure which each position represents rather than the overall position in financial instruments which the net position represents. An organization should only offset assets and liabilities due to the same counterparty where there is a legal right of set-off or when enforceable netting arrangements are in place. Some accounting standards-setting bodies have gone further than this and imposed additional restrictions. For example, the United States FAS Interpretation No. 39 requires that positions be considered individually unless there is a right of set-off and an intent to settle net or a master netting agreement in place between the institution and its counterparty.

Dealing with Conflicts of Form and Substance

The accounting treatment for derivatives should represent faithfully their economic substance, which is not always apparent from their legal form.

In most transactions, form and substance are the same; however, inconsistent accounting standards for financial instruments have prompted some participants to engage in transactions structured to take advantage of "accounting arbitrage"
between different accounting regulations. This applies to transactions in cash-market instruments as well as derivatives.

Disclosure Where Accounting Regulations Preclude Adoption of the Recommended Accounting Practices
In some countries it will not be possible for dealers and end-users to implement the recommended accounting practices because this is precluded by local regulations. In these circumstances the effect of noncompliance, if material, should be included in a footnote to the financial statements.

Accounting for Internal Trades
One issue that merits comment is that of accounting for internal transactions by dealers who use derivatives to hedge investment portfolios or funding. No problem arises if the hedging transactions are conducted with a third party organization but what happens if the hedging instrument is acquired from the dealer’s market-making desk? If the hedging instrument is left at cost but the dealing position is marked to market, the gains and losses that arise on the dealing position could be construed to be “internal” to the organization and therefore requiring elimination.

The Subcommittee believes that such gains and losses should not be eliminated since to do so would negate the economic effect of the transactions. It is important to appreciate that subsequent gains and losses arising in the market-making book flow from the decision not to cover the open position. They are not “internal” profits but arise as a result of movement in market prices.

Because internal deals could be used to manipulate profits and losses if they are transacted at off-market rates, their use should be carefully controlled.

Interim Recommendation for Reporting by Dealers and End-Users

Recommendation 20: Disclosures
Financial statements of dealers and end-users should contain sufficient information about their use of derivatives to provide an understanding of the purposes for which transactions are undertaken, the extent of the transactions, the degree of risk involved, and how the transactions have been accounted for. Pending the adoption of harmonized accounting standards, the following disclosures are recommended:

- Information about management’s attitude to financial risks, how instruments are used, and how risks are monitored and controlled.
- Accounting policies.
- Analysis of positions at the balance sheet date.
- Analysis of the credit risk inherent in those positions.
- For dealers only, additional information about the extent of their activities in financial instruments.

Pending the introduction of consistent international accounting standards that define the appropriate disclosure in financial statements, progress could be made by the voluntary adoption of the interim recommendation by organizations with significant activities in financial instruments.
The Subcommittee suggests the following as voluntary disclosures applying to all categories of financial instruments, not just derivatives:

- **Qualitative information to be disclosed in the management discussion and analysis section of the annual report by dealers and end-users:**
  
  - Information about management’s attitude to financial risks (credit risk and market risk).
  
  - The purposes for which financial instruments are used and the extent of proprietary trading.
  
  - How risks are monitored and controlled (including how limits are set) and, for dealers, information about market risk and the adequacy of capital resources to support the level of activity.

- **Accounting policies and quantitative information to be disclosed in the footnotes to the financial statements by dealers and end-users:**
  
  - Detailed descriptions of accounting policies used to account for financial instruments.
  
  - Analysis of the size of positions in financial instruments both on and off the balance sheet. On-balance-sheet positions should be included at cost or market value depending upon how they appear in the financial statements. Off-balance-sheet positions should be included on the basis of notional amounts. For those financial instruments not recognized in the financial statements at market value, the market value should be disclosed.
  
  - Analysis of the credit risk inherent in the positions. An organization should disclose information about its exposure to credit risk, including:
    
    - The amount that best represents its current credit risk exposure (defined as risk of accounting loss), without taking account of the value of any collateral, in the event that other parties fail to perform their obligations.
    
    - The organization’s policy with respect to obtaining collateral.
    
    - Significant concentrations of credit risk.

- **Additional disclosure in the footnotes of dealers:**
  
  - Regulatory capital: the amount of regulatory risk capital equivalent to each category of financial assets.
  
  - Analysis of revenue relating to financial instruments in sufficient detail to enable an understanding of the extent of the organization’s activities. For a major dealer, this is likely to involve a breakdown of trading revenue from interest rate swaps and other interest rate contracts, debt instruments, foreign exchange and other categories—for example, equities and commodities.
  
  - The contingent liability under any special purpose credit enhancement arrangements of any downgrading of credit rating.
Many of the recommended disclosures already appear in the financial statements of one or more of the leading dealers and end-users, but few of these participants currently make all the suggested disclosures. The Survey of Industry Practice indicates that over 40% of dealers and over 70% of end-users do not presently describe their accounting policies for derivatives. Although the extent of the disclosure recommended might initially seem onerous to an end-user of derivatives, it should not provide any practical difficulty. Without this important information, shareholders and other interested parties cannot gain a complete picture of the organization's activities.

The proposed disclosures do not include a quantitative disclosure of the level of market risk. Various possible measures of market risk were considered and rejected. These included: information extracted from the risk management systems such as value at risk; the financial impact of specified changes in interest rates or exchange rates; the volatility of dealing revenues; and a “gap” analysis of financial instruments by repricing and maturity dates. None of the measures suggested seemed to provide a meaningful, objective measure of risk that would be comparable between organizations without creating an unreasonable burden on any reporting dealer.

Information on market risk extracted from risk management systems is intended for use on a real-time basis. Year-end information or even information on maximum and minimum levels of risk may not be representative. Information based on averages, however, may impose an excessive reporting burden, particularly if the level of aggregation used requires disclosure of a large quantity of different numbers, some of which might be competitively sensitive. Furthermore, it would be very difficult to achieve comparability. While the concept of value at risk might, in time, be developed into a useful tool for external reporting, its current relevance is more as a means for management reporting. The newness of the concept, the continued development that is taking place, the challenges of its implementation, and the lack of broad usage among dealers all suggest that it is premature to mandate a standard basis of calculation of value of risk for all organizations.

The Subcommittee also does not recommend disclosure of the effect of specified changes in interest rates or exchange rates on the market value of an organization's positions in cash market and derivatives, again because this may not be a representative measure of market risk. Interest rates in different currencies do not have the same sensitivity, nor do exchange rates. Furthermore, this measure makes comparison across various classes of financial assets arbitrary and may not accurately reflect the price sensitivities existing at the balance sheet date. Finally, unless simulations are made for numerous possible changes in rates, this measure may not adequately capture the market risk of options.

Some have proposed the disclosure of information about the volatility or stability of a dealer's trading revenues from period to period, to indicate the amount of market risk which the organization has been taking. Although a profit and loss component analysis at the level of detail recommended for internal management purposes may be informative about past market risk, it may not indicate present market risks and may be too detailed, and too sensitive, to disclose.
Another disclosure that some dealers have made is a “gap” analysis of financial instruments by repricing or maturity dates. This disclosure may provide some information about financial instruments; however, for a dealer or an end-user with complex positions, it is not very useful as an indicator of interest rate risk or other kinds of market risk. If contractual dates are used for instruments with prepayment or call options the information may well be misleading about market risk, but the more relevant expected repricing dates are difficult to verify. Repricing or maturity date schedules also cannot portray the nonlinear effects of interest rate caps and other options that are increasingly important parts of market risk management strategies. While “gap” analyses were once common tools for market risk management, dealers and sophisticated end-users increasingly have turned away from them to rely on the tools described earlier, value at risk and simulations of the effects of changes in rates.

More work will need to be undertaken in the future in order to develop a meaningful measure of market risk which could be mandated in external financial reporting. In the meantime, dealers and end-users are encouraged to experiment in disclosing information about value at risk, the results of the effect of specified changes in market rates, the volatility of trading revenues, or other data used in managing the business that they believe might help financial statement users better understand the market risks the organization is—and is not—taking.

The foregoing recommendation is pragmatic and will result in improved standards of disclosure. The recommendation will need to be reconsidered if and when more sophisticated risk measurement and reporting measures are discovered.

Examples of how the recommendations might be applied in practice to a dealer and an end-user are set out in extracts of the financial statements of Pro Forma Dealer and Pro Forma End-User attached as Exhibit A and Exhibit B, respectively, to this Working Paper.

**Recommendation for Tax Authorities**

**Recommendation 23: Tax Treatment**

Legislators and tax authorities are encouraged to review and, where appropriate, amend tax laws and regulations that disadvantage the use of derivatives in risk management strategies. Tax impediments include the inconsistent or uncertain tax treatment of gains and losses on the derivatives, in comparison with the gains and losses that arise from the risks being managed.

The areas of uncertainty and inconsistency of tax treatments vary from jurisdiction to jurisdiction but frequently include:

- “Instrument specific” tax treatment leading to inconsistent treatment of transactions having the same economic effect, but achieved using different instruments.
- Transactions entered into to manage risks being taxed differently from the transaction giving rise to the risk.
- The precise tax effect of gains and losses arising on derivatives instruments being unclear.
• Some instruments attracting no tax relief or tax liability at all.

Resolution of the uncertainties and inconsistencies in each jurisdiction would enable organizations to manage business risks without creating attendant tax risks.
Exhibit A
Pro Forma Dealer
Annual Report 19x1
Exhibit A
Pro Forma Dealer Annual Report 19x1
Contents

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- Consolidated Balance Sheet .................................................. 105
- Consolidated Statement of Cash Flows [not presented] .............. —
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Note
These financial statements are intended to provide an example of how financial statements would be presented in accordance with the disclosures recommended in the Working Paper. To put the disclosures in context, a fairly full set of financial statements has been prepared, including both information that is normally presented and the additional recommended disclosures. The precise form of disclosure for any specific dealer will depend on the nature of its operations.
Financial Review of the Year

[Only abbreviated sections dealing with trading activities, risk-based capital and risk-adjusted assets and risk management.]

Trading Revenue

Trading revenue in 19x1 increased by 40% in comparison with 19x0. Pro Forma Dealer has expanded its trading activities during the past year to take advantage of increased demand by institutional investors in their global portfolios and from the continued development of financial markets. Pro Forma Dealer is a primary dealer in government securities and a global market maker in foreign exchange contracts, interest rate and currency swaps, forward rate agreements, corporate securities, commodities, and related derivatives.

Reported trading revenue excludes the net interest revenue associated with trading activities. Such net interest revenue amounts take into account funding strategies and should be considered when evaluating trading results as they are an integral component of the overall results of these activities.

The following discussion provides information on the trading results in the principal markets in which the Group operates. Results of all activities with similar risk characteristics are generally presented together. Foreign exchange forward trading revenue is reported in swaps and other interest rate contracts in the table below because the primary risks managed by the Group with these instruments are interest rate related. The amount of net interest revenue associated with trading positions is also provided. The methodology utilized to derive net interest revenue attributable to trading activities includes accruals on interest-earning and interest-bearing trading-related positions as well as allocated amounts reflecting the cost or benefit, based on short-term interest rates, associated with net trading-related positions.

<table>
<thead>
<tr>
<th></th>
<th>Swaps and Other Interest Rate Contracts</th>
<th>Debt Instruments</th>
<th>Foreign Exchange Spot and Option Contracts</th>
<th>Other, including Equities and Commodities</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>19x1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trading revenue</td>
<td>417</td>
<td>316</td>
<td>57</td>
<td>75</td>
<td>865</td>
</tr>
<tr>
<td>Net interest revenue (expense)</td>
<td>(7)</td>
<td>97</td>
<td>-</td>
<td>(21)</td>
<td>69</td>
</tr>
<tr>
<td>Combined total for</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19x1</td>
<td>410</td>
<td>413</td>
<td>57</td>
<td>54</td>
<td>934</td>
</tr>
<tr>
<td>19x0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trading revenue</td>
<td>339</td>
<td>146</td>
<td>113</td>
<td>16</td>
<td>614</td>
</tr>
<tr>
<td>Net interest revenue (expense)</td>
<td>(33)</td>
<td>31</td>
<td>-</td>
<td>(3)</td>
<td>(5)</td>
</tr>
<tr>
<td>Combined total for</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19x0</td>
<td>306</td>
<td>177</td>
<td>113</td>
<td>13</td>
<td>609</td>
</tr>
</tbody>
</table>
Swaps and Other Interest Contracts
Trading revenue from swaps and other interest rate contracts includes results from interest rate swaps, currency swaps, foreign exchange forward contracts, interest rate futures, and forward rate agreements.

[Commentary]

Debt Instruments
Trading revenue from debt instruments includes results from government and corporate debt securities, emerging markets debt instruments, and related derivatives.

[Commentary]

Foreign Exchange
Foreign exchange trading revenue includes the results from foreign exchange spot and option contracts.

[Commentary]

Other, including Equities and Commodities
Other trading revenue includes the results from equity securities, equity derivatives, commodity derivatives, and precious metals.

[Commentary]

Off-Balance-Sheet Financial Instruments
Off-balance-sheet financial instruments include derivatives and credit-related financial instruments. Derivatives include futures, forwards, swaps, and options; transactions in these instruments may take place in the interest rate, foreign exchange, equity, and commodity markets. Credit-related financial instruments include commitments to extend credit, standby letters of credit and guarantees, and securities lending indemnifications.

The notional amounts associated with certain financial transactions are not recorded as assets or liabilities on the balance sheet. Off-balance-sheet treatment is generally considered appropriate either where exchange of the underlying asset or liability has not occurred nor is assured, or where notional amounts are used solely to determine cash flows to be exchanged. As compensation for entering into off-balance-sheet financial-instrument transactions, we earn trading, fee, and interest revenue.

Off-balance-sheet financial instruments are subject to varying degrees of credit and market risk. For a further discussion of risks and procedures used to monitor such risks, refer to the “Risk Management” section of this review. Additional information about off-balance-sheet financial instruments is provided in Note 5 to the financial statements, “Off-Balance-Sheet Financial Instruments.”
Derivatives

Derivatives activities have steadily grown since the early 1980s in response to demand from a broad base of clients. These instruments have provided highly effective tools that enable users to adjust asset or liability repricing intervals, yields, currencies, or other exposures to risk as well as to take positions. Derivatives also provide a cost-effective alternative to assuming market risks associated with traditional on-balance-sheet instruments.

The growth in the Group's activities involving derivatives is primarily attributable to market-making activities and the structuring of customized transactions to meet client needs; the Group's use of derivatives for proprietary trading and asset and liability management activities also has increased.

All derivatives are constructed from one or more of two elements—forwards and options. They are principally linked to interest rates, foreign exchange rates, prices of debt securities, equities, commodities, and hybrids thereof. These instruments are generally either negotiated over-the-counter contracts or standardized contracts executed on an exchange. Negotiated over-the-counter derivatives include forwards, swaps, forward rate agreements, options, caps, and swap options. In addition, foreign exchange spot contracts are considered to be derivatives as the cash settlement is on a forward basis, generally within two days. Derivatives are generally not traded like securities; however, with the agreement of the original counterparty they may be assigned to another counterparty or unwound in the normal course of business. Standardized exchange-traded derivatives include futures and options.

The notional amounts of derivatives are not recorded on the balance sheet, but trading-related derivatives are marked to market, and unrealized gains and unrealized losses and option premium values are recorded on the balance sheet. The related gains and losses are recorded as trading revenue. In valuing interest rate and currency swaps, the portion of the initial market value that reflects credit considerations, ongoing service costs, and transaction hedging costs is deferred and recognized in trading revenue over the life of the agreement. Derivatives entered into as part of the Group's asset and liability management activities are accounted for on an accrual of deferral basis with income generally recognized as net interest revenue.

The notional amounts of derivatives represent the volume of outstanding transactions and do not represent the potential for gain or loss associated with the market risk or credit risk of such transactions. The market risk of derivatives arises principally from the potential for changes in value due to fluctuations in interest and foreign exchange rates and in prices of debt securities, equities, or commodities. We generally reduce our exposure to market risks by entering into offsetting transactions.

The credit risk of derivatives arises from the potential for a counterparty to default on its contractual obligations. The Group attempts to limit credit risk by dealing with counterparties that are creditworthy. In addition, the Group obtains collateral where appropriate and increasingly requires the use of legally enforceable master netting agreements. These agreements provide for the net settlement of covered
contracts with the same counterparty in the event of default or other cancellation of the agreement.

Credit exposure exists at a particular point in time when a derivative has a positive market value. Derivatives, other than options, may be in an unrealized gain or loss position depending on market rates and the terms of the contract. Purchased option contracts with positive market values have credit risk. The notional amounts shown in the following tables reflect all contracts, both those with and without credit exposure. The credit exposure presented in the following tables has been reduced for the effects of master netting agreements.

<table>
<thead>
<tr>
<th>In Billions: December 31</th>
<th>Notional Amount</th>
<th>19x1</th>
<th>Credit Exposure</th>
<th>Notional Amount</th>
<th>19x0</th>
<th>Credit Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreign exchange spot, forward, and futures contracts</td>
<td>143.3</td>
<td>3.9</td>
<td>123.0</td>
<td>3.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interest rate and currency swaps</td>
<td>219.4</td>
<td>5.7</td>
<td>178.1</td>
<td>5.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other forwards, swaps, and futures</td>
<td>140.8</td>
<td>0.1</td>
<td>66.0</td>
<td>0.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Option contracts</td>
<td>132.2</td>
<td>1.4</td>
<td>100.8</td>
<td>1.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[Commentary]

Capital Adequacy
Risk-Based Capital

Pro Forma Dealers risk-based capital at December 19x1 and 19x0 is as follows:

<table>
<thead>
<tr>
<th>In Millions</th>
<th>19x1</th>
<th>19x0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common stockholders' equity – Tier 1 capital</td>
<td>4,045</td>
<td>3,460</td>
</tr>
<tr>
<td>Long-term debt qualifying as risk-based capital</td>
<td>1,387</td>
<td>1,254</td>
</tr>
<tr>
<td>Qualifying allowance for credit losses</td>
<td>659</td>
<td>626</td>
</tr>
<tr>
<td>- Tier 2 capital</td>
<td>2,046</td>
<td>1,880</td>
</tr>
<tr>
<td>Total risk-based capital</td>
<td>6,091</td>
<td>5,340</td>
</tr>
</tbody>
</table>

Risk-Adjusted Assets

<table>
<thead>
<tr>
<th>In Billions</th>
<th>19x1</th>
<th>19x0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk-adjusted assets</td>
<td>55.1</td>
<td>51.6</td>
</tr>
</tbody>
</table>

Further details are provided in the “Risk-Adjusted Assets” section of the notes to the financial statements.
Risk Management

Risk in many forms occurs in the ordinary course of business. The exposure to risk offers the opportunity for reward as well as the possibility of loss. Consequently, rather than seeking to avoid risk, the Group identifies and assumes risk in connection with its diverse business activities. The principal risks are credit and market risks. Credit risk—the uncertainty of future earnings arising from the possibility that some counterparties may default—results from extending credit as part of our lending activities and from carrying trading positions, including derivatives. Market risk—the uncertainty of future earnings on positions in various markets due to price changes—results from market-making, positioning, and asset and liability management activities in the interest rate, foreign exchange, equity, and commodity markets.

In the financial markets in which we operate, we earn interest, trading, and fee revenues as compensation for serving our clients’ needs and for assuming credit and market risks by entering into transactions. We regularly measure, monitor, and manage these risks through a variety of control mechanisms. We seek to maximize the return on these risks by diversifying our exposures and activities over many instruments, markets, clients, and geographic regions and by limiting risk positions.

Professionals responsible for maintaining relationships with clients or for activities in specific markets operate from selected geographic locations to ensure that they have proper knowledge of those markets and can evaluate relevant information promptly.

In recognition of the importance of risk management in our business activities and in line with the recommendations of The Group of Thirty, during the year Pro Forma Dealer formed a new, independent, Corporate Risk Management function. Building on effective methods and processes that were already in place within the firm for defining and monitoring risk, this new function unites these procedures, bringing together as co-heads of the Corporate Risk Management Group the chairmen of the Credit Policy and Market Risk Committees. We created this group to enhance and develop an even more comprehensive and consistent set of corporate risk management methodologies and policies. This group is also responsible for assigning risk limits and monitoring positions relative to limits. With the assistance of the Corporate Risk Management Group, senior management regularly monitors the overall risk profile.

To enhance the control environment for our activities and assist in decision-making, we have made significant investments in the training of personnel and in the development of information technology. In addition, we have established appropriate accounting policies and procedures. This control environment is subject to periodic reviews by both internal auditors and external auditors.

Credit Risk

The Credit Policy Committee establishes policies and procedures to define, quantify, and monitor credit risks, including settlement risk.

The organizational groups supporting the Credit Policy Committee establish maximum credit limits as deemed necessary to industry, product, and country.
Client limits are established by credit officers with lending authority and direct knowledge of clients, with oversight provided by the Corporate Risk Management Group. Senior management regularly reviews established limits and actual levels of exposures.

To reduce individual counterparty credit risk, the Group is increasingly requiring the use of master netting agreements. These agreements provide for the net settlement of covered contracts with the same counterparty in the event of default or other cancellation of the agreement.

The credit review procedures are designed to identify at an early stage country, industry, product, and client exposures that require greater than normal scrutiny. Once identified, these exposures are monitored carefully by the Charge-Off Committee, which is a group composed of senior officers. In assessing the adequacy of our allowance for credit losses, this committee, on a quarterly basis, recommends to senior management what portion of credit exposures should be charged off and whether a specific allocation of the allowance for credit losses should be made.

In recommending an appropriate level for the allowance for credit losses, we consider the existing level of nonperforming assets and the overall credit exposures, taking into account not only possible losses on specific credits, but also the probability that there are inherent losses in the existing portfolio that have not yet been identified. In assessing the probability of losses that have not yet been identified, consideration is given to: the historical loss experience; economic and political conditions; concentrations of risk by country, industry, product, and client; and the relatively large size of many of our clients given our wholesale banking orientation.

**Market Risk**

To manage market risk the Group has well-defined financial and operating controls for each business unit and has established limits for interest rate, foreign currency, and other market exposures. An important tool in monitoring exposures and establishing limits for substantially all of our products is the estimation of the potential loss of current and future earnings on existing positions under certain assumptions within the markets being measured.

The Market Risk Committee provides a forum for reviewing the liquidity profile and the market risk in asset and liability management and trading positions, as discussed below. The Market Risk Committee regularly reviews market exposures and analyzes the effects of actual or projected changes in rates, prices, or market liquidity on the value of these positions. This Committee also reviews our liquidity profile by monitoring the differences in maturities between assets and liabilities and by analyzing the future level of funds required based on various assumptions, including the ability to liquidate investment and trading positions.

**Liquidity Profile**

Management of the liquidity profile is designed to ensure that the Group has, even under adverse conditions, access to funds to adequately cover client needs, maturing liabilities, and the capital needs of subsidiaries while raising funds at the most economical cost. Sources of funds considered in meeting these objectives
include acceptance of client deposits, issuance of other short-term liabilities, maturities and sales of investment securities and loans, sales of trading-related positions, maturities of interest-earning deposits with banks, issuance of debt and equity, and cash provided from operations including off-balance-sheet activities.

**Asset and Liability Management Positions**

Asset and liability management positions include those interest-rate-sensitive assets, liabilities, and off-balance-sheet instruments that are used as part of the Group’s financing, investing, and interest-rate-management activities. In managing our overall asset and liability management portfolio, our objective is to maximize total return, including net interest earnings plus realized gains or losses from investment securities, off-balance-sheet instruments, and asset sales, and the change in the net present value of the portfolio.

Since assets, liabilities, and off-balance-sheet instruments (such as investment securities, loans, interest-bearing deposits, long-term debt, interest-rate swaps, and interest-rate options) vary in their repricings and maturities, changes in interest rates may result in an increase or decrease in net interest revenue as well as in the estimated fair values of such instruments. We actively monitor our interest-rate exposure and liquidity profile and use financial instruments such as interest-rate and currency swaps, financial futures, options, and similar instruments to adjust our exposure in light of market conditions.

**Trading Positions**

Trading positions include both on- and off-balance-sheet instruments that are used for market-making and proprietary positioning. We manage the risks inherent in trading activities by actively monitoring the sensitivity to changes in market conditions and by establishing and monitoring trading limits. In setting limits we consider several factors, including our experience in each market, our clients’ requirements, the relevant experience of management and individual traders, and market liquidity and volatility.
## Consolidated Statement of Income

Financial Years Ending December 31

<table>
<thead>
<tr>
<th>In Millions</th>
<th>Note</th>
<th>19x1</th>
<th>19x0</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Net Interest Revenue</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interest revenue</td>
<td></td>
<td>5,191</td>
<td>5,630</td>
</tr>
<tr>
<td>Interest expense</td>
<td></td>
<td>4,201</td>
<td>4,864</td>
</tr>
<tr>
<td>Net interest revenue</td>
<td></td>
<td>990</td>
<td>766</td>
</tr>
<tr>
<td>Provision for credit losses</td>
<td></td>
<td>27</td>
<td>33</td>
</tr>
<tr>
<td>Net interest revenue after provision for credit losses</td>
<td></td>
<td>963</td>
<td>733</td>
</tr>
<tr>
<td><strong>Noninterest Revenue</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trading revenue</td>
<td></td>
<td>3865</td>
<td>614</td>
</tr>
<tr>
<td>Corporate finance revenue</td>
<td></td>
<td>222</td>
<td>204</td>
</tr>
<tr>
<td>Credit-related fees</td>
<td></td>
<td>107</td>
<td>91</td>
</tr>
<tr>
<td>Investment management fees</td>
<td></td>
<td>214</td>
<td>190</td>
</tr>
<tr>
<td>Operational service fees</td>
<td></td>
<td>234</td>
<td>209</td>
</tr>
<tr>
<td>Net investment securities gains (losses)</td>
<td></td>
<td>(9)</td>
<td>2</td>
</tr>
<tr>
<td>Other revenue</td>
<td></td>
<td>46</td>
<td>47</td>
</tr>
<tr>
<td><strong>Total non interest revenue</strong></td>
<td></td>
<td>1,679</td>
<td>1,357</td>
</tr>
<tr>
<td><strong>Operating Expenses</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salaries</td>
<td></td>
<td>460</td>
<td>443</td>
</tr>
<tr>
<td>Employee benefits</td>
<td></td>
<td>502</td>
<td>379</td>
</tr>
<tr>
<td>Net occupancy</td>
<td></td>
<td>240</td>
<td>173</td>
</tr>
<tr>
<td>Technology and communications</td>
<td></td>
<td>227</td>
<td>207</td>
</tr>
<tr>
<td>Other expenses</td>
<td></td>
<td>229</td>
<td>184</td>
</tr>
<tr>
<td><strong>Total operating expenses</strong></td>
<td></td>
<td>1,586</td>
<td>1,386</td>
</tr>
<tr>
<td>Income before income taxes</td>
<td></td>
<td>984</td>
<td>704</td>
</tr>
<tr>
<td>Income taxes</td>
<td></td>
<td>247</td>
<td>186</td>
</tr>
<tr>
<td><strong>Income after Taxation for the Year</strong></td>
<td></td>
<td>737</td>
<td>818</td>
</tr>
</tbody>
</table>

The accompanying notes are an integral part of these financial statements.
Consolidated **Balance Sheet - at December 31**

<table>
<thead>
<tr>
<th>Note</th>
<th>19x1</th>
<th>19x0</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assets</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash and due from banks</td>
<td>1,037</td>
<td>1,467</td>
</tr>
<tr>
<td>Interest-earning deposits with banks</td>
<td>3,161</td>
<td>5,587</td>
</tr>
<tr>
<td>Investment securities (market value: 15,494 in 19x1 and 12,433 in 19x0)</td>
<td>14,787</td>
<td>12,360</td>
</tr>
<tr>
<td>Trading account assets</td>
<td>12,813</td>
<td>10,435</td>
</tr>
<tr>
<td>Securities purchased under agreements to resell</td>
<td>7,985</td>
<td>5,803</td>
</tr>
<tr>
<td>Loans</td>
<td>18,531</td>
<td>18,375</td>
</tr>
<tr>
<td>Less: allowance for credit losses</td>
<td>946</td>
<td>1,233</td>
</tr>
<tr>
<td>Net loans</td>
<td>17,585</td>
<td>17,142</td>
</tr>
<tr>
<td>Customers' acceptance liability</td>
<td>701</td>
<td>732</td>
</tr>
<tr>
<td>Accrued interest and accounts receivable</td>
<td>5,357</td>
<td>3,821</td>
</tr>
<tr>
<td>Premises and equipment, net</td>
<td>1,426</td>
<td>1,340</td>
</tr>
<tr>
<td>Other assets</td>
<td>4,126</td>
<td>3,381</td>
</tr>
<tr>
<td><strong>Total assets</strong></td>
<td>68,978</td>
<td>62,068</td>
</tr>
</tbody>
</table>

| **Liabilities** | | |
| Noninterest-bearing deposits | 2,875 | 4,428 |
| Interest-bearing deposits | 21,775 | 20,610 |
| **Total deposits** | 24,650 | 25,038 |
| Securities sold, not yet purchased | 5,486 | 4,421 |
| Securities sold under agreements to repurchase | 14,475 | 14,023 |
| Commercial paper | 1,842 | 2,245 |
| Other liabilities for borrowed money | 6,891 | 4,421 |
| Accounts payable and accrued expenses | 5,934 | 4,325 |
| Liability on acceptances | 705 | 737 |
| Long-term debt not qualifying as risk-based capital | 2,210 | 1,893 |
| Other liabilities | 1,353 | 251 |
| Long-term debt qualifying as risk-based capital | 1,387 | 1,254 |
| **Total liabilities** | 64,933 | 58,608 |
| Commitments and contingencies (various not presented) | | |
### Consolidated Balance Sheet - at December 31 (continued)

<table>
<thead>
<tr>
<th>Stockholders' Equity</th>
<th>Note</th>
<th>19x1</th>
<th>19x0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common stock</td>
<td></td>
<td>651</td>
<td>645</td>
</tr>
<tr>
<td>Capital surplus</td>
<td></td>
<td>613</td>
<td>527</td>
</tr>
<tr>
<td>Retained earnings</td>
<td></td>
<td>2,778</td>
<td>2,285</td>
</tr>
<tr>
<td>Foreign currency translation</td>
<td></td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total stockholders' equity</strong></td>
<td></td>
<td>4,045</td>
<td>3,460</td>
</tr>
<tr>
<td><strong>Total liabilities and stockholders' equity</strong></td>
<td></td>
<td>68,978</td>
<td>62,068</td>
</tr>
</tbody>
</table>

The accompanying notes are an integral part of these financial statements.
Notes to Financial Statements

1. Accounting Policies
The following is a description of significant accounting policies and practices.

Consolidation
[Not presented.]

Securities
Debt and equity securities are held in both the investment and trading account portfolios. The distinction between the two is primarily based on management's intent when the securities are acquired. Trading account assets are held in anticipation of short-term market movements and are held for resale. In contrast, investment securities are acquired as long-term investments. It is Pro Forma Dealer's policy not to make transfers between investment securities and trading account assets.

We carry debt securities held for investment at cost, adjusted for amortization of premiums to the earliest call date and accretion of discounts to maturity. Marketable equity securities for investment are carried at the lower of aggregate cost and market value. Non-marketable equity investment securities are carried at cost. The cost base of both marketable and non-marketable equity securities is reduced to reflect impairments in value expected to be other than temporary. If investment securities are identified as held for sale, then they are held at the lower of cost and market value. Gains and losses on sales of investment securities are computed on a specific identified cost basis and are included in other revenue.

Trading-account assets, consisting of securities and money market instruments, are valued at market value. We base "Market Value" for this purpose on quoted market prices, on pricing models (utilizing indicators of general market conditions or other such economic measurements), or on estimates of amounts to be realized upon settlement, assuming current market conditions and an orderly disposition over a reasonable period of time. We include gains and losses, both realized and unrealized, in trading account revenue.

We also value obligations to deliver securities sold but not yet purchased at market value, and record them on the balance sheet as of their trade date.

Securities Financing Arrangements
We treat securities purchased under agreement to resell and securities sold under agreement to repurchase generally as collateralized lending and borrowing transactions and carry them at the amounts at which the securities were initially acquired or sold.

Premiums and Discounts
Amortization of premiums and accretion of discounts generally are recognized as interest expense or interest revenue over the life of the instrument.

Non Accrual Loans
[Not presented.]
Allowance for Credit Losses
We maintain an allowance considered adequate to absorb losses inherent in the existing portfolios of loans and other undertakings to extend credit, such as irrevocable unused loan commitments, or to make payments to others for which a client is ultimately liable, such as standby letters of credit and guarantees, commercial letters of credit and acceptances, and other credit-related exposures. We make a judgment as to the adequacy of the allowance at the end of each quarterly reporting period. Should the allowance be judged to be inadequate either because of reductions due to charge-offs or because of changes in the size or risk characteristics of the portfolios, the allowance is increased through a provision for credit losses that is charged to income.

Premises and Equipment
Premises and equipment are stated at cost less accumulated depreciation. Depreciation generally is computed by the straight-line method over the estimated useful lives of the related asset.

Derivatives
Derivatives include futures, forwards, swaps, and options in the interest rate, foreign exchange, equity, and commodity markets. The Group uses these instruments for market-making and proprietary trading and in conjunction with its overall asset and liability management activities.

Those derivatives that are entered into for trading purposes or used as hedges of other trading instruments are carried at market value, with resultant gains and losses reported currently in trading revenue. Market value is based on mid-market values; to reflect credit considerations, ongoing servicing, and transaction hedging costs, a portion of the market value initially associated with interest rate and currency swaps is deferred and recognized over the life of the agreement in trading revenue.

The market values associated with futures, forwards, options, and swaps are reported in trading account assets or securities sold, not yet purchased, as appropriate.

Gains and losses related to contracts that are designated and effective as hedges or used to modify the interest rate characteristics of a specific asset or liability carried at amortized cost or the lower of aggregate cost or market value are not recognized currently. Such gains and losses generally are deferred and recognized over the expected remaining lives of the underlying asset or liability in net interest revenue. The market values of such open or unsettled contracts are taken into consideration in reporting the fair value of the related asset or liability. Upon contract settlement, the cumulative change in market value is recognized as an adjustment to the carrying amount of the underlying item.

Revenue or expense associated with interest rate swaps entered into to meet longer-term interest rate management objectives, including maximization of net interest revenue, is accrued over the life of the agreement in net interest revenue.

Other Accounting Policies
[Not presented.]
### 2. Interest Revenue and Interest Expense

An analysis of interest revenue and interest expense is presented in the following table.

<table>
<thead>
<tr>
<th></th>
<th>19x1</th>
<th>19x0</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Interest Revenue</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deposits with banks</td>
<td>439</td>
<td>837</td>
</tr>
<tr>
<td>Investment securities</td>
<td>1,229</td>
<td>1,174</td>
</tr>
<tr>
<td>Trading account assets</td>
<td>1,045</td>
<td>884</td>
</tr>
<tr>
<td>Securities purchased under agreements to resell</td>
<td>671</td>
<td>756</td>
</tr>
<tr>
<td>Loans</td>
<td>1,619</td>
<td>1,904</td>
</tr>
<tr>
<td>Other sources</td>
<td>188</td>
<td>70</td>
</tr>
<tr>
<td><strong>Total interest revenue</strong></td>
<td>5,191</td>
<td>5,630</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>19x1</th>
<th>19x0</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Interest Expense</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deposits</td>
<td>1,887</td>
<td>2,304</td>
</tr>
<tr>
<td>Securities sold, not yet purchased</td>
<td>407</td>
<td>495</td>
</tr>
<tr>
<td>Securities sold under agreements to repurchase</td>
<td>1,185</td>
<td>1,225</td>
</tr>
<tr>
<td>Other borrowed money</td>
<td>468</td>
<td>570</td>
</tr>
<tr>
<td>Long-term debt</td>
<td>254</td>
<td>270</td>
</tr>
<tr>
<td><strong>Total interest expense</strong></td>
<td>4,201</td>
<td>4,864</td>
</tr>
<tr>
<td><strong>Net interest revenue</strong></td>
<td>990</td>
<td>766</td>
</tr>
</tbody>
</table>

### 3. Trading Revenue

An analysis of trading revenue is presented in the following table.

<table>
<thead>
<tr>
<th></th>
<th>19x1</th>
<th>19x0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swaps and other interest rate contracts (i)</td>
<td>417</td>
<td>339</td>
</tr>
<tr>
<td>Debt instruments (ii)</td>
<td>316</td>
<td>145</td>
</tr>
<tr>
<td>Foreign exchange (iii)</td>
<td>57</td>
<td>113</td>
</tr>
<tr>
<td>Other, including equities and commodities (iv)</td>
<td>75</td>
<td>17</td>
</tr>
<tr>
<td><strong>Trading revenue</strong></td>
<td>865</td>
<td>614</td>
</tr>
</tbody>
</table>

(i) Includes gains and losses from interest rate swaps, currency swaps, foreign exchange forward contracts, interest rate futures, future rate agreements, and related derivatives.

(ii) Includes gains and losses from government and corporate debt securities, and related derivatives.

(iii) Includes gains and losses from foreign exchange spot and option contracts.

(iv) Includes gains and losses from equity securities, precious metals, and commodity derivatives.
4. Trading Account Assets and Securities Sold, Not Yet Purchased

<table>
<thead>
<tr>
<th>In Millions</th>
<th>19x1</th>
<th>19x0</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Trading Account Assets</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government treasury securities</td>
<td>8,171</td>
<td>8,408</td>
</tr>
<tr>
<td>Certificates of deposit, bankers’ acceptances, and commercial paper</td>
<td>735</td>
<td>888</td>
</tr>
<tr>
<td>Corporate debt and equity</td>
<td>1,692</td>
<td>519</td>
</tr>
<tr>
<td>Other, including options</td>
<td>2,215</td>
<td>620</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>12,813</td>
<td>10,435</td>
</tr>
</tbody>
</table>

| **Securities sold, not yet purchased** | | |
| Government treasury securities | 4,267 | 4,024 |
| Other, including options | 1,219 | 397 |
| **Total** | 5,486 | 4,421 |

5. Off-Balance-Sheet Financial Instruments

Pro Forma Dealer enters into various transactions involving off-balance-sheet financial instruments. These instruments can be used to meet the risk management, trading, and financing needs of clients or for Pro Forma Dealers’ proprietary trading and asset and liability management purposes and are subject to varying degrees of credit and market risk. Credit risk and market risk associated with on- and off-balance-sheet financial instruments are monitored on an aggregate basis. Although not incorporated by reference into these audited financial statements, refer to the “Off-Balance-Sheet Financial Instruments” and “Risk Management” sections of “Financial Review” for a further discussion of off-balance-sheet financial instruments, their risks, and controls used to monitor such risks, and the “Risk-Adjusted Assets” section of “Capital and Funding Analysis” for further information about off-balance-sheet exposures and risk-based capital equivalent amounts.

Derivatives

Derivatives include futures, forwards, swaps, and options. Transactions in these instruments may take place in the interest rate, foreign exchange, equity, and commodity markets.

The notional amounts of these instruments represent the volume of outstanding transactions and do not represent the potential for gain or loss associated with the market or credit risk of such transactions. The market risk of derivatives arises from the potential for changes in value due to fluctuations in interest and foreign exchange rates and in prices of debt securities, equities, or commodities. Pro Forma Dealer generally reduces its exposure to market risks by entering into offsetting transactions. The credit risk of derivatives arises from the potential for a counterparty to default on its contractual obligations. The effect of such defaults
varies as the market value of derivatives contracts changes. Credit exposure exists at a particular point in time when a derivative has a positive market value. The Group attempts to limit its credit risk by dealing with creditworthy counterparties, obtaining collateral where appropriate, and increasingly requiring the use of legally enforceable master netting agreements. These agreements provide for the net settlement of covered contracts with the same counterparty in the event of default or other cancellation of the agreement. The timing of cash receipts and payments relating to these instruments is determined by contractual agreements.

A summary of the aggregate notional amounts of derivatives at December 31 is presented in the following table.

<table>
<thead>
<tr>
<th>In Billions</th>
<th>19x1</th>
<th>18x0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreign exchange contracts:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spot, forward, and futures contracts</td>
<td>143.3</td>
<td>123.0</td>
</tr>
<tr>
<td>Interest rate and currency swaps:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interest rate swaps</td>
<td>166.2</td>
<td>129.7</td>
</tr>
<tr>
<td>Currency swaps</td>
<td>53.2</td>
<td>48.4</td>
</tr>
<tr>
<td>Other forwards, swaps, and futures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interest rate futures</td>
<td>80.3</td>
<td>22.3</td>
</tr>
<tr>
<td>Forward rate agreements</td>
<td>42.5</td>
<td>32.8</td>
</tr>
<tr>
<td>Debt securities contracts*</td>
<td>12.3</td>
<td>7.6</td>
</tr>
<tr>
<td>Commodity and equity contracts</td>
<td>5.7</td>
<td>New</td>
</tr>
<tr>
<td>Option contracts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interest rate options purchased</td>
<td>46.8</td>
<td>33.4</td>
</tr>
<tr>
<td>Interest rate options written**</td>
<td>37.0</td>
<td>30.7</td>
</tr>
<tr>
<td>Foreign exchange options purchased</td>
<td>19.3</td>
<td>16.5</td>
</tr>
<tr>
<td>Foreign exchange options written</td>
<td>22.6</td>
<td>16.9</td>
</tr>
<tr>
<td>Commodity and equity options purchased</td>
<td>3.7</td>
<td>2.0</td>
</tr>
<tr>
<td>Commodity and equity options written</td>
<td>2.8</td>
<td>1.3</td>
</tr>
</tbody>
</table>

* Debt securities contracts are composed primarily of to-be-announced securities.

** Includes 0.7 billion and 0.3 billion of written put option contracts on debt securities at December 31, 19x1 and 19x0, respectively.

Gains and losses related to foreign exchange contracts, interest rate and currency swaps, other forwards, swaps, and futures, and option contracts that are used for trading purposes are recognized currently in trading revenue. The unrealized gains and losses on these contracts are recorded gross on the consolidated balance sheet.
6. Estimated Fair Value of Financial Instruments
The aggregate net fair value of all balance sheet and off-balance-sheet financial instruments at December 31, 19x1, exceeded the carrying value in the financial statements by 1.2 billion before taking account of income tax.

Set out below are those items principally contributing to this amount:

<table>
<thead>
<tr>
<th>In Billions: December 31, 19x1</th>
<th>Carrying Value</th>
<th>Fair Value</th>
<th>Appreciation/ (Depreciation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net loans</td>
<td>17.6</td>
<td>17.9</td>
<td>0.3</td>
</tr>
<tr>
<td>Derivatives used in asset and liability management activities</td>
<td>-</td>
<td>0.6</td>
<td>0.6</td>
</tr>
<tr>
<td>Investment securities</td>
<td>14.8</td>
<td>15.5</td>
<td>0.7</td>
</tr>
<tr>
<td>All other financial instruments, net</td>
<td>......</td>
<td>...........</td>
<td>(0.4)</td>
</tr>
<tr>
<td>Net appreciation</td>
<td>1.2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

7. Risk Adjusted Assets and Off-Balance-Sheet Exposures
The Group’s consolidated risk adjusted assets and off-balance-sheet exposures at December 31, 19x1 and 19x0, are set out in the following table:

<table>
<thead>
<tr>
<th>In Billions</th>
<th>19x1</th>
<th>19x0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assets</td>
<td>Balance sheet/ notional amount</td>
<td>Risk adjusted balance</td>
</tr>
<tr>
<td>Cash and due from banks and interest-earning deposits with banks</td>
<td>4.2</td>
<td>0.9</td>
</tr>
<tr>
<td>Investment securities</td>
<td>14.8</td>
<td>2.6</td>
</tr>
<tr>
<td>Trading account assets</td>
<td>12.8</td>
<td>3.7</td>
</tr>
<tr>
<td>Securities purchased under agreements to resell</td>
<td>8.0</td>
<td>1.7</td>
</tr>
<tr>
<td>Loans</td>
<td>18.5</td>
<td>16.5</td>
</tr>
<tr>
<td>Allowance for credit losses</td>
<td>(0.9)</td>
<td>-</td>
</tr>
<tr>
<td>Customers’ acceptance liability</td>
<td>0.7</td>
<td>0.7</td>
</tr>
<tr>
<td>Premises and equipment, net</td>
<td>1.4</td>
<td>1.4</td>
</tr>
<tr>
<td>Other assets</td>
<td>9.5</td>
<td>5.2</td>
</tr>
<tr>
<td>Total assets</td>
<td>69.0</td>
<td>32.7</td>
</tr>
</tbody>
</table>
8. Concentrations of Credit Risk

Pro Forma Dealer's clients and other counterparties to the Group's on- and off-balance-sheet financial instruments operate in diverse sectors of the world economy, and include non-bank financial institutions, governments, and banks. Non-bank financial institutions primarily include investment banks, insurance companies, and investment companies.

Summarized in the following table are the amounts at risk for the Group's on- and off-balance-sheet financial instruments with credit risk, allocated to the sectors and geographic areas of the ultimate obligors at December 31, 19x1 and 19x0, respectively. The amounts related to on-balance-sheet instruments include the book values of loans, investment and trading securities, resale agreements, interest-earning deposits with banks, and other assets. The amounts related to off-balance-sheet instruments include contractual amounts (for commitments to extend credit, standby and other letters of credit and guarantees, and securities lending indemnifications), the positive unrealized market value (for foreign exchange contracts, currency and interest rate swaps, and other contracts), and amounts receivable for securities sold that have not reached the contractual settlement date. The amounts below are before taking account of collateral related mainly to loans, resale agreements, securities lending indemnifications, and amounts receivable for securities sold, not yet settled, that are available to limit these credit risks. The
amounts below also do not consider the extent to which legally enforceable master netting agreements have been used to limit the amount of credit exposure. Included in the total amounts below are 52.4 billion and 43.7 billion of off-balance-sheet exposures at December 31, 19x1 and 19x0, respectively. The risk-based capital framework, which establishes capital requirements for banks, considers the credit risks as well as the collateral associated with financial instruments.

<table>
<thead>
<tr>
<th>In Billions: 31 December</th>
<th>Non-bank financial institutions</th>
<th>Governments</th>
<th>Banks</th>
<th>All other sectors</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>19x1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[Region 1]</td>
<td>25.0</td>
<td>20.9</td>
<td>5.4</td>
<td>18.8</td>
<td>70.1</td>
</tr>
<tr>
<td>[Region 2]</td>
<td>5.3</td>
<td>5.2</td>
<td>8.6</td>
<td>11.2</td>
<td>30.3</td>
</tr>
<tr>
<td>[Region 3]</td>
<td>2.0</td>
<td>1.2</td>
<td>8.3</td>
<td>4.0</td>
<td>20.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>32.3</td>
<td>27.3</td>
<td>22.3</td>
<td>39.0</td>
<td>120.9</td>
</tr>
</tbody>
</table>

Cash and marketable security collateral ............... 13.9     1.5     4.3     4.0     23.7

| **19x0**                |                               |             |      |                  |      |
| [Region 1]              | 15.2                          | 15.9        | 5.6  | 24.2             | 60.9 |
| [Region 2]              | 4.0                           | 4.6         | 8.9  | 8.8              | 26.3 |
| [Region 3]              | 2.3                           | 1.8         | 8.8  | 5.5              | 18.4 |
|                         |                               |             |      |                  |      |
|                         | 21.5                          | 22.3        | 23.3 | 38.5             | 105.6|

Cash and marketable security collateral ............... 8.8     0.5     3.3     4.8     17.4

At December 31, 19x1 and 19x0, no single industry in the “all other sectors” category accounts for more than 10% of the total.
Exhibit B
Pro Forma End-User
Annual Report 19x1
Exhibit B
Pro Forma End-User Annual Report 19x1
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Consolidated Balance Sheet ............................................................. 119
Consolidated Statement of Cash Flows [not presented] ....................... —
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Note
These financial statements are intended to provide an example of how financial statements would be presented in accordance with the disclosures recommended in the Working Paper. To put the disclosures in context, a fairly full set of financial statements has been prepared, including both information that is normally presented and the additional recommended disclosures. The precise form of disclosure for any specific end-user will depend on the nature of its operations.
Financial Review of the Year

Financial policies
[NB: General framework only excluding detailed commentary on the financial statistics.]

Pro Forma End-User maintains debt levels which it considers prudent in light of expected cash flows and the gearing ratio of debt to equity capital. The Group’s overall cost of capital is reduced by using debt financing thus maximizing the return to shareholders.

The Group’s financial strength has resulted in long term credit ratings of [ ] from Standard & Poor’s and [ ] from Moody’s as well as the highest credit rating available for its commercial paper program.

[Liquidity policy and profile]

The Group’s objective is to reduce its exposure to fluctuations in interest rates by arranging interest rate swaps to convert a proportion of its floating rate debt into fixed rate debt. In addition future rate agreements are used to a limited extent to reduce the impact of expected future increases in interest rates by locking into current levels.

[Analysis of exposure to fixed and floating rates. Commentary on level of interest charge.]

With a substantial proportion of its assets and profits generated overseas, foreign currency management is another key element of the Group’s financial strategy. Pro Forma End-User closely monitors its exposure to currency fluctuations and takes action to reduce the impact of these fluctuations where this is cost effective. The Group benefits from operating in a number of different currencies, because the effect of weakness in any particular currency may be offset by the effect of the strength of other currencies. The Group undertakes various hedging activities to enhance income and cash flows denominated in foreign currencies. These hedging activities primarily are conducted by forward purchases and sales of currencies and by the use of purchased options to buy and sell currencies. In addition, the Group uses foreign currency borrowings where appropriate to finance investments in overseas countries.

[Broad analysis of exposure to foreign currency risk and the extent to which this is hedged.]

It is the Group’s policy not to speculate in financial instruments by taking positions that are not hedged by actual or reasonably anticipated transactions. The Group’s risk management policies are dealt with below.

Risk Management
[Discussion of the Group’s attitude to financial risk and how the Group treasury activities are controlled including the approved instruments and transactions, and how limits are set and compliance monitored.]
## Consolidated Statement of Income

Financial Years Ending December 31

<table>
<thead>
<tr>
<th>In Millions</th>
<th>19x1</th>
<th>19x0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Operating Revenues</td>
<td>8,716</td>
<td>7,714</td>
</tr>
<tr>
<td>Cost of goods sold</td>
<td>3,369</td>
<td>3,099</td>
</tr>
<tr>
<td>Gross Profit</td>
<td>5,347</td>
<td>4,615</td>
</tr>
<tr>
<td>Selling, administrative and general expenses</td>
<td>3,399</td>
<td>2,969</td>
</tr>
<tr>
<td>Operating Income</td>
<td>1,948</td>
<td>1,646</td>
</tr>
<tr>
<td>Interest income</td>
<td>9</td>
<td>17</td>
</tr>
<tr>
<td>Interest expense</td>
<td>114</td>
<td>129</td>
</tr>
<tr>
<td>Other income (reductions) - net</td>
<td>(11)</td>
<td>53</td>
</tr>
<tr>
<td>Income Before Income Taxes</td>
<td>1,832</td>
<td>1,587</td>
</tr>
<tr>
<td>Income taxes</td>
<td>575</td>
<td>510</td>
</tr>
<tr>
<td>Income After Taxation for the Year</td>
<td>1,257</td>
<td>1,077</td>
</tr>
</tbody>
</table>

The accompanying notes are an integral part of these financial statements.
## Consolidated Balance Sheet - at December 31

<table>
<thead>
<tr>
<th>Assets</th>
<th>19x1</th>
<th>19x0</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash and cash equivalents</td>
<td>37</td>
<td>105</td>
</tr>
<tr>
<td>Marketable securities, at cost</td>
<td>71</td>
<td>70</td>
</tr>
<tr>
<td>Trading accounts receivable less allowances</td>
<td>703</td>
<td>622</td>
</tr>
<tr>
<td>Finance subsidiary receivables</td>
<td>20</td>
<td>24</td>
</tr>
<tr>
<td>Inventories</td>
<td>1,279</td>
<td>1,259</td>
</tr>
<tr>
<td>Prepaid expenses and other assets</td>
<td>720</td>
<td>714</td>
</tr>
<tr>
<td><strong>Total current assets</strong></td>
<td>2,830</td>
<td>2,794</td>
</tr>
<tr>
<td><strong>Investments and Other Assets</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Investments</td>
<td>442</td>
<td>414</td>
</tr>
<tr>
<td>Finance subsidiary receivables</td>
<td>63</td>
<td>192</td>
</tr>
<tr>
<td>Long-term receivables and other assets</td>
<td>425</td>
<td>295</td>
</tr>
<tr>
<td><strong>Property, Plant and Equipment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land</td>
<td>135</td>
<td>115</td>
</tr>
<tr>
<td>Buildings and improvements</td>
<td>1,018</td>
<td>801</td>
</tr>
<tr>
<td>Machinery and equipment</td>
<td>3,007</td>
<td>2,714</td>
</tr>
<tr>
<td><strong>Less allowances for depreciation</strong></td>
<td>1,145</td>
<td>1,037</td>
</tr>
<tr>
<td><strong>Total assets</strong></td>
<td>7,369</td>
<td>6,790</td>
</tr>
</tbody>
</table>
### Consolidated Balance Sheet - at December 31 (continued)

<table>
<thead>
<tr>
<th>In Millions</th>
<th>19x1</th>
<th>19x0</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Liabilities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Current:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accounts payable and accrued expenses</td>
<td>1,502</td>
<td>1,276</td>
</tr>
<tr>
<td>Loans and notes payable</td>
<td>1,312</td>
<td>564</td>
</tr>
<tr>
<td>Finance subsidiary notes payable</td>
<td>70</td>
<td>231</td>
</tr>
<tr>
<td>Current maturities of long-term debt</td>
<td>10</td>
<td>73</td>
</tr>
<tr>
<td>Accrued taxes</td>
<td>642</td>
<td>692</td>
</tr>
<tr>
<td><strong>Total current liabilities</strong></td>
<td>3,536</td>
<td>2,836</td>
</tr>
<tr>
<td><strong>Non Current Liabilities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Long-term debt</td>
<td>747</td>
<td>656</td>
</tr>
<tr>
<td>Other liabilities</td>
<td>439</td>
<td>329</td>
</tr>
<tr>
<td>Deferred income taxes</td>
<td>54</td>
<td>144</td>
</tr>
<tr>
<td><strong>Total liabilities</strong></td>
<td>4,776</td>
<td>3,965</td>
</tr>
<tr>
<td><strong>Commitments and contingencies</strong> [various not presented]</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Stockholders' Equity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Common stock</td>
<td>283</td>
<td>281</td>
</tr>
<tr>
<td>Capital surplus</td>
<td>581</td>
<td>577</td>
</tr>
<tr>
<td>Retained earnings</td>
<td>1,976</td>
<td>1,967</td>
</tr>
<tr>
<td>Foreign currency translation</td>
<td>(247)</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total stockholders' equity</strong></td>
<td>2,593</td>
<td>2,825</td>
</tr>
<tr>
<td><strong>Total liabilities and stockholders' equity</strong></td>
<td>7,369</td>
<td>6,790</td>
</tr>
</tbody>
</table>

The accompanying notes are an integral part of these financial statements.
Notes to Financial Statements

1. Accounting Policies
The following is a description of significant accounting policies and practices. [Only extracts are presented.]

Foreign Currency Translation

[Extract only.]

We have deferred realized and unrealized gains and losses on marking to market foreign exchange forward contracts and options that are designated and effective as hedges of assets, liabilities, and transactions. These are recognized in income in the same period as the items being hedged.

Interest Rate Management Instruments
We have treated settlement payments arising under the terms of the interest rate swaps, representing the periodic differential between floating and fixed interest rates on the notional principals as adjustments to interest payable on the accruals basis. Realized and unrealized gains and losses on future rate agreements are deferred until the commencement of the borrowing to which they relate and then are treated as adjustments to interest payable on the accruals basis.

Unrealized gains and losses on marking interest rate swaps to market are not recognized in income where the notional principal of the swap position matches the principal of the related debt.

2. Off-Balance-Sheet Risk
Pro Forma End-User makes use of foreign exchange contracts to manage its exposure to currency fluctuations and interest rate swaps and future rate agreements to manage its exposure to changes in interest rates.

Pro Forma End-User uses foreign exchange forward contracts and foreign exchange options to hedge foreign currency transactions and, in some cases, probable anticipated transactions (principally export sales).

Pro Forma End-User uses interest rate swaps and future rate agreements to manage its exposure to changes in interest rates on elements of both its short-term and long-term debt by converting floating-rate debt into synthetic fixed-rate debt. Unrealized gains and losses on marking interest rate swaps to market are not recognized in income where the notional principal of the swap position matches the principal of the related debt. This is usually the case but the early repayment of the Group’s Deutschemark borrowings during the year left a Deutschemark interest rate swap uncovered. Accordingly, a loss of 12 arising on marking the swap to market at December 31 19x1 has been charged to income for the year. The swap has been terminated since the year end for a slightly lower amount.
A summary of the aggregate notional amounts of derivatives at December 31 is presented in the following table.

<table>
<thead>
<tr>
<th></th>
<th>19x1</th>
<th>19x0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreign exchange forward contracts</td>
<td>984</td>
<td>654</td>
</tr>
<tr>
<td>Interest rate swaps</td>
<td>250</td>
<td>290</td>
</tr>
<tr>
<td>Forward rate agreements</td>
<td>25</td>
<td>30</td>
</tr>
<tr>
<td>Foreign exchange options purchased</td>
<td>18.5</td>
<td>19.2</td>
</tr>
</tbody>
</table>

3. Additional Information About Financial Instruments

Interest Rate Sensitivity

For those financial instruments on which interest is receivable or payable, the interest rate sensitivity is as follows:

- Cash and cash equivalents includes an amount of 15 (19x0: 25) which is deposited with a bank at interest rates variable day by day.
- Marketable securities consist of investments in Treasury bills and commercial paper bearing a fixed rate of discount and with an average maturity of 45 days (19x0: 56 days).
- Finance subsidiary receivables bear interest at fixed rates. Receivables classified as current assets are due within one year. The other receivables have an average remaining life of two years (19x0: three years).
- Loans and notes payable consist primarily of commercial paper issued in Europe and the United States. This bears a fixed rate of discount with an average maturity of 160 days (19x0: 120 days).

Long-term debt consists of the following (in millions):

<table>
<thead>
<tr>
<th></th>
<th>19x1</th>
<th>19x0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floating-rate French franc notes due 1996</td>
<td>167</td>
<td>159</td>
</tr>
<tr>
<td>5-3/4% Japanese yen notes due 1998</td>
<td>161</td>
<td>173</td>
</tr>
<tr>
<td>Floating-rate UK sterling notes due 1999</td>
<td>249</td>
<td>239</td>
</tr>
<tr>
<td>Floating-rate Deutschemark notes due 1999</td>
<td>–</td>
<td>153</td>
</tr>
<tr>
<td>6-1/2% US dollar notes due 2004</td>
<td>160</td>
<td>–</td>
</tr>
<tr>
<td>Other</td>
<td>20</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>757</td>
<td>729</td>
</tr>
</tbody>
</table>

Of the total floating-rate debt of 416 (19x0: 551), interest rate swaps have effectively fixed the rates on 250 (19x0: 290) at rates averaging 8-1/2% (19x0: 7-1/2%).
Credit Risk

Financial instruments that subject to Pro Forma End-User to credit risk and the amounts at risk at December 31 19x1 and at December 31 19x0 (in millions) are as follows:

<table>
<thead>
<tr>
<th></th>
<th>19x1</th>
<th>19x0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash and marketable securities</td>
<td>108</td>
<td>175</td>
</tr>
<tr>
<td>Current asset trade receivables</td>
<td>1,151*</td>
<td>1,135*</td>
</tr>
<tr>
<td>Long-term receivables</td>
<td>488</td>
<td>487</td>
</tr>
</tbody>
</table>

* includes amounts due from counterparties in relation to off balance sheet instruments.

Estimated Fair Value of Financial Instruments

For those categories of financial instruments, both on and off balance sheet, where there are differences between the fair value at December 31 19x1 and the carrying value, the amounts were as follows:

<table>
<thead>
<tr>
<th>In Millions: December 31 19x1</th>
<th>Carrying value</th>
<th>Fair value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current marketable securities</td>
<td>71</td>
<td>83</td>
</tr>
<tr>
<td>Finance subsidiary receivables</td>
<td>83</td>
<td>89</td>
</tr>
<tr>
<td>Long-term debt</td>
<td>(757)</td>
<td>(759)</td>
</tr>
<tr>
<td>Interest rate swaps and future rate agreements (net)</td>
<td>6</td>
<td>(52)</td>
</tr>
</tbody>
</table>
Section 6
Working Paper of the Systemic Issues Subcommittee
Working Paper of the Systemic Issues Subcommittee

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III. Conclusion ........................................................................ 139
The rapid growth of global over-the-counter (OTC) derivatives transactions—those privately negotiated contracts provided by dealers to end-users—and their role in reinforcing market linkages have led some observers to question whether this activity might increase systemic risks in the financial markets or complicate the efforts of supervisors to deal with systemic disturbances.

Supervisory authorities have studied these systemic issues in some detail and, although they acknowledge the constructive role derivatives can play, their studies also identify concerns. The purpose of this Working Paper is to provide a practitioners’ assessment of these issues and to suggest steps that might be taken to address them. Section I of this paper defines and identifies possible sources of systemic risk. Section II assesses each source and discusses measures to reduce the risks posed.

I. Systemic Issues

Systemic Risk and Systemic Crisis Defined
The Promisel Report offers the following definitions of “systemic risk” and “systemic crisis”:

Systemic Risk: “The risk that a disruption (at a firm, in a market segment, to a settlement system, etc.) causes widespread difficulties at other firms, in other market segments or in the financial system as a whole.”

Systemic Crisis: “A disturbance that severely impairs the working of the financial system and, at the extreme, causes a complete breakdown in it. Systemic risks are those risks that have the potential to cause such a crisis. Systemic crises can originate in a variety of ways, but ultimately they will impair at least one of three key functions of the financial system: credit allocation, payments, and pricing of financial assets. A given financial disturbance may grow into a systemic crisis at one point in time but not another, depending on the financial and economic circumstances prevailing when the shock occurs.”

Since systemic risk arises in the course of ordinary market activities, it can never be completely eliminated. The merits of measures proposed to contain or reduce systemic risk must be weighed against the foregone benefits of the activities that would be curtailed or eliminated.

Possible Sources of Systemic Risk
Most commentators, rather than asserting categorically that derivatives increase systemic risk, raise questions about the potential impact of these activities. One example comes from Richard Farrant of the Bank of England: “I do not for one

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moment suggest that you have got it all wrong. What I do ask, with boring repetitiveness, is: are you quite sure that you have got it all right?  

Likewise, the Promisel Report observes that derivatives activity between banks has led to a substantial increase in the volume and complexity of exposures, thereby creating new challenges in risk management. That Report also raises questions about: the concentration of activity among a few dealers; the reduced transparency of firms’ balance sheets; the risk that market liquidity may not always be sufficient to allow complex positions to be managed; and increases in settlement risk due to increased trading volumes. The Promisel Report joins other commentators in questioning whether systemic risk might also arise from: the credit risk of derivatives, unregulated entities, links among capital market segments that are strengthened by derivatives, or legal risks.

This Working Paper discusses these issues one by one. But first it may be useful to present them in terms similar to those used by those who have expressed concerns.

Size and Complexity
The rapid growth of derivatives and their complexity may be outpacing participants’ ability to evaluate and manage the associated risks.

Concentration
Global derivatives transactions may be increasingly concentrated among a relatively small number of institutions. Failure of one of these institutions could trigger credit losses and affect market liquidity.

Lack of Transparency
Risk management transactions may reduce the transparency of financial activities. As a result, it may be more difficult to control risks internally, to assess credit risk of counterparties, or to understand the overall composition of derivatives activity.

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3 “A worst-case scenario would be a very large firm with a lot of swaps unable to perform vis-à-vis a whole variety of counterparties . . . it would be a chain reaction coming out from the hub of a wheel.” Mary Schapiro, Commissioner, Securities and Exchange Commission (SEC), “Swaps: The Next Debacle For Banking?” American Banker, August 4, 1992.


6 “The legal risk continues to be a source of concern . . . Most of all, we need the assurance that these contracts are enforceable in good times and bad in all appropriate jurisdictions.” David W. Mullins Jr, Vice Chairman, Federal Reserve Board of Governors, Derivatives Strategy & Tactics, August 10, 1992.
Illiquidity
In times of stress, sharp price movements or volatility shocks may reduce liquidity in certain derivatives activities, as well as in the instruments used for hedging. Liquidity may be of special importance for options, which can require frequent hedge adjustments, and in those cases where derivatives portfolios must be liquidated for contractual or other reasons.

Settlement Risk
Settlement risk results from the possibility that on the day when two parties are due to exchange payments, one delivers and the other does not. The magnitude of this risk may have increased because of the volume of derivatives activities.

Credit Risk
As the derivatives business has grown, the credit risk taken on by dealers has increased. In addition, activity may have extended to marginal end-users of lower credit quality. Defaults by these firms could have systemic implications.

Unregulated Entities
The failure of a large, unregulated dealer, particularly in view of the regulators' possible inability to respond directly, could cause disruption for other derivatives participants.

Market Linkages
Since derivatives link markets, they can transmit the impact of shocks through the financial system further and faster than otherwise would be the case. For instance, dynamic hedging of option positions through trading of the underlying instruments might increase market volatility.

Legal Risks
As new activities, derivatives do not fit neatly into old legal categories, and may fall victim to ambiguities in the legal and regulatory framework. This legal uncertainty could lead to widespread disruption.

II. Analysis of the Issues
Participants in derivatives activity consider all these issues and their relative importance in the management and use of derivatives. This is evidenced by the responses to the Survey of Industry Practice.

Size and Complexity
Size
Global derivatives activity has grown considerably in the past decade. Its size can be measured in terms of notional principal amount either outstanding at the end of a period or transacted during a period. While it constitutes an important activity, by these measures its scale is unimposing compared to that of traditional financial activities.

International Swaps and Derivatives Association (ISDA) dealers reported writing 74,340 swaps in 1991, for just under $2 trillion in notional amount. In contrast, in 1992, more than 600 million futures and options contracts were traded on organized
exchanges, representing a notional amount exceeding $140 trillion. Global net turnover in the foreign exchange markets, in April 1992 was estimated to have totalled $880 billion per day, or roughly $220 trillion at an annual rate.

A comparison of amounts outstanding supports the same conclusion: at year-end 1991, ISDA dealers reported interest rate and currency swaps plus caps, floors, collars, and swaptions outstanding of $4.5 trillion, compared with $14.4 trillion for bonds outstanding and $10.1 trillion for equities.

Concern over the size of derivatives activity has been driven by the use of notional amounts as a proxy for the magnitude of risks associated with derivatives. In fact, the actual amounts at risk in derivatives, in terms of credit, market, and settlement risks, are a small fraction of the notional amounts, and are modest by comparison to the more traditional areas of loans, bonds, and foreign exchange. As of December 1992 the gross replacement cost, or market value, for all OTC derivatives positions (including foreign exchange forwards of two or more weeks in maturity) at the lead banks of the 50 largest U.S. bank holding companies was $144 billion—only 2.3% of the total notional principal outstanding, or less than 11% of bank assets.

Complexity
Many derivatives are complex but the associated risks are not especially complicated: these risks are no more complex than many of the risks in the real economy. The holder of a portfolio of mortgage loans, a company submitting a committed bid for a construction contract payable in a foreign currency, a U.S. investor holding Japanese equities, and an investor in callable gilts all face inherently complex exposures. Derivatives have to be as complex as the risks they are created to manage.

In any event, complexity would merit concern only if these activities outstripped participants’ ability to evaluate and manage the associated risks. But in fact most dealers have gone to great lengths to establish sophisticated techniques to manage


9 Source: J.P. Morgan.

10 "While the types of risk that swaps present may not be unique, and therefore should not compel unique forms of regulations, one must also look at the aggregate size of risks in this market. Here, the widespread use of 'notional amounts' is the worst thing market participants have done, because the specter of 'trillions of dollars in 'notional amount' has scared many people, including a few members of legislative bodies. In reality, however, while the $1 trillion in contracts that U.S. broker-dealers are booking annually seems large, the amounts actually at risk in these markets do not appear to be unusually large compared to the size of exposures that banks, broker-dealers and insurance companies maintain for their traditional businesses. Actual risk is represented by the replacement cost or the mark-to-market value of the contract, which is typically only 2% to 3% of the notional amount." Richard Breeden, Chairman, Securities and Exchange Commission, Speech to ISDA Annual Meeting, Hong Kong, March 11, 1993.

their exposures with considerable precision. These techniques are themselves complex, but that is an appropriate response to the complexity of the problem being solved. Derivatives dealers in the past 10 years have been among the most intensive investors in financial research and development as well as users of financial engineering skills developed through pure theoretical research at universities. In the process, they have addressed the challenges of derivatives through the development of sophisticated risk management systems and specialized management and operating practices.

Dealers have been driven to greater precision by two factors in particular. First, credit risk of derivatives was scrutinized because it was likely to fluctuate in size. (The techniques that have been developed to measure and manage this risk are described in the Working Paper on Credit Risk Measurement and Management.) Second, by developing increasingly precise hedges of the components of market risk, dealers were able to better accommodate customer needs by moving beyond matched swap transactions to individually tailored derivatives. The ability to disaggregate derivatives into simple building blocks—fowards and options—permits dealers to manage individual components of risk in large portfolios and provides economies of scale. (The techniques that have been developed to measure and manage market risk are described in the Working Paper on Valuation and Market Risk Management.)

By employing this technology, dealers and end-users have enhanced their ability to manage derivatives risk. The Survey suggests that dealers are mindful of that risk, and believe they have come to grips with "complexity." Only 13% of respondents consider it a matter of serious concern. Senior managers are confident about the general ability of their derivatives professionals, systems, and policies to cope with complexity. Nonetheless, dealers acknowledge a continuous need for increasing the understanding of derivatives by senior management, and heavy investment in risk management systems is continuing.

As derivatives participants have developed a more sophisticated understanding of credit risk, market risk, legal risk, and of the relationships among them, this knowledge has flowed out of derivatives groups and into the management practices governing traditional activities. As a result, derivatives activities have fostered better understanding and management of risks throughout participant firms, thereby contributing to the soundness of the financial system.

Concentration
While concentration of derivatives activities has been mentioned as a concern, it is not perhaps as serious an issue as it might first appear.

Looking only at data for banks in one country creates an impression of concentration. For example, the top eight banks in the United States accounted for 86% of the OTC interest rate derivatives outstanding and 88% of OTC currency derivatives outstanding among 50 of the largest U.S. banks at year-end 1991. Taking account of competition from other countries and sectors, however, gives a

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12 Source: "Consolidated Reports of Conditions and Income," 1991. Concentration ratios are based on the notional principal amounts of OTC derivatives outstanding at the eight largest participants as a percentage of outstandings held by the lead banks of the 50 largest U.S. bank holding companies.
more accurate picture. The top eight firms accounted for only 56% of worldwide interest rate and currency swap activity at year-end 1991, according to one recent survey. No firm in that survey had over a 10% share of the activity. The share of the eighth largest was 4.4%. While small segments of OTC derivatives activity are likely to be more concentrated, the very fact that they are small suggests that problems in those segments are unlikely to create a systemic threat.

Concentration of credit risk does not appear to be sufficient to create systemic risk. Among dealers responding to the Survey, only 5% think it is of serious concern. More than 60% indicate that their top 10 counterparties accounted for less than 30% of their credit exposure. In turn, that derivatives exposure is only a part of the total credit exposure of any firm.

One other point may help put this concern about concentration into perspective. Although it says nothing about the share of the largest firms in OTC derivatives activities, it is striking that the number of derivatives dealers worldwide—as evidenced by the size of ISDA membership—has grown to 150 today. This is three times the number of primary dealers in U.S. government bonds and over seven times the number of dealers in U.K. gilts.

Lack of Transparency

Internal Management
Dealers note that internally the risks of derivatives are becoming increasingly transparent thanks to the growing and nearly universal reliance on mark-to-market measures for risk management. According to the Survey, 85% of dealers follow this practice. Doing so instills greater risk management discipline; problems are identified more quickly and management is driven to take steps to address them before they grow.

Financial Reporting
Senior management at 16% of all dealers—but at 25% of large dealers—did express serious concern over the level of public disclosure of counterparty exposures, while an additional 41% expressed some concern.

One improvement in financial reporting for derivatives will take place starting in 1994 when Financial Accounting Standards Board Interpretation No. 39 takes effect in the United States. Dealers worked closely with the FASB to develop this reporting requirement, which will put the current credit exposure of each swap dealer on the balance sheet, where it will appear along with other risks, including those of bank loans. These derivatives transactions will be carried on the books based on the net market value of all transactions written under a single master agreement. Because it relies on net market value, this new reporting requirement for swaps is a more precise measure of credit risk than that applied to some other activities.

More is needed to improve the transparency of financial reporting. The Recommendations of this Study call on dealers and end-users to voluntarily adopt

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accounting and disclosure practices for international harmonization and greater transparency, pending the arrival of international standards.

**Industry Data**

As derivatives activity has grown, so has the demand for additional information. Private industry organizations have contributed substantially, and continue to do so, to the base of information and consolidated data on derivatives. Efforts by ISDA should continue to be encouraged and supported by participants. Complementary efforts such as those by national banking organizations which provide additional data on local segments of derivatives activity should also be supported.

The quality of statistics on global derivatives has become the subject of concern among regulators. Issues are: the completeness of coverage (by jurisdiction, activity, type of institution, and maturity); the consistency of data; different national and international sources; double counting; and even the meaningfulness of the data. This Study does not try to assess whether data currently available is adequate: that would depend on weighing the costs of strengthened data collection against the uses to which that improved data might be put. However, the Study has attempted to improve the data in two ways. First, by advocating more complete and consistent accounting and disclosure, the Study helps ensure that future statistics based on accounting sources will be a good deal more meaningful. Second, Group of Thirty support helped ISDA extend coverage of its statistics to equity, commodity, and multi-asset derivatives. The results are summarized in the Overview of Derivatives Activity.

**Illiquidity**

By facilitating the identification, separation, and independent management of components of market risk, derivatives dealers are able to move beyond product liquidity to risk liquidity. The interest rate risk of a highly customized U.S. dollar interest rate swap structure can be hedged with other swaps, forward rate agreements (FRAs), Eurodollar futures contracts, Treasury notes, or even bank loans and deposits. The swap may appear to be illiquid, but if its component risks are not, then other dealers will be willing to provide liquidity to an instrument they can hedge.

The liquidity of derivatives transactions has been tested in several situations of failure by important participants. When insolvent financial institutions have been wound up in the last few years, including DFC New Zealand, Bank of New England, British & Commonwealth Bank, and Drexel Burnham, the derivatives activities were either transferred or closed out reasonably quickly.\(^{14}\)

The magnitude of illiquidity risk varies greatly depending upon the extent to which market participants have similar positions to manage, and the extent to which they use dynamic hedging. Most end-users use derivatives for hedging purposes and are provided with customized transactions that do not require ongoing hedge adjustments on their part. As for dealers, most derivatives portfolios require only limited amounts of hedging relative to their overall size because, to a large extent,\(^{14}\)

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positions are well matched. Exposure to this risk is greatest for dealers whose portfolios have large short convexity and volatility positions. Derivatives dealers attempt to hedge directly the convexity and volatility risks of options written with purchased options—hedging options with options, while dynamically hedging only the smaller residual risk arising from any remaining mismatches in the options portfolio. It is these dealers who need, and typically have, the most sophisticated risk management systems.

Experiences such as the October 1987 stock market crash and the September 1992 EMS crisis have strengthened a healthy respect among dealers for the illiquidity risks involved in managing derivatives portfolios. In the Survey, 23% of all dealers—but 35% of large dealers—indicate serious concern over illiquidity and an additional 63% indicated some concern. Indeed, among reasons unrelated to counterparty risk, dealers most frequently cite illiquidity of a specific instrument, and market discontinuity, as the source of significant variance from their expected profit or loss on a derivatives transaction. The Survey showed that, to cope with this, the great majority of respondent dealers take illiquidity into account in their risk limits or on a case by case basis. About 60% now also conduct stress tests during which they will consider scenarios with these problems. Another 20% or so of respondent dealers plan to begin stress testing in the near future.

The recommendations of this Study regarding market risk management provide a solid foundation for prudent management of illiquidity risk. These practices include performing realistic stress scenario simulations, adjusting the value of positions to reflect either their own lack of liquidity or the illiquidity of relevant hedging instruments, and using limits to control the overall level of illiquid or potentially illiquid positions.

**Settlement Risk**

The largest source of settlement risk in payment systems is the settlement exposure created by foreign exchange transactions, called “Herstatt” risk after the 1974 failure of the Bankhaus Herstatt. While OTC derivatives would benefit from a reduction of Herstatt risk, it must be noted that the amounts involved are very small relative to the amounts involved in traditional foreign exchange activities. ISDA has estimated that daily global cash flows from interest rate swaps and currency swaps average $2.5 billion. In contrast, the BIS estimates daily global net turnover in the foreign exchange markets at $880 billion. The payments netting provisions that are standard in derivatives contracts are an important way in which participants reduce the settlement risk of payments made in the same currency.

**Credit Risk**

In 1992, ISDA commissioned an independent survey of swap credit losses. Dealers responding to the survey held 113,000 transactions aggregating $3.1 trillion in notional amount with an average life of 3.3 years. The survey asked for all defaults and losses over the entire history of a dealer’s involvement in swaps. Respondents reported 513 defaulted transactions over a 10-year period with a notional amount of $12.8 billion. The notional amount of transactions giving rise to a claim totalled $9.8 billion and the actual losses incurred were $358 million.
The following table shows the sources of the losses. The United Kingdom local authorities problem was the most significant event and is a useful reminder of the importance of legal risk.

### Net Loss by Counterparty Type

<table>
<thead>
<tr>
<th>Counterparty Type</th>
<th>Amount (in millions)</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK Local Authorities</td>
<td>$177.7</td>
<td>49.6%</td>
</tr>
<tr>
<td>Corporate</td>
<td>94.5</td>
<td>26.4%</td>
</tr>
<tr>
<td>Other Non-Dealer Financial Institutions</td>
<td>60.1</td>
<td>16.8%</td>
</tr>
<tr>
<td>Savings &amp; Loans</td>
<td>20.3</td>
<td>5.6%</td>
</tr>
<tr>
<td>Other Governmental Entities</td>
<td>3.0</td>
<td>0.8%</td>
</tr>
<tr>
<td>Non-ISDA Dealers</td>
<td>2.0</td>
<td>0.6%</td>
</tr>
<tr>
<td>ISDA Dealers</td>
<td>0.6</td>
<td>0.2%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$358.2</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

The rate of credit losses on derivatives compared with loss rates for traditional banking products indicates that by entering into derivatives transactions, bank dealers have increased the average credit quality and diversity of risk to which they are exposed.

The recommendations of this Study are designed to further reduce the level of credit risk by encouraging participants to make extensive use of bilateral, multi-product master agreements with payments and close-out netting provisions; such agreements reduce counterparty credit exposures significantly. Banking regulators have estimated that netting on a bilateral basis results in an average reduction in counterparty exposure of between 40% and 60%.

Further, albeit smaller, reductions in counterparty exposure could be achieved through multilateral netting arrangements. Since some participants are more likely to find it more economic and efficient to conduct transactions on a bilateral basis, multilateral netting arrangements are unlikely to supplant completely bilateral arrangements. Instead, they represent one more risk reduction technique, among many, from which participants could choose. As the Lamfalussy Report discusses, however, multilateral netting arrangements may give rise to systemic concerns which need to be better understood.

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16 “Even when legally effective in reducing net exposures, multilateral netting systems also have the potential to increase systemic risks because they concentrate risks on the central counterparty.” Lamfalussy Report.
The netted risk of bilateral and multilateral arrangements can be further reduced through risk reduction techniques including collateral or margin arrangements. The Study recommendations encourage derivatives participants to make appropriate use of such techniques.

**Unregulated Entities**

Most major derivatives dealers currently are either regulated or supervised. As already discussed, major dealers include the world’s largest commercial banks. These generally are well capitalized and sophisticated managers of credit and market risk. Their derivatives activities typically are both supervised and regulated by applicable banking authorities.

Major dealers also include securities firms, which are regulated, well capitalized, and sophisticated about derivatives risks. To the extent derivatives activity takes place in an affiliate of a U.S. broker-dealer, the SEC has adopted risk assessment recordkeeping and reporting rules. These require the broker-dealer to report off-balance-sheet information of its affiliates in order to assess the potential effects on the registered broker-dealer. These rules apply to the AAA derivatives vehicles that have been set up as affiliates of U.S. broker-dealers.

Some other entities, such as affiliates of insurance companies and certain non-financial firms, may not be directly regulated or supervised.

Any change in the regulatory structure of derivatives activity would have to be justified by an analysis of the resulting costs and benefits. Foreign exchange dealing and trading has existed far longer on a similar basis and without significant supervisory concerns. Unregulated dealers have promoted competition and innovation without any evidence to date of increased risk to regulated dealers or increased systemic risk. An example of such innovation is the creation of AAA-rated derivatives vehicles in response to tough credit standards applied to dealers. Some regulated dealers have subsequently considered such arrangements.

Regulated dealers have strong incentives to avoid excessive levels of credit risk with any one unregulated dealer, just as they do with any one unregulated non-dealer institution. End-users make similar assessments. Furthermore, the fact that regulators may be limited in their ability to intervene where the transactions involve an unregulated dealer should have no greater systemic implications than if the transactions involved a large unregulated end-user.

To the extent that participants are relying on regulatory oversight for protection, they can effectively assess the regulatory status of their counterparties. Knowing which dealers are regulated and which are not, derivatives participants are free to choose the conditions under which they will deal with each type of firm. Since

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17 "Before introducing any additional regulations, we need to identify clearly the public policy objectives that the regulations are intended to achieve. We should also consider whether official encouragement of private sector initiatives is a more effective means of meeting those objectives. And we should be mindful of the potential adverse effects of regulation on competition, efficiency, and innovation in the OTC derivative markets." Susan M. Phillips, Member, Board of Governors of the Federal Reserve System, "Challenges Posed by OTC Derivatives," Text of Speech to Annual Meeting of the National Futures and Options Society, New York, NY, December 3, 1992.
participants have the ability to identify other unregulated participants and evaluate
the risks and benefits of trading with them, participation by unregulated dealers
should not be impeded.

Market Linkages
Most observers concur that, irrespective of derivatives, the world markets for trade
and finance have become increasingly integrated and accessible. It can be said that
derivatives have resulted from, or at least followed, this evolution in international
markets. Derivatives have helped the process by intermediating markets efficiently
and providing effective risk management tools and techniques that enhance the
operation of global businesses.

In follow-up interviews to the Survey of Industry Practice, participants felt
positively about the linkage provided by derivatives. Those interviewed stated that,
in the context of two crises, the October 1987 stock market crash and the September
1992 EMS currency crisis, during which price discontinuities occurred, derivatives
had if anything helped overcome each crisis. This view is supported by the Joint
Study (see footnote 1) which offers the opinion that, during the 1992 European
currency crisis, “it is unlikely that the underlying markets would have performed
as well as they did in September without the existence of related derivative
markets.”

Linkages with Underlying Markets
Linkages between markets are considered by some to be a source of concern in
certain circumstances, since derivatives, by reducing the barriers between markets,
may make it possible for shocks in one part of the financial system to be
transmitted faster and farther than was possible before. The close links between
derivatives and underlying markets might result in an increase in market volatility,
possibly because of dynamic hedging of option positions.

The academic research on the effects of derivatives on market volatility is
increasingly consistent in its findings, and particularly voluminous after the 1987

18 The literature has been surveyed by Cliff Smith and Charles Smithson in “Derivatives and Volatility,”
Intermarket, July 1989; Sharon Brown, James Jordan, and Robert Mackay in “Selected Abstracts of
Research on Derivatives and Market Volatility,” Center for Study of Futures and Options Markets, Virginia
Tech, 1990; John Broad, Charles Goodhart, and Charles Sutcliffe in Inter-Market Volatility Linkages: The
London Stock Exchange and London International Financial Futures Exchange, London School of
Economics, June 1992; and, most recently, by Aswath Damodaran and Marti Subrahmanyam in “The
Effects of Derivatives Securities on the Markets for the Underlying Assets in the United States: A Survey,”

19 In June 1992, for example, a report commissioned by the Securities and Investments Board and
published in London concluded, based upon the study of the U.K. market, that “the introduction of futures
trading has not led to an increase in spot market volatility.” Broad, Goodhart, and Sutcliffe, op. cit.,
page 6.
Linkages with Exchange-Traded Derivatives

Concern has been expressed that activity in privately negotiated derivatives may divert order flow from the centralized exchange markets for futures, reducing information flow and impairing price discovery. In the extreme, the final result could be market fragmentation, a loss of liquidity and more volatile futures prices.

In fact, the growth of these derivatives may well have had the opposite effect—acting as a complement to the development of the exchange markets. Most of the growth in global derivatives is in response to new demands by end-users for customized transactions that are not met by the exchanges. Derivatives growth adds indirectly but significantly to exchange-traded volumes, as derivatives dealers rely in part on exchange-traded futures and options to hedge their net market risks.

Evidence of this is that, on U.S. exchanges at year-end 1991, banks held over 50% of the open positions in short-term interest rate futures, over 45% of the open positions in calls on short-term interest rate futures, and over 42% of the open positions in puts. Much of this activity in interest rate futures and options is driven by the need to hedge global derivatives portfolios. For example, the Chicago Mercantile Exchange’s Eurodollar futures and options contracts—two of the exchange-traded contracts most closely associated with global derivatives activity—have also been the most successful contracts. The volume of Eurodollar futures grew by over 300% between 1987 and 1991, a period of rapid growth for global derivatives. The Eurodollar contract also has the largest far-dated volume of any futures contract because of its use in the hedging of longer-dated swaps. Derivatives dealers are estimated to hold over 50% of the total open interest in Eurodollar contracts.20

The effect of this activity is to augment, rather than impair, price discovery by bringing more participants into the price formation process. With participants actively competing with one another, arbitrage effectively unifies dispersed price information. In this regard, global derivatives activity and the exchange markets are complementary.

Legal Risks

Much has been done to reduce legal risks in derivatives activities; however, they remain significant and have the potential to create systemic problems. More action is required to contain them.

The nature of these risks was realized most dramatically in the large losses sustained by dealers as a result of the ultra vires ruling of the House of Lords on derivatives contracts entered into by U.K. local authorities. The decision of the U.S. District Court for the Southern District of New York in Transnor v. BP America Petroleum, No. 86 Civ. 1493 (S.D.N.Y. April 18, 1990)(described in footnote 16 of the

20 Swap activity also drives a significant portion of the activity in energy futures and options. For example, in March 1992, commodity swap dealers reportedly held as hedges positions accounting for 17.5% of crude oil and 5.5% of clear products open interest on the New York Mercantile Exchange, up over 60% from the figures for September 1991. The increase in activity by commodity swap dealers as a percentage of open interest coincided with a 23% increase in open interest during this period. See “The Growth of NYMEX and Over-the-Counter Markets: Interrelationships, Implications and Strategic Recommendations,” New York Mercantile Exchange, March 1992.
Overview of Derivatives Activity) also created legal uncertainty that greatly reduced the liquidity in the market for North Sea oil forward contracts. As a result, dealer concerns over the enforceability of swap transactions have been heightened. Today, 13% of all dealers express serious concern and another 41% express some concern over the legality of transactions with certain counterparties.

To prevent recurrence of such events, the Study recommends that legislators, regulators, and participants work actively together to identify and remove legal and regulatory uncertainties where they now exist, and as markets evolve and new types of transactions are developed. This is consistent with recommendations in the Promise Report.

The most serious enforceability issue is with bilateral close-out netting arrangements in bankruptcy. Significant steps have been taken in this regard to reduce uncertainty, particularly in the United States. Senior management of 43% of all dealers—55% of large dealers—expressed serious concern over the enforceability of netting provisions in some jurisdictions, with another 45% expressing some concern. One of the consequences noted by 70% of all dealers was difficulty in achieving a high degree of cross-product exposure netting. Another consequence is that only 5% of all dealers calculate the utilization of credit limits on a net basis only. Fifty-nine percent calculate it on a gross basis only, and 34% both ways. In the future, however, heavier reliance on netting is expected.

Dealers surveyed believe that netting was accorded inappropriate treatment by regulators in setting capital adequacy standards, with 78% of them viewing this with either some or serious concern. A Study recommendation urges regulators and supervisors to recognize netting where and to the full extent it is enforceable and to reflect these arrangements in their capital standards, thereby creating tangible incentives for their use.

III. Conclusion

Identifying possible sources of systemic risk and assessing the risks posed from the practitioners’ vantage point leads to these conclusions:

- There are some areas that are unlikely to cause systemic risk, including size of the activity, settlement volumes, and unregulated participants.
- There are other areas where the systemic implications of derivatives are more difficult to assess. However, the management implications of these issues are understood by participants. The risks associated with complexity, concentration, liquidity, and linkages between markets are manageable and being managed.
- Finally, some tangible systemic concerns are being addressed with tangible solutions. These concerns stem from the newness of the activity, and as it matures further, they should diminish. In the areas of transparency, credit, and legal risk, much progress has been made. The Study identifies further ways to strengthen the system, and these are the subject of recommendations.

The analysis also suggests that by making it possible to value and transfer more types of risk more freely than in the past, derivatives activity gives supervisors new
tools for dealing with systemic disturbances, including assessing and winding up troubled firms.

To reduce systemic risk further, this Study proposes the following:

- Participants should continue to strengthen their risk awareness and risk management.
- Participants, legislators, regulators, and supervisors should work together to reinforce the legal and institutional framework of this activity, notably by enhancing netting schemes and resolving legal uncertainties, and by improving accounting and disclosure standards.
- Participants, regulators, and supervisors should continue to cooperate towards developing a better understanding of risks and measures to mitigate them.

These are also the conclusions of the Promisel Report. This Working Paper endorses those conclusions as an appropriate and sufficient response to systemic concerns raised by derivatives activity.

In its conclusion, the Promisel Report also states that the development of new financial instruments, notably derivatives, has given the financial and non-financial sectors “... better opportunities to manage risks and enhance returns ... without concentrating risks in just a few institutions. This in turn holds out the prospect that the financial sector’s susceptibility to risks could itself be lessened.”

To date, no significant events or losses associated with OTC derivatives transactions have approached a systemic crisis. Nevertheless, participants have not been complacent toward the risk management challenges posed by derivatives, and complacency would be inappropriate. This Study, by increasing awareness of financial risks and participants' means of managing them, should help reduce systemic risk.