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Financial Derivatives Actions Needed to Protect the Financial System (GAO)

United States: Government Accountability Office (GAO)

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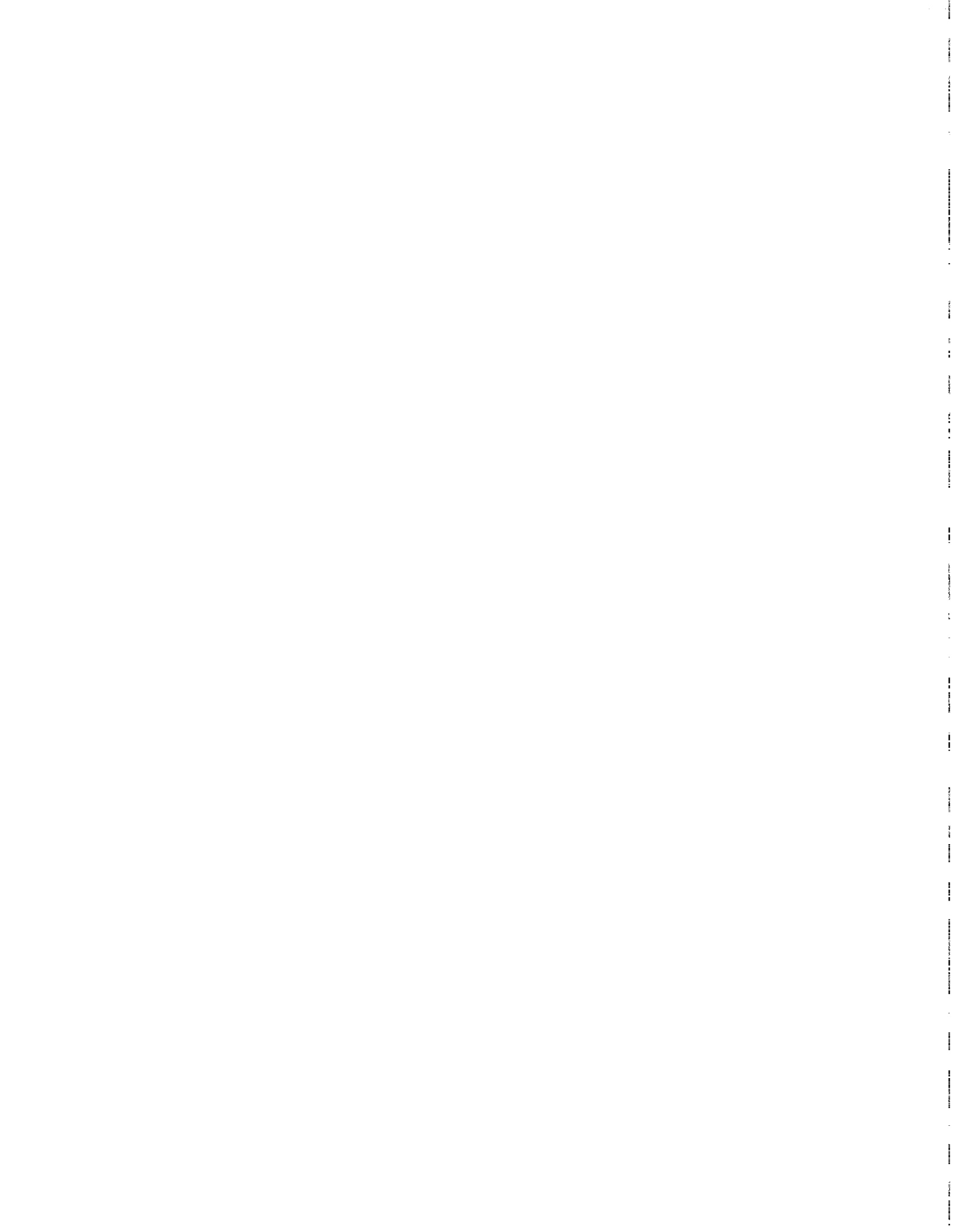
United States: Government Accountability Office (GAO); Donald W. Riegle, Jr.; Alfonse M. D'Amato; Patrick J. Leahy; Richard G. Lugar; Edward J. Markey; Jack Fields; John D. Dingell; Carlos J. Moorhead; Henry B. Gonzalez; Jim Leach; E. (Kika) de la Garza; Pat Roberts; Robert (Bob) F. Smith; and Charles A. Bowsher

May 1994

FINANCIAL DERIVATIVES

Actions Needed to Protect the Financial System







United States
General Accounting Office
Washington, D.C. 20548

**Comptroller General
of the United States**

B-257099

May 18, 1994

The Honorable Donald W. Riegle, Jr.
Chairman

The Honorable Alfonse M. D'Amato
Ranking Minority Member
Committee on Banking, Housing,
and Urban Affairs
United States Senate

The Honorable Patrick J. Leahy
Chairman

The Honorable Richard G. Lugar
Ranking Minority Member
Committee on Agriculture, Nutrition
and Forestry
United States Senate

The Honorable Edward J. Markey
Chairman

The Honorable Jack Fields
Ranking Minority Member
Subcommittee on Telecommunications
and Finance
Committee on Energy and Commerce
House of Representatives

The Honorable John D. Dingell
Chairman

The Honorable Carlos J. Moorhead
Ranking Minority Member
Committee on Energy and Commerce
House of Representatives

The Honorable Henry B. Gonzalez
Chairman

The Honorable Jim Leach
Ranking Minority Member
Committee on Banking, Finance
and Urban Affairs
House of Representatives

B-257099

The Honorable E. (Kika) de la Garza
Chairman

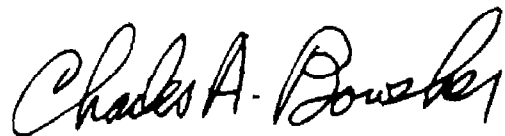
The Honorable Pat Roberts
Ranking Minority Member
Committee on Agriculture
House of Representatives

The Honorable Robert F. (Bob) Smith
House of Representatives

This report responds to requests concerning derivative products. Our objectives were to determine (1) what the extent and nature of derivatives use was, (2) what risks derivatives might pose to individual firms and to the financial system and how firms and regulators were attempting to control these risks, (3) whether gaps and inconsistencies existed in U.S. regulation of derivatives, (4) whether existing accounting rules resulted in financial reports that provided market participants and investors adequate information about firms' use of derivatives, and (5) what the implications of the international use of derivatives were for U.S. regulations.

We are sending copies of this report to other appropriate congressional committees and executive branch agencies, including the Secretary of the Treasury, the Chairman of the Securities and Exchange Commission, the Acting Chairman of the Commodity Futures Trading Commission, the Chairman of the Federal Reserve Board, the Comptroller of the Currency, the Acting Chairman of the Federal Deposit Insurance Corporation, and the Acting Director of the Office of Thrift Supervision and other interested parties. We will also make copies available to others on request.

This report was prepared under the direction of James L. Bothwell, Director, Financial Institutions and Markets Issues, who may be reached on (202) 512-8678 if you or your offices have any questions. Major contributors are listed in appendix VI.



Charles A. Bowsher
Comptroller General
of the United States

Executive Summary

Purpose

Severe financial shocks of the 1980s—the 1987 market crash; the savings and loan crisis; and the failures of major banks, securities firms, and insurance companies—cost billions of dollars. As part of an effort to better anticipate and prevent future financial crises, Congress and federal regulators have focused on the increasing use of financial products known as derivatives. Derivatives have enabled commercial corporations, governments, financial firms, and other institutions in the United States and worldwide to reduce their exposure to fluctuations in interest rates, currency exchange rates, and the prices of equities and commodities. Derivatives also have enabled users to reduce funding costs and speculate on changes in market rates and prices. The market value of a derivatives contract is derived from a reference rate, index, or the value of an underlying asset—hence the term “derivative.”¹

Congress, federal regulators, and some market participants were concerned that knowledge of how to manage and oversee risks associated with derivatives may not have kept pace with their increased use. These concerns have been heightened by recent reports of major losses from derivatives use. GAO’s principal objectives were to determine (1) what risks derivatives might pose to individual firms and to the financial system and how firms and regulators were attempting to control these risks, (2) whether gaps and inconsistencies existed in U.S. regulation of derivatives, (3) whether existing accounting rules resulted in financial reports that provided market participants and investors adequate information about firms’ use of derivatives, and (4) what the implications of the international use of derivatives were for U.S. regulation.

Background

In the past 2 decades, fundamental changes in global financial markets—particularly the increased volatility of interest rates and currency exchange rates—prompted a number of public and private institutions to develop and use derivatives. Derivatives use was accelerated by the continuing globalization of commerce and financial markets and by major advances in finance, information processing, and communications technology.

The best available data indicate that the total volume of worldwide derivatives outstanding as of year-end 1992 was at least \$12.1 trillion in terms of the notional, or principal, amount of derivatives contracts. The notional amount is one way that derivatives activity is measured. However,

¹The underlying assets, rates, and indexes that determine the value of derivatives include stocks, bonds, commodities, interest rates, foreign currency exchange rates, and indexes that reflect the collective value of underlying financial products.

it is not a meaningful measure of the actual risk involved. The actual amounts at risk for many derivative products vary both by the type of product and the type of risk—credit, market, legal, or operational. For example, derivatives credit risk is the exposure to the possibility of loss resulting from a counterparty's failure to meet its financial obligations. Gross credit risk for 14 major U.S. financial institutions that responded to a GAO survey was \$114 billion, or 1.8 percent of their \$6.5-trillion notional amount, as of year-end 1992.

Other kinds of risk can be more difficult to measure than credit risk and can also result in significantly larger exposures for firms depending on the type of product and the way it is used. Because of the numerous combinations of products and types of risks, no single measure exists that reflects the actual amount at risk from derivatives activities.

But firms that use derivatives can sustain significant losses. For example, in late 1993, the U.S. subsidiary of a large German commodities firm reportedly incurred major losses on various derivatives contracts related to oil prices. Financial assistance reportedly involving more than 120 international banks and about \$2 billion was needed to resolve the crisis. Poor operations controls were reportedly responsible for allowing the losses at this firm to grow to such levels. Reports are also beginning to appear about unanticipated derivatives losses totaling in the hundreds of millions of dollars by some U.S. firms.

The four basic types of derivative products that GAO focused on were forwards, futures, options, and swaps. These basic products can be combined to create more complex derivatives. As shown in table 1, some basic derivatives are standardized contracts traded on exchanges. Others are customized contracts that include negotiated terms, such as amounts, payment timing, and interest or currency rates. When contracts are not traded on an exchange, they are called over-the-counter (OTC) derivatives.

Executive Summary

Table 1: The Four Major Types of Derivatives

Derivatives	Market	Definition	Example
Forwards	OTC markets for customized contracts	Forwards and futures obligate the holder to buy or sell a specific amount or value of an underlying asset, reference rate, or index at a specified price on a specified future date.	A U.S. importer promises to buy machinery at a future date for a price quoted in German currency. The importer can use a forward contract—or a futures contract, if one is available that meets the firm's needs—to fix the dollar cost of converting to German currency at that future date. Thus, the importer avoids a loss if the dollar cost of German currency increases between the purchase and delivery dates.
Futures	Organized exchanges primarily for standardized contracts		
Options	OTC and exchanges	Options contracts grant their purchasers the right but not the obligation to buy or sell a specific amount of the underlying at a particular price within a specified period.	A mutual fund buys an option on a given amount of Treasury bills. The fund will benefit if the price of the Treasury bills moves in a favorable direction. If the price moves in an unfavorable direction, the fund will not recover the option's price.
Swaps	OTC	Swaps are agreements between counterparties to make periodic payments to each other for a specified period. In a simple interest rate swap, one party makes payments based on a fixed interest rate, while the counterparty makes payments based on a variable rate. The contractual payments are based on a notional amount that for interest rate swaps is never actually exchanged.	A bank has a portfolio of loans whose floating rates must be adjusted frequently because they are tied to changes in market interest rates. The bank also has deposits that pay customers at rates that are adjusted infrequently. This bank has interest rate risk, because a decline in interest rates reduces the interest receipts on its loans but not the interest payments the bank must pay depositors. The bank may enter into an interest rate swap with another financial institution to hedge its interest rate risk.

Source: GAO.

Participants in derivatives markets include end-users and dealers. Firms that use derivatives to manage (hedge) their financial risks or to speculate are called end-users. They include financial institutions, commercial firms, mutual and pension funds, and some government entities.

Dealers—usually large banks, securities firms, insurance companies, or their affiliates—can use derivatives for the same purposes as end-users, but as dealers, they also earn income by meeting the demand for derivatives. To the extent that dealers are willing to buy or sell derivatives, they provide liquidity to the OTC markets. In liquid markets, a large number

of contracts can be entered into easily, without unduly affecting market and price stability.

Thousands of institutions use derivatives, but OTC dealing activity is concentrated among a relatively few financial firms worldwide. U.S. bank regulatory data on the notional amount of derivatives contracts indicate that as of December 1992, the top seven domestic bank OTC derivatives dealers accounted for more than 90 percent of total U.S. bank derivatives activity. Similarly, securities' regulatory data indicate that the top five U.S. securities firms dealing in OTC derivatives accounted for about 87 percent of total derivatives activity for all U.S. securities firms. U.S. dealers were a major part of world activity and, according to industry sources, accounted for about half of the total volume of OTC derivatives activity worldwide.

General types of controls over risks associated with derivatives activities include management and regulatory controls. Management controls include the oversight efforts of firms' boards of directors and senior management. The boards and senior managers are primarily responsible for ensuring, with the assistance of audit committees and external auditors, the effectiveness of their institutions' derivatives risk-management systems. Regulatory controls include requirements for information reporting, capital, and examinations. Consistent, reliable, and complete financial reporting of derivatives activities provides for both effective management and regulatory oversight.

GAO focused this report on derivatives but recognizes that many of the issues addressed by the report, such as risk management and corporate governance, have broader application to firms' overall activities.

Results in Brief

Derivatives serve an important function in the global financial marketplace, providing end-users with opportunities to better manage financial risks associated with their business transactions. The rapid growth and increasing complexity of derivatives reflect both the increased demand from end-users for better ways to manage their financial risks and the innovative capacity of the financial services industry to respond to market demands. However, Congress, federal regulators, and some members of the industry are concerned about these products and the risks they may pose to the financial system, individual firms, investors, and U.S. taxpayers. These concerns have been heightened by recent reports of substantial losses by some derivatives end-users.

Derivatives activities are rapidly expanding and increasingly affected by the globalization of commerce and financial markets. Much OTC derivatives activity in the United States is concentrated among 15 major U.S. dealers that are extensively linked to one another, end-users, and the exchange-traded markets. This combination of global involvement, concentration, and linkages means that the sudden failure or abrupt withdrawal from trading of any of these large dealers could cause liquidity problems in the markets and could also pose risks to the others, including federally insured banks and the financial system as a whole. Although the federal government would not necessarily intervene just to keep a major OTC derivatives dealer from failing, the federal government would be likely to intervene to keep the financial system functioning in cases of severe financial stress. While federal regulators have often been able to keep financial disruptions from becoming crises, in some cases intervention has and could result in industry loans or a financial bailout paid for by taxpayers.

GAO found that no comprehensive industry or federal regulatory requirements existed to ensure that U.S. OTC derivatives dealers followed good risk-management practices. Strong corporate governance is critical to the success of any risk-management system but is particularly crucial for managing potentially volatile derivatives activities. Primary responsibility for risk management rests with boards of directors and senior management. Until recently, no comprehensive guidelines existed against which firms could measure their risk-management performance. The Group of Thirty² sponsored a study that recommended benchmark risk-management practices for the industry.³ The study indicated that not all industry participants were following those practices. Regulators have recently issued guidelines for certain bank dealers, and both regulators and market participants said improvements in risk-management systems have already been made as a result of these recommendations and guidelines. However, GAO noted that no regulatory mechanism existed to bring all major OTC dealers into compliance with them.

GAO also noted that in such a rapidly growing and dynamic industry, new participants are likely to enter the market. Some of these new entrants may not be as knowledgeable as present dealers or may take on unwarranted risk in an attempt to gain market share or increase profits. In either case, systemic risk could increase. Each of the 15 major U.S. OTC

²The Group of Thirty is an international financial policy organization whose members include representatives of central banks, international banks and securities firms, and academia.

³Derivatives: Practices and Principles, The Group of Thirty (Washington, D.C.: July 1993).

derivatives dealers GAO visited has reported making considerable investments in its risk-management systems. While the major dealers have reported taking actions to improve their risk-management systems, GAO believes that the federal government also has responsibility for ensuring that safeguards exist to protect the financial system.

Federal regulators have begun to address derivatives activities through a variety of means, but significant gaps and weaknesses exist in the regulation of many major OTC derivatives dealers. For example, securities regulators have limited authority to oversee the financial activities of securities firm affiliates that conduct the OTC derivatives activities. Insurance companies' OTC derivatives affiliates are subject to limited state regulation and have no federal oversight. Yet OTC derivatives affiliates of securities and insurance firms constitute a rapidly growing component of the derivatives markets. In contrast, bank regulators have authority to supervise all the financial activities of banks and their holding companies. While these regulators have improved their supervision of banks' derivatives activities, their approach still has weaknesses, such as insufficient regulatory reporting requirements and inadequate documentation and testing of internal controls.

Further compounding the regulators' problems and contributing to the lack of knowledge by investors, creditors, and other market participants are inadequate rules for financial reporting of derivatives activity. GAO found that accounting standards for derivatives, particularly those used for hedging purposes by end-users, were incomplete and inconsistent and have not kept pace with business practices. Insufficient accounting rules for derivatives increase the likelihood that financial reports will not fairly represent the substance and risk of these complex activities. In addition, the lack of rules for certain products makes it likely that accounting for these products will be inconsistent, thereby greatly reducing the comparability of financial reports.

GAO believes that innovation and creativity are strengths of the U.S. financial services industry and that these strengths should not be eroded by excessive regulation. However, GAO also believes the regulatory gaps and weaknesses that presently exist must be addressed, especially considering the rapid growth in derivatives activity. The issue is one of striking a proper balance between (1) allowing the U.S. financial services industry to grow and innovate and (2) protecting the safety and soundness of the nation's financial system. Achieving this balance will require unprecedented cooperation among U.S. and foreign regulators, market

participants, and members of the accounting profession. GAO makes recommendations designed to help Congress, the regulators, and the industry address this issue.

Principal Findings

Derivatives Risk Management Requires Comprehensive Oversight

The risks posed by derivatives use include (1) credit risk (as defined earlier); (2) market risk (adverse movements in the price of a financial asset or commodity); (3) legal risk (an action by a court or by a regulatory or legislative body that could invalidate a financial contract); and (4) operations risk (inadequate controls, deficient procedures, human error, system failure, or fraud). These general types of risk exist for many financial activities, but the specific risks in derivatives activities are relatively difficult to manage, in part, because of the complexity of some of these products and the difficulties in measuring these risks. For example, because derivatives might be used in conjunction with other assets and liabilities, measuring the extent of market risks of derivative products alone is not sufficient to understand firms' total market risk.

Regulatory examinations of the major bank dealers that were done from 1990 through 1992 identified some serious weaknesses in these dealers' risk-management systems, such as failure to set or follow risk limits. The July 1993 Group of Thirty report recommended derivatives risk-management practices that boards of directors and senior managers could use as benchmarks against which to measure their firms' improvements in risk-management practices. A survey of 80 dealers that was done as part of the report indicated that the risk-management systems of these dealers did not conform with all of the report's recommendations. However, the report indicated that major dealers followed the recommended practices more completely than did other firms. Subsequently, the Office of the Comptroller of the Currency and the Federal Reserve issued guidance on risk-management practices for the banks they supervise that was consistent with the Group of Thirty recommendations. Regulators and the 15 major OTC dealers GAO visited said that improvements in risk-management systems have been made in response to both the Group of Thirty recommendations and bank guidance. However, GAO noted that the Group of Thirty recommendations did not have the force of regulation and the bank guidance only applied to certain banks.

Boards of directors, senior managers, audit committees, and external auditors all have important roles in ensuring that derivatives risks are managed effectively. Prior GAO work showed weak corporate governance systems were a common feature of failed financial institutions. Congress recognized this weakness in enacting the Federal Deposit Insurance Corporation Improvement Act of 1991 (FDICIA), which required management of large banks and thrifts to perform annual comprehensive assessments of their internal control systems for financial reporting and establish independent audit committees. It also required external auditors to report on managements' assessments.

FDICIA's requirements do not apply to all major dealers and end-users of complex derivative products. Nonetheless, strong internal control systems; independent, knowledgeable audit committees; and public reporting on internal controls are critical to firms engaged in complex derivatives activities and should play an important role in ensuring sound financial operations and protecting shareholder interests of these firms. Thus, GAO encourages the boards of directors of major dealers and end-users of derivatives that have not already done so to establish and implement these improvements.

Regulatory Gaps Heighten Systemic Risk

Basic regulatory controls did not exist for many major U.S. OTC derivatives dealers, as shown in table 2. For example, banks—but not securities or insurance firm affiliates—were subject to regulatory examinations. In addition, major U.S. OTC derivatives dealers that were affiliates of securities and insurance firms were not required to hold a specific amount of capital to cushion against potential derivatives-related losses. In contrast, banks that were OTC derivatives dealers had capital requirements. Further, only banks and securities firm affiliates were required to submit information routinely on derivatives activities. But this information was submitted quarterly and did not include comprehensive counterparty concentrations or sufficient detail on the type and amount of derivatives earnings.

Table 2: U.S. Regulatory Oversight of OTC Derivatives Activities of Financial Institutions and Financial Institution Affiliates as of April 1994

Type of institution	Examination requirements	Capital requirements	Reporting requirements
Banks	Banks are subject to annual examinations. Those major OTC derivatives dealers regulated by the Office of the Comptroller of the Currency are subject to continuous on-site examinations.	For credit risk, banks are to hold capital against their derivatives' positions equal to 8 percent of the adjusted value of their positions. The adjustments serve to reduce required capital, depending on the type of counterparty and the maturity of the contract. Since March 1994, these firms also must hold at least 3 percent of the unadjusted replacement cost of certain contracts.	Banks are to report quarterly their total derivatives notional amounts by product type. They also are to report the total gross replacement cost of these positions. Reporting on individual counterparty credit exposures is not required, but the exposures may be reviewed by regulatory staff during periodic examinations.
Securities firm affiliates	None.	None.	Since October 1992, securities firm affiliates have been required to report quarterly their total derivatives notional amounts by product type. They also were to report the total gross replacement cost of those positions. Information on individual counterparty credit exposures is to be reported only when exposures are above a certain threshold.
Insurance firm affiliates	None.	None.	Insurance firm affiliates' financial information is consolidated with parent company reports.

Source: GAO.

The largely unregulated activities of U.S. OTC derivatives dealers that are affiliates of securities and insurance companies have been growing rapidly. As of their fiscal year-end 1992, the five major securities firms and three insurance companies whose affiliates had the highest dollar amount in derivatives outstanding accounted for about 30 percent of the U.S. OTC dealers' total volume, while banks accounted for about 70 percent. However, the growth rate of OTC and exchange-traded derivatives from 1990 through 1992 was 100 percent for insurance firms and 77 percent for securities firms, compared with 41 percent for banks.

If one of these large OTC dealers failed, the failure could pose risks to other firms—including federally insured depository institutions—and the

financial system as a whole. Financial linkages among firms and markets could heighten this risk. Derivatives clearly have expanded the financial linkages among the institutions that use them and the markets in which they trade. Various studies of the October 1987 market crash showed linkages between markets for equities and their derivatives. According to those studies, prices in the stock, options, and futures markets were related, so that disruptions in one were associated with disruptions in the others.

The concentration of OTC derivatives activities among a relatively few dealers could also heighten the risk of liquidity problems in the OTC derivatives markets, which in turn could pose risks to the financial system. Because the same relatively few major OTC derivatives dealers now account for a large portion of trading in a number of markets, the abrupt failure or withdrawal from trading of one of these dealers could undermine stability in several markets simultaneously, which could lead to a chain of market withdrawals, possible firm failures, and a systemic crisis. The federal government would not necessarily intervene just to keep a major OTC derivatives dealer from failing, but to avert a crisis, the Federal Reserve may be required to serve as lender of last resort to any major U.S. OTC derivatives dealer, whether regulated or unregulated. Two past major financial disruptions have already shown liquidity problems involving securities, foreign exchange, and derivatives markets—the 1987 market crash and the 1992 turmoil in European currency markets.

Accounting Principles for Derivatives Have Not Kept Pace With Business Practices

Generally Accepted Accounting Principles are not adequate to ensure reliable and consistent financial reporting of derivatives activities. In particular, accounting rules for hedging activities are incomplete and inconsistent. Thus, investors, market participants, and regulators may lack reliable information on which to base investment and business decisions and regulatory actions. In the absence of accounting rules for certain derivatives, accounting practices of derivatives market participants have been shaped by common industry practice and the adaptation of existing rules for similar products. This approach to accounting for derivatives is likely to result in inappropriate and inconsistent financial reporting of derivatives activities, especially reporting of hedging activities by end-users.

To address concerns about the extent and nature of the use of derivatives and other financial instruments, the Financial Accounting Standards Board (FASB) issued two disclosure standards. These standards require disclosure

of certain risks involved in holding financial instruments and the fair value of these instruments. Because of the limitations of the existing standards, FASB recently proposed a third standard, which is intended to require more specific and comprehensive disclosures about derivatives activities. This proposed standard is an improvement over existing disclosure requirements. However, additional disclosures would provide financial statement users a more complete understanding of derivatives activities. While disclosure does provide important information about derivatives activities and associated risks, it is no substitute for accounting standards that promote reliable and consistent financial reporting.

FASB recognizes the need for comprehensive accounting standards for derivatives and other financial instruments. FASB began work in 1986 to provide comprehensive accounting standards for the recognition and measurement of these instruments and has made progress in developing standards for certain financial instruments. However, progress on the development of proposed standards for derivatives has been slow, in part, because of the complexity and diversity of some derivative products and particularly because of controversy over how to account for products used for hedging purposes. FASB has been unable to reach agreement on basic accounting questions that must be resolved before meaningful progress can be made to develop accounting rules for derivatives.

FASB has discussed market value accounting as a means to resolve many of the derivatives hedge accounting issues it faces. While GAO believes that market value accounting is ultimately the best solution to accounting for all financial instruments, including derivatives, GAO also recognizes that the adoption of a new accounting model such as this is likely to take some time. Because time is critical for providing authoritative accounting rules for derivatives, it may not be feasible to strive toward comprehensive market value accounting in the short term. However, market value accounting should be FASB's ultimate objective.

The Protection of Internationally Linked Financial Systems Requires Coordinated International Efforts

The interrelationships among OTC derivatives dealers and markets worldwide increase the likelihood that a crisis involving derivatives will be global. GAO's analysis of publicly reported information indicated that financial institutions worldwide with the largest derivatives volumes, in terms of notional amounts, included firms from 11 countries. The highest volume firms were from France, Switzerland, the United Kingdom, and the United States. These firms were also actively conducting derivatives activities in markets outside their own countries. Data provided to GAO by

14 major U.S. dealers indicated that an average of about 24 percent of their OTC derivatives volume represented transactions with foreign dealers as of year-end 1992.

The major OTC derivatives dealers in the countries included in GAO's review were subject to varying types of regulation. With many different regulatory approaches, strengthening U.S. derivatives regulation without coordinating and harmonizing related actions with foreign countries poses at least two risks. First, U.S. financial institutions would remain vulnerable to a crisis that began abroad and spread to the United States as a result of the global linkages among financial institutions and markets. Second, regulation that market participants viewed as too severe could cause firms to move their derivatives activities outside of the United States. However, coordinating and harmonizing regulation worldwide has been difficult to achieve. The United States should continue its leading role in bringing greater harmonization to international regulation of financial activities, including derivatives.

Recommendations

Recommendations to Congress

Given the weaknesses and gaps that impede regulatory preparedness for dealing with a crisis associated with derivatives, GAO recommends that Congress require federal regulation of the safety and soundness of all major U.S. OTC derivatives dealers. Regulators should attempt to prevent financial disruptions from turning into crises and resolve crises to minimize risks to the financial system. Thus, firms that become insolvent should be allowed to fail but to do so in an orderly fashion.

The immediate need is for Congress to bring the currently unregulated OTC derivatives activities of securities firm and insurance company affiliates under the purview of one or more of the existing federal financial regulators and to ensure that derivatives regulation is consistent and comprehensive across regulatory agencies. This could be done in several ways. For example, one legislative proposal would accomplish this goal by assigning the responsibility for the unregulated entities to the Securities and Exchange Commission (SEC) and creating an interagency commission to establish principles and standards for each federal financial regulator to use in supervising derivatives activities. Another approach could be based on the concept that underlies the arrangement established for government

securities dealers. Under this concept, lead responsibility for setting principles and standards applicable to all major U.S. derivatives dealers would be divided among existing agencies on the basis of their expertise and mission. Extensive consultation with all of the agencies supervising derivatives activities would be required before any principles or standards were adopted.

GAO also recommends that Congress systematically address the need to revamp and modernize the entire U.S. financial regulatory system. Gaps and weaknesses in OTC derivatives regulation clearly demonstrate that the existing regulatory structure has not kept pace with the dramatic and rapid changes in the domestic and global financial markets that have occurred over the past several years. Banking, securities, futures, and insurance are no longer separate and distinct industries that can be well regulated by the existing patchwork quilt of federal and state agencies. Many issues need to be debated and decided, including the appropriate uses of federally insured deposits and the extent to which they should be used to finance large-scale proprietary trading in derivatives or other financial instruments. One of the first issues that needs to be addressed is how the U.S. regulatory system should be restructured to better reflect the realities of today's rapidly evolving global financial markets. GAO recommends that the committees of jurisdiction work together on this issue. In addition, these committees should hold hearings, at least annually, on developments that affect the safety, soundness, and stability of the U.S. financial system.

Recommendations to Financial Regulators

GAO recommends that the appropriate regulatory authorities take the following actions to improve their capability to oversee OTC derivatives activities and to anticipate and respond to any financial crisis involving derivatives. Developing specific solutions should involve working closely with industry representatives to:

- Develop and maintain accurate, current, and centralized information that is accessible to all regulators, including information on the extent of major OTC dealers' counterparty concentrations and the sources and amounts of their derivatives earnings.
- Develop and adopt a consistent set of capital standards for OTC derivatives dealers sufficient to ensure that all of the major risks associated with derivatives are reflected in capital.
- Establish specific requirements for independent, knowledgeable audit committees and internal control reporting for all major OTC derivatives

dealers. Internal control reporting by boards of directors, managers, and external auditors should include assessments of derivatives risk-management systems.

- Perform comprehensive, annual examinations of the adequacy of major OTC derivatives dealers' risk-management systems using a consistent set of standards established for this purpose and including consideration of the internal control assessments performed by boards of directors, management, and auditors.
- Provide leadership in working with industry representatives and regulators from other major countries to harmonize disclosure, capital, examination, and accounting standards for derivatives.

Recommendations to FASB

GAO recommends that FASB:

- Proceed expeditiously to issue its existing exposure draft on disclosures of derivatives and fair value of financial instruments.
- Proceed expeditiously to develop and issue an exposure draft that provides comprehensive, consistent accounting rules for derivative products, including expanded disclosure requirements that provide additional needed information about derivatives activities.
- Consider adopting a market value accounting model for all financial instruments, including derivative products.

Recommendations to SEC

GAO recommends that SEC:

- Ensure that SEC registrants that are major end-users of complex derivative products establish and implement corporate requirements for independent, knowledgeable audit committees and public reporting on internal controls. Internal control reporting by boards of directors, managers, and external auditors should include assessments of derivatives risk-management systems.
- Ensure that FASB proceeds expeditiously to develop and adopt comprehensive, consistent accounting rules and disclosure requirements for derivative products.

Agency Comments

We did not receive formal agency comments on this report. However, we did provide senior officials of the administration, U.S. and foreign financial regulators, the major derivatives dealers, the major derivatives exchanges, and FASB, as well as other industry representatives and experts an

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opportunity to discuss the findings and conclusions of our work. We incorporated their comments where appropriate.

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Abbreviations

BIS	Bank for International Settlements
CEA	Commodity Exchange Act
CFTC	Commodity Futures Trading Commission
COSO	Committee of Sponsoring Organizations of the Treadway Commission
EC	European Community
FASB	Financial Accounting Standards Board
FCM	futures commission merchant
FDIC	Federal Deposit Insurance Corporation
FDICIA	Federal Deposit Insurance Corporation Improvement Act of 1991
FFIEC	Federal Financial Institutions Examination Council
GAAP	Generally Accepted Accounting Principles
GFOA	Government Finance Officers Association
IOSCO	International Organization of Securities Commissions
ISDA	International Swaps and Derivatives Association
OCC	Office of the Comptroller of the Currency
OECD	Organization for Economic Cooperation and Development
OTC	over-the-counter
SEC	Securities and Exchange Commission
SFAS	Statements of Financial Accounting Standards

Introduction

In the past 20 years, fundamental changes in global financial markets have increased the demand for cost-effective protection against risks associated with movements in foreign exchange and interest rates as well as equity and commodity prices. The increase in the volatility of foreign exchange rates began in the early 1970s after the world's major industrial countries abandoned the Bretton Woods system of fixed currency rates.¹ This system collapsed after the United States suspended the dollar's convertibility into gold. It was replaced by the current floating exchange rate system that allows currency rates to fluctuate in response to supply and demand. Similarly, an increase in the volatility of interest rates occurred following changes in government policy that allowed interest rates to fluctuate more freely.² Also, institutions' exposures to rate and price volatility increased because of growth in international commerce and finance.

Derivatives Address Uncertainties in Global Financial Markets

Derivatives are globally used financial products that have evolved to meet the demand for cost-effective protection against risks associated with rate and price movements. Derivatives essentially unbundle and transfer those risks from entities less willing or able to manage them to those more willing or able to do so. The values of derivatives are based on, or derived from, the value of an underlying asset, reference rate, or index—called the underlying. Common types of underlying assets are stocks, bonds, and physical commodities, such as wheat, oil, and lumber. An example of an underlying reference rate is the interest rate on the 3-month U.S. Treasury bill. An example of an underlying index is the Standard & Poor's 500 Index, which measures the performance of 500 common stocks.

Derivatives include customized and standardized contracts. Some derivatives are customized contracts between parties (also called counterparties) that include one or more negotiated terms in addition to price. These terms can include the quality and quantity of the underlying, time and place of delivery, and method of payment. Other derivatives are standardized contracts whose terms are fixed—except for price, which the market determines. Derivatives can be privately negotiated by the parties; these are called over-the-counter (OTC) derivatives. Derivatives also can be traded through central locations, called organized exchanges, where

¹The Bretton Woods system, established in 1944, maintained exchange rate stability by fixing non-U.S. currencies to the U.S. dollar, which was convertible into gold at \$35 per ounce. The United States suspended convertibility into gold in 1971, and the system of fixed currency rates was abandoned in 1973.

²In the United States, interest rate volatility increased after October 1979, when the Federal Reserve shifted away from a policy centered on its controlling interest rates.

buyers and sellers or their representatives meet to determine derivatives prices; these are called exchange-traded derivatives.

The Ways Market Participants Use Derivatives

Market participants use derivatives (1) to hedge, or to protect against adverse changes in the values of assets or liabilities; (2) to speculate, or to assume risk in attempting to profit from anticipating changes in market rates or prices; and (3) to obtain more desirable financing terms.⁹

Hedgers protect themselves from market risk, which is the exposure to the possibility of financial loss caused by adverse changes in the values of assets or liabilities. They protect themselves by entering into derivatives transactions whose values are expected to change in the opposite direction as the values of their assets or liabilities. For example, a hedger can protect asset values through derivatives transactions that increase in value as the asset values decline. The increases in values of the derivatives contracts (profits) will offset, or hedge, the decrease in values of the assets (losses).

In contrast, speculators take on risk in an attempt to profit from changes in the values of derivatives or their underlyings. Rather than owning the underlying, speculators can use derivatives as a more affordable way to attempt to profit from anticipating movements in market rates and prices. As speculators enter into transactions with hedgers and other speculators, they provide liquidity to the derivatives markets, thereby helping to ensure that high volumes of trading can occur without significantly affecting prices.

Some derivatives enable market participants to obtain more desirable financing in two ways. First, as we discuss later in this chapter, market participants can work together to take advantage of differences in the rates at which they borrow money. Second, an important by-product of hedging is the enhanced creditworthiness of the hedger. Banks will extend more favorable financing terms to firms that have reduced their market risk through hedging activities.

In achieving these purposes, derivatives can be more cost-effective than transactions in the underlying cash markets because of the reduced transaction costs and the leverage that derivatives provide. For example, instead of buying or selling \$100,000 worth of U.S. Treasury bonds, a

⁹Institutions may also use derivatives to change the asset mix of their portfolios. They use derivatives because their costs are lower than those of buying or selling the underlying.

market participant can realize the benefits of buying or selling the same amount of bonds by using a derivatives contract and posting a deposit, called a margin, of only about \$1,500, or 1.5 percent of the face amount of the bonds. Likewise, a market participant can achieve a result similar to buying or selling all of the stocks in the Standard & Poor's 500 Index by buying or selling a derivatives contract on this index for as little as 5 to 10 percent of the cost of the underlying stocks.

The Basic Types of Derivatives and How They Are Used

Derivative products include forwards, futures, options, and swaps. Forwards, futures, and options are typically used to hedge or to speculate. Swaps are typically used to hedge or to obtain more desirable financing. Swaps can be used to speculate⁴ but may not be used as frequently for this purpose because a swap's transaction costs are high compared to those of other derivatives, according to market participants. These basic products also can be combined to create more complex products, called hybrid derivatives.

Forwards and Futures

Forwards and futures are contracts that obligate the holder to buy or sell a specific underlying at a specified price, quantity, and date in the future. Forwards are OTC contracts; futures are usually standardized contracts traded on organized exchanges.

Market participants can hedge their assets and liabilities with either forwards or futures, depending on whether they need a customized product or can use a standardized exchange-traded product. For example, a U.S. importer arranged to buy machinery from a German manufacturer for delivery 1 year from the date of the arrangement and at a price payable upon delivery in German currency (the mark). In this case, the importer's need for a customized contract necessitated the use of a forward contract rather than a standardized futures contract. At the time the importer arranged the purchase, it entered into a foreign exchange forward contract to purchase the exact amount of marks needed to pay for the machinery at the expected delivery date in 1 year. The foreign exchange forward contract enabled the importer at the time of the purchase arrangement to lock in the U.S. dollar cost of marks. Without this contract, the importer would have been exposed to the risk of a rise in the dollar cost of buying

⁴One U.S. firm had an after-tax loss of \$102 million to close out two leveraged interest rate swaps, according to the firm's press release. The transactions were adversely affected by the recent dramatic increase in interest rates. The company said that these transactions were inconsistent with its policy. News accounts reported these swaps as speculative transactions.

marks between the time the purchase was arranged and the time the machinery was delivered.⁵

Speculators can use either forward or futures contracts to attempt to profit from market movements. For example, a speculator who believes the dollar cost of the mark is about to rise very quickly can buy a forward or futures contract that increases in value with rises in the value of the mark. If the increase in the dollar cost of the mark is greater than the market expects, the speculator can profit. Alternatively, if the dollar cost of the mark rises more slowly than the market expects or declines in value, the speculator will lose money.

Options

Option contracts, which can be either customized and privately negotiated or standardized, give the purchaser the right to buy (call option) or sell (put option) a specified quantity of a commodity or financial asset at a particular price (the exercise price) on or before a certain future date.⁶ For this right, the purchaser pays the seller (writer) an amount called the option premium. In general, purchased call options increase in value with increases in the market value of the underlying. Purchased put options generally increase in value with decreases in the market value of the underlying.

Options differ from forwards and futures in that options do not require the purchaser to buy or sell the underlying. A purchaser will not exercise an option until the market price of the underlying is greater than the exercise price for a call option or less than the exercise price for a put option. Options that are not exercised expire with no value. Therefore, the amount that can be lost by option purchasers is the amount of the premium. However, the amount that can be lost by option writers can be much greater, because they are liable for covering the costs of any changes in value that benefit the purchasers.

The U.S. importer of German machinery we mentioned earlier could have purchased a foreign exchange call option instead of a foreign exchange forward contract to protect against the risk of a rise in the dollar cost of marks. Paying the call option premium would have given the importer the right to buy the needed amount of marks at a specified exchange rate. If

⁵A decline in the value of the mark would impose an opportunity cost, however, because the importer would have paid a higher price for the marks in the forward contract than it could have paid by purchasing the currency at the time of delivery.

⁶This is the definition of an American-style option. A European-style option can only be exercised on its expiration date.

the U.S. dollar cost of marks had risen above the specified exchange rate as of the payment due date, the importer could have exercised the option to buy the marks. If the price of marks had not risen above the specified exchange rate, the importer could have purchased the marks in the market and allowed the option to expire.

Speculators, too, can use options to benefit from greater-than-expected fluctuations in market rates and prices. A speculator that buys an option on an underlying—such as an option on an amount of U.S. Treasury notes or German marks—will benefit if the price of the underlying moves far enough in a favorable direction to create profits greater than the option premium. If the movement in the price of the underlying does not create profits to cover the option premium or is unfavorable, the speculator will lose money but no more than the amount paid for the option premium plus transaction costs. Speculators can also profit from writing options by collecting the premiums for options that are not exercised. This profit can be exceeded by losses, however, if the price movement of the underlying is unfavorable. In fact, if the unfavorable price movement is large and occurs before the speculator can buy back the option or enter into an offsetting transaction, the speculator can incur losses that are many times greater than the value of the premium received.

Swaps

Swaps are OTC agreements between counterparties to make periodic payments to each other for a stated time. The calculation of these payments is based on an agreed-upon amount, called the notional principal amount or simply the notional amount.⁷ The notional amount is not typically exchanged except in currency swaps. The periodic payments may be fixed or floating. Floating payments change with fluctuations in interest or currency rates or equity or commodity prices, depending on contract terms.

Financial institutions can use swaps to hedge against adverse changes in interest rates, among other things. For example, a bank may have a portfolio of loans whose floating interest rates adjust frequently because they are tied to changes in market interest rates. The bank also may have an obligation to make interest payments on deposits that are adjusted less

⁷Some derivatives, principally interest rate swaps, are only exchanges of periodic payments between counterparties. The amount that the counterparties use to determine the payments to be exchanged is called the notional amount because it is not exchanged. The notional amount is exchanged at the termination of foreign currency swaps. For forwards, futures, and options, we use the amount of the contract to measure the volume. When we refer to the collective volumes of all of the products, we use the term notional/contract amount.

frequently. Such a bank would be exposed to interest rate risk because a decline in interest rates would reduce the interest receipts on its loans but not the interest payments on deposits. The bank may enter into an interest rate swap with another financial institution to hedge the interest rate risk. In the swap contract, the bank would agree to make payments based on a floating interest rate in exchange for receiving payments based on a fixed interest rate. Thereafter, if interest rates declined, the bank's fixed rate receipts on the swap would match its fixed rate payments to depositors. If interest rates rose, the higher rates the bank received on the loans in its portfolio would offset the higher rates it paid under the swap agreement.

Swaps can also be used to obtain more desirable financing terms. For example, a company with a medium credit rating may wish to protect against rising interest rates by obtaining fixed rate borrowing but may not wish to pay the higher interest rate normally paid by companies of its credit quality. The company may be able to arrange lower fixed rate financing by first obtaining a floating rate loan and then entering into a swap contract with a higher rated counterparty.

The Participants in the Derivatives Markets and the Level of Their Activity

Derivatives market participants include end-users and dealers. End-users typically use OTC and exchange-traded derivatives to hedge risk, obtain more desirable financing terms, or speculate on market movements. End-users include banks, securities firms, insurance companies, governments, mutual and pension funds, and commercial firms worldwide. Data on global derivatives use are unavailable, but data provided by U.S. bank regulators showed that more than 500 U.S. banks used derivatives in 1992.⁸ In appendix I, we discuss the use of derivatives by state and local government entities and private pension plans.⁹

Certain institutions that use derivatives also act as dealers by quoting prices to, buying derivatives from, and selling derivatives to end-users and other dealers. Similar to other end-users, dealers use derivatives to hedge risk, obtain more desirable financing terms, and speculate on market movements. They also develop customized derivative products for their clients. In general, derivatives dealing provides liquidity to OTC markets and profits and losses to dealers. Some highly complex transactions

⁸Comparable data were unavailable for securities firms and insurance companies.

⁹To determine the extent and nature of derivative product use by end-users, we mailed a survey to more than 4,600 state and local government entities and 156 private pension plans. The survey results showed that for fiscal year 1992 the extent of derivatives use varied from a low of 4 percent of local government entities to a high of 72 percent of private pension plans and that the types of derivatives used varied widely across the different types of entities.

involving combinations of derivatives, such as swaps and options, can generate large fees. They also represent a growing part of derivatives activity. Dealers in OTC derivatives actively use exchange-traded derivatives—often to hedge the risks of their OTC portfolios. Data indicate that OTC derivatives dealers are usually large international banks and affiliates of securities firms or insurance companies with high credit ratings; however, data are unavailable on the total number of dealers worldwide.

Objectives, Scope, and Methodology

Our objectives were to determine (1) what the extent and nature of derivatives use was, (2) what risks derivatives might pose to individual firms and to the financial system and how firms and regulators were attempting to control these risks, (3) whether gaps and inconsistencies existed in U.S. regulation of derivatives, (4) whether existing accounting rules resulted in financial reports that provided market participants and investors adequate information about firms' use of derivatives, and (5) what the implications of the international use of derivatives were for U.S. regulation.

To determine the extent and nature of derivatives use, we reviewed relevant literature, congressional testimony, and previous studies. We interviewed selected U.S. and foreign financial regulators, financial industry representatives, market participants, academicians, and consultants. In addition, we gathered and analyzed information on the size of the market, the level of concentration of derivatives activity among major OTC dealers, and the linkages among markets and firms associated with derivatives use. To do this, we reviewed regulatory and industry data and asked 15 major U.S. OTC derivatives dealers to complete a written survey (see app. V), of which 14 responded (see app. III for survey results). The 15 U.S. firms surveyed included the 7 banks, 5 broker-dealers, and 3 insurance company affiliates that in 1992 had the highest levels of derivatives activity in their respective industries. The seven banks and five broker-dealers we focused on had considerably higher levels of derivatives activity than others in their industry; and the three insurance companies were the only U.S. insurance companies that we could identify as derivatives dealers. We identified the 15 major U.S. OTC derivatives firms by using information on derivatives activities from bank regulators, the Securities and Exchange Commission (SEC), the Securities Industry

Association,¹⁰ and annual reports. We did not verify the statistical information we received from the derivatives dealers.

To determine the risks that derivatives might pose to individual firms and the way these firms attempted to control these risks, we interviewed selected officials from 20 securities firms, 30 banks, 5 thrifts, 6 pension funds, 5 insurance companies, 19 industry associations, 3 software vendors, and 2 credit rating agencies. These interviews included discussions with the 15 major U.S. OTC derivatives dealers we identified earlier. We also interviewed selected U.S. and foreign financial regulators, industry representatives, academicians, and consultants to gain an understanding of derivatives activities, the risks associated with these activities, and organizational structures and approaches used to manage derivatives risks. In addition, we reviewed relevant literature, congressional testimony, and previous studies done by regulators, international organizations, and other groups. Finally, we gathered and analyzed information, including responses to the survey of the major OTC derivatives dealers mentioned earlier, on how firms manage risks that derivatives pose.

To determine whether gaps and inconsistencies existed in U.S. regulation of derivatives, we (1) interviewed selected U.S. and foreign bank, thrift, securities, options, futures, and insurance industry regulators and (2) reviewed government, exchange, and international organization documents, including correspondence, memoranda, reports, regulations, and laws. In addition, we reviewed and analyzed financial regulators' examination policies, procedures, reports, and workpapers.

To determine whether existing accounting rules result in financial reports that provide market participants and investors adequate information about firms' use of derivatives, we reviewed existing and proposed Generally Accepted Accounting Principles (GAAP) and other accounting guidance relevant to derivatives. In addition, we had discussions with Financial Accounting Standards Board (FASB)¹¹ staff and reviewed various discussion papers, correspondence, and memoranda on accounting for derivatives prepared by FASB staff. Finally, we reviewed the 1992 annual reports of 10 large U.S. bank holding companies with significant derivatives activity, including the 7 major OTC derivatives dealers.

¹⁰The Securities Industry Association is a trade group that represents broker-dealers that account for about 90 percent of the securities business in North America.

¹¹FASB is an independent board with primary responsibility for establishing and interpreting GAAP. GAAP includes rules for accounting for transactions and related disclosure requirements.

To determine the implications of the international use of derivatives for U.S. regulation, we gathered information on and analyzed the use of derivatives in Australia, France, Germany, Japan, Singapore, Switzerland, and the United Kingdom. In these countries, we interviewed officials from bank and securities regulators; stock, futures, and options exchanges; and selected foreign financial institutions. In addition, we interviewed officials from seven international organizations—the Bank for International Settlements (BIS),¹² the Basle Committee on Banking Supervision,¹³ the European Community (EC),¹⁴ the International Organization of Securities Commissions (IOSCO),¹⁵ the Organization for Economic Cooperation and Development (OECD),¹⁶ the World Bank,¹⁷ and the International Swaps and Derivatives Association (ISDA).¹⁸ We obtained their opinions about the adequacy of domestic and international regulation, the existence of regulatory gaps, and the need for further improvements.

We focused our review on financial forwards, futures, options, and swaps and the 15 major U.S. OTC derivatives dealers discussed earlier. We did not include derivatives securitized by specific assets (called asset-backed securities), such as collateralized mortgage obligations. Unlike forwards, futures, options, and swaps, which are designed to transfer risk among counterparties, asset-backed securities are similar to bonds in that they are issued in order to raise funds. However, like the derivative products

¹²BIS was established in 1930 in Basle, Switzerland, by Western European central banks. One of its functions is to provide a forum for cooperative efforts by the central banks of major industrial countries.

¹³This committee, which includes central bank and bank supervisory representatives from 12 leading industrial nations (Belgium, Canada, France, Germany, Italy, Japan, Luxembourg, the Netherlands, Sweden, Switzerland, the United Kingdom, and the United States) is a forum for addressing international bank regulation issues. The committee meets under the auspices of the Bank for International Settlements in Basle, Switzerland.

¹⁴The EC includes Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, and the United Kingdom. Its purpose is to unite these countries under one system of rules and regulations in all aspects of trade, including financial markets.

¹⁵The IOSCO includes securities administrators from 63 countries, as of February 1993. The organization facilitates efforts to coordinate international securities regulation.

¹⁶OECD includes members from 24 developed countries. Its goals are to achieve high economic growth, contribute to sound economic expansion, and contribute to the expansion of world trade.

¹⁷The World Bank, also known as the International Bank for Reconstruction and Development, was established in 1945 and is owned by 160 countries. Its objective is to help raise the standard of living in developing countries by channeling financial resources to them from developed countries. It finances its lending operations primarily from borrowing in international capital markets.

¹⁸ISDA is a trade association that represents more than 150 leading financial institutions worldwide. Its membership includes investment, commercial, and merchant banks that deal in privately negotiated OTC derivatives transactions.

we discuss, purchasers may hold them for investment purposes or to hedge interest rate risks.

We recognized that many of the issues addressed in this report could be extended to the overall activities of firms. For example, our discussions of corporate governance, risk management, and internal controls could be applied to such activities. Because our focus was on derivatives, however, we did not attempt to broaden the discussion in this way.

We did our work between April 1992 and March 1994 in accordance with generally accepted government auditing standards.

Agency Comments

We did not receive formal agency comments on this report. However, we did provide senior officials of the administration, U.S. and foreign financial regulators, the major derivatives dealers, the major derivatives exchanges, and FASB, as well as other industry representatives and experts an opportunity to discuss the findings and conclusions of our work. We incorporated their comments where appropriate.

Extent and Nature of Derivatives Use

We used the best data available to estimate that the notional/contract amount of derivatives outstanding globally as of year-end 1992 was at least \$12.1 trillion.¹ This estimate understates the actual amount of derivatives outstanding, because the sources we used were not always complete, and no statistics existed for some derivatives.

Thousands of institutions use derivatives, but OTC derivatives dealing activity is concentrated among a relatively few financial firms worldwide. Further, derivatives activity has expanded financial linkages among the dealers, end-users, and exchange-traded markets in which these institutions trade. Regulators and market participants have differing views on the potential effects of derivatives market growth, dealer concentration, and financial linkages should a financial crisis occur. However, past experience has shown that cases of severe financial stress generally require federal intervention to resolve.

Derivatives Activity Has Grown Rapidly

Without complete information about total global derivatives volume, we estimated that the global notional/contract amount outstanding at the end of fiscal year 1992 was at least \$12.1 trillion.² This estimate does not include more than \$5.5 trillion of foreign exchange forward contracts. These contracts generally have been excluded from estimates in other reports. Most have short terms—7 days or less—and are often difficult to distinguish from the cash market. However, foreign exchange forward contracts are derivatives, and we have included them in our analysis throughout the report. The total notional/contract amounts of derivatives outstanding at the end of fiscal year 1992 represents an increase of about 145 percent from the end of fiscal year 1989, the earliest year for which comparable data are available. As noted in chapter 1, derivatives use has grown in response to the expanding need for products to address the risks of volatile interest and exchange rates and prices. This growth has been facilitated by major advances in finance, information processing, and communications technology.

¹Some of the summary data used in this report were derived from multiple sources that may cover different 12-month periods. For example, U.S. bank regulatory data for major OTC dealers are reported on a calendar year basis, and annual report data for these dealers are on a fiscal year basis; however, these dealers do not all have the same fiscal year. To minimize confusion, we use the term year-end for all data for which this condition applies.

²Our \$12.1-trillion estimate also includes \$2 trillion of forward rate agreements. In a forward rate agreement, counterparties agree on an interest rate to be paid on a notional amount of specified maturity at a specific future date. An estimate for the volume of these agreements appeared in a 1993 article published by the Federal Reserve Bank of New York, Eli M. Remolona, "The Recent Growth of Financial Derivative Markets," *Federal Reserve Bank of New York Quarterly Review* (New York: Winter 1992-93).

The notional/contract amount is one way derivatives activity is measured. However, it is not a meaningful measure of the actual risk involved. For certain types of derivative products, the amount at risk can be much smaller than the notional/contract amount, which we discuss in chapter 3.

Table 2.1 shows the notional/contract amounts of derivatives held by four types of underlyings from year-end 1989 through year-end 1992. For this period, the notional/contract amount of interest rate derivatives grew at a faster rate than the amount of foreign exchange derivatives (153 percent compared to 133 percent, respectively). The table also shows that the interest rate derivatives market as of year-end 1992 was larger (62 percent of the total) than the foreign exchange derivatives market (37 percent of the total). The equity and commodity derivatives markets combined were much smaller (1 percent of the total).³

Table 2.1: Notional/Contract Amounts of Derivatives Held by Type of Underlying From Year-End 1989 Through Year-End 1992

Dollars in billions

Type of underlying	1989	1990	1991	1992	Percentage of total 1992	Percentage increase from 1989 through 1992
Interest rate	\$4,311	\$ 6,087	\$ 8,404	\$10,923	62%	153%
Foreign exchange rate	2,779	3,927	5,415	6,475	37	133
Equity and commodity price ^a	108	158	209	245	1	127
Total	\$7,198	\$10,172	\$14,028	\$17,643	100%	145%

Note: See appendix IV for methodology.

^aDoes not include complete data on physical commodity derivatives and equity options on the common stock of individual companies.

Sources: BIS, ISDA, Federal Reserve Bank of New York, Swaps Monitor Publications, Inc., Derivatives Strategy & Tactics, Inc., various annual reports, and GAO analysis.

Table 2.2 shows that of the four derivative product types, forwards were the largest percentage of the worldwide market (42 percent). It also shows that options were the smallest percentage of the market (13 percent).

³We did not compare the growth rates of exchange-traded and OTC derivatives in terms of notional/contract amounts. Differences in the operation of the exchange-traded and OTC markets complicate comparisons of derivatives volume for the two types of trading. Offsetting contracts reduce notional/contract amounts held in the exchange-traded markets and add to amounts held in the OTC markets. For exchange-traded derivatives, a clearinghouse is the ultimate counterparty to all transactions, and the clearinghouse closes out buy and sell transactions on identical contracts between participants. However, in OTC trading, an offsetting transaction generally involves a new contract between different counterparties. As a result, the notional/contract amounts of offsetting transactions remain outstanding on financial reports until contract expiration or maturity.

Chapter 2
Extent and Nature of Derivatives Use

Table 2.2: Notional/Contract Amounts of Derivatives Held by Product Type From Year-End 1989 Through Year-End 1992

Dollars in billions

Type of derivative product	1989	1990	1991	1992	Percentage of total 1992	Percentage increase from 1989 to 1992
Forwards ^a	\$3,034	\$ 4,437	\$ 6,061	\$ 7,515	42%	148%
Futures	1,259	1,540	2,254	3,154	18	151
Options	953	1,305	1,841	2,263	13	137
Swaps	1,952	2,890	3,872	4,711	27	141
Total	\$7,198	\$10,172	\$14,028	\$17,643	100%	145%

^aIncludes foreign exchange, forward rate agreements, equity, and commodity forwards.

Note: See appendix IV for methodology.

Sources: BIS, ISDA, Federal Reserve Bank of New York, Swaps Monitor Publications, Inc., Derivatives Strategy & Tactics, Inc., various annual reports, and GAO analysis.

Derivatives Dealing Activity Is Concentrated Among a Few Major OTC Dealers

About 150 firms were acting as derivatives dealers worldwide as of December 1992, according to ISDA data; however, most dealing activity was concentrated among a small number of firms. A report⁴ sponsored by the Group of Thirty⁵ indicated that eight U.S. bank dealers accounted for 56 percent of the worldwide notional/contract amounts of interest rate and currency swaps as of December 1991. U.S. bank regulatory data indicate that the top seven domestic bank derivatives dealers by notional/contract amounts accounted for more than 90 percent of all U.S. bank derivatives activity as of December 1992.⁶ SEC data show a similar concentration of activity among U.S. securities derivatives dealers. The top five by notional/contract amounts accounted for about 87 percent of total derivatives activity for all U.S. securities firms as of their fiscal year-end 1992. An April 1993 report by the Group of Ten⁷ provided a possible

⁴Derivatives: Practices and Principles, The Group of Thirty (Washington, D.C.: July 1993).

⁵The Group of Thirty is an international financial policy organization whose members include representatives of central banks, international banks and securities firms, and academia.

⁶In this report, when we refer to bank regulatory data, we are presenting information for banks from their consolidated holding company reports.

⁷The Group of Ten consists of 11 major industrial member countries that coordinate monetary and fiscal policies through general agreements to borrow and other activities. Group members are Belgium, Canada, France, Germany, Italy, Japan, the Netherlands, Sweden, Switzerland, the United Kingdom, and the United States.

explanation for this concentration.⁸ It stated that the need for complex information and risk-management systems in conducting derivatives activities has resulted in the concentration of the activity among a few large firms.

The degree of concentration of derivatives dealing activity can vary by product type. For example, a report published by BIS⁹ in October 1992 indicated a relatively large number of dealers for high-volume derivatives with generally lower risk, such as interest rate swaps under 3 years to maturity. The report also indicated a relatively small number of dealers for longer term derivatives with higher risk, such as swaps with more than 3 years to maturity and currency options with more than 6 months to maturity. The BIS-published report found that few institutions were committed to continuously buying or selling the longer term derivatives and even fewer institutions were acting as dealers for more customized derivatives.

Derivatives Have Expanded Linkages Among Institutions and the Markets in Which They Trade

Derivatives have expanded the financial linkages among the institutions that use them and the markets in which they trade. Reports on derivatives, the trading strategies that firms use, past financial crises, and our analysis all provide evidence of these expanded linkages.

Various reports from regulators and market participants acknowledged that growth in derivatives use has expanded the financial linkages among markets and institutions. For example, in its July 1993 report on derivatives, the Group of Thirty stated that international finance and commerce have become increasingly integrated and that derivatives have followed this evolution. The report noted that derivatives have helped further financial linkages by providing opportunities for firms to use products in one market to hedge risks arising from the firms' participation in other markets. The firms themselves are also linked. The BIS report indicated that more than 40 percent of the notional volume of all interest rate swaps, currency swaps, and interest rate options held by ISDA member dealers was for contracts among themselves.

Derivatives also link markets as a result of trading strategies that firms use. For example, one bank we visited had sold OTC call options that

⁸International Capital Movements and Foreign Exchange Markets, A Report to the Ministers and Governors by the Group of Deputies, Group of Ten (Rome, Italy: Apr. 1993).

⁹Recent Developments in International Interbank Relations, prepared by a Working Group established by the Central Banks of the Group of Ten, BIS (Basle, Switzerland: Oct. 1992).

required it to make U.S. dollar-denominated payments to its customers if the prices of certain petroleum products rose in Japan. However, the prices of the petroleum products were denominated in Japanese yen. As a result, the bank conducted transactions in several markets to hedge its risks. The bank used the foreign currency markets to hedge potential changes in value between the dollar and the yen and used the commodities markets to hedge potential changes in the price of petroleum products. Similarly, stock and bond investors often use the futures and options markets to hedge. For example, a pension fund manager told us that the fund uses stock and bond futures to temporarily increase or decrease investments in the underlying cash instruments until the transactions can be executed in the cash markets.

Past crises have also shown how derivatives link markets and institutions. In a 1992 letter to a Member of Congress, a former president of the New York Federal Reserve Bank said that markets for equities and associated derivatives effectively function as one market. This statement reflected the results of various studies of the October 1987 market crash. According to the studies, prices in the stock, futures, and options markets were related, so that disruptions in one were associated with disruptions in the others. The linkages between derivatives and their underlying markets were evident again in the late 1992 turmoil in the European currency markets. Volatility in the cash markets prevented some OTC derivatives in European currencies from being traded for a time. Suspension of some OTC activity led to a spurt of trading in the exchange-traded derivatives markets.

Derivatives dealers are themselves linked by derivatives activity. Our survey results from major OTC derivatives dealers indicated such linkages. According to the 14 responses we received, an average of 37 percent of the total financial obligations created by these firms' derivatives transactions was owed on contracts among these firms and dealers in other countries. The BIS report had similar findings. It said that transactions among derivatives dealers represented about 41 percent of the notional/contract amount of derivatives outstanding as of December 1991.

The portfolio of a nondealer U.S. bank that we visited also demonstrated how derivatives create new financial linkages. The bank had more than 30 counterparties to its derivatives transactions, including 12 U.S. banks, 8 U.S. securities firms, 7 foreign banks, several nonfinancial firms, a foreign securities firm, and a U.S. insurance company. Bank officials noted that the bank's derivatives transactions had created new linkages because it

had not previously done business with some of these firms before entering into derivatives contracts with them.

Views Differed on the Effects of Market Size, Dealer Concentration, and Financial Linkages

Regulators and market participants had differing views on the implications of the extent of derivatives use, concentration of activity, and expanded linkages should a financial crisis occur. No empirical evidence was available for determining the actual effects of these characteristics because no crisis caused by derivatives has occurred.

Concerns Exist That Size, Concentration, and Linkages Increase the Risks to Firms and Markets

Concerned regulators and market participants said that the size and concentration of derivatives activity, combined with derivatives-related linkages, could cause any financial disruption to spread faster and be harder to contain. Because the same relatively few major OTC derivatives dealers accounted for a large portion of trading in a number of markets, regulators and market participants feared that the abrupt failure or withdrawal from trading of one of these dealers could undermine stability in several markets simultaneously. This could lead to a chain of market withdrawals, or possibly firm failures, and a systemic crisis. For example, the Group of Ten's report noted that, because of the concentration of derivatives dealer activity, a credit problem or technology failure at a large dealer could create problems for the overall financial system. Also, the BIS report noted that greater concentration means that the failure of a large dealer would cause larger losses for other participants than if the credit exposures were more dispersed.

A primary concern of regulators and market participants about the failure or abrupt withdrawal from trading of a major dealer is the potential effect of either event on market liquidity. The BIS report noted that because derivatives have made it possible to create positions that span many markets, a liquidity problem in one market could force an abrupt liquidation of contracts in other linked markets, causing all the markets to have liquidity problems. A similar concern of regulators was that the linkages between markets might put unmanageable pressure on the exchanges to maintain orderly markets following a disruption in the OTC markets. U.S. banking regulators reported that the liquidity of OTC derivatives markets could be more easily disrupted than that of exchange-traded derivatives because the selection of potential counterparties for OTC transactions can be limited by creditworthiness concerns and generally nonstandardized contract terms.

Further, BIS reported that the failure of a large derivatives dealer could reduce the willingness of the remaining dealers to continue acting as dealers. The likely result would be further loss of liquidity and extreme price movements. An SEC commissioner, as well as some SEC staff members, expressed concern that liquidity problems could escalate a small financial disturbance into a large one if many dealers attempted to conduct transactions in the same markets to hedge or close out similar derivatives positions at the same time. This sudden increase in volume on one side of the market could move prices by such a large amount that firms would incur large losses.

Regulators and market participants pointed out that past firm failures, such as those of the Bank of New England and Drexel Burnham Lambert (a holding company with a large securities firm affiliate), have not really tested the stability of the derivatives markets, because the derivatives portfolios of these firms were too small to have much effect. However, these failures, while not caused by derivatives, were large enough to require federal intervention. Regulators and market participants cited two past financial disruptions to illustrate the potential for liquidity problems associated with derivatives. First, the difficulty of U.S. securities markets in processing the high volume of trades during the 1987 market crash caused inaccuracies in the displayed prices of both individual stocks and stock indexes. The resulting price uncertainties reduced the liquidity of the futures markets as evidenced by the larger-than-normal difference, or spread, between prices quoted to buy or sell these contracts. Wider spreads meant that either buyers were required to pay more or sellers received less than usual for any trades they conducted during these periods.

Second, derivatives liquidity problems were associated with the turmoil that occurred in various European currency markets from August through November 1992. According to a report by the International Monetary Fund, several OTC derivatives, including foreign exchange forwards, currency swaps, and options, experienced reduced liquidity, and spreads for buying and selling widened significantly. For example, the report noted that almost no forwards in Italian lire were traded for a 2-week period because of dealer uncertainty over short-term interest rates. Trading in OTC currency options also declined greatly during this time. The report stated that the volatility in currency prices and lack of foreign exchange forward prices prevented many dealers from writing options because they were unable to price them accurately.

Others Were Less
Concerned About Risks

Other federal regulators and market participants were not as concerned about market growth and disputed the extent of risks posed by market size and concentration. Some said that linkages reduced rather than increased the potential for derivatives to cause or worsen a financial crisis. They pointed out that many financial disruptions have occurred without derivatives liquidity problems or a major dealer failure.

These regulators and market participants said that market size and concentration were not problems. They said that concentration of dealer activity had occurred because of the nature of the business. They also said that the large amount of activity among major OTC dealers reflected customer preference for dealing with prominent firms that have high credit quality and ample capital and that are better able to handle large numbers of sizable transactions. Moreover, they distinguished between concentration of derivatives dealing activity and concentration of risk. The concentration of derivatives dealing activity, they said, did not necessarily reflect an equivalent concentration of risk. They added that concentration was not high in terms of individual types of derivative products. According to these regulators and market participants, most major OTC dealers extensively hedge their derivatives risk. Further, the Group of Thirty report noted that none of the institutions in its survey of the world's largest derivatives dealers had more than a 10-percent share of the total notional/contract amounts of any particular derivative product, such as interest rate swaps. The Group of Thirty report also noted that concentration among firms offering more customized products was not much of a concern because of the small volume of these products compared with other derivatives, such as the most common interest rate swaps.

Some regulators and market participants also believed that derivatives-related financial linkages among firms and markets may act to reduce financial system risk. Although U.S. bank regulators were concerned about the impact of linkages, they noted in a 1993 report¹⁰ that the impact of the European monetary turmoil was less severe than it might have been because of the existence of related derivatives markets. They reported that firms with currency positions were able to switch to exchange markets when OTC contracts were unavailable. As a result, volumes on many futures exchanges around the world reached record levels, according to the International Monetary Fund report. Also, the

¹⁰Derivative Product Activities of Commercial Banks, Joint Study Conducted in Response to Questions Posed by Senator Riegle on Derivative Products, the Federal Reserve Board, Federal Deposit Insurance Corporation, and the Office of the Comptroller of the Currency (Washington, D.C.: Jan. 1993).

Group of Thirty report noted that derivatives assist in the efficient intermediation of markets and provide effective risk-management tools and techniques. The report stated that linkages associated with derivatives could help reduce a financial disturbance by spreading it among more firms and markets. Further, the BIS report stated that linked markets could act as a safety valve by enabling price changes to be quickly transmitted across markets, thereby helping to diffuse disturbances.

The Group of Thirty report also described how derivatives can reduce dealers' vulnerability to liquidity problems. It discussed how derivatives dealers can isolate the individual risks of a particular product, allowing the firm to manage each risk independently and increasing the number of tools that can be used to manage them. For example, the interest rate risk of a highly customized U.S. dollar interest rate swap can be hedged using forwards, futures, other swaps, Treasury notes, or any other financial product whose value changes with interest rates. Thus, even if a firm's ability to hedge with one product is affected by liquidity problems, it can hedge with other products.

Some regulators and market participants also said that the liquidity of derivatives had been successfully tested. They said that the derivatives portfolios of the Bank of New England and Drexel Burnham Lambert were closed out without causing market illiquidity. Again, events of the European monetary crisis were cited as evidence. That is, liquidity was not a problem during the high-volume trading of the European monetary turmoil when OTC derivatives counterparties were hard to find because dealers and end-users turned to the derivatives exchanges to hedge their risks.

Past Crises Have Required Federal Involvement

If a disruption occurs in the derivatives markets or threatens to spread from other markets to the derivatives markets, federal intervention may be necessary to prevent a disruption from becoming a crisis. Should a crisis arise, federal regulators are likely to be involved in containing and resolving financial problems at banks and thrifts because of the potential risk to the financial system and the potential government liability for losses incurred by the federal deposit insurance funds—the Bank Insurance Fund and the Savings Association Insurance Fund.¹¹ In the past, resolving problems or crises in the financial system has been expensive.

¹¹The Bank Insurance Fund and the Savings Association Insurance Fund are funded primarily through assessments from federally insured banks and thrifts, respectively. Each is administered by the Federal Deposit Insurance Corporation. The proceeds of these funds are used to compensate depositors, if necessary, should a federally insured institution fail.

For example, the U.S. thrift crisis has cost taxpayers hundreds of billions of dollars. On a smaller scale, but also expensive, was the failure of the Bank of New England in 1991, which cost the Bank Insurance Fund about \$1.2 billion. The bank also had a portfolio of derivatives with a notional value of \$30 billion that had to be carefully closed out, unwound, or transferred to other counterparties under federal supervision to avoid market disruptions.

Federal regulators have also been involved in financial disturbances that did not involve banks. For example, when Drexel Burnham Lambert failed in 1990, federal involvement was necessary to keep payments flowing among Drexel's various debtors and creditors and to avoid financial system gridlock. Federal action may have also averted a broader systemic crisis after the 1987 market crash. Federal Reserve officials said that during the crisis they took a number of actions, which included (1) providing liquidity to the financial system through the Federal Reserve open market operations, (2) contacting major banks regarding their financial obligations, (3) suspending the rules governing the lending of securities to accommodate securities dealers, and (4) extending the opening and closing hours of their electronic transfer system for large dollar payments.

The possibility of federal involvement is particularly an issue for banks because they have deposit insurance and direct ties to the Federal Reserve's discount window. For the most part, bank derivatives trading and other related activities are carried out by the banks themselves rather than in affiliates within the bank holding company. As a result, customers may be more willing to deal with banks, and the banks may be more willing to take on risks because of deposit insurance and discount window access. In our 1991 report,¹² we recommended that nontraditional banking activities only be conducted in separate subsidiaries by well-capitalized and well-managed banks. Although banks have engaged in some derivatives trading for years, the growth in volume and increased complexity of recent derivatives and related trading may have pushed many such activities outside the boundaries of traditional banking.

The likelihood of federal involvement in a crisis may have been increased by recent legislation. The Federal Deposit Insurance Corporation Improvement Act of 1991 (FDICIA) makes it easier for the Federal Reserve to lend directly to all types of financial firms with liquidity needs in a crisis, not just to federally insured banks.

¹²Deposit Insurance: A Strategy for Reform (GAO/GGD-91-26, Mar. 4, 1991).

Derivatives Require Careful Management

Although derivatives can provide economic benefits, dealers and end-users can experience extensive unanticipated losses if they do not carefully manage the risks associated with the use of derivatives. Several large U.S. and international firms have reported extensive losses from derivatives transactions as a result of unanticipated market movements and weaknesses in their risk-management systems. The Group of Thirty and bank regulators have also reported weaknesses in risk management systems of derivatives dealers and end-users. Although strong corporate governance is critical to the success of any risk-management system, it is particularly crucial for managing the risks of complex and potentially volatile derivatives. Boards of directors, senior management, audit committees, and internal and external auditors all have key roles within the corporate governance system to manage the risks associated with derivatives.

The general types of risk associated with derivatives—credit, market, legal, and operations—exist for many financial activities. Therefore, risk-management policies and controls over such activities are also generally applicable to derivatives. However, the specific risks associated with derivatives activities are relatively difficult to manage, in part, because of the complexity of some of these products and the difficulties in measuring their risks.

Until the publication in 1993 of a report sponsored by the Group of Thirty, firms lacked comprehensive guidelines for evaluating their risk-management practices. That report recommended specific derivatives risk-management practices as benchmarks for firms' use. Subsequently, two federal bank regulators issued similar guidance on risk-management practices for the banks they supervise. Neither the Group of Thirty recommendations nor the federal bank regulators' guidance has the weight of federal regulations. However, the 15 major U.S. dealers that we visited described derivatives risk-management systems that generally conformed with them. The Group of Thirty report indicated that not all dealers fully complied with its recommendations. Also, bank regulators found some serious weaknesses in major dealers' risk-management systems. However, regulators and market participants said that improvements have been made in response to the recommendations and guidelines.

Strong Corporate Governance Is Critical to Managing Derivatives Activities

Effective risk-management systems must be capable of responding to rapid and unanticipated changes in portfolio values resulting from volatility in the financial markets. Strong corporate governance, which includes competent supervision by firms' boards of directors and senior management, is needed to ensure that such systems are in place and functioning as anticipated. The audit committees of the boards of directors should provide oversight of internal and external auditor activity to ensure appropriate focus and to ensure that management is not overriding internal controls. Although accountability for controlling the risks associated with derivatives rests with the boards of directors and senior management, auditors play a primary role in testing compliance with risk-management policies and controls. Management accountability for internal controls can be enhanced through annual formal assessments and public reporting on the effectiveness of risk-management policies and controls. Review by the external auditor should enhance the reliability of such reports. The likely effect of such assessments and reporting would be to increase the attention given to derivatives risk management by senior management and boards of directors.

The 15 major OTC derivatives dealers we visited described how their boards and senior managers were involved in controlling derivatives activities. Recent studies of derivatives activities and some of our prior work have shown a need for improvement in corporate governance systems. In addition, significant losses have been reported recently by several participants in the derivatives markets. According to published reports, some of these losses were related to breakdowns in their risk-management systems for derivatives activities.

Corporate Governance Requirements Were Enacted by Congress in Response to Failures of Banks and Thrifts

Our prior work analyzing failed financial institutions, including banks, thrifts, and insurance companies, showed that weak systems of corporate governance were a predominant characteristic of the failed institutions.¹ Our report on the audit committees of the nation's largest banks (those with assets of \$10 billion or more) showed that their committees lacked the independence and expertise that we believed were necessary to properly oversee bank operations.² Congress recognized the link between

¹Failed Banks: Accounting and Auditing Reforms Urgently Needed (GAO/AFMD-91-43, Apr. 22, 1991); Bank Failures: Independent Audits Needed to Strengthen Internal Control and Bank Management (GAO/AFMD-89-25, May 31, 1989); Thrift Failures: Costly Failures Resulted From Regulatory Violations and Unsafe Practices (GAO/AFMD-89-62, June 16, 1989); and Insurer Failures: Regulators Failed to Respond in Timely and Forceful Manner in Four Large Life Insurer Failures (GAO/T-GGD-92-43, Sept. 9, 1992).

²Audit Committees: Legislation Needed to Strengthen Bank Oversight (GAO/AFMD-92-19, Oct. 1, 1991).

past failures of financial institutions and weak corporate governance when it enacted FDICIA. This act requires management of large banks and thrifts to perform annual comprehensive assessments of financial institutions' systems of internal controls over financial reporting and to report to federal regulators on the effectiveness of such systems. In addition, FDICIA requires the institutions' external auditors to attest to managements' assertions in a separate report to regulators. FDICIA also requires the applicable institutions to have an audit committee made up of outside directors who are independent of institution management and establishes a reporting link between the audit committee and external auditors. An essential responsibility of the audit committee is to review reports of management and the external auditors. For the largest institutions, FDICIA requires that audit committees include members with banking or related financial management expertise.

Unfortunately, regulations issued to date by the Federal Deposit Insurance Corporation (FDIC) to implement the corporate governance provisions of FDICIA have been limited. FDIC's decision to issue such limited regulations provides much latitude in how banks and thrifts implement the law and lessens the potential of the law to effectively control derivatives and other risk-taking by the banks. Effective implementation of the corporate governance model of FDICIA by major bank dealers and end-users of complex derivative products may require regulators to issue more specific regulations to ensure that the risks of derivatives activities are properly addressed.

We believe that the corporate governance model established by FDICIA has broad applicability to both major dealers and end-users of derivative products. Strong internal control systems; independent, knowledgeable audit committees; and public reporting on internal controls are critical to firms engaged in complex derivatives activities and should play an important role in ensuring sound financial operations and protecting shareholder interests of these firms. Thus, we encourage the boards of directors of major dealers and end-users of derivatives that have not already done so to establish and implement these improvements.

**Management, Directors,
and Auditors All Play
Crucial Roles in Effective
Corporate Governance**

For derivatives market participants, an effective corporate governance system needs to specifically address all areas of risk related to these activities. In each of these areas, the board of directors, senior management (and its designated risk-monitoring unit), the audit committee, internal auditors, and external auditors all have important

roles in an effectively operating risk-management system. The different roles that each of these groups play represent critical checks and balances in the overall risk-management system.

For example, in an effective risk-management system, the board of directors would be responsible for approving the risk-management policies and controls that management proposes. By this approval process, the board would gain an understanding of the types and amounts of derivatives exposures and the impact they might have on the firm under varying scenarios. The board could look to the risk-monitoring unit and the outside auditors to provide an analysis of this exposure before it approves related policies and controls. The board ultimately would be accountable for the level of risk assumed by the firm concerning derivatives. Unless the board were knowledgeable and well-informed, it would become an ineffective link in the risk-management process.

The role of senior management (and its risk-monitoring unit) would be to implement the approved policies and controls to ensure that risks from derivatives activities are (1) within the limits approved by the board, (2) properly analyzed before transactions are undertaken, (3) monitored on an ongoing basis, and (4) comprehensively reported on in a timely manner. For example, policies and controls would be in place to ensure that (1) before entering into transactions, established risk limits were understood, the legality of the related contracts was assessed, an analysis of counterparty financial strength was performed, market factors were considered, and system capabilities to record and track transactions were in place; (2) after entering into transactions, changes in counterparty strength and market factors would be constantly monitored and reacted to as necessary; and (3) the results of derivatives activities and the risk exposures they represent would be reported to the board and senior management on a regular basis. These risk-management activities would be thoroughly documented in order to provide the next link in the risk-management system—compliance testing.

Oversight of testing compliance with risk-management activities would be most effective under the purview of the audit committee. Using the internal and external auditors as its tools, the audit committee would ensure that the approved risk-management policies and procedures were being effectively carried out in the daily operation of the firm and that management was not overriding related internal controls. This function would require systematic identification, testing, and evaluation of the critical internal controls that were designed to ensure compliance with

established policies and procedures. For example, risk-management controls could include requiring approval of transactions based on dollar thresholds, limiting concentrations of risk, monitoring counterparty credit deteriorations, testing the accuracy of counterparty information entered into the monitoring system, and verifying the existence of collateral. The audit committee would also oversee the development and implementation of a program for compliance testing and evaluation of these controls by the internal and external auditors.

Effective oversight by the audit committee would require that committee members be independent of management and have a working knowledge of the risks and exposures of derivatives activities. The committee would have access to legal counsel and to other outside experts, if necessary, to help assess these risks and exposures. In addition, internal and external auditors would need to be highly trained professionals who were capable of evaluating the wide array of complex derivatives transactions and their related risks.

The results of the internal control testing and evaluation would be reported to the audit committee, which would then report such information to the full board of directors. The board and management would take immediate action to correct control weaknesses identified in this process.

Most of the major studies on derivatives activities—which did not specifically focus on the 15 major OTC dealers we visited—have indicated weaknesses in boards of directors' and senior managers' understanding of and controls over derivatives. The Group of Thirty report included, among other things, recommendations on the involvement of boards and senior managers in managing derivatives activities. The report noted that top management at some firms may not have the expertise and involvement needed to adequately address the risks that derivatives pose to their firms. Similarly, the federal bank regulators' joint study on derivatives reported that management needed to increase its awareness and understanding of the nature of the risks assumed in the firms' derivatives activities. Management and boards that do not have a sufficient understanding of derivatives should call upon experts to assist them in gaining knowledge of derivatives and in developing appropriate risk-management systems for the derivatives activities of their firms.

Regulators Play a Role in the Assessment of the Overall Adequacy of Risk-Management Systems

For regulated entities, another important check in the risk-management system is the applicable federal regulator. The regulator has the important role of an outside assessor of the overall adequacy of the risk-management system. Federal banking regulators have been playing this role to some extent. They reported that bank derivatives dealers need to continue enhancing their procedures and infrastructures for managing and controlling derivatives risk as well as committing sufficient financial and managerial resources to developing risk-monitoring systems. We found that bank examiners had identified at least 16 instances where major bank dealers had incomplete or inadequate policies addressing their derivatives activities.

The regulatory role can be enhanced if the regulator establishes standards for prudent risk-management practices for derivatives and reporting requirements that allow for the monitoring of both specific entity and systemwide derivatives activities. The Office of the Comptroller of the Currency (OCC)³ and the Federal Reserve⁴ separately issued guidance for the use of their bank examiners and banks involved in derivatives activities. Both incorporated many of the Group of Thirty recommendations on board and senior management responsibility. This responsibility includes ensuring that derivatives activities are (1) consistent with boards of directors' overall risk-management philosophy and firms' business strategies, (2) conducted in a safe and sound manner, and (3) overseen by an independent risk-management group that has clear authority to carry out its responsibilities.

In previous reports, we have recommended that banking regulators increase the effectiveness and efficiency of their regulatory examinations by focusing more attention on the adequacy of an institution's overall system of internal controls. The types of risk-management practices described in the guidance issued by OCC and the Federal Reserve could be used by regulators not only as a basis for assessing risk-management of derivatives activities but also for assessing the overall risk-management activities of the institution. FDICIA's requirements for management and auditor internal control assessments and reporting, if properly implemented, could efficiently assist examiners in making their assessments. Examiners can use the work of management and auditors to

³Banking Issuance (BC-277): Risk Management of Financial Derivatives, Comptroller of the Currency (Oct. 27, 1993).

⁴Supervision and Regulation Letter 93-69: Examining Risk Management and Internal Controls for Trading Activities of Banking Organizations, Board of Governors of the Federal Reserve System (Dec. 20, 1993).

supplement their examination procedures as long as they adequately review such work.

Reporting on Risk-Management Assessments Is Key to Accountability

Formal, documented assessments of risk-management policies and controls, with public reporting of the results, would help strengthen risk-management systems through increased public accountability of management and boards of directors. This type of formal assessment and reporting helps fulfill (1) the need of investors to know how well their investments are being managed, (2) the necessity for regulators to have an early warning of problems that could lead to future financial deterioration of regulated entities, (3) the obligation of counterparties and other creditors to understand the credit risk associated with these entities, and (4) the desire of the general public to have accountability in our financial system.

Officials from all 15 dealers we visited said that they had documented assessments of risk-management systems and some form of board of director and senior management involvement in monitoring and controlling derivatives activities.⁵ Examples of involvement that some cited included (1) senior managers assessing the institution's risk exposure and establishing policies for derivatives, (2) derivatives managers reporting directly to the board of directors, and (3) executive-level committees establishing and approving the credit and trading limits for derivatives transactions. Nevertheless, the Group of Thirty report found that one-third of the dealers responding to its survey of 80 U.S. and foreign dealers did not involve senior management in authorizing traders to commit firms to transactions.

We found that the external auditors performed some reviews of firms' derivatives risk-management systems in connection with their audits. Some dealers reported publicly on managements' assessments of internal controls. In general, we did not find specific reporting on risk-management systems for derivatives by the dealers. However, the 1993 annual reports of some dealers provided expanded discussion of risk-management practices for derivatives. We did not find public reporting on internal controls, either general or specific, by the external auditors of these major dealers.

⁵We did not attempt to duplicate the extensive industry surveys and description of industry operations done by the Group of Thirty and others. Instead, we talked to major U.S. OTC derivatives dealers about their operations and surveyed them to obtain consistent information about particular risks. (See app. III.)

Under FDICIA, beginning in 1994, dealers that are large commercial banks and their auditors are required to report to regulators on management assessments of internal controls over financial reporting and safeguarding of assets. These assessments encompass a major portion of the risk-management systems for derivatives. A framework for evaluating and reporting on controls over financial reporting and safeguarding of assets, including the types of risk-management controls over derivatives activities, is now available to management and auditors. This framework, entitled *Internal Control-Integrated Framework*, was issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in September 1992. With a recent addendum concerning safeguarding of assets made at our request, we believe the COSO framework is an effective approach to evaluating and reporting on internal controls. For purposes of public management reporting, the COSO addendum provides the following definition related to safeguarding controls:

“Internal control over safeguarding of assets against unauthorized acquisition, use or disposition is a process, effected by an entity’s board of directors, management and other personnel, designed to provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of the entity’s assets that could have a material effect on the financial statements.”

The addendum provides a related definition of effectiveness:

“Such internal control can be judged effective if the board of directors and management have reasonable assurance that unauthorized acquisition, use or disposition of the entity’s assets that could have a material effect on the financial statements is being prevented or detected on a timely basis.”

Formal assessments and reporting on internal controls over financial reporting and safeguarding of assets using the COSO framework will provide a consistent measure of accountability for effective risk management of derivatives and other activities. The likely effect of such assessments and reporting would be to increase the attention to risk management by senior management and boards of directors. Currently, such assessment and reporting requirements and audit committee requirements apply under FDICIA to large insured depository institutions. Because many major derivatives dealers and end-users are not insured depository institutions, these requirements do not extend to them.

A strong system of internal controls is particularly important for major derivatives dealers because the volume and complexity of these activities

require significant reliance on systems. The application of FDICIA's requirements to all major dealers could be an effective means to ensure that their risk-management systems were operating effectively. If the systems were operating effectively, they could help alleviate the risk of a systemic crisis resulting from the failure of one of these dealers. Further extension of these requirements to all major end-users of complex derivatives would greatly increase the accountability of these companies to investors, creditors, and the general public. Such strong corporate governance is not meant to preclude firms from taking risks but is meant to preclude them from taking risks without the knowledge and approval of senior management and the board of directors.

The general types of risk associated with derivatives activities—credit, market, legal, and operations—must each be considered in the design and evaluation of an effective risk-management system. The corporate governance roles of the board of directors, senior management, the audit committee, and the auditors must extend to each of these types of risk. Determining the level of involvement of these various groups depends on the nature and magnitude of the particular risk exposure. A discussion of each of these general risks as it relates to the 15 firms we visited and specific guidance for controlling these risks follows.

Credit Risk Is a Key Consideration in Managing OTC Derivatives

Credit risk is the exposure to the possibility of financial loss resulting from a counterparty's failure to meet its financial obligations. Major OTC bank dealers reported that the dollar amounts of credit exposures were generally lower for their derivatives activities than for their traditional loans as of December 1992. Also, for 1992, the major OTC dealers reported losses from credit risk of less than one-half of 1 percent of their gross credit exposures. However, managing credit risk can be difficult for OTC derivatives because credit exposure can change rapidly. The Group of Thirty recommendations and bank regulators' guidance approached this risk in similar ways. The major OTC derivatives dealers we visited described procedures that generally followed these approaches. However, the Group of Thirty report and bank regulators' examinations found weaknesses in the procedures derivatives dealers use to manage credit risk.

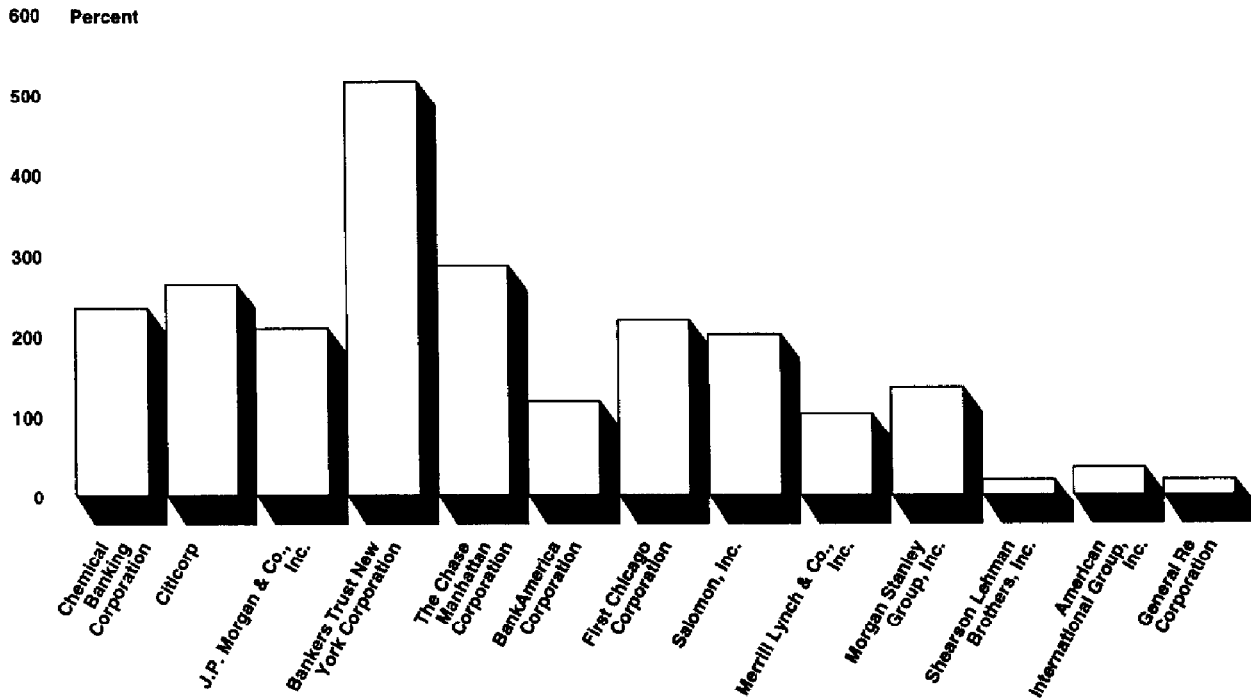
Credit Exposure Is Significant, but Losses to Date Have Been Small

The major OTC derivatives dealers put their capital at risk in an attempt to profit from their derivatives activities. Using equity (assets minus liabilities) as a simple measure of capital, we found that for these dealers,

derivatives-related credit exposures were higher than their equity. However, for all but one bank dealer, credit exposure from derivatives was lower than credit exposure from bank loans. For all of the major OTC derivatives dealers, their credit exposures from derivatives were also far lower than the outstanding notional/contract amounts of their derivatives contracts because the notional amount is not exchanged in many derivatives transactions and is not a measure of the amount at risk. The 14 major U.S. derivatives dealers that responded to our survey reported that their combined gross exposure to credit risk from OTC derivatives in 1992 was \$114 billion, or 1.8 percent of their \$6.5-trillion notional/contract amounts.

Our analysis indicated that the reported derivatives-related credit exposures of the major U.S. dealers varied. As shown in figure 3.1, the exposures for the 13 dealers for which information was available ranged from about 19 percent to more than 500 percent of equity capital. This means that the financial condition of some derivatives dealers would be more quickly affected than others by sizable derivatives-related credit losses. As shown in figure 3.1, the gross credit exposure of 10 of the 13 dealers was equal to or greater than 100 percent of equity.

Figure 3.1: Derivatives Gross Credit Exposures of 13 U.S. OTC Derivatives Dealers as a Percentage of Equity, 1992

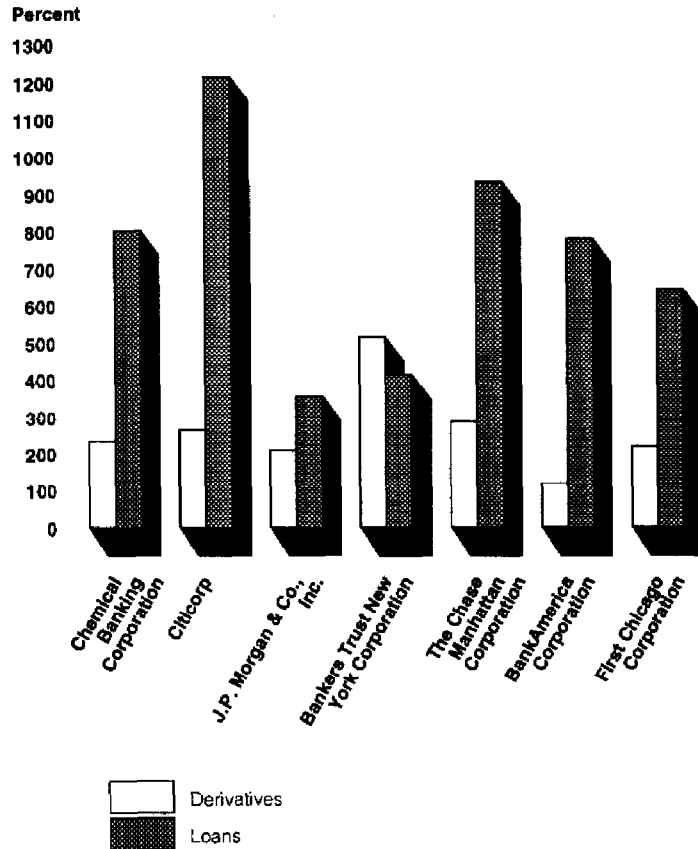


Note: Table only includes data for 13 of the 15 major OTC derivatives dealers because 2 did not make comparable public disclosures.

Source: Annual reports for 1992.

Our analysis of the reported derivatives-related credit exposures of the major U.S. bank dealers also showed that their derivatives activities generally represented less exposure than their lending activities. As shown in figure 3.2, the derivatives-related credit exposures for the seven U.S. bank dealers were, with one exception, much lower than the credit exposure arising from their loans.

Figure 3.2: Credit Exposures of Derivatives and Loans of Seven U.S. Banks Compared as a Percentage of Equity, 1992



Source: Annual reports for 1992.

Although complete information was unavailable, the data on derivatives-related credit loss experience also showed that these activities had not produced large losses as of year-end 1992. According to data provided by the 14 major U.S. OTC derivatives dealers that responded to our survey, the 1992 total losses incurred by those dealers as a result of derivatives counterparty default was \$250 million, or about 0.2 percent of their combined gross credit exposure. For the 3-year period from 1990 to 1992, these dealers reported incurring total credit-related derivatives losses of about \$400 million.

Assessing and Managing Credit Risk Is More Difficult for OTC Derivatives

Managing derivatives-related credit risk can be difficult because the amount of exposure can change rapidly. Almost all derivatives-related credit exposure in the United States arises from OTC products because derivatives transactions conducted on exchanges are processed by clearinghouses. Clearinghouses guarantee payments between counterparties, thus significantly reducing credit risk for exchange-traded derivatives.

Assessing and managing the credit risk of OTC derivatives requires close monitoring of changes in the market values of these contracts because such changes affect the potential loss from defaults. The market value of contracts changes with fluctuations in the underlying—such as interest rates or foreign exchange rates. For example, if the value of the German mark rises after a firm enters into a forward contract to buy marks at a future date, the contract value will have increased for this firm. However, this increased value can be realized only if the counterparty to the contract meets its obligation. In this way, increases in a contract's value increase the firm's credit exposure. To measure its total credit exposure, a firm with a derivatives portfolio must frequently update the values of its derivatives contracts to determine the impact on credit exposure of changes in market prices and rates.

Guidance Exists for Managing Derivatives Credit Risk

The Group of Thirty report and the bank regulatory guidance state the following three important practices for firms in their management of derivatives credit risk:

- Firms need to fully measure their derivatives-related credit risk and establish limits on the amount of exposure by counterparty. According to the recommendations of the Group of Thirty report, fully measuring firms' derivatives credit exposures requires determining (1) each contract's market value (current exposure) and (2) the potential increase in this market value (potential credit exposure). The second step involves estimating a probable future market value for a derivatives contract, assuming changes in the underlying market prices or rates.⁶
- Firms need to establish a separate, independent credit management function for overseeing customer credit analysis, developing credit limits, and monitoring compliance with these limits. The Group of Thirty recommended that an independent credit risk-management function with clear authority and analytical capabilities be responsible for approving

⁶In a typical interest rate swap, the potential credit exposure increases early in the life of the swap and then declines as the maturity date nears.

standards used to measure credit exposure for all activities, not just derivatives, setting credit limits and monitoring their use, reviewing credits and concentrations of credit risk, and reviewing and monitoring risk-reduction arrangements.

- Firms need to use bilateral netting agreements to reduce their credit exposures with individual counterparties. Such agreements allow parties to combine payment obligations arising from multiple transactions into one net payment and also allow them to create only one obligation in the event of one party's default or failure.⁷

Major U.S. Dealers Manage Credit Risk in Various Ways

Officials of the major U.S. derivatives dealers we interviewed described managing their derivatives-related credit risk in ways that generally conformed to recommendations by the Group of Thirty and guidance provided by bank regulators. Officials of these dealers said that their firms operated with independent credit risk-management functions, had established credit limits, and used netting agreements. In addition, they said that their firms reduced credit risk by conducting most of their derivatives transactions with counterparties that had high credit ratings.

Each of the 15 major OTC dealers we visited reported having an independent credit risk-management group. These groups were described as being responsible for analyzing the creditworthiness of potential derivatives counterparties, setting limits on such exposures, and monitoring compliance with these limits. For example, officials of one firm told us that its separate credit management department had established nine categories of creditworthiness for derivatives counterparties. The officials said that the department used these categories to set varying limits on the amount of derivatives transactions that could be made with firms in these categories. They said that the credit management department was separate from the derivatives trading departments and reported directly to this firm's senior management.

⁷In addition to bilateral netting, multilateral netting has the potential to further reduce credit risk. Under multilateral netting, each participant has one obligation that results from netting its positions with those of all other participants in the multilateral netting system. Multilateral netting reduces the amount of money subject to settlement risk (the risk that funds and/or financial instruments will not be exchanged as anticipated) by releasing capital currently used to support derivatives transactions. In this way, multilateral netting can reduce systemic risk. However, it also has the potential to increase systemic risk by concentrating risk in a central counterparty and increasing incentives to expand derivatives activities to lower credit counterparties. While multilateral netting systems exist for exchange-traded derivatives, no major multilateral netting system exists for OTC derivatives. Commercial banks are developing proposals to establish such systems for certain OTC foreign exchange contracts, but progress has been shown. (See Report of the Committee on Interbank Netting Schemes of the Central Banks of the Group of Ten Countries, BIS (Basle, Switzerland: Nov. 1990).

Officials of each of the 15 dealers also told us that they had established credit risk limits and systems to ensure firms' observance of the limits. Features of their credit risk-monitoring practices included (1) using automated systems to quickly determine whether a counterparty's limit had been exceeded; (2) checking compliance at the end of the day and directing instances of exceeded limits to management for action; and (3) requiring traders to seek prior management approval for some transactions, such as those exceeding a certain dollar threshold.

The 14 dealers that responded to our survey reported they were using netting agreements to reduce credit risk. According to our survey, a combined total of about 75 percent of OTC derivatives notional/contract amounts were subject to netting agreements for the 12 firms that provided specific information as of December 1992. The 14 dealers that responded to our survey reported that their combined gross exposure to credit risk from OTC derivatives as of December 1992 was \$114 billion. This amount was reduced to about \$68 billion after taking into account netting agreements, collateral, and other credit risk reduction techniques.

The 14 dealers also said they reduced their credit risk by conducting most of their derivatives activities with counterparties of high credit quality. Twelve firms reported that 94 percent of both their notional/contract amounts and credit exposure as of December 1992 was with investment grade counterparties. That is, most of their counterparties had BBB or Baa and higher credit ratings.⁸ We also developed information that confirms the high credit quality of most derivatives counterparties. From publicly available data, we identified 200 firms with swap portfolios of at least \$1 billion as of year-end 1991. These firms included many financial institutions and commercial firms. As shown in table 3.1, 97.5 percent of the total \$5.5 trillion of outstanding notional amount of swaps held by these firms was recorded by firms that had investment grade ratings. Only 2.5 percent of the total was recorded by firms with noninvestment grade ratings.

⁸According to major credit rating agencies, Standard & Poor's/Moody's, AAA/Aaa through BBB/Baa ratings are investment grade, respectively. AAA/Aaa are the highest rating indicating that capacity to repay debt is extremely strong. AA/Aa indicate a very strong capacity to repay differing from AAA/Aaa only in a small degree. A indicates a strong capacity to repay although with somewhat more susceptibility to adverse effects of changes in circumstances and economic conditions than in the higher rated categories. BBB/Baa indicate an adequate capacity to repay but with somewhat more susceptibility to adverse effects of changes in circumstances and economic conditions than in the higher rated categories.

Table 3.1: 1993 Credit Ratings of 200 Companies With More Than \$1 Billion in Swaps Outstanding as of Year-End 1991

Dollars in billions			
Credit rating	Number of companies	Outstanding notional amounts of swaps	Percent
AAA or Aaa	21	\$535	9.7%
AA or Aa	34	1,747	31.7
A	78	2,023	36.7
BBB or Baa	38	1,066	19.4
Total investment grade	171	\$5,371	97.5%
Speculative	15	30	0.6
Unrated	14	106	1.9
Total noninvestment grade	29	\$136	2.5%

Sources: Swaps Monitor Publications, Inc., Derivatives Strategy & Tactics, Inc., and various annual reports.

The likelihood of default losses on investment grade credit exposure is low, on the basis of historical performance. A major credit-rating agency tabulated the performance of 4,000 bond issuers over a 22-year period. It found that the worst 1-year default rate for investment grade issuers was 1.1 percent for those firms that had Baa ratings within the prior year. The demand for a top credit rating among OTC market participants has provided an incentive for derivative dealers, whose credit ratings are below AAA and AA, to create separately capitalized, credit-enhanced AAA subsidiaries. These subsidiaries have ratings higher than their parent firms primarily because capital is segregated in the separate subsidiaries.

Weaknesses in Credit Risk-Management Procedures Have Been Found

The recommendations of the Group of Thirty and the guidance of federal bank regulators were based on weaknesses that the Group of Thirty and the regulators each had discovered in the procedures of various derivatives dealers. According to survey results published in the Group of Thirty report, 25 percent of the 80 dealers surveyed did not monitor counterparty exposures on at least a daily basis. Although most dealers regularly updated and monitored the market values of their derivatives (their current exposure), about 78 percent did not frequently adjust the total estimated credit exposures to account for changes in the potential credit exposures of individual transactions. Not adjusting these amounts can lead to inaccuracies in calculations of a firm's total credit risk.

In its dealer survey, the Group of Thirty also found that most firms' risk-management systems were incapable of monitoring

derivatives-related credit risk across products and activities. The systems used by about half of the dealers did not aggregate exposures from derivatives and nonderivatives activities across all products and all business lines. Of these, about half planned to introduce this capability. Without this capability, a firm could extend credit that exceeded previously determined limits. About 66 percent of the dealers surveyed also had not integrated their derivatives-related credit risk-management systems with those for other activities, such as loans. And less than half of these planned to make this improvement.

Bank regulators have cited major U.S. bank derivatives dealers for credit risk-management weaknesses, such as failure to set or follow risk limits. For example, one institution did not always document credit approvals for derivatives transactions. Another institution was not monitoring its credit exposures with counterparties on a global basis. Because of these weaknesses, these institutions could not ensure that they would not exceed their counterparty limits.

Managing Market Risk for Derivatives Can Be Complex

Another derivatives-related risk is market risk. As defined in chapter 1, market risk is the exposure to the possibility of financial loss resulting from unfavorable movements in interest and currency rates as well as equity and commodity prices. A key step in managing market risk is measuring it. Accurately measuring derivatives market risk is dependent upon accurate derivatives pricing. However, pricing can be difficult because derivatives' values are affected by many factors. The Group of Thirty recommendations and regulatory guidance proposed similar practices for managing market risk. And the major U.S. dealers we visited described practices that were generally like those proposed. However, the Group of Thirty and federal bank regulators have identified weaknesses in the practices derivatives dealers follow in managing market risk.

Measuring and Managing Derivatives Market Risk Can Be Difficult

Accurately measuring the market risk for derivatives portfolios requires the use of modern computer systems and software that rely on the most advanced mathematical, statistical, and database techniques. One aspect of derivatives that makes measuring and, therefore, managing market risk difficult is that their values are influenced by many different factors. For example, the value of a portfolio of foreign exchange options is affected by changes in exchange rates, interest rates, and the length of time remaining before the options expire.

Increased difficulty in properly assessing the extent of some derivatives' market risk also arises because OTC products lack centralized markets, such as exchanges, where prices are readily disclosed. Instead, dealers of OTC derivative products use sophisticated mathematical models to compute a product's value using various factors. Sometimes, the factors used in these calculations are assumptions that can vary depending on characteristics, such as the periods selected to calculate their value.

The market risk of derivatives can also be difficult to measure because the values of some of these products can change in different proportions than the assets or rates that underlie them. For example, if the exchange rate between two currencies changes by 5 percent, the value of a foreign exchange forward involving these currencies would change roughly symmetrically, or by about 5 percent. However, the value of options involving these currencies would not change symmetrically. The asymmetrical movement in option prices makes measuring their market risk and, therefore, appropriately managing it more difficult, especially as the size of a firm's portfolio grows.

Further, the development of more complex derivative products, such as hybrid derivatives, complicates pricing and, therefore, measuring and managing market risk. Hybrid derivatives are composite products that can include two or more underlyings that can determine pricing and payout (profit or loss). However, the two or more underlyings cannot be isolated or decomposed into independent single underlyings. As a result, while hybrids can be more economical (for example, composite options are less costly than a portfolio of options on every underlying), the risk of mispricing can be greater.

Finally, measuring the extent of market risk of derivative products alone is not sufficient to understand the firm's total market risk. Derivatives might be used in conjunction with other assets and liabilities. As discussed in chapter 1, a forward contract might be used to hedge the future value of a firm's cash in another currency. As the exchange rate fluctuates, the value of the forward contract and the value of the cash will change in opposite directions. Therefore, determining the firm's market risk requires assessing the market risk of both positions in relation to each other. These assessments can get extremely complicated for the major OTC derivatives dealers, because they do not hedge each asset or liability individually. Rather, they might hedge different combinations of assets and liabilities together using different combinations of derivatives. Determining their

total market risk requires assessing the relationships and changes in values of their entire portfolio.

Although only limited data exist on the extent of unanticipated losses due to market risk involving derivatives, the available information indicates that such losses can be significant. As indicated in chapter 1, while leverage provides a less expensive way to profit from market value changes, it can also lead to potentially large losses. For example, a futures contract to buy \$100,000 of U.S. Treasury bonds can be purchased by a deposit of as little as \$1,500. However, if the price of these bonds declines by only 1 percent, the value of this futures contract would decrease by \$1,000, or 66 percent of the amount deposited. We could not identify any aggregate data on losses resulting from derivatives activities, but recent regulatory and press reports have indicated that commercial firms that are end-users have suffered large losses by either speculating using derivatives or failing to properly manage attempts to hedge their business activities. For example, one large international firm lost more than \$1 billion in derivatives transactions after market prices moved against its derivatives transactions.⁹

Guidance Exists for Managing Market Risk

The Group of Thirty recommendations and federal bank regulatory guidance encourage dealers to include in their risk-management systems two primary elements. First, systems should be able to measure and limit exposure to market risk losses. This requires firms to value all their derivatives using market values—called mark-to-market. Federal Reserve guidance recommends that banks mark-to-market their derivatives portfolios at least daily. It also recommends that banks have systems that assess the impact of price movements⁹, or exposure to loss, of a given probability over a specified time on derivatives. In addition, the guidance recommends that boards of directors set approved limits on such exposures to loss. Second, systems should stress test, or simulate, the impact that various changes in market prices and rates would have on the value of a firm's derivatives portfolio. For example, Federal Reserve guidance expects the bank to analyze its ability to withstand changes in

⁹According to the Commodity Futures Trading Commission (CFTC) and various trade journals, in late 1993, the U.S. subsidiary of a large German commodities firm reportedly incurred extensive losses on various OTC and exchange-traded derivatives contracts after oil prices moved against the firm. Financial assistance arranged by Deutsche Bank, a part owner of the firm, reportedly involved more than 120 international banks and about \$2 billion to resolve the crisis. According to news accounts, poor operations controls were responsible for allowing the losses at this firm to grow to such levels. Reports are also beginning to appear about unanticipated derivatives losses totaling in the hundreds of millions of dollars by some U.S. firms.

price resulting from market events or changes in market participant behavior that could have adverse effects.

Dealers Report Using a Variety of Ways to Manage Market Risk

All 15 major U.S. dealers we visited described having risk-management systems that included limits on their market risk exposure and stress testing procedures, although the way each firm's system operated varied. The 15 dealers said they valued their derivatives portfolios on a mark-to-market basis and had limits on their exposure to market risk. Often these dealers had overall limits that included limits on the amount of exposure that could be incurred by different organizational units, products, or individual traders.

The dealers measured these limits in various ways. For example, one official said that the firm used earnings-at-risk limits that established the maximum amount of earnings the firm was willing to risk in its derivatives portfolio. An official of another firm said the firm set limits based on a daily measurement of the maximum amount it could lose on its derivatives positions over the next year. This firm's risk-management system produced a report of these amounts across risk categories, including interest rates, equities, commodities, and various foreign currencies.

The systems these dealers used to report their market risk exposures also varied. We were told about (1) a system capable of updating the values of all positions almost immediately, giving management knowledge of the current value of the firm's derivatives holdings; (2) a system that provided traders and supervisors instant access to information on individual trader's positions and provided daily consolidated reports to management; (3) a system that compiled the value of derivatives holdings on a global basis; and (4) a system that consolidated all positions in specific geographic areas but not for the firm as a whole.

The 14 dealers that responded to our survey reported that they stress tested their portfolios to determine the effects of movements in market prices on portfolio value, including the firms' derivatives. The tests were intended to simulate price changes based on historical volatilities over, for example, a 2-year period. The actual periods used by other firms varied.

Weaknesses in Market Risk-Management Procedures Have Been Found

The Group of Thirty and federal bank regulators have identified some weaknesses in the procedures derivatives dealers used to manage market risk. Of the 80 U.S. and foreign derivatives dealers that the Group of Thirty surveyed, 15 percent indicated they did not mark their derivatives trading portfolios to market. Large dealers more frequently reported having systems that marked derivatives to market than did small ones. Also, 39 percent of the dealers surveyed did not stress test their portfolios to determine the impact of unexpected market changes on their derivatives portfolios; 20 percent of the large dealers in the survey were not using this technique.

Bank examiners have identified weaknesses in procedures used by major U.S. bank dealers to control market risk. For example, bank examiners identified at least 12 instances of these banks failing to accurately value their derivatives positions. At one institution, regulators found that the bank had not yet developed earnings-at-risk limits for all the derivative products it was trading. At another bank, regulators found that the institution's risk limits for changes in the value of interest rate products with different maturities were not sufficiently detailed to limit losses that could occur if interest rates did not change equally for all maturities.

Various Factors Affect Legal Enforceability of Derivatives Contracts

A third type of derivatives-associated risk is legal risk—the possibility of financial loss resulting from an action by a court or by a regulatory or legislative body that invalidates a derivatives contract or prior derivatives transactions. Legal risk is associated primarily with OTC contracts in the United States because the legal standing of exchange-traded derivatives is better established. The management of legal risk requires anticipating events that could affect the enforceability of contracts. To date, we are aware of one case involving action by a legal body that produced relatively large losses for some dealers. The Group of Thirty report and bank regulatory guidance address legal risk in derivatives activities, and firms report using a variety of ways to manage this risk.

The primary legal risk for derivatives is that a court or other body will find the contract to be unenforceable. For example, the terms of a derivatives contract may violate a law. Until recently, users of swaps and other OTC derivatives in the United States faced the risk that a court would invalidate their contracts as illegal off-exchange futures contracts. The Commodity Exchange Act (CEA) requires that any trade in a futures contract be executed on an exchange designated by CFTC. Although CEA does not define a futures contract, administrative and judicial decisions have

applied the term broadly enough to potentially include swaps and other derivatives that have futures-like characteristics. A judicial decision defining one of these contracts as a futures contract would have both invalidated the contract and called into question the legality of many OTC derivatives activities.

Without resolving whether any OTC derivative was a futures contract, CFTC substantially reduced this legal risk by using authority that the Futures Trading Practices Act of 1992 granted it to exempt swaps from most CEA provisions, including the exchange trading requirements. However, the exemptive provision does not completely eliminate the risk that a swaps contract could be found to violate CEA. Furthermore, it does not apply to swaps whose payments are based on the prices of securities or securities indexes.

The potential for derivatives to be found in violation of existing laws also exists in other countries. The Group of Thirty reported that some derivatives continue to face uncertain treatment under gambling statutes in Brazil, Canada, and Singapore.

Another source of legal risk is that a party to a derivatives contract may be deemed to have lacked the authority to have entered into the contract. A legal decision of this kind in the United Kingdom produced some of the largest derivatives losses that have occurred to date. In this case, a court found that a local government council lacked the legal authority to enter into derivatives contracts. That decision invalidated the council's swaps and other contracts. As a result of the decision, the derivatives contracts of approximately 130 such local councils were invalidated, resulting in losses of about \$178 million to more than 75 derivatives dealers.

Even when a contract is valid, a court or other organization may not give effect to a material contract provision. For example, many derivatives dealers and users are concerned about the enforceability of netting agreements. As discussed previously, netting is a means of reducing the credit risk associated with OTC derivatives contracts. Counterparties to a series of contracts agree to offset their reciprocal payment obligations against each other and exchange a single payment representing only the difference. Netting thereby reduces their credit exposures by preventing one counterparty that becomes insolvent from suspending its payments, while at the same time demanding performance by its counterparty. Recent changes in U.S. law have made the enforceability of netting virtually certain; however, questions remain about the enforceability of

some netting agreements. Because the law does not explicitly address cross-product netting, doubt remains about the enforceability of all agreements to net across product types. That is, to net a swaps amount against a forwards amount is still in doubt.

The enforceability of netting in other countries is uncertain. The Group of Thirty report, which considered legal opinions addressing derivatives issues for the United States and eight other countries, stated that although many of these countries had taken steps to increase the legality of netting agreements, more could be done to increase certainty. For example, the report noted that in Australia no specific law provided for the netting of obligations and that in Japan no court precedent supported netting.

The bank regulatory guidance recommended similar procedures for limiting legal risk. It indicated that banks should reasonably satisfy themselves that their counterparties have the legal authority to enter into transactions. In addition, it recommended that banks satisfy themselves of the legality of the terms of any contract governing their derivatives activities with a counterparty.

All 11 major U.S. derivatives dealers that responded to the legal risk part of our survey described similar methods of limiting the legal risk in derivatives activities. These dealers indicated that their legal departments assessed the enforceability of their derivatives contracts and, when appropriate, obtained legal opinions regarding counterparties' authority to enter into contracts.

Major OTC Derivatives Dealers Reported Using Sophisticated Systems to Manage Operations Risk, but Weaknesses Have Been Identified

The last risk in derivatives activities that we discuss is operations risk—the exposure to the possibility of financial loss resulting from inadequate systems, management failure, faulty controls, fraud, or human error. The Group of Thirty and bank regulators have recommended ways to address operations risk, and the major OTC derivatives dealers' descriptions of their systems generally included some of the same recommended elements. However, the Group of Thirty and regulators have identified weaknesses in derivatives dealers' management of operations risks. Further, while the losses we reported earlier resulted from unexpected market movements, the magnitudes involved reflect a breakdown in operations controls. Only such a breakdown could allow losses to grow so large before being detected.

Managing derivatives' operations risk requires developing the procedures and controls needed to ensure the effective management of the other basic types of financial risk, including credit, market, and legal risks. The Group of Thirty indicated that the procedures and controls of derivatives dealers should be adequate to ensure that derivatives transactions are recorded accurately; risks are measured fully; and traders comply with all required policies, procedures, and limits. The complex nature of many derivatives transactions increases the difficulty of developing adequate procedures and controls. For example, determining the value of most derivative products requires complicated mathematical calculations that are not easily done, especially on a daily basis, without advanced computer systems and skilled personnel.

The Group of Thirty recommendations and bank regulatory guidance provided similar procedures for controlling the operations risk of derivatives. They recommended that firms

- invest in qualified personnel and comprehensive risk-management systems that are commensurate with the scope, size, and complexity of their activities and risks;
- establish credit risk-management and market risk-management functions that are independent of trading personnel; and
- conduct internal audits of their derivatives activities to ensure that policies, procedures, and limits related to derivatives are being followed.

All 15 major U.S. derivatives dealers we visited told us they had controls over their derivatives activities. Examples they cited included the separation of duties between trading and administrative staff, independent transaction confirmations, and independent pricing of their OTC portfolios.

A specific example of a control used by the dealers we visited was that they generated information on their derivatives trading activities from two separate groups. The groups were traders, those who contact customers and do transactions, and administrative staff, those responsible for accounting and systems operations. Each group reported trading totals and estimated exposures daily and then compared the reports for consistency. These dealers emphasized the importance of good communication between both groups, pointing out that each must provide a check on the other, while having segregated duties and independence in key activities.

Although the major dealers attempted to control their operations risk, the Group of Thirty report noted that firms using derivatives should increase their efforts to hire additional qualified staff to administer support functions. The report found that the transaction confirmation function was fully automated at 40 percent of the dealers, partially automated at 10 percent of the dealers, and not automated at 45 percent of the dealers.¹⁰ Of the dealers that were partially automated or not automated, 80 percent planned to automate completely. Finally, the Group of Thirty found that one-third of the dealers that responded to its survey did not involve senior management in authorizing traders to commit the firm to transactions.

Effective management of operations and other derivatives risks requires a strong system of corporate governance. Earlier we discussed the importance of instituting such systems for major derivatives dealers and end-users. While the Group of Thirty report and regulators' guidance address some aspects of corporate governance, we do not believe they alone are enough to ensure that derivatives risks will be effectively managed.

¹⁰These percentages are quoted from the Group of Thirty report. They did not add to 100 percent.

Bank Regulators Are Improving Their Derivatives Oversight, but Weaknesses Remain

To better ensure the safety and soundness of individual banks and the U.S. financial system, federal bank regulators oversee all bank activities, including derivatives activities. Regulators use three primary means to oversee bank activities: reviewing required reports; requiring adherence to minimum capital standards; and conducting periodic examinations to verify compliance with reporting, capital, and other regulatory requirements. Although bank regulators have proposed improvements to the reports banks submit, information banks are currently required to report on credit risk exposures and derivatives earnings is insufficient for regulators to use in monitoring and identifying potential problems of major bank OTC derivatives dealers. Also, although minimum capital standards are designed to protect against credit risk losses from derivatives, banks' capital standards do not completely address the other risks of derivatives activities. Efforts are under way to expand these standards. Finally, bank regulatory examinations, which are critical to effectively monitoring the risk-management practices of the major bank dealers, cover derivatives activities but do not comprehensively assess and document internal controls over these activities. Bank regulators have taken other actions to address the risks associated with derivatives activities, including issuing guidance and sharing information in interagency forums.

Various Organizations Are Responsible for Overseeing Banks and the U.S. Financial System

A primary purpose of federal banking regulation is to better ensure the safety and soundness of individual banks and the U.S. financial system. Federal bank regulators monitor the financial soundness of federally insured banks to protect depositors' interests and to minimize potential losses to the Bank Insurance Fund. In addition, the Federal Reserve is responsible for ensuring the overall stability of the U.S. financial system by serving as a lender of last resort for banks and other institutions.

Four federal regulators oversee banks and thrifts, and these institutions may also be subject to oversight by state regulatory authorities. Banks with national charters are overseen by OCC. State-chartered banks that are members of the Federal Reserve are overseen by the Federal Reserve as well as by state-level banking authorities. The Federal Reserve also oversees bank holding companies. Federally insured state-chartered banks that are not Federal Reserve members are subject to the oversight of the FDIC and state banking authorities.¹ Thrifts are overseen by the Office of Thrift Supervision and, if not federally chartered, by state authorities.

¹FDIC also has some backup supervisory responsibilities for all federally insured depository institutions, even those primarily overseen by the Federal Reserve, OCC, and the Office of Thrift Supervision.

Of the top seven U.S. bank derivatives dealers included in our study, four are overseen primarily by OCC, and the other three are primarily regulated by the Federal Reserve and state banking authorities. We did not identify any thrifts that were derivatives dealers. As a result, the following discussion does not include thrifts overseen by the Office of Thrift Supervision.

Regulators Are Not Collecting Sufficient Information on Credit Risk and Earnings

To monitor the level of risk and the financial health of banks, regulators require banks to periodically report information on their operations, including their derivatives activities. As of April 1994, the derivatives-related information in reports banks were required to file was limited to total notional/contract amounts, total aggregated derivatives-related credit exposure, and total aggregated trading-related earnings from derivatives and other trading activities. However, bank regulators did not receive information such as large individual counterparty credit exposures or the source and amount of derivatives earnings. As a result, bank regulators cannot adequately monitor the credit risk of major OTC bank derivatives dealers or identify the way these dealers use derivatives. Bank regulators have recently proposed collecting additional information on banks' derivatives notional/contract amounts and market values, but these proposals do not include individual counterparty credit exposures or sufficient detail on derivatives earnings.

Current Reporting Is Incomplete

Reporting requirements are a means for bank regulators to monitor the financial condition of banks, including their derivatives operations. The current requirements for collecting information on the notional/contract amounts of derivatives activities are designed to enable bank regulators to identify the major market participants and monitor market trends. They also assist regulators in determining where best to apply examination resources at individual institutions.

As of April 1994, information that regulators were collecting on the total aggregated derivatives-related credit exposure provided them with only a limited and infrequent measure of the risk derivatives pose to these institutions. More detailed and frequent information on individual counterparty derivatives-related credit exposures would enable regulators to better ensure the safety and soundness of bank derivatives dealers and respond effectively in case of a market disruption. It would, for example, enable regulators to identify specific concentrations of credit exposure large enough to affect a bank's financial soundness. Identifying large credit

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exposures to classes of counterparties, such as those in a particular industry or country, could be especially useful if the economic prospects or financial conditions of those counterparties changed over time. If a large derivatives dealer failed or developed financial problems, regulators could also use counterparty exposure information to identify the institutions to be contacted first as part of mitigating a crisis or resolving a failure.

Banks—including the seven major bank derivatives dealers we identified—have been required since 1990 to more precisely report the notional/contract amounts of their derivatives activities. These reports are required quarterly and are to include separate totals for interest rate and foreign exchange derivatives and a combined total for equity and commodity derivatives. For each of these types of derivatives, banks report a combined total for forwards and futures and separate totals for options and swaps.² Each quarter, banks also report their total derivatives-related credit exposure, aggregated for all counterparties.³ Separate totals are reported for interest rate and foreign exchange rate contracts, with subtotals reported for contracts maturing in 1 year or less and those maturing in more than 1 year.

Derivatives' credit exposures change continuously as positions, rates, and prices change. The major bank dealers monitor their performance at least daily, with many doing so more frequently. Major changes in exposures can occur often. Thus, regulators, who receive banks' reports quarterly, run the risk that they will miss potentially damaging changes in credit exposures. Regulators need immediate access to information such as individual firm and aggregate credit exposures to anticipate or respond to a financial crisis.

Regulators do not require banks, including the major bank derivatives dealers, to routinely report information about large derivatives-related credit exposures to individual counterparties or classes of counterparties. Information on individual banks is available, however, to the regulatory staff during on-site examinations. The importance of such information for regulators was illustrated during an examination of a large bank derivatives dealer. After requesting a listing showing all counterparty

²Separate notional/contract amounts are reported for options written and options purchased.

³Total derivatives-related credit exposure is measured by the total replacement cost for contracts that have a positive market value. Exchange-traded products are excluded from these totals if they are subject to daily payment of margin, which greatly reduces their credit exposure. Foreign exchange contracts with maturities of 14 days or less are excluded because their replacement costs are usually small.

exposures, the regulatory staff noted that the bank had accumulated large derivatives-related exposures to a group of foreign banks whose financial condition had deteriorated. As a result, the regulatory staff required bank officials to brief them on efforts to more closely monitor and reduce these exposures, if it became necessary. By not requiring banks to routinely report this type of counterparty information, bank regulators may miss future opportunities to act before significant losses are incurred.

Regulators Have Proposed
Collecting Some Additional
Information on Derivatives
Amounts and Credit
Exposures

Bank regulators have proposed expanding derivatives-related reporting requirements, but their proposal does not require banks to report sufficient information on their credit exposures. On March 9, 1994, the Federal Financial Institutions Examination Council (FFIEC), which prepares policies and guidance on behalf of all the federal bank and other depository institution regulators, issued a proposal that would require banks to provide additional details on their derivatives notional/contract amounts by product. The proposal would require banks to report separate totals for futures and forwards, which are currently reported together, and to provide separate totals for exchange-traded and OTC options.⁴ Regulators noted that the additional reporting would enhance their understanding of the risks of bank activities should a systemic disruption develop in a particular market.

The FFIEC proposal also would require that banks with total assets of at least \$100 million begin reporting the total market value of their derivatives for contracts with both a positive market value and a negative market value. This reporting would be done separately for derivatives held for dealing or trading purposes and for derivatives used for hedging or other purposes. Finally, the FFIEC proposal would require banks to report additional information on derivatives-related credit exposures but not information on exposures by individual counterparty. With the proposal, FFIEC intends that banks report their net current credit exposure across all products and counterparties after taking into account legally enforceable bilateral netting agreements, which banks use to reduce their derivatives-related credit risk. The proposal notes that these amounts would provide a more accurate measure of the credit exposure arising from derivatives activities. However, because the proposal would not require more frequent reporting on credit exposures to individual counterparties, bank regulators would still lack sufficient information to routinely monitor credit risks at individual banks or across institutions.

⁴Similar to the current requirement for options, separate notional/contract amounts would be reported for options written and options purchased.

Current Reporting Is Insufficient to Monitor Bank Derivatives Earnings

Regulators require banks to report their earnings as a means of monitoring their continued profitability. The Group of Thirty report also recommended that derivatives dealers routinely identify and isolate the individual sources of derivatives revenues to increase their understanding of the risks and returns of these activities. Identifying the profits or losses arising from proprietary trading, investments, and fees could indicate how well banks are managing their derivatives risks; this indication could be especially useful to regulators as derivatives activities increase.

Information such as details on the sources and amounts of derivatives earnings would also allow regulators to assess the stability of these earnings. Receiving information on proprietary trading income would be useful for regulators because such income is usually considered more volatile and thus less reliable than earnings from activities undertaken on behalf of customers. Receiving information on earnings by product type would also be useful to regulators, because the amount of volatility and of risk varies among products. For example, a bank writing options earns premium income but faces potentially large losses if price moves are adverse and the options are exercised. Information on the source and amount of bank derivatives earnings would also assist regulators in determining the adequacy of the capital and risk-management systems used to support derivatives activities.

Receiving information on derivatives earnings is increasingly important as derivatives activities grow at major bank dealers and provide a larger proportion of total revenues. For several of the dealers we visited, derivatives and other trading activities were a significant source of revenues for their firms. One dealer used derivatives as a primary business strategy in managing customers' financial risks. For the eight major U.S. OTC derivatives dealers that responded to the question in our survey, OTC derivatives activities accounted for an average of 15 percent of pretax income. In analyzing information reported to bank regulators, we found that the percentage of income earned by the seven major bank derivatives dealers from total trading activities, including derivatives, grew from about 4 percent of these banks' combined gross revenues in 1986 to more than 10 percent by the end of 1992, an increase of 142 percent. For two of these banks, those revenues had grown to about 25 and 34 percent of their gross revenues.

Bank regulators do not routinely collect information on the sources and types of derivatives-related earnings from banks. Under current regulatory reporting requirements, the major bank derivatives dealers and other

banks are to report their derivatives-related earnings aggregated with the results of other trading activities. More detailed information on derivatives' contributions to earnings was generally available to regulatory staff during periodic examinations. However, such information was developed by bank or examination staff and, therefore, was not always available for analysis between examinations.

FFIEC has proposed expanding bank reporting requirements to obtain more detailed information on bank derivatives earnings quarterly, but the proposal would not require banks to report sufficient information on the sources of this income. It would require banks to report the amount of income earned from derivatives separately from other kinds of income. However, the income reported for derivatives does not distinguish between income from dealing or trading activities. In addition, the proposal would require banks to report the increase or decrease in net interest income and net interest expense that arises from other derivatives activities. While the proposal would expand the information bank regulators collect on derivatives earnings, it would not require the collection of information on the type of earnings, such as by activity (proprietary trading versus customer requests) or by product (written options or swaps). Therefore, regulators would lack ready access to information needed to adequately assess the risks of bank derivatives activities, such as information for distinguishing between profits or losses from normal operations and those from increased risk-taking.

Existing Bank Capital Requirements for Derivatives Currently Do Not Address All Risk

Bank regulators impose minimum capital requirements both to provide protection and to warn that losses from a bank's activities may threaten its safety and soundness. As of April 1994, regulatory capital requirements were intended to provide protection against losses arising from derivatives credit risk, but did not yet completely address losses from market, operations, or legal risks. U.S. bank regulators issued several proposals in 1993, including two proposals developed in the United States and a proposal developed jointly by U.S. and foreign regulators. These proposals sought industry comments on ways to expand current capital standards to better address market risk. However, the exact form of any market risk standards that will be adopted is unclear, because U.S. and international approaches vary and market participants and some regulators are critical of the international proposal. The amount of capital banks hold for derivatives will also be affected by regulators' proposals to recognize a broader form of netting.

Capital Requirements
Protect Against Losses

Capital serves as a buffer to absorb unexpected losses that a bank's current earnings cannot cover. As a bank's capital approaches the minimum required levels, regulators are warned that a bank's financial health is threatened and that federal intervention may be needed. Minimum capital requirements thereby reduce the likelihood of bank failures, protect depositors and creditors, and maintain the public's confidence in the banking system.

For a bank conducting derivatives activities, it must have enough capital to cushion it from losses arising from the risks these products pose. Establishing a standard that addresses all derivatives risks would provide bank regulators consistent criteria for assessing whether banks are adequately protected against derivatives losses. A minimum standard would also provide regulators with a baseline for identifying and acting when a bank's capital condition deteriorates.

Existing Capital
Requirements Primarily
Address Derivatives' Credit
Risk

As of April 1994, the capital requirements applicable to U.S. banks, including the seven major OTC derivatives dealers, did not completely address all derivatives risks. U.S. banks were required to comply with two different types of capital requirements—a risk-based requirement and a leverage ratio requirement. The risk-based requirement addressed derivatives' credit risk. The leverage ratio requires banks to hold capital against other risks, but this requirement has only recently included derivatives and does not apply to all of banks' derivatives contracts.

In 1988, regulators in the United States and other countries agreed to the Basle Accord, an internationally developed risk-based capital standards framework for banks.⁵ The accord's standards require banks to hold capital to cushion against potential losses arising primarily from credit risk, including credit risk from derivatives activities. Consistent with the accord, U.S. banking regulators have required all U.S. banks, since 1992, to hold capital equal to at least 8 percent of the total value of their assets, including derivatives holdings, after adjusting this value by the relative risk of the counterparties to these transactions. At a minimum, a bank's capital must consist of at least 4 percent of core capital,⁶ which includes common

⁵Working under the auspices of BIS in Basle, Switzerland, representatives of bank regulatory bodies from 12 countries adopted a framework for establishing minimum capital standards for internationally active banks. Each country was responsible for enacting the framework into its national regulations.

⁶Core capital is also called tier 1 capital.

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stockholders' equity, certain types of preferred stock,⁷ and minority equity investments in subsidiaries. The remainder of a bank's total capital can also consist of supplementary capital,⁸ which includes loan and lease loss allowances, certain debt securities, and subordinated debt with a maturity of 5 years or more.

These risk-based capital standards were developed because regulators in the United States and in other countries wanted to more adequately address the risks posed by specific activities. By working with various countries to develop an international standard, regulators also attempted to encourage banks to strengthen their capital positions and minimize competitive inequality arising from requirements differing across countries. According to the original 1987 consultative paper issued by the Basle Committee on Banking Supervision, the target ratio of 8 percent capital to risk-adjusted assets was chosen because it represented a higher level of capital than banks in various countries were generally holding at the time.⁹ Recognizing this, the 1988 Basle Accord allowed 4 years for banks to come into full compliance with the required amount.

To adjust asset values to account for the relative riskiness of a counterparty, banks multiply the asset values by certain credit conversion factors, which are percentages ranging from 0 to 100 percent. For example, if a bank holds a claim on a Federal Reserve bank or the central bank of another OECD country, this asset is multiplied by a factor of 0 percent, which results in no capital being held against the risk of credit loss from this transaction. For an obligation owed by another commercial bank, a bank must multiply the amount of this obligation by 20 percent, which requires the bank to hold capital equal to 1.6 percent of this amount. For an obligation owed by a private corporation, such as a loan, a bank must multiply the amount of the loan by 100 percent, which requires the bank to hold capital equal to a full 8 percent of this amount.

Under the risk-based capital requirements adopted by U.S. bank regulators, derivatives are subject to a capital requirement of less than 8 percent because counterparties are generally of high credit quality. To determine the amount of capital to be held for a derivatives contract's

⁷Banks are allowed to include in their core capital only such perpetual preferred stock that does not have a maturity date, cannot be redeemed at the option of the holder, has no other provisions that will require future redemption of the securities, and allows the issuer to defer or eliminate the dividend that is paid to the holders of such securities.

⁸Supplementary capital is also called tier 2 capital.

⁹Consultative Paper: Proposals for International Convergence of Capital Measurement and Capital Standards, Committee on Banking Regulations and Supervisory Practices, BIS (Basle, Switzerland: Dec. 1987).

credit risk, banks first must determine the market value of the contract, which is called the current exposure. To this amount, they then must add an additional amount to account for the potential increased exposure that may arise as market rates or prices change, which is called the potential future exposure. This potential future exposure amount is calculated by multiplying the notional amount of the contract by a certain percentage ranging from 0 to 5 percent, depending on whether the derivative is an interest rate or foreign exchange rate contract and its original maturity. Once a bank has determined the total of a derivatives contract's current exposure and potential exposure, this total is then multiplied by a maximum credit conversion factor of 50 percent, even if the counterparty is a private corporation. This calculation results in the bank holding capital equal to at least 4 percent of the contract's market value but usually less than the 8 percent required on other extensions of credit, such as loans. According to U.S. bank regulators, the maximum credit conversion factor for derivatives contracts was set at 50 percent because the majority of counterparties to these contracts were of high credit quality. As stated in chapter 3, we found that more than 97 percent of the notional amount of swaps outstanding at year-end 1991 for a sample of 200 firms was held by firms with at least investment grade credit ratings.

U.S. banks also must comply with a capital leverage ratio, but this requirement has only applied to derivatives since March 1994 and does not address all of banks' derivatives contracts. This ratio requires banks to hold certain amounts of capital equal to or greater than certain specified percentages of their total assets. Such requirements for other bank activities have been in place since the early 1980s. Since 1990, banks have been specifically required to hold capital between 3 and 5 percent of their total assets, depending on a regulatory assessment of the strength of their management and controls.

Bank regulators require banks to comply with both the risk-based capital standard and leverage ratio because the former primarily addresses only credit risk. The leverage ratio requires banks to hold capital as a cushion against losses arising from other risks, such as operational weaknesses in internal policies, systems, and controls. Although previously banks' derivatives activities were not subject to this leverage ratio, beginning March 31, 1994, banks were required to include the value of those contracts with a positive market value as part of their total assets subject

to the leverage ratio capital requirement.¹⁰ Whether this requirement provides sufficient capital for operations or legal risks is difficult to determine because these risks cannot be quantified. In addition, the requirement does not address contracts with negative market value.

Although U.S. capital standards for the derivatives activities of banks do not address all risks, at least four of the seven major bank derivatives dealers we identified evaluated the adequacy of the capital held by their institutions to protect against market and other risks arising from their derivatives activities. For example, one official told us that his bank assigned different amounts of capital to protect against potential market risk losses on its derivatives portfolio, depending on the volatility of market prices or rates that underlie the derivatives it held. He said that the bank also assigned varying amounts of capital based on the credit risk associated with each derivatives transaction by using internally developed rankings of counterparty credit quality that included at least nine categories.

U.S. Regulators Issued Proposals to Address Market Risk

Regulators issued several proposals to develop standards for market risk. U.S. bank regulators issued the first of these proposals in 1993 as required by FDICIA. That proposal addresses whether banks should hold additional capital against interest rate risk.¹¹ It seeks to quantify the level of risk banks are exposed to by measuring the effect of interest rate changes on the bank's economic value, using either a regulator-developed mathematical model or a bank internal model. After identifying the level of interest rate risk an institution faces, regulators will assess whether the bank is holding sufficient capital. In addition to measuring interest rate risk, regulators expect banks with significant foreign exchange activities to be capable of measuring and assessing the risk of these activities. However, bank regulators were unsure about whether the additional capital banks may be required to hold against interest rate or foreign exchange risks will be established by a formula or left to regulatory staff to determine on a case-by-case basis. According to a bank regulatory official, interagency meetings between the banking regulators are

¹⁰This change resulted from regulators adopting for reporting purposes the provisions of FASB Interpretation No. 39: *Offsetting of Amounts Related to Certain Contracts*, FASB (Norwalk, CT: Mar. 1992). This interpretation requires firms to report the total value of any derivatives contracts with a positive value as an asset and the total value of any derivatives contracts with a negative market value as a liability on their balance sheets.

¹¹Interest rate risk is the risk of potential loss arising from changes in interest rates; it is one of the primary types of market risk that banks face.

continuing and another proposal for public comment will be issued by summer 1994.

A second proposal U.S. banking regulators issued in 1993 in response to FDICIA would revise current capital standards to specifically include concentrations of credit risk and the risk of nontraditional activities, including derivatives. This proposal does not advocate a numerical measurement of these risks but, instead, would add them to the list of specific factors that regulators consider in assessing a bank's overall capital adequacy. Any additional capital required as a result of these risks would be determined on a case-by-case basis. According to a bank regulatory official, a revised proposal has been drafted and public comments will be sought in 1994.

U.S. Regulators Also Issued an International Group's Proposals to Address Market Risk

In addition to their own proposals, U.S. regulators participated in developing a Basle Committee on Banking Supervision proposal to address the market risk of bank activities.¹² In general, this group's market risk proposal would have banks hold specific amounts of capital against potential losses on their trading activities, including derivatives. Banks would be required to hold capital against the value of any outstanding derivatives positions after offsetting the values of all opposite buy or sell positions in the same product.

U.S. market participants have criticized the Basle Committee's proposal. One of their primary objections is that it would result in banks holding either too much or too little capital. For example, some commentators noted that the amount of capital that the proposal could require would not be accurate because it would use notional/contract amounts to measure potential price changes instead of derivatives market values. According to commentators, bank risk-management systems can more accurately measure price changes. Commentators also were concerned that the proposal would discourage firms from properly hedging their risks because it measures risk by type of product and not by type of market risk, such as interest rate, foreign exchange, or equity risk. In addition, some commentators said that the proposal was too inflexible to apply to new products whose risks might overlap product categories.

¹²The Basle Committee on Banking Supervision includes bank regulatory staff from the 12 countries that developed the Basle Accord on credit risk. The committee's proposals and their status are discussed in more detail in chapter 7.

Lack of Standards for
Operations and Legal Risks
Hampers Regulators'
Ability to Evaluate Banks'
Capital Adequacy

As indicated previously, current bank capital requirements only partially address the operations and legal risk of derivatives. To assess whether the current requirements provide for adequate capital, regulators must first understand the level of risk to which banks are exposed. Regulators can best obtain such information through an on-site examination that considers the quality of management controls over legal and operations risks, and the characteristics of the banks' derivatives activity. As of April 1994, bank regulators had the legal authority to require banks to hold additional capital or curtail involvement in activities that pose risk based on assessments of the quality of a bank's management and controls or the adequacy of its capital level. Further, FDICIA requires bank regulators to take certain actions of this type for banks whose capital declines to specified levels.

As described in chapter 3, derivatives activity can result in losses not only because of exposure to credit and market risks but also because of exposure to operations and legal risks.¹³ In contrast to credit and market risks, which regulators, major OTC dealers, and others attempt to quantify, legal and operations risks are not amenable to numerical measures. Notional amounts may not represent the degree of operations risk. For example, two banks may each have \$100 billion in derivatives notional/contract amounts. However, if one bank's contracts are composed of 10 simple interest rate swaps and the other's of 10 complex options, the former has less operations risk than the latter. Alternatively, if one bank has numerous simple interest rate swaps but inadequate risk-management controls, while the other has complex options but excellent controls, the latter may have less operations risk than the former. The situation is similar for legal risk: a large volume of swaps between two U.S. banks may have much less legal risk than a small volume of transactions between a U.S. bank and a quasigovernmental entity in a foreign country.

The positive market value of a bank's derivatives portfolio also does not capture the degree of operations risk. Two firms might both have derivatives portfolios with positive market values of \$2 billion. Relatively few large swaps might compose the portfolio of the first firm; numerous small, complex derivatives might compose the portfolio of the second. Even if both firms had the same quality of operations controls and management, the holder of the complex derivatives would be exposed to more operations risk. For example, the difficulty of accurately monitoring

¹³As discussed in chapter 3, legal risk is the exposure to financial loss arising from adverse legal or regulatory body action. Operations risk is the exposure to financial loss from inadequate systems, management failure, faulty controls, fraud, or human error.

the value of more complex derivatives increases the likelihood of a related operations error producing a loss.

Given these difficulties, regulators will have to weigh the relative advantages and disadvantages of various approaches to developing a minimum capital standard for derivatives' operations and legal risks. Also, the amount of any additional capital to be required to address these risks should not be so large as to cause derivatives activity to move from soundly managed dealers to less-soundly managed or less-regulated dealers. To avoid such problems, any additional capital requirement regulators establish could be designed to vary depending on the regulator's assessment of the quality of a bank's systems and controls for operations and legal risk. Banks with weaker controls, then, could be required to hold more capital than those with stronger systems.

Broader Recognition of Netting Will Affect Capital for Derivatives

Under another Basle Committee proposal and a similar U.S. proposal, U.S. regulators are considering allowing banks to make greater use of netting contracts in computing the amount of capital held for their derivatives activities. Currently, a U.S. bank is only allowed to net obligations on derivatives contracts with another counterparty that are denominated in the same currency and due on the same date.¹⁴ Under the provisions of a proposal developed and issued by U.S. and foreign regulators as part of the Basle Committee, a bank would be allowed to net together all obligations on its derivatives contracts with each counterparty with whom it has entered into legally enforceable netting agreements. Banks will have to satisfy the appropriate regulators in each country that their netting agreements are enforceable under the laws of each relevant jurisdiction. In the event a counterparty defaults, a bank could incur larger losses if its netting agreement is not legally enforceable. This could occur if a court required the bank to pay the entire amount it owes without offsetting this amount by the defaulting counterparty's obligations. In the Basle Committee proposal, the regulators acknowledge that allowing greater use of netting will likely reduce the amount of capital banks hold for derivatives activities.

Recognizing that legally enforceable netting agreements can reduce banks' credit risk exposures, the Federal Reserve has also approved a proposal that would allow U.S. banks to begin netting their derivatives obligations in accordance with this international proposal. Staff from the Federal

¹⁴This is known as netting by novation. It is discussed in more detail in chapter 7.

Reserve advised us that they intend to issue a U.S.-specific version of this proposal in conjunction with the other U.S. bank regulators during 1994.

Bank Regulatory Examinations Address Derivatives, but Internal Controls Have Not Been Adequately Assessed

On-site examinations are federal bank regulators' primary means for assessing the safety and soundness of banks. According to a Federal Reserve official, on-site bank examinations, including evaluation of internal risk-management models, systems, and controls, are the most important elements of supervision and regulation of derivatives activities. To determine the effectiveness of a bank's controls, regulators need to assess the adequacy of control systems, specifically identify critical control procedures, test these procedures, and evaluate the results of these tests.

Federal bank regulators conduct examinations that cover the risk-management systems and practices of the major OTC derivatives dealer banks. The examinations are based on guidance that is generally consistent with the recommendations of the Group of Thirty but does not have the weight of regulation. As a result, obtaining corrective action should a bank fail to comply with the guidance can be a more difficult and time-consuming process. In the absence of regulations, bank regulators must cite unsafe and unsound conditions to force compliance with desired standards.

To determine whether derivatives activities were being addressed by regulators, we reviewed 26 examination reports done by OCC and Federal Reserve staff from 1990 through 1992 for the 7 major bank derivatives dealers. This period preceded the 1993 implementation of bank guidance for assessing the risks of derivatives activities. We determined that examiners evaluated the derivatives activities of these banks at least once annually during this 3-year period.¹⁵ As indicated in chapter 3, the examination reports we reviewed identified various deficiencies and corrective actions related to derivatives.

Although the bank regulators have assessed the major OTC derivatives dealers' risk-management systems, we are concerned that examiners may not be sufficiently testing internal controls. In earlier work, we reported that regulatory staff conducting examinations did not routinely identify the key internal controls applicable to banks' operations, including their derivatives activities, nor did regulatory staff extensively test these

¹⁵The 1992 examination reports for two of these banks were not completed in January 1993 when we did our review of examination reports.

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controls.¹⁶ As part of this earlier work, we recommended in February 1993 that federal bank regulators annually perform comprehensive internal control reviews.

Our review of the examination reports and supporting workpapers for two major bank derivatives dealers provided some evidence that problems may persist in this area. That is, while OCC and the Federal Reserve had performed work that would identify weaknesses in risk-management procedures and some internal controls, the agencies had not both conducted and documented adequate reviews of these banks' internal controls. Specifically, the responsible OCC bank examiner said that the agency did not have the resources to extensively test internal controls at the bank in question. In contrast, Federal Reserve officials said that the agency had identified and tested the key internal controls applicable to the selected bank's operations, but that examiners had not fully documented their work.

A change as a result of recent legislation should improve regulators' ability to assess bank internal controls. On June 2, 1993, bank regulators issued regulations pursuant to FDICIA that require management at large banks to evaluate and annually report to their respective regulatory bodies on the effectiveness of internal controls at their institutions. Bank external auditors are also required to attest to the accuracy of management's internal control evaluations. These internal control evaluations and the subsequent external auditor certifications should assist bank regulators in focusing their examinations on the areas of bank operations posing the greatest risk. In our previous reports on federal bank examinations, we recommended that regulators use these evaluations as part of identifying and testing banks' key internal controls.

Bank regulators have recently taken steps to improve their examinations of banks' derivatives activities. In February 1994, the Federal Reserve issued its new examination manual, which consolidates and expands examination procedures relating to trading and derivatives activities. According to Federal Reserve staff, this manual also includes more detailed guidance for examiners on internal controls.

¹⁶See our reports Thrift Examination Quality: OTS Examinations Do Not Fully Assess Thrift Safety and Soundness (GAO/AFMD-93-11, Feb. 16, 1993); Bank Examination Quality: FDIC Examinations Do Not Fully Assess Bank Safety and Soundness (GAO/AFMD-93-12, Feb. 16, 1993); Bank Examination Quality: FRB Examinations and Inspections Do Not Fully Assess Bank Safety and Soundness (GAO/AFMD-93-13, Feb. 16, 1993); Bank Examination Quality: OCC Examinations Do Not Fully Assess Bank Safety and Soundness (GAO/AFMD-93-14, Feb. 16, 1993); and Bank and Thrift Regulation: Improvements Needed in Examination Quality and Regulatory Structure (GAO/AFMD-93-15, Feb. 16, 1993).

Bank Regulators Have Taken Other Actions to Address Derivatives Risks

Bank regulators have taken other actions to address risks associated with derivatives use. As indicated in chapter 3, both the Federal Reserve and OCC issued guidance in late 1993 on derivatives' risk management for use by their examiners and the institutions they supervise. Both agencies also participate on several interagency working groups that are addressing derivatives issues. Staff from the Federal Reserve, FDIC, OCC, and the Office of Thrift Supervision have had periodic meetings since October 1993 to share information and develop consistent regulatory accounting principles for derivatives. In addition, the bank and thrift regulators also periodically meet with representatives of SEC and CFTC to discuss derivatives issues as part of a working group formed in January 1994 at the direction of the Secretary of the Treasury. The Federal Reserve and OCC have also conducted specialized training on derivatives for their staffs and designated certain staff to serve as advisers on derivatives issues to the heads of the agencies or to examination staff.

SEC, CFTC, and Insurance Regulators' Ability to Oversee OTC Derivatives Dealers Is Limited

Although the bank derivatives dealers are subject to regulation, basic regulatory controls do not exist for the major U.S. OTC derivatives dealers that were affiliates of securities firms and insurance companies. Securities firm affiliates reported some information on their derivatives activity. However, this information included limited data on counterparty concentrations and did not specifically identify the type and amount of derivatives earnings. Further, the OTC dealing activities of securities firms that did not involve regulated securities were not subject to capital standards or regulatory examinations. The OTC dealing activities of insurance companies were neither subject to capital standards nor examined. While these dealers' derivatives activities were small compared to those of the top seven bank dealers, as noted in chapter 1, their activities increased at a higher rate from 1990 to 1992 than did the banks'. Further, these securities firms and insurance companies are large financial firms. As in the case of a major bank failure, a crisis involving derivatives that affects one of these firms would likely affect the financial system and require federal intervention to resolve. Although the federal government would not necessarily intervene just to keep a major OTC derivatives dealer from failing, the federal government is likely to intervene to keep the financial system functioning in cases of severe financial stress.

Securities and Futures Laws Limit SEC and CFTC Authority Over Derivatives Dealers

The regulatory oversight responsibilities of SEC and CFTC differ substantially from those of bank regulators. Bank regulators are authorized to regulate affiliates of banks or bank holding companies. In contrast, SEC and CFTC are authorized to regulate activities involving securities and futures and only those firms that trade these products. For the most part, neither agency regulates OTC derivative products or the dealers of those products unless their trading is conducted in a regulated institution. Whereas bank regulators seek to ensure the safety and soundness of banks and protect the Bank Insurance Fund, SEC's and CFTC's primary purposes are to protect investors or customers in the public securities and futures markets and to maintain fair and orderly markets.

SEC and CFTC Do Not Regulate All OTC Derivatives Activities

As part of its oversight efforts, SEC regulates the activities of broker-dealers—firms that buy and sell securities for their own accounts and as agents for their customers. These firms must register with SEC and comply with its requirements for regulatory reporting, minimum capital, and examinations. They must also comply with the requirements of the various exchanges and industry associations, such as the New York Stock Exchange and the National Association of Securities Dealers, which are

granted self-regulatory responsibilities under the Securities Exchange Act of 1934. SEC monitors broker-dealer capital levels through periodic reporting requirements and regular examinations. To fulfill its regulatory responsibilities and foster confidence in the industry and financial system, SEC focuses on the regulated broker-dealers and on protecting customers from losing funds or securities held by these firms. U.S. securities laws do not apply to a securities firm's entire organizational structure, which may also include a holding company and other affiliates.

The Securities Exchange Act of 1934 governs securities trading in the United States. The definition of a security subject to SEC regulation includes traditional capital-raising instruments, such as stocks, bonds, and notes. Through a 1982 amendment of the act, Congress clarified that securities subject to SEC regulation include options on individual securities and on groups of or indexes on securities. Because SEC's jurisdiction pertains only to securities, it does not regulate affiliates of broker-dealers whose activities involve products that are not securities.

As part of its oversight efforts, CFTC reviews exchange rules, ensures their consistent enforcement, and monitors the positions of large traders. CFTC also regulates the activities of various market participants, including futures commission merchants (FCM)—firms that buy and sell futures contracts as agents for customers. FCMS must comply with CFTC's requirements for regulatory reporting, minimum capital, and examinations. In addition, they must comply with the rules imposed by the various exchanges such as the Chicago Mercantile Exchange and the Chicago Board of Trade, as well as the National Futures Association, all of which act as self-regulatory organizations under CEA.

CEA gives CFTC exclusive jurisdiction over all futures contracts. The significance of defining an instrument as a futures contract has been CEA's requirement that all futures contracts trade on a CFTC-designated exchange. The Futures Trading Practices Act of 1992 authorizes CFTC to grant exemptions to this requirement and to impose conditions on such exemptions. Since receiving such authority, CFTC has exempted certain OTC contracts, including nonequity swaps, energy-based commodity contracts, and contracts that combine features of futures and securities, called hybrid contracts. CFTC did not exempt nonequity swaps from the antifraud and antimanipulation provisions of CEA. Similar to SEC, CFTC focuses on ensuring the financial stability of regulated FCMS to protect their customers and does not directly examine the activities of the holding companies or any other affiliates of these firms.

Other than reporting requirements, OTC derivatives dealers that are affiliates of securities and futures firms are subject to minimal regulation. Neither SEC nor CFTC regulate the activities of OTC derivatives dealers that are not either broker-dealers or FCMs. However, they have the authority to collect information about the activities of firms affiliated with broker-dealers or FCMs, respectively, including derivatives dealers. The five major securities firm derivatives dealers that we identified were conducting their OTC derivatives dealing in one or more affiliates outside the entity regulated by SEC or CFTC.¹ At the time of our review, FCMs that were not already affiliated with a securities firm did not have any affiliates that were major OTC derivatives dealers. However, some firms had recently started conducting such activities and eventually could become major dealers.

Securities and Futures Firm Affiliates Are Not Required to Report Sufficient Information on Derivatives Risks and Earnings

Recent legislation authorized SEC to collect information from holding companies and other unregulated affiliates of the securities firms it regulates, including OTC derivatives dealers. To allow SEC to assess the risks posed by a broker-dealer's affiliates, the Market Reform Act of 1990 authorized SEC to collect information from registered broker-dealers about the activities and the financial condition of their holding companies and material associated persons.² SEC began in October 1992 to receive the information required under risk-assessment rules developed pursuant to the act.³ This information includes the total derivatives notional/contract amounts, aggregate credit risk of these firms' derivatives dealer affiliates, and certain concentrated exposures to individual counterparties. Specifically, these firms report quarterly on the notional/contract amounts of futures, forwards, options, and swaps positions, segregated by interest rate, foreign exchange, and commodities contracts. SEC also requested and received narrative descriptions of these firms' derivatives risk-management procedures and systems.

SEC also instituted a reporting requirement for credit exposures to individual counterparties that exceed certain limits. As required by the risk-assessment rules, the affiliates of securities firms are to report any individual counterparty credit exposures that exceed a certain threshold.

¹Each of these five securities firms also had FCM affiliates conducting exchange-traded derivatives activities subject to CFTC regulation.

²A material associated person has a relationship to a broker-dealer such that its business activities are reasonably likely to have a material impact on the financial and operational condition of the broker-dealer.

³Rules 17h-1T and 17h-2T, 17 C.F.R., parts 240 and 249.

This threshold is \$100 million or 10 percent of the broker-dealer's tentative net capital or 10 percent of the affiliate's net worth, whichever is greater. However, SEC officials said that only one firm had reported exposures that exceeded these thresholds as of March 31, 1993. SEC collected no other information on counterparty credit exposure on a routine basis. SEC's threshold is too high to obtain sufficient information for detecting potential credit-risk problems among the OTC derivatives dealer affiliates of securities firms. Such information would better enable SEC to anticipate and quickly respond to a crisis involving derivatives at these firms.

Like bank regulators, SEC is not receiving income information that shows gains and losses on derivatives separate from securities firms' other trading activities. As a result, the earnings from proprietary trading are not separated from income earned on customer transactions. Such information could help SEC to assess the risks taken by securities firms using derivatives to speculate.

The Futures Trading Practices Act of 1992 provided CFTC authority similar to SEC's—that is, to collect information for use in assessing the risks posed by the activities of an FCM's holding company or any affiliates. Proposed reporting requirements were issued for public comment in February 1994, with 120 days allowed for comments.

SEC Has Limited Capital Standards and Examination Authority Over Derivatives Dealers

SEC has capital standards that address derivatives, but these standards apply only to regulated broker-dealers, not to OTC derivatives dealers that are affiliates of securities firms. Also, SEC has no authority to examine the activities of these affiliates.

SEC uses its net capital rule (rule 15c3-1) to oversee the financial soundness of broker-dealers. This rule requires broker-dealers to maintain sufficient capital to satisfy the claims of their customers, other broker-dealers, and creditors. Under the rule, a broker-dealer must subtract from the value of its assets various amounts, called haircuts, depending on the assets' liquidity or riskiness. For example, SEC requires firms to reduce the value of any stock holdings by 15 percent for purposes of computing their capital.

According to SEC officials, the treatment of OTC derivatives under the net capital rule has been one of the factors that has influenced firms to conduct these activities in affiliates not subject to the rule. For swaps, securities firms are to add to their net worth the value of any contracts

with unrealized positive market value and subtract from their net worth the value of any contracts with a negative market value. However, they also are to deduct from their net worth the value of any swap payments due them as unsecured receivables. In addition, they are to reduce any swap with a positive market value by up to 6 percent of the notional amount of the contract, depending on the term of the contract and whether the swap has been offset or hedged. Various percentages of the market value of other derivatives, including forwards, futures, and options, are also subtracted to adjust a securities firm's net worth due to holdings of these products. The result is that these requirements can tie up large portions of a firm's capital.

SEC has questioned whether derivatives treatment under the net capital rule is appropriate to address securities firms' risks. In May 1993, SEC issued a concept release seeking comments on the possibility of altering its capital requirements for OTC derivatives. The release includes several proposals, including revising the net capital rule to address the credit and market risks of derivatives activities but with lower capital charges than currently exist. SEC is also seeking comment on whether separate capital requirements should be drafted for derivatives dealer affiliates.

Officials of the five securities firms that had major OTC derivatives dealer affiliates told us that although their businesses were not subject to SEC capital or examination requirements, they voluntarily set aside capital on the basis of their calculations of the risks of their activities. They noted that rating agencies and counterparties insist that they do so. For example, to receive the highest possible credit ratings for certain of their derivatives dealer affiliates, several securities firms placed in these affiliates amounts of capital that were large relative to the level of their proposed activities.

Other officials expressed concerns over the rising volume of business conducted by unregulated firms, such as affiliates of securities firms. According to information in their 1992 annual reports, the five major securities firm OTC derivatives dealers had total notional/contract amounts of about \$3 trillion outstanding, which represented an increase of 77 percent since 1990. A Federal Reserve official, who oversees examinations of large bank derivatives dealers, told us that the risk of a financial crisis is heightened when financial problems at an unregulated firm can cause other derivatives dealers to become reluctant to continue trading.

State Insurance Regulatory Oversight of Derivatives Dealer Affiliates Is Limited

State insurance departments, not federal regulators, are responsible for monitoring insurance companies both domiciled⁴ and licensed to operate in the state. State insurance regulators do not directly oversee the financial condition of affiliates of insurance companies that are OTC derivatives dealers. We identified three insurance companies—domiciled in Delaware, New Jersey, and New York—that had major OTC derivatives dealer affiliates.⁵ Derivatives dealer affiliates of insurance companies are subject to minimal reporting requirements and no capital requirements and are not examined.

Derivatives Dealer Affiliates of Insurance Companies Are Subject to Minimal Reporting Requirements

Insurance regulators collect limited information on the derivatives dealer affiliates of insurance companies. Insurance regulatory officials in the three states we visited said that they receive audited consolidated financial statements for the parent company or the holding company of the insurance company. These consolidated statements contain all of the parent company's or holding company's derivatives notional/contract amounts and aggregate credit exposure, including information on the derivatives dealer affiliate. The affiliate is not required to provide other financial information to insurance regulators. Therefore, as is the case for banks and securities firms, no information is available on these derivatives dealers' individual counterparty credit exposures or on the sources and types of income they earn from derivatives.

As part of a study of derivatives issues, the National Association of Insurance Commissioners⁶ is considering the need for increased disclosure and reporting requirements on derivatives use by insurance companies. However, as of April 1994, its efforts have focused on the regulated insurance company and not on the derivatives dealer affiliates.

⁴Domiciled means the insurance company is legally headquartered in a state.

⁵The derivatives dealer of one of these insurance companies is a subsidiary of the parent, not a separate affiliate. Because the subsidiary is not a completely separate legal entity, it may be subject to more state regulation than affiliates. For ease of reference, we include the derivatives dealer subsidiary with affiliates in the rest of our discussion.

⁶The National Association of Insurance Commissioners is an advisory group that comprises insurance regulators from 50 states and the District of Columbia. It identifies insurance issues and proposes model laws for state enactment to ensure consistent regulation.

**State Insurance Regulators
Do Not Require Capital
Standards or Examinations
of Derivatives Dealers**

The state insurance regulators we interviewed said that they did not impose capital requirements on derivatives dealer affiliates. Both officials of insurance company affiliates and state insurance regulators told us that derivatives dealer affiliates voluntarily hold capital against derivatives exposures as part of effective risk-management practices.

The state insurance regulators we contacted told us that they did not examine the activities of derivatives dealer affiliates. Officials of one state insurance regulator said that they had the authority to examine the derivatives dealer subsidiary of an insurance company. However, they said that they had not examined such a subsidiary, and they would not examine one unless they found that its activities had adversely affected the insurance company. Overall, insurance officials in the three states we contacted said their oversight responsibility was designed to monitor the health and solvency of only the regulated insurance companies—not to oversee affiliates of insurance companies dealing in derivatives.

Accounting Principles for Derivatives Have Not Kept Pace With Business Practices

The rules governing the accounting treatment for derivatives in the United States do not adequately cover some of the most basic types of derivative products. Of the four basic types of derivatives, only two—forwards and futures—are directly addressed by existing authoritative accounting rules. Therefore, accounting for a wide range of derivatives activities has been shaped in the United States by industry practices and analogies drawn to apply limited existing rules.

Accounting for end-user hedging activities is the most problematic derivatives accounting issue. Accounting rules for these activities are incomplete and contradictory and could be easily misapplied to result in inappropriate reporting of gains and losses from these activities. As a result, financial reports of end-users may be inconsistently presented; unrepresentative of the substance and risks of derivatives activities; and misleading to investors, creditors, regulators, and others. As many dealers are also end-users, these issues are applicable to them as well.

While FASB has recognized the need for better accounting rules for derivatives, especially rules for applying deferral hedge accounting by end-users, FASB's progress in developing such rules has been slowed by the complexity and controversy associated with derivative products and related financial instruments.¹ Unfortunately, the issuance of a complete set of rules that meets accounting and disclosure needs is unlikely in the immediate future.

Rules for Accounting for Derivatives Are Needed to Promote Consistent, Reliable Financial Reporting

Rules for accounting for derivatives activities are needed for the same reason rules are needed for accounting for other financial activities. Investors, creditors, regulators, and other users of financial reports generally depend upon accounting rules to help ensure the consistency and reliability of information in financial reports. The effective functioning of our economy depends upon financial information that is widely used being reliable and clearly understood. Such widespread use, understanding, and confidence in reliability requires that financial statements be prepared in conformance with established accounting rules.

¹FASB has defined a financial instrument as cash, evidence of an ownership interest in an entity, or a contract that both (1) imposes on one entity a contractual obligation to deliver cash or another financial instrument to a second entity or to exchange financial instruments on potentially unfavorable terms with a second entity and (2) conveys to that second entity a contractual right to receive cash or another financial instrument from the first entity or to exchange other financial instruments on potentially favorable terms with the first entity. A financial instrument has off-balance-sheet risk of accounting loss if the risk of accounting loss to the entity may exceed the amount reported as an asset, if any, or if the ultimate obligation may exceed the amount that is reported as a liability in the balance sheet.

In the United States, such accounting rules are known as Generally Accepted Accounting Principles (GAAP). GAAP includes rules for accounting for transactions as well as related disclosure requirements. Accounting rules define how the transactions of an enterprise should be recognized, measured, and reported in the enterprise's financial statements. Footnotes to those financial statements provide additional data that are relevant to the interpretation of the statements. The data include qualitative information on specific financial statement items as well as supplementary quantitative information that expands on the information in the financial statements. The footnote disclosures can also explain terms of financial arrangements or basic contractual agreements. Investors, creditors, and others use the enterprise's financial statements to (1) evaluate management's performance, (2) measure borrowing power, (3) guide investment decisions, and (4) support arguments on public policy issues. Regulatory information is derived, in part, from these statements or from the accounting systems upon which they are based.

Accounting Rules Address
Only Some Types of
Derivatives

Accounting rules established by FASB—referred to as Statements of Financial Accounting Standards (SFAS)—directly address only two of the four basic types of derivatives we discuss in this report—forwards and futures, although not all types of forwards are addressed. No specific accounting rules have been established for swaps or options. The lack of complete accounting rules for derivatives activities is a matter of concern, especially with regard to accounting by end-users for hedging activities. In general, in the absence of accounting rules, preparers of financial reports individually and judgmentally base accounting on common industry practices. These individual judgments may result in inappropriate reporting by some entities. In addition, inconsistent reporting by different entities of similar transactions is likely. As a result, reported financial results may be misleading and lack the transparency necessary for effective business and economic decisionmaking.

Derivatives Accounting
Has Been Shaped by
Industry Practices and
Analogies Drawn in
Applying Limited
Accounting Rules

The accounting practices for many derivative products not addressed by accounting rules—including complex hybrids that this report does not discuss in detail—have evolved on the basis of common industry practices and analogies that preparers draw in applying limited existing accounting rules. As products increase in complexity, the likelihood of inconsistent and inappropriate accounting for derivatives also increases.

Common industry practices in accounting for derivatives have been determined largely by the objectives of those using derivatives. If the objective is to profit from trading activities, changes in the market value of the derivative product are reflected as gains or losses in the income statement. Alternatively, if the objective is to hedge financial risks, changes in the value of the derivatives are accounted for using the same basis of accounting as the underlying asset or liability being hedged (the hedged item).

If the underlying asset or liability is carried on the balance sheet at current market value, the derivative product used as a hedge is also carried at current market value, and any applicable gains or losses are reflected currently in the income statement. This practice is similar to the accounting for derivatives used for trading. But if the underlying asset or liability is carried on the balance sheet at historical cost,² or the hedged item is reported as an off-balance-sheet item,³ changes in the market value of the derivative product are not recorded in income until the income statement effects of the hedged item are realized in a later transaction. This type of accounting, which this report refers to as deferral hedge accounting, has the effect of delaying recognition of gains or losses in the market value of the derivative products. Criteria that are currently in effect limit the circumstances under which deferral hedge accounting is permissible.

The approach of determining the accounting for derivatives in accordance with the way derivatives are used seems relatively straightforward, but many factors complicate its application. The first of these complicating factors is the lack of common agreement on the definition of "hedging of financial risks." In addition to this basic definitional issue, the complexity and diversity of derivative products and transactions further complicate the determination of the timing of recognition and the measurement of derivatives activities in financial reports. Finally, the existing criteria for derivatives products that are eligible for deferral hedge accounting differ for the various product types. This disparity has caused significant controversy.

²Historical cost is the amount of cash, or its equivalent, paid to acquire an asset or the amount received when a liability was incurred.

³Under criteria that are currently in effect, derivatives are excluded from the balance sheet when (1) an exchange of an underlying asset or liability has not yet occurred and no assurance exists that it will occur or (2) notional amounts are used solely to determine cash flows to be exchanged in the future. Futures, forwards, options, and swaps, the focus of this report, are all considered to be off-balance-sheet products.

Current Practices in
Accounting for Forwards

The only GAAP rule for forward contracts is SFAS No. 52, Foreign Currency Translation, which includes accounting requirements for forward exchange contracts. Under SFAS No. 52, forward exchange contracts entered into for speculative purposes are recorded at market value on the balance sheet, with subsequent changes in market value recorded as gains or losses in the income statement. Changes in the market value of forward exchange contracts that qualify as hedges of investments in foreign subsidiaries are included as part of the translation adjustment in stockholders' equity on the balance sheet. If the forward contract is a hedge of a foreign currency commitment not yet recorded in the financial statements (for example, a firm order to purchase foreign goods), the change in value of the contract is deferred until the transaction being hedged is recorded (for example, when the foreign goods are received and recorded). It is included at that time as part of the measurement of the transaction (for example, as part of the purchase price).

As of April 1994, GAAP rules did not address accounting for forward contracts that did not involve foreign exchange rates. In practice, these contracts are generally accounted for by analogy to SFAS No. 80, a discussion of which follows.

Current Practices in
Accounting for Futures

Futures contracts are accounted for on the basis of requirements of SFAS No. 80, Accounting for Futures Contracts. SFAS No. 80 requires that a change in market value of an open futures contract be immediately recognized in earnings unless the contract qualifies as a hedge of an asset or liability carried at cost. If the contract does so qualify, the gain or loss may be deferred and reported as an adjustment to the carrying amount of the hedged item on the balance sheet. The total amount of the commodity or financial instrument that underlies the futures contract (the underlying) is not recorded on the balance sheet.

Current Practices in
Accounting for Options

The current practices in accounting for options have been shaped by analogies drawn by industry in applying accounting rules for forward exchange contracts and futures. In the absence of any GAAP rules for accounting for options, a task force of the American Institute of Certified Public Accountants published in 1986 Issues Paper 86-2, Accounting for Options. This paper, which has influenced accounting practices for options, included advisory conclusions that proposed criteria and hedge accounting techniques for options based largely on SFAS No. 52 and SFAS No. 80, which cover accounting for forward exchange contracts and

futures. However, the task force departed from those SFASS when the economics of options differed significantly from those of forward exchange contracts and futures.

In general, the paper concluded that as in accounting for futures contracts, changes in the market value of options should be immediately recognized in earnings unless hedge accounting is specifically justified under certain criteria. If the option qualifies as a hedge, then changes in the market value of the option are included in income in the same period as changes in the market value of the item being hedged. However, the paper raised concerns about whether hedge accounting is appropriate for all options. It generally concluded that the application of hedge accounting should be limited to certain portions of certain types of options contracts. Although this paper has affected the evolution of existing accounting practices, it does not have the status of GAAP.

Current Practices in Accounting for Swaps

As of April 1994, GAAP did not directly address accounting for swaps. In practice, foreign currency swaps are accounted for on the basis of analogies drawn in applying accounting rules for forward exchange contracts. Industry practice for interest rate and commodity swaps is to record the net difference in interest or other obligations of the swap counterparties directly to income or expense. Neither the notional amount nor the market value of these swaps entered into for hedging purposes is recorded on the balance sheet. The market value of interest rate and commodity swaps entered into for trading purposes is recorded on the balance sheet and changes in the value are reflected in income.

Hedge Accounting Is Complicated by Product Complexity and Lack of Clear, Noncontradictory Rules and Definitions

The most complicated accounting issue concerning derivative products is whether a transaction entered into for risk-management purposes qualifies for deferral hedge accounting. Deferral hedge accounting generally allows gains and losses on the derivative product to be deferred and recognized in the income statement at the same time as the income statement effect of the hedged item. If the hedge operates as planned, the income statement effects of the derivative product and the hedged item will substantially offset each other. However, determining whether a hedge is operating effectively and thus qualifies for hedge accounting is difficult in reality. In addition, there is currently disagreement over the appropriate objective for risk management activities that should qualify for deferral hedge accounting.

Lack of Accepted
Definition for Hedging
Financial Risks

The traditional definition of hedging has been that it is a strategy of entering into transactions or financial positions whose primary purpose and effect is to protect an entity from exposure to interest rate, foreign exchange, or commodity price risk. This traditional viewpoint assumes that enterprises enter into hedging transactions to reduce risk of loss.

Another viewpoint extends the definition of hedging to include "other risk adjusting activities," which are strategies whose purposes and effects are to adjust the level of risk, either up or down, but not necessarily to reduce it. Because deferral hedge accounting allows for delayed recognition of gains and losses from derivative activities, the potential ramification of this viewpoint is that the effects of increasing the level of an institution's risk of loss would not be reflected immediately in income. We believe deferral hedge accounting should be limited to activities intended to decrease an enterprise's exposure to risk of loss. The determination of the proper definition of hedging of financial risks is the first and foremost issue that must be resolved by FASB so that it can continue with the development of accounting standards in this area.

Hedge Criteria for
Complex Transactions Are
Difficult to Apply

The difficulty in determining whether a hedge is operating effectively and qualifies for hedge accounting stems generally from the complexity of many derivative products and the lack of accounting rules that apply to all products. Existing accounting rules that might be used to account for hedges conflict with one another, resulting in further inconsistency and confusion.

The traditional practice in hedge accounting is to treat a derivative product as a hedging instrument if it meets the following general criteria:

- The item (position) to be hedged and the hedging instrument are specifically identified by management and the relationship between them is designated as a hedge.
- The existing asset or liability to be hedged actually exposes the firm to market risk caused by changes in factors such as interest or exchange rates.
- The hedging instrument is expected to reduce such exposure and continues to do so throughout the life of the hedging instrument.

In general, these criteria are applied to determine whether correlation exists between the item being hedged and the derivative product being used as a hedge. Perfect negative correlation results in a complete offset

between the change in the value of the item being hedged and the hedge instrument.

In cases where the asset or liability being hedged is carried at historical cost, the deferral of hedge gains and losses results in a delay in the recognition of the change in the derivative's market value. As long as the derivative qualifies for hedge accounting, such recognition is not required until the reporting period in which the change in market value of the hedged item is ultimately recognized. For example, an entity using futures contracts to hedge interest rate changes on its adjustable-rate debt would defer changes in the market value of those contracts until the date of the interest rate adjustment on the debt. After the rate adjustment, the entity would amortize the hedge gain or loss as an adjustment of interest expense. If the hedge was effective, then changes in the value of the contracts would substantially offset the income statement effects of the rate change. However, if the change in value of the contracts did not correlate well with the change in interest rates on the debt, the ultimate income statement effects would not be substantially offsetting. Once this situation was identified, deferral accounting would not be allowed under the hedge criteria.

A misapplication of the deferral hedge criteria can result in misleading financial reports. For example, deferral of hedge losses that do not correlate with changes in the value of the underlying items being hedged results in a misstated balance sheet and skewed income statement effects.

Hedge Accounting Lacks Clear, Noncontradictory Rules

Hedge accounting is complicated by the lack of clear rules and the existence of possibly applicable rules that are contradictory. For example, the actual application of the hedge criteria is difficult due to the lack of clear accounting rules on (1) the degree to which the hedge must correlate to qualify for hedge accounting, both initially and throughout the life of the hedge, and (2) the frequency of assessment. The lack of clarity in these areas allows for potential manipulation of the hedge criteria, particularly in situations where wide fluctuations in values occur during the hedge period.

Another major difficulty in current practice for hedge accounting is the inconsistency in existing rules on the treatment of anticipated transactions. An anticipated transaction is one that an entity expects to carry out in the normal course of business. SFAS No. 52, which contains accounting rules on foreign currency transactions, limits hedge accounting

to anticipated foreign currency transactions that are firmly committed. SFAS No. 80, which provides guidance on futures contracts, is inconsistent with SFAS No. 52. SFAS No. 80 extends hedge accounting to anticipated transactions that are not firmly committed, provided certain underlying criteria are met.

The complexities surrounding deferral hedge accounting for derivatives activities are deepened by the lack of clear accounting rules for hedging activities involving groups of assets and liabilities. These types of hedging activities, referred to as dynamic portfolio management, are often used rather than static hedging of individual items. Dynamic portfolio management is characterized by the continuous assessment and periodic adjustment of the risk in groups of assets, liabilities, and binding commitments of an enterprise.

Dynamic portfolio management enables an entity to more easily take maximum advantage of naturally offsetting positions in the portfolio and thus to adjust only for the portfolio's net remaining exposure. Dynamic portfolio management is commonly used, especially by financial institutions, because it is particularly efficient and cost-effective in many situations. However, the hedge criteria commonly applied under SFAS No. 52 and SFAS No. 80 to justify deferral hedge accounting for hedges of individual transactions—including specific designation, assessment of effectiveness, and tracking—are difficult to apply to these dynamic portfolio activities, and no alternative criteria have been developed by FASB.

Existing and Proposed Standards Require Disclosure of Derivatives Activities

FASB issued two SFAS on disclosure requirements, one in 1990 and one in 1991, to address general concerns about the extent and nature of an entity's financial instruments (including derivative products) with off-balance-sheet risks of accounting losses as well as current market values of financial instruments. A third proposed standard was recently released for comment and is expected to be issued by the end of 1994.

Under the two existing disclosure standards, preparers of financial statements must disclose information about the credit and market risks involved with financial instruments and the fair value of financial instruments. SFAS No. 105,⁴ Disclosure of Information About Financial Instruments With Off-Balance-Sheet Risk and Financial Instruments With

⁴Disclosure may be made either in the body of the financial statements or in the footnotes to the financial statements. Certain financial instruments are excluded from the scope of SFAS No. 105 because existing disclosure guidance addresses these items.

Concentrations of Credit Risk, requires disclosure of the following information by class of financial instrument with off-balance-sheet risk:

- face or contract amount (or notional principal amount if no face or contract amount exists);
- the nature and terms of the instrument, including, at minimum, a discussion of credit risk, market risk, cash requirements, and the related accounting policy;
- the amount of accounting loss the entity would incur if any party to the financial instrument failed completely to perform according to the terms of the contract and collateral or other security, if any, proved to be worthless;
- the entity's policy for requiring collateral or other security to support financial instruments subject to credit risk, information about the entity's access thereto, and the nature and a brief description of the collateral or other security supporting those financial instruments; and
- significant concentrations of credit risk arising from all financial instruments, whether from an individual counterparty or groups of counterparties, including information about the activity, region, or economic characteristic that identifies the concentration of credit risk.

SFAS No. 107, Disclosures about Fair Value of Financial Instruments, requires the following information to be disclosed about the fair value of all financial instruments,⁵ regardless of whether it is recorded in the balance sheet:

- fair value of the financial instruments for which it is practicable to estimate that value and
- method and significant assumptions used to estimate fair value.

When the estimation of the fair value of a financial instrument is impracticable, the statement requires disclosure of information that is pertinent to such estimation. This information includes the carrying amount, effective interest rate, maturity, and the reason the estimate of fair value was impracticable.

We reviewed the 1992 annual reports of 10 large U.S. bank holding companies with significant derivatives activity, including 7 major OTC dealers. Our review showed that these institutions generally were complying with the disclosure requirements listed earlier. However, we

⁵Fair value is defined as the amount at which an item could be exchanged in a current transaction between willing parties, other than in a forced or liquidation sale.

noted some variances in the extent and methods of disclosures. For example, some of the institutions provided extensive coverage of the risk-management process (i.e., credit risk, interest rate and currency risk, and liquidity risk) for financial instruments in the Management Discussion and Analysis section of their annual reports or devoted separate sections to describe the risk-management process. Such discussions alerted the reader to the types of risks inherent in the use of financial instruments, such as interest rate swaps and foreign currency transactions. Other institutions disclosed information in footnotes or supplemental schedules, while still others provided rather limited disclosures. Some clearly quantified the amount of credit risk exposures of counterparties or concentrations of credit risk, and others made disclosures that were less clear.

Because SFAS Nos. 105 and 107 leave financial statement preparers with substantial flexibility in the presentation and level of detail of the required disclosures, the information provided about derivatives and other financial instrument activities is not likely to be consistent or complete, thereby making meaningful analysis of such information by financial statement users very difficult.

Recognizing these inadequacies, FASB recently added a project to its agenda to improve disclosures about derivatives. An exposure draft of a proposed SFAS, Disclosure About Derivative Financial Instruments and Fair Value of Financial Instruments, was released for comment on April 14, 1994. The proposed SFAS would require disclosure of the following information either in the body of the financial statements or in the accompanying footnotes:

- the amounts, nature, and terms of each class of derivatives that are not subject to SFAS No. 105 (because they do not result in off-balance-sheet risk of accounting loss), including differentiation between instruments held or issued for purposes of trading and purposes other than trading;
- the average, maximum, and minimum aggregate fair values during the reporting period of each class of derivatives held or issued for trading purposes, with differentiation between assets and liabilities;
- the net gains or losses arising from derivatives trading activities during the reporting period and where those net trading gains or losses are reported in the income statement;
- a description of the entity's objective for each class of derivatives held or issued for purposes other than trading and how these instruments are reported in the financial statements; and

- a description of anticipated transactions for which the risks are hedged with derivatives, including the expected time frame for the transactions, the amount of related hedging gains and losses that are explicitly deferred, and the transactions or other events that result in recognition of the deferred gains and losses in income.

The proposed SFAS encourages but does not require disclosure of quantitative information about interest rate or other market risks of derivatives that is consistent with the way the entity manages those risks. It also encourages disclosure of such information about other assets and liabilities. The proposed SFAS would also amend SFAS No. 107 to require that fair value information be presented without combining, aggregating, or netting the fair value of separate financial instruments of a different class. It would also require that this information be presented in one location, with the related carrying amounts, in a form that makes it clear whether the amounts are favorable or unfavorable.

The comment deadline for the proposed SFAS is July 1, 1994. FASB expects to issue the final SFAS by the end of 1994. The proposed SFAS would be effective for financial statements issued for fiscal years ending after December 15, 1994, except for entities with less than \$150 million in total assets. For those entities, the effective date would be 1 year later.

Although the proposed SFAS is an improvement over existing disclosure requirements in SFAS No. 105 and SFAS No. 107, we believe there are additional disclosures that would provide financial statement users a more complete understanding of derivatives activities. For instance, the proposed SFAS does not require a clear distinction between dealing activities, speculative activities, and hedging and other risk-management activities. We believe this type of distinction is necessary for a clear understanding of the nature and risks of entities' derivatives activities. As mentioned earlier, the proposed SFAS encourages but does not require that the risks of interest rate and other market changes be quantified and disclosed. We believe these disclosures should be required because of the significant risk that such market changes pose to many entities and to promote consistency in reporting.

We recognize that these additional disclosures will be difficult to immediately implement because of the basic definitional issue we discussed earlier and the systems limitations of some entities. Further study and resolution of these and other disclosure issues are needed so

that this important additional information about derivatives activities can be provided in financial reports.

The disclosures required by SFAS No. 105, No. 107, and the recently proposed SFAS, while not fully satisfactory, are important steps toward helping users of financial statements better understand the risks associated with financial instruments and derivative products in published financial statements. However, disclosure, no matter how complete, is no substitute for consistent and comprehensive accounting rules that would require such risks to be reflected in the derivation of financial statement numbers.

FASB's Financial Instruments Project Is Attempting to Address Gaps in Rules on Accounting for Derivatives

FASB has undertaken an ambitious and comprehensive project on the recognition and measurement of financial instruments. The goal of this complex project is to develop broad accounting rules and disclosure requirements for financial instruments, including derivative products. One approach that FASB is considering is based on the premise that all financial instruments are basically composed of a few fundamental types of financial instruments. Under this approach, a determination of how to recognize and measure these instruments would lead to consistent solutions for the accounting issues raised by more complex instruments as well as activities that establish relationships among financial instruments, such as hedging. The project's scope is broad, covering important topics such as consideration of mark-to-market accounting; hedging and other risk-adjusting activities; securitization of assets; and troubled debt restructurings.

In January 1992, FASB began deliberations on accounting for hedging. In June 1993, FASB issued a report on its deliberations,⁶ including its tentative conclusions. These conclusions included FASB's agreement that deferral hedge accounting would be permitted for hedges of existing assets and liabilities and firm commitments if hedging instruments and hedged items are designated, are highly inversely correlated, and have a clear economic relationship that reduces enterprise (or business unit) risk at inception and during the course of the hedge. FASB was unable to agree on whether to permit deferral hedge accounting for hedges of anticipated transactions. A major impediment to reaching consensus on this issue was that deferral hedge accounting for losses and gains realized on hedges of anticipated transactions does not correlate with the established definitions of assets

⁶A Report on Deliberations, Including Tentative Conclusions on Certain Issues Related to Accounting for Hedging and Other Risk-Adjusting Activities, FASB (Norwalk, CT: June 1993).

and liabilities included in FASB's conceptual framework for financial accounting and reporting.⁷

FASB also tentatively distinguished hedging from other risk-adjusting activities, which include dynamic portfolio management and the creation of synthetic instruments,⁸ such as interest rate swaps. In its June 1993 report, FASB noted that it had trouble dealing with these three categories of activity simultaneously and was concerned that these categories were not clearly enough distinguished from each other. In addition, FASB tentatively concluded that it could see no practical way to apply deferral hedge accounting on a pool basis to a dynamically managed portfolio; however, FASB was soliciting further input on this issue.

In December 1993, FASB decided to put aside all of its previous tentative conclusions and began redeliberating each of the issues it had previously considered. As of April 1994, FASB was exploring two alternative approaches to hedge accounting. The first approach would be to continue along the lines of the conventional hedge accounting model FASB had previously discussed. The second approach would be to more fully develop a recent proposal that would classify all derivatives as either acquired for risk management or trading. All derivatives would be marked to market. Changes in the value of derivatives acquired for trading purposes would be recognized in earnings as they occur. Changes in the value of derivatives acquired for risk management would be reflected in equity to the extent that certain tests are met; otherwise these changes would be recognized in earnings.

As of April 1994, FASB was also planning to revisit the fundamental issue of defining the objective of hedge accounting and the types of transactions that should be afforded special hedge accounting treatment.

⁷These definitions are included in Statement of Financial Accounting Concepts No. 6, Elements of Financial Statements, December 1985. Statement of Financial Accounting Concepts No. 6 defines assets as probable future economic benefits obtained or controlled by a particular entity as a result of past transactions or events. Liabilities are defined as probable future sacrifices of economic benefits arising from present obligations of a particular entity to transfer assets or provide services to other entities in the future as a result of past transactions or events.

⁸Synthetic instruments are created by linking two or more distinct instruments whose collective characteristics resemble those of a prototype instrument.

Market Value Accounting Would Help Resolve Hedge Accounting Issues

FASB has discussed market value accounting as a means to resolve many of the hedge accounting issues, including the difficulty in differentiating between speculative and risk-management derivatives activities and determining which of these qualify for deferral hedge accounting. Market value accounting would not, however, solve the issues surrounding anticipatory transactions because it does not address whether these deferred losses and gains can be recorded as assets and liabilities under FASB's conceptual framework. However, it would eliminate much of the other controversy surrounding hedge accounting, particularly for financial institutions.

Current accounting rules do not require comprehensive market value accounting for financial instruments.⁹ As we have previously stated in comment letters, we believe that FASB should consider a market value accounting model for financial institutions. In commenting on recent FASB pronouncements, we have strongly supported market value concepts for loan loss accounting, debt and equity securities, and related liabilities. However, FASB did not adopt such concepts in these pronouncements. As a result, nondealer financial institutions will continue to carry on their balance sheets significant amounts of assets and liabilities at historical cost.

The most prevalent argument for continuing use of the historical cost model is that it is an objective accounting measurement that can be easily determined. However, the historical cost model masks the realities of today's rapidly changing markets and fails to provide investors, depositors, regulators, and others with the full complement of information they need in making business, economic, and regulatory decisions.

The limited disclosure of market realities through footnotes to the financial statements stands in sharp contrast to the extensive market information used to manage the activities of most large and sophisticated entities. These entities are typically managed through constant monitoring—sometimes on a daily or even more frequent basis—of the market values of their financial instruments, including derivative products. Business decisions about how to operate these entities are generally based on a market value accounting model. However, public financial reports of nondealers are generally prepared on the basis of the historical cost model.

⁹Securities firms and other derivatives dealers generally use market value accounting for trading activities. Therefore, any change to broadly adopt market value accounting would have little effect on accounting for these activities. The major effect of market value accounting would be on those activities that are currently accounted for using historical cost.

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This disparity clouds financial reports and can mislead users of such reports as to managements' activities. Market value accounting, on the other hand, would provide financial statement users with the bottom line results of managements' end-user hedging activities and would eliminate the potential for inappropriate reporting of hedge gains and losses.

We recognize that numerous implementation issues would have to be studied and resolved before the adoption of a comprehensive market value accounting model was possible. However, the financial instruments project that has been under way for more than 5 years has been unable to satisfactorily resolve issues involved in using the historical cost model. We believe that the development of a market value accounting model for all financial instruments, including derivatives, may well be a valid outcome of the financial instruments project. Such an accounting model would not only solve many of the accounting issues concerning derivatives but, more importantly, would provide a new level of transparency in financial reporting of hedging activities.

Ensuring the Safety and Soundness of Derivatives Activities Will Require International Cooperation

The interrelationships among OTC derivatives dealers and markets worldwide increase the likelihood that a crisis involving derivatives will be global. A crisis beginning abroad can affect U.S. institutions and markets. As a result, unilaterally strengthening U.S. regulation may not be sufficient to protect the U.S. financial system. Such unilateral action also may hamper U.S. product innovation, affect U.S. firms' competitiveness, and encourage firms to move their activities to markets with less regulation. Avoiding these potentially adverse consequences of unilaterally strengthening derivatives regulation in the United States will require U.S. regulators to coordinate with regulators internationally.

Foreign regulators described to us their policies and procedures for regulating derivatives. However, we did not verify their descriptions or compare their practices to the policies and procedures that they described. As a result, we could not compare the quality of foreign regulation to U.S. regulation. We learned that approaches to the regulation of derivatives varied across the countries included in our review. The scope of the financial regulation in most of the countries we reviewed covered all major OTC derivatives dealers. However, requirements for reporting, capital, examinations, and disclosure in public financial statements were not always complete. To date, attempts to coordinate international financial regulation, while achieving some successes, have usually taken considerable time and have not always produced agreement.

Unilateral U.S. Regulatory Action May Not Be Sufficient and Could Have Adverse Consequences

U.S. regulatory action would not address the derivatives activities of all major OTC dealers worldwide. According to our analysis of publicly reported information, financial institutions with the largest derivatives notional/contract amounts worldwide included firms from 11 countries,¹ with firms from France, Switzerland, the United Kingdom, and the United States having the highest volumes. These firms were also actively conducting derivatives activities in markets outside their own countries. For example, most of the major U.S. derivatives dealers we identified had affiliates conducting derivatives activities in other countries, including at least 7 firms that had affiliates in all 7 of the countries we included in our review. Based on data provided by the 14 U.S. dealers that responded to our survey, transactions with foreign dealers represented an average of about 24 percent of the U.S. dealers' combined derivatives notional/contract amounts.

¹Our analysis uses publicly available data compiled by Swaps Monitor Publications, Inc., which publishes a newsletter that tracks the derivatives industry. Other financial institutions may have higher derivatives notional/contract amounts but are not included because of the lack of comprehensive disclosure requirements in many countries (as discussed later in this chapter).

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Regulators worldwide have recognized that improvements are needed in the regulations and standards that apply to derivatives. Given the global nature of derivatives activities, they also recognized that such improvements will require extensive international regulatory cooperation. According to the BIS report, the regulatory staffs of several countries agreed that reducing the risk of an international systemic disruption would require regulators, market participants, and others to act jointly to improve derivatives risk-management and accounting and disclosure practices. The report also suggested that the central banks of various countries work with other financial authorities to ensure that financial institutions are adequately capitalized and have appropriate systems in place for managing and controlling risks. Federal Reserve officials and others noted that greater harmonization among various countries' legal and regulatory systems, such as those governing netting arrangements, would also reduce the risks faced by institutions operating internationally.

U.S. regulators and market participants were concerned that U.S. derivatives regulation could become onerous compared to that of other countries. They feared that such U.S. regulation could adversely affect the ability of U.S. markets and firms to produce innovative products and strategies as well as compete against financial institutions in other countries. A Federal Reserve Board Governor said that regulators must be aware of the potential effects of regulation on competition, efficiency, and innovation in derivatives markets. During a congressional hearing on derivatives, an official of a large U.S. derivatives dealer testified that intense competition forces firms to continually improve the way they manage their derivatives activities. He said that market participants would oppose any regulatory change that reduced this competitive environment.

Coordinating and harmonizing approaches to derivatives regulation also would reduce opportunities for market participants to shift their activities to jurisdictions with less regulation. While the safe and sound markets that can result from effective regulation may attract participants, regulators and market participants in the United States and other countries told us that firms often decide on the country in which to conduct their derivatives activities on the basis of various factors, including differences in regulatory requirements, accounting practices, or tax treatment. A manager for a U.S. securities firm in Japan cautioned that excessive regulation of derivatives in one country would cause trading to move outside that country, leaving its financial institutions at a competitive disadvantage. Regulatory officials and market participants noted that volumes of equity derivatives decreased on Japanese exchanges and

increased on exchanges in Singapore and the United States after Japanese regulatory changes made trading these products more costly.

Foreign Regulatory Approaches Varied

Regulators in the seven foreign countries included in our review² have implemented a variety of approaches addressing derivatives risks, but the activities of the major OTC derivatives dealers were all subject to regulation. Regulatory reporting requirements in these countries addressed derivatives notional volume and some measures of risk, but the type of information reported varied. The capital requirements for banks in these countries are generally similar, but some regulators have placed additional requirements on banks conducting derivatives activities. Four countries have separate capital requirements for securities firms, but these requirements varied. Regulators examine or oversee private sector examinations of the financial institutions using derivatives in these seven countries. Finally, requirements to disclose derivatives activities in public financial statements also varied, but most countries required only limited disclosure.

The Activities of Major OTC Dealers Are Regulated

In contrast to the gaps in U.S. regulation, major OTC derivatives dealers were subject to regulation by at least one regulatory body in all seven of the countries we reviewed. In France, Germany, Japan, Singapore, and the United Kingdom, all derivatives dealers were overseen by either the countries' national banking or securities regulatory bodies or both. However, regulators in two countries—Australia and Switzerland—acknowledged that derivatives activities by some financial institutions were not subject to direct regulation in their countries. They said that the activities of these institutions were not significant enough to concern them.

Regulators Collected Different Information to Assess the Extent and Risk of Derivatives Activities

All regulators obtained some information about derivatives on a monthly or quarterly basis to assess the volume and risks of derivatives activities, but some regulators collected more detailed information than others. As shown in table 7.1, regulators in three of the seven countries collected separate notional/contract totals primarily for forwards, futures, options, and swaps. These totals were subdivided in various ways—for example, by type of underlying (including foreign currencies, interest rate contracts, and equities), by type of market (exchange-traded or OTC), by purpose

²The countries we reviewed were Australia, France, Germany, Japan, Singapore, Switzerland, and the United Kingdom.

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(hedging or speculation), by maturity, or by type of counterparty. Regulators in the other four countries did not collect such information for all derivatives or obtained it only in combination with other products. In addition to notional/contract totals, regulators in six countries obtained other information to assess the extent of market or credit risk associated with derivatives. Such information included derivatives' market values, credit equivalent amounts,³ risk ratios, or capital held to cover market or credit risk.

³Credit equivalent amounts are based on the Basle Accord's current exposure method, which specifies that a contract's credit equivalent amount is the contract's replacement cost or market value plus an additional amount, called an add-on, to reflect potential future credit risk.

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Table 7.1: Regulatory Reporting Requirements for Major OTC Derivatives Dealers in Selected Countries

Country	Requirements for reporting notional/contract amounts	Requirements for reporting amounts for credit or market risk
Australia	Banks report quarterly on forwards, futures, options, and swaps for foreign currencies, interest rates, gold, equities, and other contracts. Banks also make weekly reports on foreign currency derivatives. Securities firms do not report any derivatives positions.	Banks report quarterly on the credit equivalent amount of outstanding transactions.
France ^a	Banks report quarterly on derivatives, grouped as interest rate or currency, exchange-traded or OTC, and hedging or proprietary positions.	Banks report quarterly on unhedged positions.
Germany ^a	Banks report monthly on forwards, futures, options, and swaps related to foreign currencies, interest rates, equities, and other contracts. The information is subdivided by major types of exchange-traded and OTC contracts, by maturity, and by type of counterparty.	Banks report monthly on the delta value of options, ^b the credit equivalent amount of other reported contracts, and three ratios that reflect the extent of foreign exchange risk, interest rate risk, and other market risks.
Japan	Banks and securities firms report monthly on exchange-traded derivatives. ^c	Banks and securities firms report monthly on the market value of exchange-traded derivatives.
Singapore	Banks and securities firms report monthly a combined total for exchange-traded and OTC derivatives.	Banks report monthly on the market value of their unhedged foreign exchange positions for capital purposes.
Switzerland ^a	Banks report monthly on foreign currency derivatives and annually on foreign currencies, forwards, and OTC interest rate contracts.	An annual audit report to regulators comments about risks undertaken and how they are managed.
United Kingdom	Banks report monthly on activities related to foreign currencies and quarterly on forwards, OTC options, and swaps related to interest rates, foreign currencies, precious metals, equities, and other contracts. Depending on the overall nature of their business, some banks provide more detailed information, biweekly or monthly, about derivatives. Securities firms report monthly on the market value of futures, options, and swaps, and submit quarterly reports that provide more detail about specific types of derivatives.	Banks report quarterly on the credit equivalent amount of their contracts. Depending on the overall nature of their business, some banks provide more detailed analyses of their market and credit risks. Securities firms report monthly and quarterly on the amount of capital held to cover market and credit risks with quarterly reports providing more detail on specific types of derivatives.

^aNo separate reporting requirements apply to securities firms because only firms licensed as banks can conduct securities activities.

^bThe delta value of an option measures the sensitivity of the option's price to changes in the price of the underlying contract.

^cThis reporting is by numbers of contracts.

Sources: Compiled from information supplied by the Australian Securities Commission, the Reserve Bank of Australia, the Commission Bancaire (France), the Deutsche Bundesbank (Germany), the Federal Banking Supervisory Office (Germany), the Bank of Japan, the Ministry of Finance (Japan), the Monetary Authority of Singapore, the Federal Banking Commission (Switzerland), the Swiss National Bank, the Bank of England (United Kingdom), and The Securities and Futures Authority Ltd. (United Kingdom).

Most Financial Institutions Were Subject to Capital Requirements

Capital requirements applied to most financial institutions using derivatives in the countries we reviewed. However, some of these requirements covered more of the risks associated with derivatives than others. Four of the seven countries—Australia, Japan, Singapore, and the United Kingdom—had different capital requirements for banks and securities firms. In contrast, France, Germany, and Switzerland, where financial institutions conducting securities activities must also be licensed as banks, required all institutions to meet bank capital requirements.

Bank capital requirements met the standards set by the Basle Accord in all seven countries we reviewed, but some countries had additional capital requirements. As recommended by the Basle Accord,⁴ the seven countries all had bank capital requirements that required specific amounts of capital to cushion against potential losses arising from credit risk, including losses from derivatives. To address market risk, the Monetary Authority of Singapore required domestic banks to hold capital equal to 12 percent of their net positions in foreign exchange activities,⁵ rather than the 8 percent recommended by the Basle Accord. Several bank regulators limited the accumulation of certain risks relative to capital and required banks to report on such risks. Most common were limits on foreign exchange market risk and large credit exposures to any one counterparty. German regulations also limited the accumulation of interest rate risk and other market risks.

Four countries—Australia, Japan, Singapore, and the United Kingdom—had separate capital regulations that applied to securities firms, although the treatment of derivatives under these requirements varied. Similar to firms operating in the United States, securities firms in these four countries generally were required to meet minimum levels of net worth (assets minus liabilities) after making certain adjustments to this net worth—or capital—amount. These adjustments usually involved reducing the values of a firm's assets, including derivatives, by certain amounts so those that are less liquid or that have greater risk faced correspondingly larger reductions.

In Japan, securities firms' capital standards accounted for both the credit and market risks of derivatives activities by requiring firms to reduce the

⁴The capital requirements recommended in the Basle Accord are discussed in detail in chapter 4. At a minimum, the requirements apply to internationally active banks. Regulators may also apply them to domestic banks at their own discretion.

⁵All of this capital must be core capital (tier 1), which includes paid-up share capital/common stock and disclosed reserves/retained earnings.

value of their derivatives positions by certain amounts according to both the creditworthiness of the counterparty and the type of asset underlying the contract. Securities regulators in the United Kingdom also tested a firm's overall credit and market risk in setting capital requirements. Firms were required to reserve a certain amount of capital to cover each of these risks. U.K. regulators recognized that derivatives can be used to hedge market risk and permitted firms to hold less capital for hedged positions. Securities firms in Singapore made some reductions to the value of derivatives, but these reductions did not account for market risk. In Australia, net derivatives positions were included in securities and futures firms' assets but were not reduced to account for their various risks. Securities and futures regulators in Australia noted in March 1994 that they were reviewing these standards, which may result in changes to better address the risks derivatives pose.

The efforts of various international organizations will likely result in changes to the capital requirements in the seven countries we reviewed. For example, certain changes to capital requirements will be implemented in the EC in 1996, while other changes are being negotiated that would apply internationally.

Examinations and Regulatory Guidance Addressed Internal Controls and Risk Management

Regulators in the countries included in our review told us that financial institutions were examined to assess, among other things, the internal controls and risk-management procedures for all activities, including derivatives. It is more common outside the United States for regulators to delegate examination authority to external auditors, although regulators in some countries conducted their own examinations. Most regulators told us that regardless of the approach used, the extent to which derivatives are being addressed in examinations is generally increasing.

Bank examinations in Australia, Germany, Switzerland, and the United Kingdom were done primarily by external audit firms using guidelines established by the regulators. In these countries, the auditors provided regulators with detailed audit reports and discussed any problems identified with the regulators. However, these countries' bank regulators said that they planned to be more involved in examinations in the future. For example, bank regulators in Australia said they will begin visiting banks periodically to increase their understanding of banks' risk-management systems. The Bank of England was establishing a regulatory group responsible for examining banks' risk-assessment models, similar to current practices of U.K. securities firm regulators.

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Although external auditors review German banks' operations, staff from Germany's Bundesbank (the central bank) inspected banks' foreign exchange activity, including derivatives, but these inspections were not done annually.

In contrast to these approaches, regulators in France, Japan, and Singapore and securities firm regulators in Australia and the United Kingdom did their own examinations of the financial institutions they regulate. Australian securities regulators, however, were not authorized to examine certain OTC derivatives. In the United Kingdom, where many U.K., U.S., and other foreign banks and securities firms trade derivatives, a special team of U.K. securities regulators was responsible for approving, testing, and monitoring models that were used to estimate derivatives risk and for generally assessing the quality of risk management among securities firms.

Regulators in four of the countries we reviewed had also issued guidance concerning risk management for the financial institutions they supervised. In 1987 guidance, the Bank of England stated that banks' records and internal controls should identify risk exposure limits, particularly those related to derivatives, monitor compliance with such limits, properly value positions, and ensure that management was adequately informed. In 1990, France's Banking Commission issued a rule addressing the interest rate risk of financial institutions that actively trade securities and derivatives. Under this rule, these institutions must have management systems to immediately record all transactions, track positions globally and by product type, and monitor compliance with limits on risk exposure. Switzerland's Federal Banking Commission and the Monetary Authority of Singapore issued guidance in 1991 and 1992, respectively, for financial institutions using derivatives. The guidance issued by both of these regulators stated that institutions were expected to have clearly defined business procedures and effective internal control systems. Singapore's guidance also emphasized the need for appropriate accounting procedures and informed senior management. Finally, according to a Bundesbank official, German regulations that govern the conduct of foreign exchange activity will likely be expanded to cover all trading activities, including derivatives.

**Derivatives Disclosure in
Some Public Financial
Statements Was Limited**

The extent of derivatives disclosure in foreign public financial statements was specified by regulators or accounting bodies in all but one of the countries we reviewed. While the extent of disclosure was greater in some

countries, regulators and financial institution officials from several countries said that existing requirements generally did not allow regulators and market participants to accurately assess an institution's financial condition. However, regulators in some countries indicated that because their current disclosure requirements were being modified, the amount of information disclosed about derivatives might increase.

Our review of the public financial statements of 28 foreign banks and securities firms from the 7 countries we visited showed that derivatives disclosure ranged from none to disclosure similar to that required of U.S. institutions. Australian disclosure standards did not address derivatives at all. In Japan, Singapore, and Switzerland, banks and securities firms were only required to disclose certain aspects of their derivatives activities, while German banks were required to disclose, in notes to the financial statements, the types of derivatives held and how they were used.⁶ Other countries' disclosure requirements for derivatives were more comprehensive. In the United Kingdom, for example, accounting and disclosure standards were set by the U.K. Accounting Standards Board and supplemented by regulatory requirements and industry recommendations. Accordingly, banks were required to disclose the types and purposes of their derivatives transactions, but also were urged to disclose derivatives' replacement cost, credit risk-weighted amount (based on the Basle Accord), underlying principal amount, and accounting policies related to derivatives. French regulations required financial institutions to make similar disclosures related to derivatives. Although disclosure requirements were not always extensive, financial institution officials in several countries told us they voluntarily disclosed more derivatives information in their financial statements than was required because such disclosure provided more information to investors and market participants.

Accounting rules and disclosure requirements for derivatives were changing in some of the seven countries. The rules and recommended procedures for banks in the United Kingdom were written in 1991 to take effect for accounting periods starting in December 1992. Accounting rules and disclosure standards in Australia and Switzerland were also being revised to improve derivatives coverage.

⁶Financial institutions in Japan were only required to disclose exchange-traded derivative products. In Singapore, institutions must disclose any material losses arising from derivatives. Swiss financial institutions were only required to disclose fixed forward transactions based on securities and precious metals.

International Coordination Efforts Have Achieved Only Mixed Success

As of April 1994, several international regulatory and industry organizations were making efforts to coordinate and harmonize regulatory or market practices for financial institutions, and some of these efforts have achieved success. However, these efforts usually required considerable time, some were not complete, and others failed to produce international agreement.

Among the most important of the efforts were the projects to develop minimum capital requirements for banks and securities firms by the Basle Committee on Banking Supervision, IOSCO, and the EC. The Basle Committee established international capital requirements in 1988 for the credit risk of banks' activities, including derivatives, and has proposed requirements for market risk. IOSCO's efforts to develop international capital requirements for securities firms have been less successful, which in turn has delayed efforts by the Basle Committee and IOSCO to develop common international capital requirements for banks and securities firms. The EC has written capital rules to address credit and market risks for EC banks and securities firms. Such rules are to be fully operational in 1996. As of April 1994, only bank regulators were attempting to develop international models for reporting requirements. Industry groups have made strides in reducing the operational and legal risks of derivatives by harmonizing international practices for transaction documentation. However, uncertainties remained in other legal areas, including the enforceability of netting agreements in different countries. Finally, an international effort led by various countries' bodies for setting accounting standards was attempting to improve the way financial institutions account for and disclose their derivatives activities, but the results of this effort were not expected until the end of 1994 or later.

Bank Regulators Successfully Created International Capital Standards for Credit Risk, but Market Risk Requirements Are Not Yet Final

International efforts to produce capital standards for banks have made progress, although these efforts had required considerable time and were incomplete as of April 1994. After regulators from the United States and the United Kingdom prepared a bilateral accord on bank capital in January 1987, regulatory representatives from the 12 countries that form the Basle Committee on Banking Supervision issued risk-based capital standards for international banks in July 1988. These Basle Accord standards were primarily designed to ensure that internationally active banks have adequate capital to protect against credit risk, including the exposures created by derivatives. Although these standards were finalized in 1988, banks were not required to fully comply until December 1992. The accord also recognized the use of netting by novation for capital adequacy

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purposes.⁷ When these capital standards were issued, the Basle Committee indicated that it intended to expand the accord to consider the additional market risks that banks incur, such as interest rate risk and foreign exchange risk.

In January 1991, the Basle Committee issued guidance on controlling large credit exposures, noting that efforts to define acceptable levels of credit concentration in relation to capital as defined by the Basle Accord were appropriate. Whereas the Basle Accord measures credit risk on a portfolio basis, the committee said a different approach was needed to measure credit exposure to a single counterparty. It recommended that regulators measure the full extent of such exposure by including actual and potential claims against a counterparty. It also suggested limiting single counterparty exposures to 25 percent of total capital and requiring banks to report such exposures before they reach that level, for example at no more than 10 percent of capital. It further advised regulators to be aware of other types of credit concentrations, such as those with particular geographic and economic sectors or with different affiliates of the same institution.

In April 1993, the Basle Committee proposed several changes to the Basle Accord. To address the market risk of certain bank activities, the committee proposed that capital charges be applied to banks' trading positions in equities and debt securities, and in foreign exchange, including derivatives.⁸ The committee also proposed recognizing additional types of netting arrangements that would affect the amount of capital needed to cover credit risk. The proposals were expected to be modified on the basis of comments received from regulators and market participants, and as indicated in chapter 4, some commentators in the United States have criticized the approach advocated in these proposals. As of April 1994, no firm date existed as to when any revised proposal would be finalized.

The effect of the Basle Committee's proposals on the level of capital held by banks active in derivatives is difficult to predict. The Chairman of the Basle Committee said he would not expect the market risk proposal to increase capital requirements by more than 1 percent, except in extraordinary circumstances. However, because derivatives can also be

⁷Netting by novation requires that a separate contract be established to combine the obligations of multiple contracts with a single counterparty that are denominated in the same currency and are due on the same date.

⁸This proposal would not apply to derivatives used to hedge nontrading positions.

used to decrease risk, the committee noted that banks with well-hedged positions could actually have lower capital requirements. Moreover, the committee expected that broader recognition of netting for capital purposes would reduce the amount of capital held against banks' credit risk. To take advantage of the new rules on netting, banks would be required to have a netting agreement⁹ with the respective counterparty and would have to provide a legal opinion that such netting is enforceable in both counterparties' jurisdictions. A broader recognition of netting could be particularly beneficial to banks actively dealing in derivatives when they typically have a large number of offsetting contracts with other financial institutions.

**Negotiations to Establish
International Capital
Standards for Securities
Firms Have Been
Unsuccessful**

International efforts to develop minimum capital standards for securities firms have been under way since 1987; however, as of April 1994, regulators had not yet agreed on certain aspects of these standards. The IOSCO working group, formed to study issues related to the capital adequacy of international securities firms, recommended in 1989 that capital standards cover credit and market risks and recognize the risk-reduction potential of hedging techniques.¹⁰ Since then, IOSCO members have had a common understanding about how to measure credit and market risks, but they have not agreed on what level of capital provides adequate protection against the market risk of securities. IOSCO has not held detailed discussions about capital requirements for derivatives.

The lack of agreement among the various securities regulators has also prevented the harmonization of international capital standards for both banks and securities firms. The Basle Committee and IOSCO have jointly discussed the development of such standards. Some IOSCO members also consulted with the Basle Committee as it prepared its proposal to expand bank capital requirements to address market risk. However, the two groups were unable to issue the proposal jointly because of a lack of agreement among IOSCO members on capital standards for international securities firms.

⁹In the event of a counterparty's failure to perform due to default, bankruptcy, or liquidation, such a netting agreement would create a single legal obligation between the parties to exchange only the net value of the sum of the unrealized gains and losses on all transactions included under the terms of the agreement.

¹⁰See *Securities Markets: Challenges to Harmonizing International Capital Standards Remain* (GAO/GGD-92-41, Mar. 10, 1992).

The EC Plans to Implement New Capital Rules in 1996

Concurrent with the Basle Committee and IOSCO efforts, EC members have been negotiating to establish EC-wide regulations governing banks and securities firms. Since 1989, EC banks have complied with the Solvency Ratio Directive, which is based on the Basle Accord and sets capital requirements to cover credit risk. Beginning in 1996, the Capital Adequacy Directive is expected to be in force, which would set capital requirements for the market risk of certain activities and specific counterparty risk. These directives will apply to banks and securities firms operating in the EC and the European Economic Area.¹¹

In purpose and structure, the Capital Adequacy Directive resembles the Basle Committee's proposal on capital standards for market risk. However, in certain areas, the directive establishes different capital requirements than those proposed by the Basle Committee. The directive acknowledges that its provisions will be revisited on the basis of the experience acquired in applying it, development of international standards, and market innovation.

Efforts to Improve Regulatory Reporting Requirements Are Limited

International organizations have not traditionally focused on developing regulatory reporting requirements but instead have relied on national supervisors to determine the kind of information they need from the financial institutions they regulate. However, several prominent reports that addressed derivatives issues have recommended that better information be made available to regulators about these activities.¹² As a first step in this effort, the Basle Committee has proposed developing a common framework to measure and report banks' interest rate risk.

The Basle Committee's proposal did not recommend a specific methodology for measuring and reporting the interest rate risk of banks but its objective is to help bank regulators identify institutions that have substantial interest rate risk. The proposal recommended that regulators measure the degree of interest rate risk associated with all of a bank's activities, including derivatives. By providing a common reporting framework for interest rate risk, regulators could collect consistent

¹¹The European Economic Area consists of EC member states and five non-EC countries: Austria, Finland, Iceland, Norway, and Sweden. As of January 1, 1994, these five countries agreed to adopt EC regulations governing the financial services industries.

¹²These reports include *Recent Developments in International Interbank Relations*, Report Prepared by a Working Group of the Central Banks of the Group of Ten Countries BIS (Basle, Switzerland: Oct. 1992); *Derivatives: Report of an Internal Working Group*, Bank of England (London: Apr. 1993); *An Integrated Bank Regulatory Approach to Derivatives Activities*, The Institute of International Finance, Inc. (Washington, D.C.: May 1993); *OTC Derivative Markets and Their Regulation*, CFTC (Washington, D.C.: Oct. 1993).

information and have additional data to further consider how such risk should be measured. Neither IOSCO nor the EC has issued guidance about regulatory reporting, although the EC expected member state regulators to collect sufficient information from banks and securities firms to ensure compliance with the new capital rules.

Other International Efforts Have Been Undertaken to Cooperate on Derivatives Regulation

Some regulators have established other efforts to coordinate and harmonize their approaches to derivatives regulation. On March 15, 1994, SEC, CFTC, and the U.K. Securities and Investments Board announced plans to work together to improve each organization's approach to regulating OTC derivatives. The groups agreed to attempt, among other things, enhancing their information-sharing capabilities and promoting the establishment of capital requirements, sound management controls, and standards for accounting, measurement, and disclosure.

In addition to this effort, IOSCO formed a working group to examine derivatives issues. This group has conducted a survey of derivatives activities in emerging markets and has formed a task force of representatives from regulators, industry, financial institutions, and academia to advise the working group.

Market Participants Have Reduced Risk by Standardizing Documentation, but Other Legal Issues Remain

Various organizations have worked to standardize documentation used by institutions offering derivatives to reduce the operational and legal risks of these products. In 1987, ISDA produced a recommended standardized contract governing derivatives transactions, known as a master agreement. This document sets out the various terms, definitions, and responsibilities of each party for the covered derivatives transactions. Among the derivatives dealers that responded to the survey done as part of the Group of Thirty report, 74 percent indicated that the method used most frequently to document their transactions was the ISDA Master Agreement. Other organizations—including groups in Japan, the United Kingdom, and the United States—have also developed and agreed to use standardized documentation to eliminate some uncertainty surrounding contracts involving OTC foreign exchange options.¹³ As a result of these efforts, participants in the world's largest foreign exchange markets are expected

¹³These efforts resulted in the International Currency Options Market Master Agreement, which sets out the terms and definitions governing OTC options transactions. This agreement was originally developed by the members of the British Bankers Association and the Foreign Exchange Committee (a group of U.S. regulatory and market participants) for foreign exchange transactions in London and New York. The terms of this agreement will also be used for transactions conducted in Tokyo as a result of another agreement between the U.S. committee and a similar group of market participants active in Japan.

to use the same contract provisions for OTC foreign exchange options transactions.

Other areas of legal uncertainty continue to pose a challenge for international regulators. For example, the uncertain status of the enforceability of netting agreements used for derivatives was a source of concern for 43 percent of the dealers surveyed as part of the Group of Thirty report. Countries that this report identified as not having legislation that specifically recognizes the enforceability of close-out¹⁴ or other types of netting included Australia, Canada, England, Germany, and Japan, although such netting provisions are believed to be enforceable under existing legislation. In addition to netting, other derivatives-related uncertainty also existed in some countries. For example, forward rate agreements, which had a total estimated notional volume of \$2 trillion as of December 1992, were possibly illegal under Japanese laws pertaining to gambling; as a result, Japanese institutions conducted such transactions in foreign affiliates. Other issues of concern included whether some counterparties, such as local governments, had the legal capacity to enter into derivatives transactions in certain countries.

Accounting Organizations Proposed New Accounting and Disclosure Standards

Many regulators around the world considered current accounting practices for derivatives inadequate. They also said that the amount and kind of information disclosed in public financial statements was too limited to adequately assess the risks that derivatives pose to financial institutions. The International Accounting Standards Committee, which includes representatives of various countries' accounting standard-setting bodies, had been working on developing accounting and disclosure standards for financial instruments, including derivatives, since the late 1980s. In January 1994, this group published a second draft of its proposed international standard for accounting and disclosure of these products. The group was planning to seek comments on this proposal until July 1994. A final standard was not expected to be developed until late 1994 or in 1995. Each country's accounting standard-setting body will then have to incorporate this standard into their own requirements.

The Group of Thirty report also recognized the need for consistent and comprehensive reporting of financial instruments internationally and included general recommendations on accounting practices and disclosures for dealers and end-users of derivatives. The various practices

¹⁴Close-out netting provides that in the event that one or both counterparties default, the obligations between the two parties will be netted to produce a single obligation.

Chapter 7
Ensuring the Safety and Soundness of
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International Cooperation

recommended by this report included having dealers account for derivatives transactions by marking them to market and adjusting their income by any resulting gains or losses in value. The report recommended that end-users account for derivatives used to manage risks in a manner consistent with the recognition of income between those derivatives and the assets or liabilities being managed. The report recommended that disclosures be sufficiently comprehensive to provide information about the purpose for which any derivatives transactions were undertaken, the extent of these transactions, the degree of risk involved, and the way these transactions are accounted for. The report also recommended that accounting standards-setting bodies in each country provide comprehensive guidance on accounting and reporting of transactions in financial instruments, including derivatives, and work toward the harmonization of international standards on this subject. The report urged the International Accounting Standards Committee to finalize its proposed accounting standard on financial instruments.

Conclusions and Recommendations

Conclusions

Derivatives serve an important function in the global financial marketplace, providing end-users opportunities to better manage financial risks associated with their business transactions. The rapid growth and increasing complexity of derivatives reflects the increased demand from end-users for better ways to manage their financial risks and from speculators for lower cost ways to potentially profit from market volatility. They also reflect the innovative capacity of the financial services industry to respond to market demands. However, the combination of global involvement, concentration, and linkages among large derivatives dealers means that the sudden failure or complete withdrawal from trading of any of these dealers could heighten the risk of liquidity problems in the markets and pose risk to the others, including federally insured banks and the financial system. In cases of severe financial stress, the federal government is likely to intervene to keep the financial system functioning.

Boards of directors and senior management have primary responsibility for managing derivatives risks. Strong systems of corporate governance must be in place for boards and management to effectively carry out this responsibility. The internal control and audit committee provisions of FDICIA provide a model for strengthening corporate governance systems of major derivatives dealers and end-users. However, FDICIA applies only to large insured depository institutions. Applying the type of corporate governance provisions included in FDICIA to all major dealers would provide needed safeguards for the public's interest. These corporate governance provisions also have applicability to major end-users of complex derivatives and their use would increase the accountability of these companies to investors, creditors, and the general public. We encourage the boards of directors of major dealers and end-users of complex derivative products that do not have in place corporate governance requirements similar to the FDICIA model to establish and implement such improvements. An increased level of corporate responsibility could help avoid the kind of speculative activity that can lead to large unanticipated losses.

Strong risk-management practices could also help major dealers reduce their derivatives risks. However, no regulation exists to bring all major OTC derivatives dealers into compliance with the recent recommendations of the Group of Thirty and guidelines on derivatives' risk management issued by the Federal Reserve and OCC. Regulations would provide a legal framework for bringing all major OTC dealers into compliance with a common set of basic standards essential to effective risk management, such as frequently marking derivatives to market and ensuring the

independence of trading from risk management and other functions. In the absence of regulations, bank regulators must cite unsafe and unsound conditions to force compliance with desired standards, and no legal requirements exist for nonbank derivatives dealers. As a supplementary, more flexible mechanism for updating risk-management standards as the market evolves, guidelines can continue to be used because regulations are difficult to issue and change.

Federal regulators address derivatives activities through a variety of means, but significant gaps and weaknesses exist in the regulation of many major OTC dealers. The Federal Reserve and OCC have required the banks they supervise to report additional information on their derivatives activities. They have also issued guidelines on risk management that include certain of the Group of Thirty's benchmark practice initiatives. However, bank regulators could further improve their oversight and reduce the risks associated with derivatives use by (1) gathering consistent information on large counterparty credit exposures and sources and amounts of derivatives-related income, and maintaining the information in a centralized location accessible to all regulators; (2) revising capital requirements to ensure that all derivatives risks are covered and that legally enforceable netting agreements recognized; and (3) increasing emphasis on the identification and testing of key internal controls over derivatives activities. These improvements could help bank regulators identify potential problems, assess the risks of individual bank activities, and provide an early warning signal for troubled banks.

Federal regulatory authority over the derivatives-dealing affiliates of major securities firms and insurance companies is limited or nonexistent. The information that regulators collect is insufficient for adequate monitoring; capital standards are lacking, and no comprehensive regulatory examinations are performed to ensure the adequacy of the risk-management practices of securities and insurance affiliates. These firms are large and have financial linkages to an increasing number of markets and other firms through a rapidly growing number of derivatives transactions. A direct federal interest exists in the safety and soundness of major bank derivatives dealers because of the Bank Insurance Fund guarantee. However, derivatives transactions carry the same risks to the financial system whether the major OTC dealer is a bank, securities firm, or insurance company. Existing differences in the regulation of derivatives dealers limit the ability of the federal government to anticipate or respond to a crisis started by or involving one of these institutions. With

strengthened, consistent regulation of derivatives dealers, federal regulators could enhance their ability to anticipate or respond to a crisis.

As we have seen, bank derivatives dealers are presently subject to more comprehensive regulation than are nonbank dealers. The regulation of banks is essential, because they have deposit insurance and direct access to the Federal Reserve's discount window. At the same time, however, this combination of deposit insurance and access also can result in potential problems because it may induce the banks and their customers to inappropriately rely on such backing. Therefore, banks may be willing to run greater risks in their trading activities—in relation to their capital—than otherwise would be the case. In addition, market participants may prefer using banks for derivatives and related trading activities simply because banks are perceived to be safer counterparties. In the past, similar concerns caused us to recommend that nontraditional banking activities, such as those associated with underwriting and dealing in corporate debt and equity securities, be conducted only by well-managed and well-capitalized banks in separate subsidiaries of the bank holding company. Whether derivatives should be placed in this category depends on regulators' determinations on how they are being used by individual banks.

Inadequate financial reporting of derivatives activities further compounds regulatory problems and contributes to a lack of knowledge by investors, creditors, and other market participants. While we support FASB's efforts to expeditiously issue specific disclosure requirements for derivatives, we believe FASB also needs to expeditiously issue comprehensive accounting rules for derivative products. Without these accounting rules, added disclosures cannot bring the consistency and clarity to financial statement reporting that is needed to assess the true substance and risks of derivatives activities, particularly end-user hedging activities. In addition, comprehensive rules governing the recording of derivatives transactions will improve the consistency and quality of financial information provided to the regulators. Adopting comprehensive U.S. accounting rules for derivatives will also better enable FASB to take an effective leadership role in working toward more uniform international accounting rules.

FASB has spent considerable time and effort analyzing hedge accounting for derivatives and consulting with derivatives experts. FASB is aware of prevalent accounting practices for hedging strategies currently in use in areas such as anticipatory transactions, dynamic portfolio management, and synthetic instruments. Perhaps more focus on differences in the

underlying objectives of these activities instead of differences in the types of instruments used to achieve these objectives would enable FASB to reach more timely conclusions. An appropriate starting point would be to require that risk-reduction objectives be in place in order for end-user derivatives activities to qualify for deferral hedge accounting.

Market value accounting is ultimately the best solution to accounting for all financial instruments, including derivatives. If all financial instruments were accounted for at market value, financial statements would be almost completely transparent concerning the effectiveness and impact of financial risk management activities. We recognize, however, that development of a new market value accounting model by FASB will take time. Because authoritative accounting standards for derivatives are needed now, short-term adoption of a comprehensive market value accounting model may not be feasible. However, this is a viable long-term objective of FASB's financial instruments project.

Improving U.S. derivatives regulation without coordinating and harmonizing such actions with foreign regulators has at least two risks. First, U.S. financial institutions will remain vulnerable to a crisis that begins abroad and spreads to the United States as a result of the global linkages among financial institutions and markets. Second, regulation that market participants view as too severe could cause firms to move their derivatives activities outside of the United States. However, coordinating and harmonizing regulation worldwide has been difficult to achieve because countries have different legal requirements and different approaches to regulation.

Innovation and creativity are strengths of the U.S. financial services industry, and these strengths should not be eroded by excessive regulation. However, U.S. regulatory gaps and weaknesses must be addressed, especially considering the rapid growth in derivatives activity. Policymakers and regulators must strike a proper balance between (1) allowing the financial services industry to grow and innovate and (2) protecting the safety and soundness of the nation's financial system. Achieving this balance will require unprecedented cooperation among U.S. and foreign regulators, market participants, and members of the accounting profession.

Recommendations to Congress

Given the weaknesses and gaps that impede regulatory preparedness for dealing with a crisis associated with derivatives, we recommend that

Congress require federal regulation of the safety and soundness of all major U.S. OTC derivatives dealers. Regulators should attempt to prevent financial disruptions from turning into crises and resolve crises to minimize risks to the financial system. Thus, firms that become insolvent should be allowed to fail but to do so in an orderly fashion.

The immediate need is for Congress to bring the currently unregulated OTC derivatives activities of securities firm and insurance company affiliates under the purview of one or more of the existing federal financial regulators and to ensure that derivatives regulation is consistent and comprehensive across regulatory agencies. This could be done in several ways. For example, one legislative proposal would accomplish this goal by assigning the responsibility for the unregulated entities to SEC and creating an interagency commission to establish principles and standards for each federal financial regulator to use in supervising derivatives activities. Another approach could be based on the concept that underlies the arrangement established for government securities dealers. Under this concept, lead responsibility for setting principles and standards applicable to all major U.S. derivatives dealers would be divided among existing agencies on the basis of their expertise and mission. Extensive consultation with all of the agencies supervising derivatives activities would be required before any principles or standards were adopted.

We also recommend that Congress begin systematically addressing the need to revamp and modernize the entire U.S. financial regulatory system. Gaps and weaknesses in OTC derivatives regulation clearly demonstrate that the existing regulatory structure has not kept pace with the dramatic and rapid changes in the domestic and global financial markets. Banking, securities, futures, and insurance are no longer separate and distinct industries that can be well regulated by the existing patchwork quilt of federal and state agencies. Many issues need to be debated and decided, including the appropriate uses of federally insured deposits and the extent to which they should be used to finance activities, such as large-scale proprietary trading in derivatives or other financial instruments. One of the first issues that needs to be addressed is how the U.S. regulatory system should be restructured to better reflect the realities of today's rapidly evolving global financial markets. We recommend that the committees of jurisdiction work together on this issue. In addition, these committees should hold hearings, at least annually, on developments that affect the safety, soundness, and stability of the U.S. financial system.

Recommendations to Financial Regulators

We recommend that the appropriate regulatory authorities take the following actions to improve their capability to oversee OTC derivatives activities and to anticipate and respond to any financial crisis involving derivatives. Developing specific solutions should involve working closely with industry representatives to:

- Develop and maintain accurate, current, and centralized information, that is accessible to all regulators, including information on the extent of major OTC dealers' counterparty concentrations and the sources and amounts of their derivatives earnings;
- Develop and adopt a consistent set of capital standards for OTC derivatives dealers sufficient to ensure that all of the major risks associated with derivatives as well as legally enforceable netting agreements are reflected in capital.
- Establish specific requirements for independent, knowledgeable audit committees and internal control reporting for all major OTC derivatives dealers. Internal control reporting by boards of directors, managers, and external auditors should include assessments of derivatives risk-management systems.
- Perform comprehensive, annual examinations of the adequacy of major OTC derivatives dealers' risk-management systems, using a consistent set of standards established for this purpose and including consideration of the internal control assessments performed by boards of directors, management, and auditors.
- Provide leadership in working with industry representatives and regulators from other major countries to harmonize disclosure; capital; legal requirements including netting enforceability; and examination and accounting standards for derivatives.

Recommendations to FASB

We recommend that FASB:

- Proceed expeditiously to issue the existing exposure draft on disclosures of derivatives and fair value of financial instruments.
- Proceed expeditiously to develop and issue an exposure draft that provides comprehensive, consistent accounting rules for derivative products, including expanded disclosure requirements that provide additional needed information about derivatives activities.
- Consider adopting a market value accounting model for all financial instruments, including derivative products.

Recommendations to SEC

We recommend that SEC:

- Ensure that SEC registrants that are major end-users of complex derivative products establish and implement corporate requirements for independent, knowledgeable audit committees and public reporting on internal controls. Internal control reporting by boards of directors, managers, and external auditors should include assessments of derivatives risk-management systems.
- Ensure that FASB proceeds expeditiously to develop and adopt comprehensive, consistent accounting rules and disclosure requirements for derivative products.

Derivatives Use by State and Local Governments and Private Pension Plans

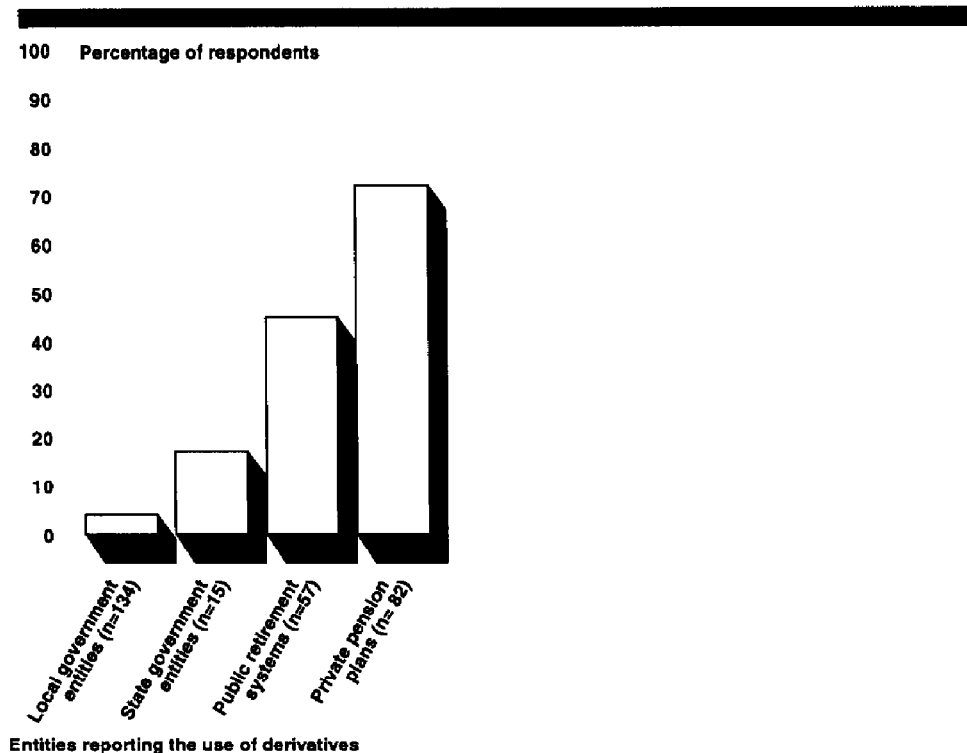
Congressional staff expressed to us their concerns that derivatives may be used inappropriately by a variety of state and local governments as well as public and private pension plans. To address these concerns and to more fully describe the extent and nature of derivatives use, we sent surveys to more than 4,600 state and local government entities that are members of the Government Finance Officers Association (GFOA), a professional association representing more than 10,000 public officials. We also surveyed the 156 largest private pension plans in the United States. Our survey results are limited to the GFOA member government entities and the private pension plans that responded. They are not generalizable to the much larger potential market of public and private sector users of derivatives. Nevertheless, our survey shows the use of derivative products in important segments of the end-user market.

Extent of Derivative Product Use

We asked respondents whether their financial entity had used a derivative (been a party to a derivatives transaction) in their fiscal year 1992. The total number of respondents was 3,727, of which 288 reported using derivatives. The extent of usage varied greatly across the types of entities, from a low of 4 percent of 3,400 localities (municipalities, special districts, and counties represented in GFOA) to a high of 72 percent among the 114 largest private pension plans that responded (see fig. I.1).

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Figure I.1: Percentage of Respondents Using Any Derivative Product in Their Fiscal Year 1992



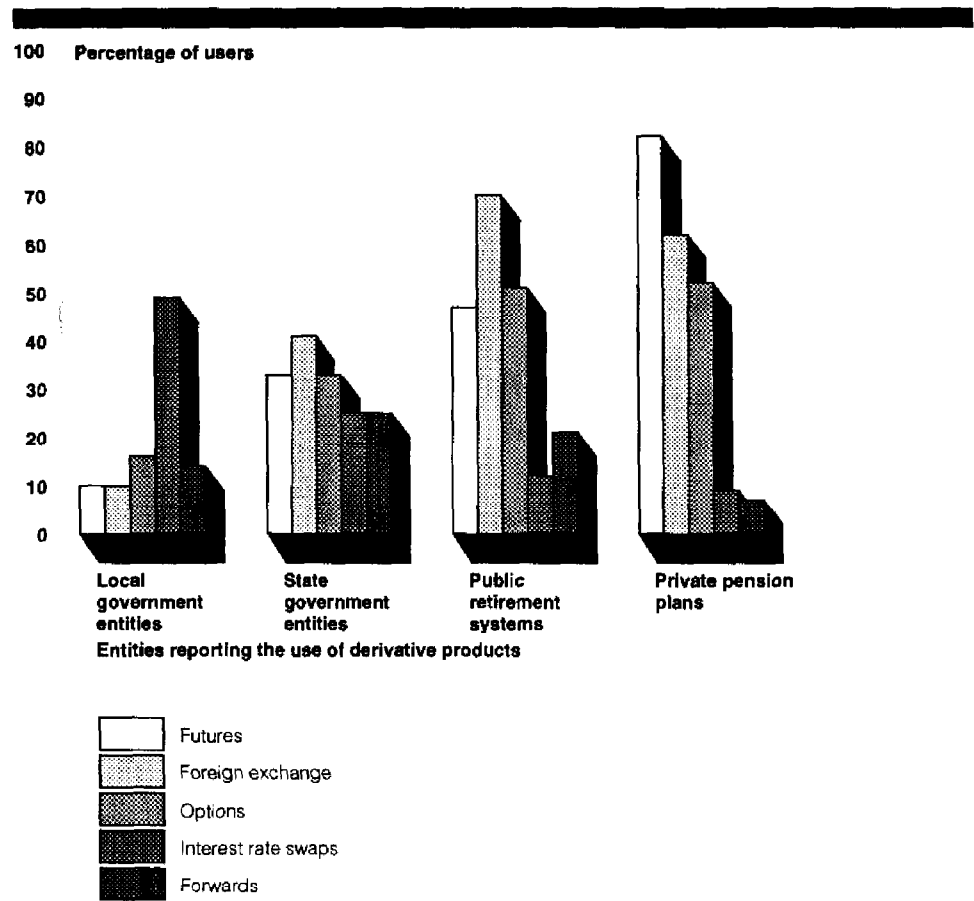
Note: The letter "n" denotes the number of respondents using any derivative product.

Source: GAO analysis.

Figure I.2 shows that the various derivative products were used differently by each group of users. The private pension plans and public retirement systems used futures, options, and foreign exchange derivatives (which could have been futures, options, or swaps) more than interest rate swaps and forwards. State government entities used all five products in fairly even proportions, while local government entities mostly used interest rate swaps.

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Figure I.2: Derivative Product Use by State and Local Governments and Private Pension Plans for Their Fiscal Year 1992



Source: GAO analysis.

Use of Derivatives Linked to Asset Size

Table I.1 shows that larger entities (in terms of assets under management) were more likely to report using at least one derivative product in their fiscal year 1992 or the entities' most recent financial reporting period. The larger entities tended to be the public retirement systems and private pension plans, which as we said earlier, were the most frequent users.

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Table I.1: The Extent of Derivatives Use for Respondents' Fiscal Year 1992 by Asset Size of Entity (Excluding State Treasuries)

Assets under management	Number of respondents	Percentage using any derivatives
\$5 billion or more	63	76%
\$1 billion to \$5 billion	172	50
\$100 million to \$1 billion	515	13
\$10 million to \$100 million	1,542	4
Less than \$10 million	1,252	1

Note: All the respondents did not answer this question.

Source: GAO analysis.

Asset size appears to be positively related to the usage of derivative products, independent of the type of entity. Table I.2 shows that the users of derivatives within particular categories of financial entities tended to have greater assets than did nonusers in the same category.

Table I.2: Average Asset Size of Users and Nonusers of Derivative Products Among Categories of Entities Surveyed for Their Fiscal Year 1992

Dollars in millions

Type of entity	Users of at least one derivative		Nonusers of derivatives	
	Average market value of assets	Number of respondents	Average market value of assets	Number of respondents
State level	\$14,259.1	11	\$2,803.1	48
Local	490.7	134	80.1	3,142
Public retirement system	9,442.1	56	3,333.3	66
Private pension plans	5,296.8	80	2,599.6	26

Note: All the respondents did not answer this question.

Source: GAO analysis.

Reasons for Use of Derivative Products

We asked respondents who reported using derivative products to either rate the importance of several common reasons for using such products or suggest their own reasons for using each type of derivative. Table I.3 shows the reasons respondents gave for using particular types of derivatives.

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Table I.3: Percentage and Number of Users Citing Reasons for Using a Derivative Product as “Very Important” or “Important”

Derivative product	Reasons							
	To reduce cost of raising capital		As a hedge ^a		To increase rate of return ^b		All other ^c	
	Percent	Number	Percent	Number	Percent	Number	Percent	Number
Interest rate swap	44%	12	73%	24	71%	20	55%	6
Foreign exchange	8	4	94	62	55	33	67	10
Forward	50	6	69	9	50	7	50	1
Future	11	6	82	56	81	56	88	30
Option	14	6	72	39	81	46	73	8
Other	28	7	86	24	70	19	71	5

Note 1: We based the percentage on the number of respondents who gave an importance rating on a particular derivative product.

Note 2: Number refers to respondents who cited an importance rating of “Very Important” or “Important.”

Note 3: All the respondents did not answer this question.

^aFor example, to guard against the effects of economic swings.

^bApart from hedging or reducing costs.

^cIncludes specific instances of the three common reasons and several additional reasons (e.g., reduce transaction costs and manage interest rate risk).

Source: GAO analysis.

Reducing the cost of raising capital was not a strong reason for using derivative products, with the possible exception of forwards or swaps. Retirement systems and pension plans did not typically “raise capital” in the financial markets. Therefore, this reason was largely inapplicable to those institutions.

Hedging was the most popular reason for using forwards, interest rate swaps, and foreign exchange derivatives. However, maximizing return on investment was also an important reason for using derivatives, especially for users of futures and options, which tended to be the public retirement systems and private pension plans. When we asked respondents to rate the importance of “increasing the rate of return,” we specifically excluded “hedging or reducing costs” from that reason in order to capture what we believed to be the speculative goals of derivative product usage.

The “other” reasons respondents cited were often technical elaborations on the three common reasons. For example, private pension plans often gave “other” reasons for using futures. Many cited stock index futures as liquid, inexpensive ways to gain equity market or asset class exposure. The few respondents who gave “other” reasons for using options cited the ability to participate in the equity market, reduce transaction costs, and manage interest rate risk.

Respondent Experiences With and Opinions of Derivative Products

Only 4 percent of the respondents indicated that they had experienced “unintended consequences as a result of using any derivative products.” The explanations that these eight respondents gave varied. Most simply described routine trading losses from adverse market movements. “As with any investment not all trades work,” said one such respondent. In addition, two private pension plans cited the failure of derivatives-based portfolio insurance programs during the 1987 market crash.

Only two derivative product respondents (1 percent of our respondents) reported having filed a complaint or entered into arbitration or litigation with a financial agent over a derivative product transaction. One pursued litigation with a broker-dealer, and another complained to a fund’s management with satisfactory results.

Methodology of End-User Survey

Congress asked us to describe the extent and nature of the use of derivative products by end-users, including governments and public and private retirement systems.

To meet this request, we sent surveys asking for details of recent derivative product usage to more than 4,600 state and local government entities that were members of GFOA. We also surveyed the largest 156 private pension plans in the United States.

To determine if the entities had used any derivative product in their last financial reporting period (their fiscal year 1992), we asked questions about the types of products they used, the reasons the products were used, and the dollar amounts involved. We also asked about positive or negative experiences the entities had with derivative products. The survey was conducted from April through August 1993.

Survey Frame Development

To meet the requirements of our survey, we needed a frame—a listing, without duplicates or omissions, of each government entity and private

pension plan in the population of entities we intended to survey. The frame also had to provide a single name and mailing address of a respondent at each entity. We divided the different types of entities we identified into eight strata (see table 1.4).

To develop the survey frame for all of the strata except state treasuries and private pension plans, we obtained the membership rolls of GFOA. GFOA's members are officials from the state and local governments we wanted to survey. We believed these officials would be the most knowledgeable about their governments' use of derivative products. We selected and surveyed one finance officer to represent each government entity. Consequently, results from this survey are not generalizable to the broader population of all state and local government entities in the United States but only to those with one or more finance officers who were GFOA members as of November 1992.

To develop the survey frame for the state treasuries stratum, the National Association of State Auditors, Comptrollers and Treasurers and GFOA helped us compile a list of the 50 state treasuries. On the basis of previous contacts with the state treasurers, we determined that some were not currently using derivatives. As a result, we did not further contact those state treasuries, designating them as nonusers for the purpose of our survey.

To develop a survey frame for the private pension plans stratum, we obtained a list of the largest plans by asset size, which equaled 200 pension plans. From this list, we kept only the 156 private pension plans, removing public employee retirement systems that were covered by our other lists of government entities. Results from the survey of the largest 156 private pension plans can only be used to make statements about that group and are not generalizable to the broader population of all private pension plans in the United States.

Survey Design and Administration

We developed our surveys after consulting government finance experts from GFOA. We also solicited comments on the surveys from municipal finance consultants and a number of government finance officers. The surveys were then pretested with respondents from several typical government entities and revised accordingly.

All of the government entities, with the exception of the state treasuries, first received a one-page screening survey, which solicited basic

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information on the use of derivative products in fiscal year 1992 or their most recent financial reporting period. We sent a longer follow-up survey, which requested information on the amounts entities held in derivatives and their reasons for using derivatives, to respondents who indicated using at least one type of derivative product on the screening survey.

For the 50 state treasuries, we used previously collected information to determine whether a state used derivatives in its fiscal year 1992. We sent follow-up surveys to those entities we understood to be using derivatives and those we were not sure about, so that respondents would not have to fill out the screening survey. (See app. II for copies of the two types of surveys.)

We also sent each private pension plan a follow-up survey without first sending a screening survey, because we expected most private pension plans to be users of derivatives. The survey we sent to private pension plans was identical to the one sent to government entities except for the title and references to the type of organization in the text of some of the questions.

The first wave of 4,794 screening and follow-up surveys was mailed out in late April 1993. We sent follow-up surveys in June and July to respondents who indicated that they used derivative products. After July, we sent follow-up surveys to respondents as their screening surveys were received. We sent a total of 156 follow-up surveys to users identified through screening surveys.

To those who did not respond to the first wave of surveys, we sent a second wave of 2,227 replacement surveys and a reminder letter in late May and early June. This number indicates that 2,567, or approximately 54 percent of the original survey population, had responded or been accounted for in some way at the end of the first wave.

In late July 1993, we began to call a limited number of entities (62) that had not yet responded. In some cases, respondents were successfully persuaded to complete all or part of their surveys by mail or fax or through telephone conversations with our staff.

In mid-August 1993, we closed out the survey and finalized the data.

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Survey Response

We finished sending out surveys and calling respondents in August 1993. The results of our survey efforts are shown in table I.4.

Table I.4: Survey Dispositions for End-User Survey

Strata	Original population (number mailed)	Adjusted population^a	Valid responses received	Response rate^b
Local-level entities				
Municipalities	2,796	2,774	2,181	79
Counties	542	541	404	75
Special districts	1,040	1,034	815	79
State-level entities				
State treasuries	35 ^c	50 ^c	37 ^c	74 ^c
Other state-level entities	65	69	50	72
Public retirement systems				
Local retirement systems	99	96	82	85
State retirement systems	56	56	44	79
Private pension plans	161	156	114	73
Total	4,794	4,776	3,727	78

^aAdjustments to the original population (first mailing) occurred for a number of reasons, including discoveries of misclassification of entities into incorrect strata, ineligible entities, duplicate listings, or mergers. In addition, state treasuries not included in the mail survey are reflected here.

^bThe response rates are determined by dividing the total number of valid responses received by the adjusted population. In cases where a screening survey was returned by a government entity but a follow-up survey sent to that entity was not returned, the entity was still considered to have "responded."

^cData for state treasuries reflect information previously collected on 15 states without using a mail survey.

Source: GAO analysis.

Survey Error and Data Quality

Because we surveyed all of the elements in the population of interest we had defined and because we did not project the results of our survey to a broader population, our results were not subject to sampling error. However, all survey data are subject to various types of nonsampling error, such as systematic biases introduced by the absence of nonrespondents, imperfections in the frame, and omissions or erroneous answers made by respondents.

For example, we asked respondents to indicate whether they used derivatives. We also asked them to indicate the amounts of their

investments, using specific definitions, time periods, and methods of valuation. The quality of their answers depended upon their understanding of our requests and their ability to retrieve the information from their financial records in a format that would have been compatible with our questions. In addition, the findings on the existence and size of derivative product holdings represent a snapshot of the financial positions of the entities in the months before the survey was administered, yet portfolio composition and size can fluctuate rapidly.

Although we did not validate the answers our respondents made to our survey questions, we took a number of steps to check the quality of our survey data. We checked the accuracy of data entry and data processing on a sample of surveys. In addition to carefully pretesting our survey questions to minimize reporting error and nonresponse, we also compared the responses to our first mailing with those of entities that would otherwise have been nonrespondents if not for our telephone contact at the end of the survey. We attempted to discover whether those more likely to be nonrespondents differed significantly from early respondents over key questions or characteristics. We found that they did not. However, we have no way of knowing how the rest of the nonrespondents would have answered.

GAO's Surveys on the Use of Financial Derivative Products by State and Local Government Entities

Screening Survey

United States General Accounting Office



Survey on the Use of Financial Derivative Products by State and Local Governmental Entities

INTRODUCTION

The U.S. General Accounting Office (GAO), an independent agency of Congress, has been asked to identify the nature and extent of the use of derivative products. Some examples of derivatives include forwards, futures, options on a stock, and swaps.

Your assistance in answering the following questions will help us determine how many state and local governmental entities have used derivative products. Although your participation in this survey is completely voluntary, your frank and honest answers will help GAO advise Congress.

The questionnaire should take only a few minutes to complete. Some respondents may receive a follow-up questionnaire on this subject at a later date. If you have any questions, please call Mr. Jerry Schober, Ms. Tamara Cross, or Mr. Steven Lozano at (202) 512-7310. Please return the completed questionnaire in the enclosed preaddressed, prepaid envelope *within 5 working days of receipt*. In the event the envelope is misplaced, our return address is:

U.S. General Accounting Office
Mr. Jerry Schober
441 G Street, NW, Room 3126
Washington, D.C. 20548

Thank you for your cooperation and assistance.

INSTRUCTIONS

- Please respond to the questionnaire even if your governmental jurisdiction or entity does not use derivative products.
- This questionnaire should be filled out by the government official(s) in your jurisdiction or entity most familiar with the overall management of and accounting for investments. Please **DO NOT** forward to a financial advisor, broker, or accountant outside this government.
- Estimates of dollar amounts will suffice.

Please provide the following information so that we may contact you if we need to clarify a response:

Name of primary respondent: _____

Title: _____

Jurisdiction/entity: _____

Telephone: () - - - -

* * * * *

1. Please enter the total market value of all assets you are managing, including any derivatives, as reported in your most recently published financial statement or annual report, OR USING YOUR BEST ESTIMATE.

(Please enter a whole dollar figure and the date for which the amount is reported. If the amount is an estimate of the current value, leave the date blank.)

1. Assets: \$ _____ .00

2. As of: | | |
 MM DD YY

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2. During or before your fiscal year 1992, has your governmental jurisdiction/entity used any of the following types of financial derivative products?
(Check one or more boxes in each row.)

	Yes, during FY 1992 (1)	Yes, before FY 1992 (2)	No (3)
1. Interest rate swaps			
2. Foreign exchange: swaps, forwards, futures, or options			
3. Forwards (excluding foreign exchange)			
4. Futures (excluding foreign exchange)			
5. Options (excluding foreign exchange)			
6. Any other derivative products (e.g., equity derivatives, interest rate caps, collars, or floors) Please specify:			

If you checked Column (1) ("Yes, during FY 1992") for any item in Question 2 above, continue with Question 3.
Otherwise, skip to Question 5.

3. Are any of the derivative products you checked in Question 2 managed in a pooled investment fund of another governmental entity? (Check one.)

1. Yes (Continue to Question 4.)
 2. No
 3. Don't know
- } (Skip to Question 5.)

4. Please identify the government official most familiar with the overall management of and accounting for investments at that pooled investment fund:

Name: _____

Title: _____

Name of fund/entity: _____

Address: _____

Telephone: () _____ - _____

5. If you have any comments on anything in this questionnaire, or on your experiences with derivative products, please use the space provided below and, if necessary, attach additional sheets.

Thank you for your time and care in filling out this questionnaire. Please return it to us in the envelope provided, or mail it to the address on the front within 5 working days.

GGD/CR/4-93/233376

Appendix II
GAO's Surveys on the Use of Financial
Derivative Products by State and Local
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Follow-up Survey

United States General Accounting Office



**Survey of
State and Local Governmental Entities
Using Financial Derivative Products**

INTRODUCTION

The U.S. General Accounting Office (GAO), an independent agency of Congress, has been asked to identify the nature and extent of the use of derivative products. Some examples of derivatives include futures, forwards, options on a stock, and swaps.

In an earlier survey, we learned that your governmental jurisdiction or entity used at least one financial derivative product in the last year. This questionnaire asks you to briefly describe your use of derivatives. Although your participation in this survey is completely voluntary, your frank and honest answers will help GAO advise Congress. Responses to this survey will be reported by GAO only in the aggregate.

The questionnaire can be completed within 30 minutes, depending upon the availability of financial records or your use of estimates. Space has been provided at the end of the questionnaire for any comments you may want to make. If you have any questions, please call Mr. Jerry Schober, Ms. Tamara Cross, or Mr. Steven Lozano at (202) 512-7310.

Please return the completed questionnaire in the enclosed preaddressed, prepaid envelope *within 10 working days of receipt*. In the event that the envelope is misplaced, our return address is:

U. S. General Accounting Office
Mr. Jerry Schober
441 G Street, NW, Room 3126
Washington, D.C. 20548

Thank you for your cooperation and assistance.

I. INSTRUCTIONS

- Use estimates when answering questions that ask for dollar amounts if exact figures are not readily available.
- This questionnaire should be filled out by the government official(s) in your jurisdiction or entity most familiar with the overall management of and accounting for investments. Please **DO NOT** forward to a financial advisor, broker, or accountant outside this government.
- Most of the information requested pertains to your most recently completed fiscal year or other reporting period.

* * * * *

Please provide the following information so that we may contact you if we need to clarify a response:

Name of primary respondent: _____

Title: _____

Jurisdiction/entity: _____

Telephone: () _____

**Appendix II
GAO's Surveys on the Use of Financial
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II. BACKGROUND

1. Please enter the total market value of all assets and liabilities you are managing, as reported in your most recently published financial statement or annual report, OR USING YOUR BEST ESTIMATE. (Please enter whole dollar figures and the date for which the amounts are reported. If the amounts are estimates of current values, leave the date blank.)

1. Assets: \$ _____ .00

2. Liabilities: \$ _____ .00

3. As of: | | |
 mm dd yy

2. Please provide the following information: (1) your most recent, unenhanced credit rating; (2) the type of security, product, or entity receiving this rating, and (3) the agency issuing the rating.

1. Credit rating: _____

2. What was rated: _____

3. Rating agency: _____

III. USE OF DERIVATIVE PRODUCTS

This section covers derivative products that your governmental jurisdiction/entity may have used during its last fiscal year. For each one, tell us whether you have used it and, if so, the amounts of money involved and why it was used.

The types of derivative products to be covered are:

- A. Interest rate swaps
- B. Foreign exchange: swaps, futures, forwards, and options
- C. Forwards (excluding foreign exchange)
- D. Futures (excluding foreign exchange)
- E. Options (excluding foreign exchange)
- F. Any other derivative products (e.g., equity derivatives, interest rate caps, collars, and floors)

**Appendix II
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A. INTEREST RATE SWAPS

3. Have you used any INTEREST RATE SWAPS (DO NOT include foreign exchange swaps on this page) at any time during your last fiscal year? (Check one.)

1. Yes -----> (Continue to Question 4.)

2. No
3. Do not know } (Skip to Question 8, on page 4.)

4. What is the total notional amount of all the interest rate swaps you have entered into during your last fiscal year? (Enter whole dollar figures from financial statements OR USE YOUR BEST ESTIMATE. If none, enter "0".)

\$ _____ . 00

5. For your interest rate swaps outstanding, if any, what is the total amount YOU ARE OWED, if available? (Enter whole dollar figures from financial statements OR USE YOUR BEST ESTIMATE. If none, enter "0".)

\$ _____ . 00

6. For your interest rate swaps outstanding, if any, what is the total amount YOU OWE, if available? (Enter whole dollar figures from financial statements OR USE YOUR BEST ESTIMATE. If none, enter "0".)

\$ _____ . 00

7. How important or unimportant were each of the following reasons in your decision to use INTEREST RATE SWAPS during your last fiscal year? (Check one box in each row.)

Reasons	Very important (1)	Important (2)	Neither important nor unimportant (3)	Unimportant (4)	Very unimportant (5)	Don't know/ No basis to judge (6)
1. To reduce cost of raising capital						
2. As a hedge (against economic swings, etc.)						
3. To increase rate of return (apart from hedging or reducing costs)						
4. Other reasons: (Specify.)						

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**B. FOREIGN EXCHANGE:
 SWAPS, FUTURES, FORWARDS, OR OPTIONS**

8. Have you used any swaps, futures, forwards, or options involving FOREIGN EXCHANGE at any time during your last fiscal year? (Check one.)

1. Yes -----> (Continue to Question 9.)
 2. No
 3. Do not know } (Skip to Question 11, page 6.)

9. Please enter the dollar amounts of holdings, if any, in FOREIGN EXCHANGE SWAPS, FUTURES, FORWARDS, OR OPTIONS, as reported in your most recently published financial statement or annual report, OR USING YOUR BEST ESTIMATE. (Please enter whole dollar figures; if you do not have actual amounts readily available, USE YOUR BEST ESTIMATE. If none, enter "0".)

Foreign Exchange	Amounts
A. Swaps	
1. Total notional/contract amount (in U.S. \$)	\$
2. Amounts YOU ARE OWED, if available	\$
3. Amounts YOU OWE, if available	\$
B. Futures	
1. Total notional/contract amount (in U.S. \$)	\$
2. Market value	\$
C. Forwards	
1. Total notional/contract amount (in U.S. \$)	\$
2. Market value	\$
D. Options (Enter the lower of cash or market value, in U.S. \$.)	
1. Puts -- exchange traded	\$
2. Puts -- over-the-counter	\$
3. Calls -- exchange traded	\$
4. Calls -- over-the-counter	\$

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GAO's Surveys on the Use of Financial
Derivative Products by State and Local
Government Entities

10. How important or unimportant were each of the following reasons in your decision to use FOREIGN EXCHANGE SWAPS, FUTURES, FORWARDS, OR OPTIONS during your last fiscal year? *(Check one box in each row.)*

Reasons	Very important (1)	Important (2)	Neither important nor unimportant (3)	Unimportant (4)	Very unimportant (5)	Don't know/ No basis to judge (6)
1. To reduce cost of raising capital						
2. As a hedge (against economic swings, etc.)						
3. To increase rate of return (apart from hedging or reducing costs)						
4. Other reasons: <i>(Specify.)</i>						

**Appendix II
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C. FORWARDS

11. Have you used any FORWARDS at any time during your last fiscal year? (DO NOT include foreign exchange forwards in this answer.) (Check one.)

1. Yes -----> (Continue to Question 12.)
 2. No }
 3. Do not know } (Skip to Question 14, page 7.)

12. Please enter the dollar amounts of holdings, if any, in FORWARDS, as reported in your most recently published financial statement or annual report, OR USING YOUR BEST ESTIMATE.
 (Please enter whole dollar figures; if you do not have actual amounts readily available, USE YOUR BEST ESTIMATE. If none, enter "0".)

Forwards (excluding foreign exchange)	Amounts
A. U.S. Treasury -- total notional/contract amount	\$
B. Other (Please specify) -- total notional/contract amount	\$
C. MARKET VALUE of all financial forwards	\$

13. How important or unimportant were each of the following reasons in your decision to enter into FORWARDS contracts during your last fiscal year? (Check one box in each row.)

Reasons	Very important	Important	Neither important nor unimportant	Unimportant	Very unimportant	Don't know/ No basis to judge
	(1)	(2)	(3)	(4)	(5)	(6)
1. To reduce cost of raising capital						
2. As a hedge (against economic swings, etc.)						
3. To increase rate of return (apart from hedging or reducing costs)						
4. Other reasons: (Specify.)						

**Appendix II
GAO's Surveys on the Use of Financial
Derivative Products by State and Local
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D. FUTURES

14. Have you used any FUTURES at any time during your last fiscal year? (DO NOT include foreign exchange futures in this answer.) (Check one.)

1. Yes -----> (Continue to Question 15.)
2. No } (Skip to Question 17, page 8.)
3. Do not know }

15. Please enter the total notional/contract amounts, if any, of FUTURES, as reported in your most recently published financial statement or annual report, OR USING YOUR BEST ESTIMATE. (Please enter whole dollar figures; if you do not have actual amounts readily available, USE YOUR BEST ESTIMATE. If none, enter "0".)

Futures (excluding foreign exchange)	Amounts
A. U.S. Treasury -- total notional/contract amount	\$
B. Other (Please specify) -- total notional/contract amount	\$
C. MARKET VALUE of all financial futures	\$

16. How important or unimportant were each of the following reasons in your decision to use FUTURES during your last fiscal year? (Check one box in each row.)

Reasons	Very important (1)	Important (2)	Neither important nor unimportant (3)	Unimportant (4)	Very unimportant (5)	Don't know/ No basis to judge (6)
1. To reduce cost of raising capital						
2. As a hedge (against economic swings, etc.)						
3. To increase rate of return (apart from hedging or reducing costs)						
4. Other reasons: (Specify.)						

**Appendix II
GAO's Surveys on the Use of Financial
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E. OPTIONS

17. Have you used any OPTIONS at any time during your last fiscal year? (DO NOT include call options on bonds outstanding or foreign currency options in this answer.)
(Check one.)

1. Yes -----> (Continue to Question 18.)
 2. No }
 3. Do not know } (Skip to Question 20, page 9.)

18. Please enter the dollar amounts of holdings, if any, in OPTIONS, as reported in your most recently published financial statement or annual report, OR USING YOUR BEST ESTIMATE. (Please enter whole dollar figures; if you do not have actual amounts readily available, USE YOUR BEST ESTIMATE. If none, enter "0")

Options (excluding foreign exchange)	Amounts
A. Dollar value of PUT options, using the lower of cash or market value	
1. Exchange-traded options	\$
2. Over-the-counter options	\$
B. Dollar value of CALL options, using the lower of cash or market value	
1. Exchange-traded options	\$
2. Over-the-counter options	\$

19. How important or unimportant were each of the following reasons in your decision to use OPTIONS during your last fiscal year? (Check one box in each row.)

Reasons:	Very important (1)	Important (2)	Neither important nor unimportant (3)	Unimportant (4)	Very unimportant (5)	Don't know/ No basis to judge (6)
1. To reduce cost of raising capital						
2. As a hedge (against economic swings, etc.)						
3. To increase rate of return (apart from hedging or reducing costs)						
4. Other reasons: (Specify.)						

**Appendix II
GAO's Surveys on the Use of Financial
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**F. ANY OTHER FINANCIAL DERIVATIVE PRODUCTS
(e.g., equity derivatives, interest rate caps, collars, floors, etc.)**

20. Have you used any OTHER FINANCIAL DERIVATIVE PRODUCTS, such as equity derivatives, interest rate caps, collars, or floors, etc., at any time during your last fiscal year? *(Check one.)*

1. Yes -----> *(Continue to Question 21.)*
 2. No }
 3. Do not know } *(Skip to Question 23, page 10.)*

21. Please enter the total notional/contract amount of holdings, if any, of OTHER FINANCIAL DERIVATIVE PRODUCT(S), as reported in your most recently published financial statement or annual report, OR USING YOUR BEST ESTIMATE. *(Please describe these products, and enter whole dollar figures; if you do not have actual amounts readily available, USE YOUR BEST ESTIMATE. If none, enter "0".)*

Other Derivative Products	Amounts
Describe products and enter total notional/contract amounts: <i>(Attach additional sheets if necessary.)</i> _____	\$

22. How important or unimportant were each of the following reasons in your decision to use OTHER FINANCIAL DERIVATIVE PRODUCT(S) during your last fiscal year? *(Check one box in each row.)*

Reasons	Very important (1)	Important (2)	Neither important nor unimportant (3)	Unimportant (4)	Very unimportant (5)	Don't know/ No basis to judge (6)
1. To reduce cost of raising capital						
2. As a hedge (against economic swings, etc.)						
3. To increase rate of return (apart from hedging or reducing costs)						
4. Other reasons: <i>(Specify.)</i>						

**Appendix II
GAO's Surveys on the Use of Financial
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IV. OTHER ISSUES

We are interested in learning about the extent of risk involved in the use of financial derivative products. We are aware that the use of certain derivative products for hedging can result in losses. Because limited information on losses is available, please share with us any negative or unanticipated experiences your government has had with derivatives.

23. Has your governmental jurisdiction or entity ever experienced any unintended consequences as a result of using any derivative products? *(Check one.)*

1. Yes ----> Please describe: _____

2. No

3. Do not know

24. Has your governmental jurisdiction or entity ever filed a complaint or been involved in (or is currently contemplating) arbitration or litigation with a broker-dealer, bank, or other financial agent over a derivative product? *(Check one.)*

1. Yes ----> Please describe: _____

2. No

3. Do not know

**Appendix II
GAO's Surveys on the Use of Financial
Derivative Products by State and Local
Government Entities**

V. COMMENTS

25. If you have any comments on this survey or additional comments on your positive and/or negative experiences with derivative products, please use the space provided below and attach additional sheets if necessary.

Thank you very much for your time and care in filling out this questionnaire.
Please return it to us in the envelope provided, or mail it to the address listed on the front cover.

GGD/CR/4-93
233376

GAO's Survey of Major OTC Derivatives Dealers

Substantial data about the derivatives markets are available through various regulatory reports, corporate annual reports, and other sources. Many of these data are incomplete and inconsistent regarding the derivatives markets as a whole. Rigorous quantitative data and other information regarding the economic risk exposures and risk-management practices of individual firms are also lacking. We were interested in learning more about the 15 firms that we identified as major over-the-counter (OTC) derivatives dealers.

All of the 15 major OTC derivatives dealers are members of the International Swaps and Derivatives Association (ISDA). We met with ISDA representatives to discuss possible methodologies for the survey. ISDA representatives said that on the basis of their own experience and discussions with the major OTC dealers, the best way to maximize the response to our survey would be to work through a neutral third-party. They suggested we use Arthur Andersen & Co. to distribute the survey and subsequently collect and compile the data from the firms that responded.

They also suggested that we include foreign dealers in our survey. We agreed to survey foreign dealers, but we asked that their responses be kept separate from the 15 U.S. firms. Because the response rate of foreign firms was not high, we did not include the responses of the foreign dealers in the summary of our survey results. After meeting with ISDA representatives, we refined and clarified the survey.

The survey attempted to identify (1) the aggregate, net economic exposure of the dealers; (2) the concentration of this exposure to types of firms; (3) the use of different risk reduction techniques and the other steps firms took to address risk management; (4) the credit quality of the derivatives portfolios and of the firms themselves; (5) the amount of credit losses and other losses experienced; and (6) additional items of interest.

A copy of the survey with data from the 14 major OTC dealers that responded, as compiled by Arthur Andersen & Co., follows. We present responses to questions 1 through 10 as aggregated totals or averages for the firms. We present narrative summaries of the responses to questions 11 through 12. Arthur Andersen & Co. deleted the names of the firms in the responses; we indicate these deletions with [].

**Appendix III
GAO's Survey of Major OTC Derivatives
Dealers**

**OTC DERIVATIVES
CONFIDENTIAL SURVEY OF U.S. DEALER INSTITUTIONS
PREPARED FOR THE
U.S. GENERAL ACCOUNTING OFFICE
BY
ARTHUR ANDERSEN & CO.**

General Accounting Office
OTC Derivatives Survey

FIRMS PARTICIPATING IN THE SURVEY

Responses Received

**Bank of America
Bankers Trust Co.
Chase Manhattan
Chemical Bank
Citibank, N.A.
First Chicago
General Re
Goldman, Sachs & Co.
JP Morgan
Lehman Brothers
Merrill Lynch
Morgan Stanley
Prudential Corp.
Salomon Brothers**

**Appendix III
GAO's Survey of Major OTC Derivatives
Dealers**

1992 Results

**General Accounting Office
OTC Derivatives Survey**

1a. Please indicate the notional/contract amounts for the total of your derivative transactions along with the related amounts at risk of accounting loss according to Statement of Financial Accounting Standards (SFAS) 105. Please show how this amount may be affected by market factors or risk reduction techniques, such as those listed below or others that you may employ.

As of Year End 1992	Type of Product			Commodity, equity, and other (c)	Total	FX<=1yr FX>2wks(d)
	Interest rate	Currency derivatives (a)	FX>1yr (b)			
Total derivative product notional/contract amount	4,408,539,000,000	1,088,908,000,000	571,430,000,000	294,180,000,000	6,472,263,000,000	1,629,051,000,000
Gross credit exposures amount at risk of accounting loss	46,308,000,000	34,579,700,000	17,061,100,000	4,015,000,000	114,442,800,000	33,322,950,000
Less:						
Netting agreements (e)					41,228,300,000	517,000,000
Collateral					4,682,050,000	30,000,000
Other (please specify):					46,000,000	0
Total net credit exposure					68,486,450,000	32,775,950,000
Potential future exposure (f)					19,110,000,000	40,000,000

Total Number of Respondents to Question 1a 14

[Above amounts represent the sum of individual responses.]

**Appendix III
GAO's Survey of Major OTC Derivatives
Dealers**

1992 Results

**General Accounting Office
OTC Derivatives Survey**

2. Approximately how many different counterparties were there for all of your firm's OTC derivative product transactions in 1992? (Note: please consider any entity for which you have one or more master netting agreements to be a separate counterparty.)

	<u>22,592</u>	[Sum of all respondents]
Number of Respondents	<u>14</u>	Average <u>1,614</u>

- 3.* What percentage of your firm's OTC derivative transactions are with other derivative products dealers and other institutions (location determined by nationality of head office)?

Type of counterparty	Percentage at year - end 1992	
	Notional/ contract amount	Net credit exposure (*)
U.S. dealers	<u>21.04%</u>	<u>10.97%</u>
Non-U.S. dealers	<u>23.54%</u>	<u>27.18%</u>
Other	<u>55.42%</u>	<u>61.87%</u>
Total	<u>100.0%</u>	<u>100.0%</u>
Number of Respondents:	<u>14</u>	

* [Question 3 presents the weighted average of all respondents, weighted by individual contract amount or net credit exposure as applicable.]

**Appendix III
GAO's Survey of Major OTC Derivatives
Dealers**

1992 Results

**General Accounting Office
OTC Derivatives Survey**

4.* Please estimate the percentage of all your firm's OTC derivative transactions that are subject to the following credit risk reduction techniques.

	<u>Percentage of notional / contract amount</u>
<u>Technique</u>	<u>Year-End 1992</u>
Enforceable netting agreements (a)	<u>74.89%</u>
Collateral	<u>4.82%</u>
Others (specify)	<u>2.91%</u>
<u>(a) FASB Interp. No. 39</u>	
Number of Respondents:	<u>12</u>

* [Question 4 presents the weighted average of all respondents, weighted by individual contract amount or net credit exposure as applicable.]

**Appendix III
GAO's Survey of Major OTC Derivatives
Dealers**

1992 Results

**General Accounting Office
OTC Derivatives Survey**

5.a. Please indicate the percentage of your OTC derivative portfolio (as of year-end 1992) with counterparties rated, after credit enhancement (by Moodys, Standard & Poor's, or their equivalent, including internal rating criteria), as a:

	Percentage of	
	<u>Notional / contract amount</u>	<u>Current credit exposure</u>
Investment grade (BBB or above)	<u>94.47%</u>	<u>93.78%</u>
Non investment grade	<u>5.53%</u>	<u>6.22%</u>
Total	<u>100.0%</u>	<u>100.0%</u>
Number of Respondent	<u>13</u>	<u>13</u>

[Question 5a. represents a weighte average (based on notional contract amount or current credit exposure a applicable) of all responses.]

5.b. Is this higher or lower than the credit quality of your loan book (if any)?

Higher 7 Lower 0 NA 7

[Question 5.b. is a sum of all responses.]

Note: Firms not responding do not have a loan book to compare credit quality against.

**Appendix III
GAO's Survey of Major OTC Derivatives
Dealers**

1992 Results

**General Accounting Office
OTC Derivatives Survey**

9. For your portfolio at year-end, please indicate the approximate range and remaining average life of your interest rate and currency swaps. Also, please indicate the average remaining life weighted by the notional/contract amount of the transactions. Please specify days, months, or years.

9a. Remaining Tenor of Interest Rate Swaps:

At year-end	Range of maturities		Weighted average life	Number of Respondents
	Shortest	Longest		
1992 or curre	0	30	2.82	14

9b. Remaining Tenor of Currency Swaps:

At year-end	Range of maturities		Weighted average life	Number of Respondents
	Shortest	Longest		
1992 or curre	0	19	2.73	14

[Results presented for questions 9a. and 9b. are a weighted average of all responses using notional contract amount as the weight.]

**Appendix III
GAO's Survey of Major OTC Derivatives
Dealers**

**General Accounting Office
OTC Derivatives Survey**

10. Please provide the current credit ratings for the following separate entities within your firm, where applicable, and the name of the rating agency. Please indicate the entity where the bulk of your OTC derivative transactions are booked.

QUESTION 10 SUMMARY

Rating	Standard and Poor's							Moody's						Below Investment Grade	Primary Booking Entity	Primary Credit Entity	No Response
	AAA	AA	A+	A	A-	P-1	P-2	Aaa	Aa1	Aa2	A1	A2	A3				
Holding Company	2	2	2	4	1	0	1	0	1	0	4	1	2	1	0	3	2
Principal bank/broker/insurance entity	2	1	4	1	0	1	0	0	0	1	2	1	0	0	6	4	5
Other affiliate/subsidiary (e.g. capital market unit)	3	0	1	0	1	0	0	1	0	0	0	0	0	0	4	2	7

[The above information is derived from information provided by each respondent. However, each response may be based on different criteria.]

**Appendix III
GAO's Survey of Major OTC Derivatives
Dealers**

1991 Results

**General Accounting Office
OTC Derivatives Survey**

1b. Please indicate the notional/contract amounts for the total of your derivative transactions along with the related amounts at risk of accounting loss according to Statement of Financial Accounting Standards (SFAS) 105. Please show how this amount may be affected by market factors or risk reduction techniques, such as those listed below or others that you may employ.

As of Year End 1991	Type of Product				Total	FX<=1yr FX>2wks(d)
	Interest rate	Currency derivatives (a)	FX>1yr (b)	Commodity, equity, and other (c)		
Total derivative product notional/contract amount	3,031,318,500,000	1,034,245,000,000	447,441,500,000	220,978,000,000	4,782,959,000,000	832,472,000,000
Gross credit exposures amount at risk of accounting loss	28,049,000,000	32,219,800,000	7,439,700,000	2,210,000,000	104,199,500,000	21,196,800,000
Less:						
Netting agreements (e)					23,214,500,000	163,000,000
Collateral					4,583,100,000	3,000,000
Other (please specify):					497,000,000	0
Total net credit exposure					75,904,900,000	21,040,800,000
Potential future exposure (f)					4,918,000,000	0
Total Number of Respondents to Question 1b					13	

[Above amounts represent the sum of individual responses.]

**Appendix III
GAO's Survey of Major OTC Derivatives
Dealers**

1990 Results

**General Accounting Office
OTC Derivatives Survey**

1c. Please indicate the notional/contract amounts for the total of your derivative transactions along with the related amounts at risk of accounting loss according to Statement of Financial Accounting Standards (SFAS) 105. Please show how this amount may be affected by market factors or risk reduction techniques, such as those listed below or others that you may employ.

As of Year End 1990	Type of Product				Total	FX<=1yr FX>2wks(d)
	Interest rate	Currency derivatives (a)	FX>1yr (b)	Commodity equity, and other (c)		
Total derivative product notional/contract amount	2,566,827,000,000	915,391,000,000	456,554,000,000	160,047,000,000	4,323,890,000,000	783,873,000,000
Gross credit exposures amount at risk of accounting loss	20,458,000,000	23,535,000,000	5,121,000,000	2,551,000,000	61,226,000,000	16,614,000,000
Less:						
Netting agreements (e)					6,650,000,000	254,000,000
Collateral					526,000,000	1,000,000
Other (please specify):					0	0
Total net credit exposure					54,050,000,000	16,359,000,000
Potential future exposure (f)					4,860,800,000	0

Total Number of Respondents to Question 1c 12

[Amounts represent the sum of all respondents.]

**Appendix III
GAO's Survey of Major OTC Derivatives
Dealers**

1991, 1990 Results

**General Accounting Office
OTC Derivatives Survey**

3.* What percentage of your firm's OTC derivative transactions are with other derivative products dealers and other institutions (location determined by nationality of head office)?

Type of counterparty	Percentage at year - end 1990		Percentage at year - end 1991	
	Notional/ contract amount	Net credit exposure	Notional/ contract amount	Net credit exposure
U.S. dealers	22.93%	13.38%	21.91%	13.14%
Non-U.S. dealers	29.36%	21.45%	24.85%	25.16%
Other	47.71%	65.22%	53.26%	61.70%
Total	100.0%	100.1%	100.0%	100.0%
Number of Respondents:		12		12

* [Question 3 presents the weighted average of all respondents, weighted by individual contract amount or net credit exposure as applicable.]

**Appendix III
GAO's Survey of Major OTC Derivatives
Dealers**

1991, 1990 Results

**General Accounting Office
OTC Derivatives Survey**

4.* Please estimate the percentage of all your firm's OTC derivative transactions that are subject to the following credit risk reduction techniques.

Technique	Percentage of notional / contract amount	
	Year-End 1990	Year-End 1991
Enforceable netting agreements (a)	72.95%	73.88%
Collateral	1.71%	2.86%
Others (specify)	1.23%	1.79%
(a) FASB Interp. No. 39		
Number of Respondents:	11	12

* [Question 4 presents the weighted average of all respondents, weighted by individual contract amount or net credit exposure as applicable.]

**Appendix III
GAO's Survey of Major OTC Derivatives
Dealers**

1991, 1990 Results

**General Accounting Office
OTC Derivatives Survey**

8. What percentage of your firm's pre-tax revenues were attributable to your OTC derivatives business, including increased trading revenues, fee income, asset/liability management, proprietary position taking, etc. (a best estimate may be appropriate)?

1990 15.77%	1991 13.76%
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Number of Respondents: 7 8
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[Question 6 is a simple average of individual responses]

7. Please provide the following information about all OTC derivative product credit losses for the years indicated.

	Amount of credit exposure when terminated	Amount charged-off	Amount recovered
1990 41,725,000 40,188,000 0
1991 130,516,000 102,516,000 1,894,334

8. Please indicate the amount of the non-credit losses incurred on your OTC derivative product portfolio that resulted from unanticipated events, e.g., mispriced options, employee fraud, failure of internal controls, etc.

1990 0	1991 35,400,000
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[Results presented for questions 7 and 8 are a sum of all responses.]

**Appendix III
GAO's Survey of Major OTC Derivatives
Dealers**

1991, 1990 Results

**General Accounting Office
OTC Derivatives Survey**

9. For your portfolio at year-end, please indicate the approximate range and remaining average life of your interest rate and currency swaps. Also, please indicate the average remaining life weighted by the notional/contract amount of the transactions. Please specify days, months, or years.

9a. Remaining Tenor of Interest Rate Swaps:

At year-end	Range of maturities		Weighted average life	Number of Respondents
	Shortest	Longest		
1990	0	30	2.61	9
1991	0	30	2.92	10

9b. Remaining Tenor of Currency Swaps:

At year-end	Range of maturities		Weighted average life	Number of Respondents
	Shortest	Longest		
1990	0	17	3.05	10
1991	0	18	3.64	11

[Results presented for questions 9a. and 9b. are a weighted average of all responses using notional contract amount as the weight.]

Narrative Summaries

11. Please describe any major enhancements your firm has made to its risk-management systems for OTC and exchange-traded derivative products within the last 3 years. Please indicate the approximate cost of these improvements.

Response (1)

"Over the past 3 years, the firm's systems development capabilities have increased substantially. In addition, the administration of these risk-management systems has been enhanced through the establishment of a centralized market risk-management function. Accomplishments include:

- Purchased and implemented a front-end position keeping system for foreign exchange.
- Implemented above system in overseas branches.
- Completed development of and implemented a front/middle office risk-management system for currency options, including exotic options.
- Developed proprietary pricing tools for interest rate derivatives.
- Upgraded front/middle offices capability for commodity derivatives.
- Installed Bloomberg analytics for fixed income trading.
- Developed and implemented real-time, global credit system which monitors current mark-to-market risk as well as potential credit risk over the life of each term transaction.
- Developed and began implementation of a global credit system which combines short term credit exposure for [foreign exchange] products and derivatives under a single position limit per counterparty and supports netting.
- Developed and implemented a current and historical database to house customer, trade, and market data for the full breadth of funding, trading and derivative products which will support risk analysis.

"Approximate costs [of these improvements were] \$1.5 million [for] 1990, \$3.5 million [for] 1991, [and] \$6.0 million [for] 1992."

Response (2)

"We consider our current system to be state of the art, measuring mark-to-market, credit risk, and all other aspects of trading risk on a 'real-time,' worldwide basis. The system is the result of continual improvements over the past years. In the past 3 years, [] banks combined their swaps and options books into one portfolio to look at the portfolio [as] a portfolio rather than [on] a deal-by-deal basis. In 1992, we combined the derivatives books of [].

"We continually employ considerable resources to develop and implement enhancements to the [management information system] and risk-management systems. Over the past year, we expanded our capabilities in the international derivatives offices to utilize the [] derivatives database to assist the pricing and handling of OTC and exchange-traded derivatives. We are presently working on the development of a new [management information system] platform which will allow for the worldwide credit limit and profit/loss processing in a much easier fashion than is currently used.

"Cost of improvements over the past 3 years [was] approximately \$7.4 million."

Response (3)

"To improve risk management, a new swaps system was completed and installed in February of 1992. Following this were newly developed potential exposure and extended risk reports. There was also a manual data integrity check of all active contracts completed by December 1992."

Response (4)

"OTC derivatives support systems are under continual review and enhancement. Over the last 2 years, a system has been developed which will measure the current and future potential exposure of a designated portfolio of derivatives under a counterparty master agreement.

"A global restructuring of front and back office systems was initiated in 1992. The first phase is scheduled for implementation in 1994. The cost of this project is anticipated to be over \$10 million."

Response (5)

"Over the last 3 years, our firm has moved extensively toward option-based analytic systems run in a workstation environment for risk management, hedging, and pricing in the derivatives areas. In some areas of the firm, OTC positions are priced and monitored on a real-time basis. In other areas, where the price information is less continuous or where the products are more complex, risk management is based on day-to-day management. The goal over the next few years is to move to real-time monitoring in all derivatives areas.

"The risk management of derivatives in the firm is based on option models. These models have been developed within each of the risk areas by a research staff that is knowledgeable in the specific market where the

model is to be applied. Thus, the development of the risk-management analytics is decentralized. However, the resulting analysis is aggregated for use in the global risk management division of the firm. The risk management is thus done at both a desk and division level (for a micro view) and at a firm level for an aggregate (macro view of risk).

"The output of these models provides not only theoretical marks, that give a measure of theoretical position value and [profit and loss], but also the usual measures of risk exposure—delta, gamma, kappa, and rho. Many areas are also moving toward using scenario analysis to evaluate the implications of large moves in the market and 'outlier' events on the [profit and loss] of the positions."

Response (6)

"This is a very broad question. [] had major systems projects oriented around derivatives [], and these have continued []. Their common goals have been to upgrade accounting and processing capacities, enhance front-end analytics and portfolio [management information system], multiply zero curve constructions, expand option pricing and simulation abilities, and move toward a common delivery platform from which more all embracing earnings-at-risk measurements can be made for both market risk and credit risk-management purposes. Many costs have overlapped with operations and financial reporting projects []. A very rough order-of-magnitude estimate of the total is \$30 million."

Response (7)

"Over the last 3 years, [] has made significant efforts toward worldwide implementation of both the infrastructure and applications to facilitate risk management of OTC and exchange-traded derivative products. These efforts have consisted of implementation of a Unix-based global pricing and risk-management application for our high-volume swap products [], the deployment of a parallel processing network for pricing and hedging the more computer-intensive mortgage products, [and] the integration of real-time feeds as well as the ongoing development of analytical models and risk-management capabilities for exotic derivatives. [] has expended an estimated \$15 million over the last 3 years for all hardware, software and personnel associated with these efforts."

Response (8)

"The primary risk-management groups within the derivatives business include the dollar swaps and nondollar groups, which have collectively spent approximately \$8 million on enhancements over the past 3 years."

"A) Major enhancements for the dollar swaps group include:

(a) Development of a comprehensive derivatives administration system which performs all back-office activities for swaps, caps, floors, swaptions, and index amortizing swaps. The system maintains a unified SQL database, which is used for all risk-management functions.

(b) Enhanced risk analysis and modelling capabilities. New models include a multifactor Monte Carlo model for valuing and hedging IAR's and other path-dependent derivatives and a closed-form arbitrage-free one-factor model for valuing and hedging swaptions and caps. These models facilitate a comprehensive, daily analysis of portfolio risk.

The estimated cost of these enhancements is \$3 million to \$4 million; most of this expense is due to (a).

"B) The derivative products risk management group [] supports all the analytic needs of [] non-dollar swap group. The products covered are swaps, interest rate options, currency options, and most recently, commodity derivatives. Most development work is on exotics, primarily power, barrier, and path dependent derivatives. The group's main product is an integrated pricing and risk-management system that is used to price and manage the risk of these products. The models used include Black & Scholes for European options, binary and quadrinomial trees for exotic [foreign exchange] options, Monte Carlo simulation for certain path dependent options, 1-factor tree models for single-currency interest rate options, 2-factor models for dual-currency interest rate options, and 3-factor models for interest and [foreign exchange] rate dependent options. The analytics support group is comprised of seven professionals (up from two 3 years ago) and is expected to grow 50 percent next year. Cost for the past 3 years is approximately \$3 million. There is also a new 10 person group for developing back-office systems to support [] derivatives business. This cost approximately \$1.5 million a year."

Response (9)

"Over the past 3 years, [] has made a number of enhancements to existing, as well as investments in new, front-end and back-office risk-management systems for derivative products, including the following:

- A new credit exposure system is in development which allows derivative exposure to be aggregated by counterparty within or across product lines and allows for various other credit related analytics to be performed.

- A new interest rate swap system has been developed and recently enhanced with a credit risk-management module which calculates potential future credit exposure by counterparty.
- An oil and grain risk-management system has been developed which includes valuation, tracking, and analytical features.
- A new system has been developed for monitoring and valuing embedded transactions.
- A new proprietary trading and risk-analysis system has been developed which values and monitors the firm's exposure related to derivatives and other proprietary firm positions.
- A new system is in development to facilitate the aggregation, reporting, and analysis of information about derivatives and other products in accordance with the new Securities and Exchange Commission requirements.
- A new system has been developed to monitor and analyze net capital charges related to derivatives and other firm proprietary positions.
- A new OTC options portfolio system has been developed which performs position keeping, pricing, and risk analysis utilizing real-time analytics.
- A globally networked valuation and risk-management system has been developed for OTC and exchange-traded equity derivative products. The system provides:
 - trade entry directly into the books and records of the firm;
 - real-time position retrieval;
 - valuation and hedging models for a wide variety of listed and OTC derivatives on international indexes and individual stocks; [and]
 - risk-management software that computes the whole portfolio's net exposure to independent and correlated changes in equity market levels, interest rates, volatilities, etc.

"Managers can obtain detailed position reports that show the current theoretical value of the whole portfolio or any part of it. They can also obtain risk reports that show how this value changes over a specified range of market, volatility, and other parameter levels. Finally, they can estimate their credit exposure to individual counterparties.

"The cost of these improvements is approximately \$45 million."

12. Please briefly describe the steps your firm takes to control the various types of legal risk involved in OTC derivative product use. For example, steps your firm takes to ensure that contracts used are legal; that the counterparties are authorized to enter into contracts; and that material contract provisions, such as netting agreements, are enforceable and not subject to misinterpretation.

Response (1)

"Negotiation of legal agreements is conducted by staff under the direction of in-house counsel in the major geographic regions. As deemed necessary, legal opinions will be obtained from counterparties or our own counsel to support the enforceability of the agreements. Enforceability of netting is determined on the basis of opinions of counsel and based on such opinions the corporation's credit policy committee will determine whether netting is to be considered enforceable within a specific jurisdiction for specific types of transactions. Overall policies governing terms of the master agreement are set by the corporation's credit policy committee. Exceptions to policy may require the approval of the office of corporate finance or credit policy committee."

Response (2)

"It is our policy to require swap counterparties to execute ISDA master swap agreements (there are certain exceptions for short-term transactions conducted under British Bankers Association terms; OTC currency options, which are generally documented under the International Currency Option Market Master Agreement; and for isolated transactions that may be otherwise documented). It is also our policy to obtain enforceability opinions from counsel to counterparties [that] are not swap dealers. These opinions address issues [about the] [] organization of the counterparty, the authority of the person executing the agreement on behalf of the counterparty, and the power of the counterparty to enter into and perform the agreement, as well as the general enforceability of the agreement. We also require counterparties to provide evidence of the corporate authorization of execution and performance of the agreement (e.g., a certified copy of the board resolution) and of the authority of the person signing the agreement on behalf of the counterparty (e.g., a certificate of incumbency).

"In addition to receiving enforceability opinions from counsel to counterparties, we review opinions with respect to netting and other issues bearing on the enforceability of swap agreements.

"We obtain opinions from counsel in various countries as well as from ISDA and other sources. We are also active participants in various committees, with the counsel to leading U.S. derivatives dealers, to discuss issues relating to derivatives transactions, such as netting, enforceability, and contract development."

Response (3)

"From time to time, standard documents are reviewed by both in-house and outside counsel. In-house attorneys involved in the majority of all negotiations of agreements require counterparties to provide evidence of authority to enter into contracts (e.g., resolutions, statutes). With respect to material contract provisions, such provisions are individually negotiated, and attorneys are kept up-to-date on the current state of law via outside counsel and professional reading. In addition, attorneys and document staff regularly attend professional seminars. All contracts [are] reviewed by attorneys prior to execution. In the ordinary course of business, legal opinions are requested and obtained from counterparties as to authorization and enforceability."

Response (4)

"We attempt to employ standard ISDA master agreements to cover as many counterparties and as many products as possible, because of the legal 'due diligence' that has been performed by the ISDA working groups in developing these agreements. We have also relied on the legal opinions obtained by ISDA with respect to the effectiveness of the ISDA agreement in the principal legal jurisdictions around the world, including with respect to the enforceability of netting agreements. We have also obtained supplementary or additional legal opinions on the ISDA agreements when we believe it is warranted. All non-ISDA forms of agreements are reviewed by our counsel group.

"Legal due diligence as to counterparty authority and authorization is generally accomplished pursuant to the requirements of our standard forms of ISDA agreements, which require that the counterparty furnish evidence of authority and authorization to enter into the contracts. This evidence, which may consist of 'signature books' of financial institutions, or incumbency certificates, or other evidence of authority, becomes part of the counterparty file. For nonstandard transactions or counterparties (such as entities formed pursuant to specific statute rather than generally-empowered corporations, or political subdivisions and government entities), we may require delivery of an opinion of counsel for the counterparty.

"We also conduct our own legal investigations on questions of legal capacity for particular classes of some counterparties by seeking advice from our own counsel."

Response (5)

"Our firm utilizes standard credit and legal practices prudent in the normal course of business. These would include but are not limited to the following: (i) requesting corporate resolutions when appropriate, (ii) seeking legal opinions from outside counsel, (iii) evaluating the ability to perform and enforce all contracts, (iv) evaluating on a country-by-country basis the effects of netting, and (v) evaluating relevant rules and statutes. Additionally, the credit department reviews and approves all long-dated [foreign exchange] contracts and all swap transactions."

Response (6)

"Our documentation policies require that a master agreement be in place before any transaction is committed, that the standard ISDA contract (vetted worldwide) be used, that we receive a corporate resolution regarding derivatives activity, and that counterparties meet the standards of 'eligible swap participants' per CFTC regulation. We ensure our confirmation of each transaction goes out within 24 hours and is traced relentlessly until it is matched by the counterparty. In the United States, netting is recognized in Financial Institutions Reform, Recovery and Enforcement Act of 1989 and the corporate bankruptcy code. Elsewhere, in the absence of explicit recognition or precedent, we rely on reasoned opinion of local counsel, but we also measure and manage credit exposures on a gross (unnetted) as well as net basis."

Response (7)

"We execute an ISDA master agreement with every counterparty that enters into [a] derivative trades with us. This master agreement typically will require the delivery of a legal opinion. In the opinion, the counterparty opines that they have the legal authority to do swaps and that the swap is an enforceable obligation. In lieu of a legal opinion, we ask for appropriate evidence of authority. We have conducted a survey of several of our largest jurisdictions and have confirmed what should be the appropriate evidence depending the type of institution. Only if we receive this appropriate evidence will we waive the legal opinion requirement. Evidence is often board resolutions (authorizing the corporation to engage in derivative trades) and an incumbency certificate from the corporate secretary. Prior to doing trades with unusual institutions or corporations incorporated in unfamiliar jurisdictions, we typically will verify with local

counsel (and/or have extensive discussions with counsel for the corporation) concerning suitability and enforceability. This is done on a case-by-case basis.”

Response (8)

“Our law department employs in-house lawyers who specialize in derivatives. They represent both the credit and product areas of our firm and oversee all legal aspects of our derivatives business. This includes regulatory compliance matters relating to securities, commodities, and banking laws in the different jurisdictions in which we operate. They also address issues relating to creditors’ rights, bankruptcy, contract enforceability (including netting agreements) and counterparty authority. Our firm’s decision not to deal with English local authorities was based in part on legal advice rendered by these professionals, and our firm suffered no losses from the []. From time to time, these lawyers may consult outside counsel, and they participate in industry trade associations and central bank committees to keep abreast of legal developments.”

Response (9)

“[] has established standard documentation procedures and policies for managing various legal risks that arise in connection with the execution and documentation of OTC derivative transactions. The firm has two units dedicated entirely to documenting derivative transactions at the confirmation and master agreement stages, respectively. Standard practices are in place to minimize the risk that agreements with counterparties might be unenforceable, including obtaining representation from counterparties with respect to the enforceability of agreements with such counterparties and seeking legal opinions from counsel with respect to the agreements. Additional documentation requirements have been put into place for counterparties, such as municipalities and mutual funds, whose authority to engage in derivative transactions may be limited. Where appropriate, the firm retains outside counsel expert in the area of law under which a prospective counterparty is operating to advise [] in connection with the authority of the counterparty to engage in derivative transactions. In instances in which serious concerns can be raised about the effectiveness of netting, it is the firm’s policy to consider the prospective credit risk of the counterparty’s activities on both a gross and a net basis.”

Response (10)

“[] and its affiliates dealing in OTC derivatives take the following steps to control various types of legal risk involved in OTC derivative product use.

First, the legal department cooperates with the capital markets, trading and other product development areas of the firm to determine whether the product or transaction is subject to regulation and to establish procedures to ensure compliance with these regulations. For example, OTC options on securities or securities indexes are subject to federal and state securities laws and to the rules of various self-regulatory organizations, such as the National Association of Securities Dealers and The New York Stock Exchange, as well as federal rules relating to the extensions of credit (Regulation T). Analysis is also performed to assure that a contract or transaction is not subject to the Commodity Exchange Act (the act) or if it is, that the transaction is subject to one or more of the exemptions contained in the act or CFTC regulations thereunder. Gambling or 'bucket shop' laws are also reviewed.

"Second, the firm and its various divisions exercise due diligence to establish that counterparties and customers have the legal capacity and authority to engage in each category of derivative transactions which they may contemplate doing with the firm. This due diligence includes obtaining copies of the corporate documents or partnership agreements, certified copies of board resolutions, prospectuses (in the case of mutual funds), and where deemed appropriate, legal opinions. Extra steps, including the review of applicable statutory authority, in consultation with local counsel, are undertaken with respect to counterparties which are governmental or quasigovernmental entities.

"Third, in connection with transactions with counterparties domiciled in jurisdictions not governed by the laws of the United States or any state, we routinely consult with local counsel with respect to the ability of [] or its affiliates to engage in the transaction in that jurisdiction and with respect to the enforceability of the contract or agreement used for the particular transaction.

"Fourth, [] routinely uses master agreements for OTC derivatives transactions including options and swaps. Risk-reduction techniques, including cross-default provisions and bilateral close-out netting, are routinely contained in this documentation. We also routinely require counterparties to sign and return confirmations of transactions to ensure the accuracy of the terms of particular trades.

"Fifth, the credit department of the firm is consulted concerning any counterparty engaging in derivatives transactions with []. In cases where margin is not required by law, credit enhancement or collateralization of

exposures, where appropriate, are covered by the appropriate agreements, which are reviewed by counsel to ensure, to the extent possible, perfection of security interest in collateral."

Response (11)

"All schedules to master contracts and all tailored confirmations are reviewed by the legal department for sufficiency and enforceability. Due diligence is performed with respect to the due authority of a counterparty to [a] contract for the trade including, but not limited to, a review of charter authority, corporate resolutions relative to corporate or entity authority, corporate resolutions relative to the authority and incumbency of signatories, and relevant statutes or ordinances regarding authority. Also, the product is reviewed to determine if it is eligible for trading off an exchange and with due regard to any dealer registration implications."

13. Please provide any additional comments you may wish with regard to OTC derivative product activities. Attach additional pages if you care to.

Response (1)

"In order for the OTC derivative product market to continue to grow and flourish, market participants must be assured that the legal and regulatory regimes in which they operate effectively reduce counterparty credit exposure and legal risks to the greatest extent possible. Market participants have, through industry groups and trade organizations, brought about legislative and regulatory reforms in various jurisdictions. The grant of exemptive authority to CFTC and the exercise of that authority to create exemptions from the exclusivity provisions of the Commodity Exchange Act for swaps and hybrid instruments is an example of successful collaboration by market participants, legislators and regulators. But uncertainty remains on many issues both in the United States and abroad. The enforceability of close-out netting arrangements outside the United States, the status of multiproduct master agreements, and the legal capacity issues for regulated and public/municipal entities are but a few of the issues which require clarification.

"Despite the progress of market participants to date, only through the active efforts of legislative and regulatory authorities can legal certainty on many of these issues be achieved. We would welcome increased involvement by legislators and regulatory authorities in the United States and abroad to promote reforms which would clarify these issues in the context of OTC derivative products. Such an effort, however, must proceed

in conjunction with market participants so that the reforms are workable and are reflective of the marketplace for the various types of transactions. Given the strong international and cross-border nature of the OTC derivative products market, we would also hope that such efforts would be undertaken in conjunction with legislators and regulatory authorities abroad. Moreover, the recently published Group of Thirty global derivatives study specifically recommended an aggressive approach [by] legislators and regulators worldwide to eliminate such legal risks."

Response (2)

"Although given the relatively short notice we were unable to provide [] data on our derivative portfolio, we are confident that the trends are favorable. The current quality of the portfolio has steadily improved, and our ability to monitor and manage all forms of risk is increasing. We are confident that the risks generated by derivatives will remain low by traditional banking standards."

Response (3)

"We believe the bulk of derivative trades are commercial transactions, not securities or futures, and consequently are unregulated. If the product is a security, due regard is given to security law regulation, dealer registration and net capital requirements, if applicable.

"We believe the credit analysis performed by a dealer in regard to a counterparty and any reserving for credit loss exceeds that which might reasonably be imposed by any regulator. In fact, any regulatory threshold of creditworthiness might prove harmful to the markets if it were below what a responsible dealer might set for its own protection. Such lower threshold might permit a dealer that otherwise would not meet a market-based creditworthiness standard to claim full adherence to the (lower) regulatory creditworthiness threshold, which in turn might induce a less sophisticated counterparty or end-user to trade with that dealer."

Methodology Used to Develop Global Estimates for Foreign Exchange Forwards and OTC Options

To estimate the notional/contract amounts for foreign exchange forwards and OTC options held worldwide, we reviewed nine databases containing information about derivatives activity. Four of the databases (1 through 4) are industry-produced compilations of derivatives data obtained from the financial reports of individual companies. Five others (5 through 9) are Federal Reserve databases produced from information that U.S. commercial banks provide directly to their regulators. We also created our own database (number 10) from information about derivatives activity on individual companies and institutions obtained from various industry sources and contained in financial reports. Information from these databases is shown in table IV.1.

**Appendix IV
Methodology Used to Develop Global
Estimates for Foreign Exchange Forwards
and OTC Options**

Table IV.1: Summary of the Notional/Contract Amounts of the 10 Databases That Were the Basis for GAO's Methodology

Dollars in billions

Source and description of databases	Total derivatives	Interest rate derivatives	Foreign exchange derivatives	Equity and commodity derivatives	Nonallocable derivatives
(1) Swaps Monitor 50 largest global dealers as of year-end 1992	\$25,985	\$10,844	\$9,757	\$874	\$4,510
(2) Swaps Monitor 1,139 firms as of year-end 1992	15,451	5,115	5,675	a	3,661
(3) Swaps Monitor 999 firms as of year-end 1991	11,770	4,529	4,765	a	2,476
(4) Swaps Monitor 808 firms as of year-end 1990	6,857	3,141	3,716	a	0
(5) Federal Reserve call report (RC-L) data for U.S. banks for first quarter of 1992	8,097	4,182	3,737	178	0
(6) Federal Reserve RC-L data for U.S. banks as of year-end 1991	7,446	3,836	3,472	138	0
(7) Federal Reserve RC-L data for U.S. banks as of year-end 1990 ^b	6,784	3,310	3,392	82	0
(8) Federal Reserve consolidated holding company report (Y-9) data for U.S. banks as of year-end 1992	8,789	4,892	3,783	114	0
(9) Federal Reserve Y-9 data for U.S. banks as of year-end 1991	7,330	3,853	3,369	108	0
(10) GAO global database of 875 firms as of year-end 1991 ^b	24,708	10,752	9,537	678	3,741

Note: The 10 databases overlap with respect to the data they contain and include double counting of some contracts. Specifically, the five Federal Reserve databases (5, 6, 7, 8, and 9) contain data only for U.S. banks and U.S. branches of foreign banks. The Federal Reserve call report (RC-L) databases (5, 6, and 7) contain derivatives data for the main banks but not the bank holding companies or consolidated entities. The Federal Reserve consolidated holding company report (Y-9) databases (8 and 9) contain derivatives data on U.S. bank holding companies and consolidated entities. The other five databases (1, 2, 3, 4, and 10) contain data on all types of firms, including U.S. banks. Databases 2, 3, and 4 contain data on U.S. financial and nonfinancial firms and U.S. branches of foreign banks. Database 1 captures the 50 largest U.S. and foreign derivatives dealers as of year-end 1992 on the basis of available information. Database 10 captures the major dealers as of year-end 1991 but also captures other U.S. and foreign firms, financial and nonfinancial firms, and dealers and end-users.

^aNo data included on equity and commodity derivatives.

^bDatabase 10 contains no information on institutions that may be using derivatives to hedge their large holdings in the stock and bond markets. These institutions include college endowments, foundations, mutual funds, and union funds. Notional/contract data for these institutions were impractical or impossible to obtain.

Sources: Swaps Monitor Publications, Inc., various annual reports, Derivatives Strategy & Tactics, Inc., and the Federal Reserve.

Appendix IV
Methodology Used to Develop Global
Estimates for Foreign Exchange Forwards
and OTC Options

We separated the notional/contract amounts of each of the 10 databases into the following five categories: (1) total derivatives, (2) total interest rate derivatives, (3) total foreign exchange derivatives, (4) total equity and commodity derivatives, and (5) total nonallocable derivatives. Nonallocable derivatives are data that we could not separate into the other categories.

We calculated the relative size of foreign exchange derivatives in the 10 databases in 2 ways. First, we calculated foreign exchange derivatives as a percentage of total derivatives (see table IV.2), and second, foreign exchange derivatives as a percentage of interest rate derivatives (see table IV.3). We selected the method that yielded the most conservative (smallest) estimates of foreign exchange derivatives held globally as of the end of each fiscal year (see table IV.4). From these estimates we subtracted industry estimates for currency swaps, foreign exchange futures, and exchange-traded currency options held globally. The net amounts are our estimates for foreign exchange forwards and OTC option contracts held worldwide as of each year-end from 1989 through 1992 (see table IV.5). We added our estimates for foreign exchange forward and OTC option contracts held worldwide to the industry estimates for other derivatives to arrive at new estimates for total derivatives held worldwide as of each year-end from 1989 through 1992 (see table IV.6).

Because the 10 databases are not statistical samples of the global derivatives markets, we could not compute valid statistical estimates of foreign exchange forwards and OTC option contracts held worldwide.¹ The 10 databases were judgmentally selected samples because the types of firms and institutions included were based on specific criteria (see the notes to table IV.1 for details). The 10 databases overlap with respect to the data that they contain (see note "a" to table IV.1 for details). Each sample was subject to limitations on available data and time.

Table IV.2 shows foreign exchange derivatives as a percentage of total derivatives for the 10 databases. It shows the percentages selected under the conservative approach and used in methodology 1.

¹We could not create a statistical sample of derivatives held worldwide for two reasons. First, we could not obtain or create a listing of the population (sampling frame). The population would consist of all of the firms and institutions in the world. Second, even if a sampling frame were created, we could not successfully pull a statistical sample from it because derivatives notional/contract data would not be available for all of the entities in the sample.

**Appendix IV
Methodology Used to Develop Global
Estimates for Foreign Exchange Forwards
and OTC Options**

Table IV.2: Foreign Exchange Derivatives as a Percentage of Total Derivatives (Methodology 1)

Database	Year	Total derivatives	Interest rate derivatives	Foreign exchange derivatives	Equity and commodity derivatives	Nonallocable derivatives
1	1992	100%	41.7%	37.5%	3.4%	17.4%
2	1992	100	39.6	36.7 ^a	^d	23.7
3	1991	100	38.5	40.5	^d	21.0
4	1990	100	45.8	54.2	^e	^e
5	1992	100	51.6	46.2	2.2	^e
6	1991	100	51.5	46.6	1.9	^e
7	1990	100	48.8	50.0 ^b	1.2	^e
8	1992	100	55.7	43.0	1.3	^e
9	1991	100	52.5	46.0	1.5	^e
10	1991	100	43.5	38.6 ^c	2.7	15.1

Note: We calculated and selected the percentages that were used on the basis of data from table IV.1.

^aFor the four databases with data as of the end of fiscal year 1992, foreign exchange derivatives as a percentage of total derivatives were 36.7, 37.5, 43.1, and 46.2 percent. We used the conservative 36.7 percent.

^bFor the two databases with data as of year-end 1990, foreign exchange derivatives as a percentage of total derivatives were 50.0 and 54.2 percent. We used the conservative 38.6 percent from 1991 for 1990 data. We also used 38.6 percent for 1989.

^cFor the four databases with data as of year-end 1991, foreign exchange derivatives as a percentage of total derivatives were 38.6, 40.5, 46.0, and 46.6 percent. We used the conservative 38.6 percent.

^dData were not available.

^eData were not applicable.

Source: GAO analysis.

Table IV.3 shows foreign exchange derivatives as a percentage of interest rate derivatives for the 10 databases. It shows the percentages selected under the conservative approach and used in methodology 2.

**Appendix IV
Methodology Used to Develop Global
Estimates for Foreign Exchange Forwards
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Table IV.3: Foreign Exchange Derivatives as a Percentage of Interest Rate Derivatives (Methodology 2)

Database	Year	Interest rate derivatives	Foreign exchange derivatives	Equity and commodity derivatives	Nonallocable
1	1992	100%	90.0%	8.1%	41.6%
2	1992	100	92.8	^d	59.9
3	1991	100	105.2	^d	54.7
4	1990	100	118.3	^d	^e
5	1992	100	89.4	4.3	^e
6	1991	100	90.5	3.6	^e
7	1990	100	102.5 ^a	2.5	^e
8	1992	100	77.3 ^b	2.3	^e
9	1991	100	87.4 ^c	2.8	^e
10	1991	100	88.7	6.3	34.8

Note: We calculated and selected the percentages that were used on the basis of data from table IV.1.

^aFor the two databases with data as of year-end 1990, foreign exchange derivatives as a percentage of interest rate derivatives were 102.5 and 118.3 percent. We used the conservative 102.5 percent for the year-end 1990 and 1989 data.

^bFor the four databases with data as of year-end 1992, foreign exchange derivatives as a percent of interest rate derivatives were 77.3, 89.4, 90.0, and 92.8 percent. We used the conservative 77.3 percent.

^cFor the four databases with data as of year-end 1991, foreign exchange derivatives as a percent of interest rate derivatives were 87.4, 88.7, 90.5, and 105.2 percent. We used the conservative 87.4 percent.

^dData were not available.

^eData were not applicable.

Source: GAO analysis.

Table IV.4 shows the results of our two methodologies for estimating foreign exchange derivatives. In methodology 1, we estimated foreign exchange derivatives as a percentage of total derivatives. In methodology 2, we estimated foreign exchange derivatives as a percentage of interest rate derivatives. We compared the two results and used the most conservative, that is, the percentages that yielded the smallest estimates for foreign exchange derivatives from 1989 through 1992.

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Table IV.4: Comparison of Methodologies 1 and 2 and the Notional/Contract Amounts of Foreign Exchange Derivatives

Dollars in billions

Year	Percentage used ^a	Percentage used ^b	Foreign exchange derivatives ^a	Foreign exchange derivatives ^b	Most conservative result used ^c
1992	36.7%	77.3%	\$6,475	\$8,443	\$6,475 ^a
1991	38.6	87.4	5,415	7,345	5,415
1990	38.6	102.5	3,927	6,239	3,927
1989	38.6	102.5	2,779	4,419	2,779

^aResult of using methodology 1. Data were from table IV.2.

^bResult of using methodology 2. Data were from table IV.3.

^cWe computed the amounts by applying the percentages from table IV.4 to the appropriate data in table IV.6. For example, for data as of year-end 1992, we estimated that foreign exchange derivatives were the lesser of 36.7 percent of total derivatives, or 77.3 percent of interest rate derivatives. The lesser amount is \$6,475, which is 36.7 percent of total derivatives held of \$17,643 (see table IV.6).

Source: GAO analysis.

Table IV.5 shows our estimates of global foreign exchange derivatives from which we subtracted the industry estimates for foreign exchange futures, exchange-traded currency options, and currency swaps in order to arrive at our estimates for global foreign exchange forward and OTC option contracts.

Table IV.5: GAO Estimates of the Notional/Contract Amounts of Foreign Exchange Forwards and OTC Options

Dollars in billions

Year	GAO estimate for total foreign exchange derivatives ^a	Less currency swaps ^b	Less currency futures ^b	Less exchange-traded currency options ^b	Equals foreign exchange forwards and OTC options ^b
1992	\$6,475	\$860	\$25	\$80	\$5,510
1991	5,415	807	18	59	4,531
1990	3,927	578	16	56	3,277
1989	2,779	449	16	50	2,264

^aData from table IV.4.

^bData from table IV.6.

Source: GAO analysis.

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Methodology Used to Develop Global
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Table IV.6: Notional/Contract Amounts for Derivatives Worldwide by Individual Product Type as of the End of Fiscal Years 1989 Through 1992

Dollars in billions

Type of derivative	1989	1990	1991	1992	Percentage of total 1992	Percentage Increase from 1989 to 1992
Forwards						
Forward rate agreements ^a	\$770	\$1,160	\$1,530	\$2,005		
Foreign exchange forwards ^b	2,264	3,277	4,531	5,510		
Total forwards	\$3,034	\$4,437	\$6,061	\$7,515	42%	148%
Futures						
Interest rate futures	1,201	1,454	2,159	3,048		
Currency futures	16	16	18	25		
Equity index futures	42	70	77	81		
Total futures	\$1,259	\$1,540	\$2,254	\$3,154	18%	151%
Options						
Exchange-traded interest rate options	387	600	1,073	1,385		
OTC interest rate options	450	561	577	634		
Exchange-traded currency options	50	56	59	80		
Exchange-traded equity index options	66	88	132	164		
Total options	\$953	\$1,305	\$1,841	\$2,263	13%	137%
Swaps						
Interest rate swaps	1,503	2,312	3,065	3,851		
Currency swaps	449	578	807	860		
Total swaps	\$1,952	\$2,890	\$3,872	\$4,711	27%	141%
Total derivatives^c	\$7,198	\$10,172	\$14,028	\$17,643	100%	145%
Total derivatives^d	\$4,934	\$6,895	\$9,497	\$12,133		

^aGAO estimated forward rate agreements as of the end of fiscal year 1992 on the basis of methodology the New York Federal Reserve used in computing estimates for year-ends 1989, 1990, and 1991.

^bGAO estimates for foreign exchange forward contracts are from table IV.5. These also include an unknown amount of OTC foreign exchange options.

^cDoes not include complete data on physical commodity derivatives and equity options on the common stock of individual companies. Table IV.2 shows that seven of the databases contain equity and commodity derivatives that ranged from 1.1 to 3.4 percent of total derivatives notional/contract amounts.

^dBefore including GAO estimates for foreign exchange forwards and OTC options.

Sources: Bank for International Settlements, GAO, ISDA, Federal Reserve Bank of New York.

15 Major U.S. OTC Derivatives Dealers and Their Notional/Contract Derivatives Amounts

Dollars in millions

Banks

Chemical Banking Corporation	\$1,620,819
Citicorp	1,521,400
J.P. Morgan & Co., Inc.	1,251,700
Bankers Trust New York Corporation	1,165,872
The Chase Manhattan Corporation	886,300
BankAmerica Corporation	787,891
First Chicago Corporation	391,400

Securities firms

The Goldman Sachs Group, L.P.	752,041
Salomon, Inc.	729,000
Merrill Lynch & Co., Inc.	724,000
Morgan Stanley Group, Inc.	424,937
Shearson Lehman Brothers, Inc. ^a	337,007

Insurance companies

American International Group, Inc.	198,200
The Prudential Insurance Company of America	121,515
General Re Corporation	82,729

Total **\$10,994,811**

^aThe 1992 annual report from which we derived this information was issued by Shearson Lehman. The firm no longer exists under this name.

Source: Annual reports for 1992.

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