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President and
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COMMENT

98-19

(27)

October 13, 1998

Jean A. Webb
Secretary
Commodity Futures Trading Commission
Three Lafayette Centre
1155 21st Street, N.W.
Washington, D.C. 20581

Re: Over-the-Counter Derivatives Concept Release
63 Fed. Reg. 26114 (May 12, 1998)

Dear Ms. Webb:

The Chicago Board of Trade ("CBOT®" or "Exchange") appreciates the opportunity to respond to the Commission's request for comments on whether it should modify its regulatory structure applicable to OTC derivatives. [Over-the-Counter Derivatives Concept Release, 63 Fed. Reg. 26114 ("Concept Release")] The Commission states that it is reexamining its approach to regulation of the OTC markets as part of "a comprehensive regulatory reform effort designed to update the agency's oversight of both exchange and off-exchange markets." 63 Fed. Reg. 26114.

The CBOT believes the Commission has been unduly criticized for undertaking this self-examination. Like a well-run business, government agencies should periodically re-examine their fundamental policies and programs to make certain they are aimed at future challenges, not those of yesterday. The Commission is no exception. Since existing law extends the Commission's jurisdiction to those futures and related options contracts traded off-exchange and requires the Commission to promote "fair competition" among on-exchange and off-exchange markets, the Commission has every reason to explore the questions it has raised in its Concept Release.

To achieve this fair competition objective, the CBOT would welcome rapid Commission action to adopt the Exchange's 1993 ProMarket Petition for streamlined government oversight for professionals-only exchange markets. Significantly, that proposal would combine the benefits of exchange markets -- price transparency, market liquidity and financial integrity through, in the CBOT's case, a triple A-rated clearing entity -- with the current regulatory flexibility now enjoyed by over-the-counter derivative markets. Adoption of meaningful ProMarket-type relief would encourage those institutions and other professionals who now seek out and benefit from the regulatory flexibility bestowed upon the over-the-counter derivatives markets to enjoy that same flexibility by trading in the more secure, self-regulated, exchange-trading environment. In short, the Commission should use its exemptive powers for exchange markets to promote both regulatory parity and market safeguards.

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At the same time, the fact-finding inquiry contemplated by the Concept Release should not, in the CBOT's opinion, result in a unilateral effort now by the Commission to regulate over-the-counter derivatives or dealer markets in futures and related options. Instead, based on the public comments received in response to its Concept Release and the other studies of these issues now underway, the Commission should work with other regulatory bodies on the President's Working Group to ensure that early next session Congress receives legislative recommendations to reform the CEA, including its Shad-Johnson Accord provisions, to address the ramifications of the three broad themes of our comment letter.

Those themes are:

1. Exchange and OTC derivatives markets are converging through market evolution. That convergence invalidates reliance on traditional "text book" market differences as a justification for why exchange derivatives markets need regulation when OTC derivatives markets do not.

2. The derivatives markets are part of the broader, global financial markets, which are interconnected through payment flows and common participants (as the recent events with Long-Term Capital Management serve to remind us), raising the need for more consistency and coordination in regulatory philosophies and principles across the differing U.S. regulatory regimes for particular trading markets or particular classes of institutional participants.

3. As the futures exchanges have proven for years, financial markets are self-policing and self-correcting. Any government oversight of markets should create meaningful self-regulatory incentives for market participants.

EXCHANGE AND OTC DERIVATIVES MARKETS ARE CONVERGING

The derivatives markets, exchange and OTC alike, have undergone significant evolutionary changes caused by globalization, institutionalization, product innovation and technology, which have blurred distinctions between the two markets beyond meaning. The enclosed paper, "Competition, Complementarity, and Structural Convergence in Exchange and OTC Derivative Markets," presents evidence of the convergence that has occurred, and continues to occur, between exchange and OTC markets. This paper was prepared by senior economists at the CBOT, and examines the markets from a business perspective, rather than a regulatory perspective. The paper demonstrates that markets are not immutable: they change in response to business demands and expectations to survive. Indeed, shaped by many of the same trends, changes are occurring across all financial markets, not just in the derivatives markets.

As the fact base in the paper demonstrates, convergence of exchange and OTC derivatives markets is occurring on many fronts: market users, product design, trading structures, price transparency, and clearing and settlement practices. If markets are to be regulated, regulation should follow

business-driven market changes. Unfortunately, federal regulation of the derivatives markets has failed to keep pace with changing conditions, and serves more as a constraint on innovation and competitiveness, as often happens with regulation. Today, exchange and OTC derivatives markets are much more alike than not, rendering the CEA's regulatory focus on "futures contracts" and "boards of trade" hopelessly out of date and constricting. Issues of agency jurisdiction should take a back seat to preventing systemic risk, promoting fair competition, providing appropriate incentives and a framework for self-regulation, preventing market distortions, and otherwise assigning government a role in regulating the intermediation process that is proportionate to the nature and sophistication of a broad range of market participants.

This problem cannot be cured by agency action: the CEA's current scheme of elastic and exclusive jurisdiction coupled with ill-defined exclusions and exemptive authority promotes dangerous legal uncertainty and arbitrary regulatory disparities. Further, the CEA's rigid, outdated framework inevitably drives the Commission to treat exchange and OTC markets in isolation of one another, as in this case where the Commission has raised in the Concept Release fundamental policy issues on the need for and role of government oversight of OTC derivatives markets separate from consideration of those same issues in the context of exchange markets. What is needed is a broader policy reassessment of whether, why and how to regulate derivatives markets generally, unhampered by needless market distinctions. So long as the CEA perpetuates artificial and obsolete distinctions between OTC and exchange markets, true regulatory reform will prove illusive. This is why Congressional action is needed to modernize the CEA.

Pending Congressional review, the Commission should refrain from implementing any changes to its current regulatory structure for OTC derivatives. We agree that the Commission has the legal authority under the CEA to regulate OTC derivatives transactions. But we also agree with Commissioners Holum, Spears and Newsome that the Commission should not exercise that authority to adopt regulations for the OTC markets.[1] As Commissioner Holum stated in her June 17, 1998 letter to Representative Ewing:

> "In my view, the OTC market, largely comprised of sophisticated, institutional participants, does not require or lend itself to a traditional regulatory structure. Rather than a parochial regulatory regime, coordinated supervision of the OTC market would permit the adaptation of an oversight structure optimally designed to encourage continued growth and innovation. Among other things, advances in technology are rapidly changing the structure of these markets, making it necessary

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[1] See the June 17, 1998 letter from Commissioner Holum to the Honorable Thomas Ewing, Chairman, Risk Management & Specialty Crops Subcommittee, U.S. House of Representatives; August 24, 1998 letter from Commissioner Holum to the Honorable Richard Lugar, Chairman, Committee on Agriculture, Nutrition and Forestry, U.S. Senate; September 4, 1998 letter from Commissioner Holum to the Honorable Richard Lugar, Chairman, Committee on Agriculture, Nutrition and Forestry, U.S. Senate; and September 11, 1998 letter from Commissioners Spears and Newsome to the Honorable Richard Lugar, Chairman, Committee on Agriculture, Nutrition and Forestry, U.S. Senate.

> that all financial regulators and supervisors, and the Congress, work together to craft an oversight policy which accommodates and encourages market expansion and innovation."

The CBOT concurs. We believe these comments are equally applicable to exchange markets. It should be the goal of the federal government to accommodate and encourage market expansion and innovation for all financial markets.

THE FINANCIAL MARKETS ARE INTERRELATED

That the financial markets are interrelated should not be a matter of dispute. This was the conclusion of the Brady Commission in its 1988 report following the October 1987 stock market crash. This is also the lesson to be learned from the recent financial difficulties of Long-Term Capital Management ("LTCM"). LTCM's financial difficulties, and the markets' reaction, serve as a reminder that markets are connected in terms of capital flows, at several critical junctures: market users (including professional trading operations such as LTCM) who trade and have financial obligations in multiple markets; financial services conglomerates who, acting as brokers, dealers and/or lenders, provide intermediation services for multiple markets and may have some role in financing or securing performance on their customers' transactions; and the central bank payment systems used to transfer funds to secure and settle financial obligations among market participants on positions established in the different markets. Thus, a default or threatened default by a powerful market player, as in LTCM's case, has potentially far-reaching repercussions for other markets and market participants, without regard to the regulatory boxes drawn around markets or classes of market professionals.

Events like LTCM also highlight the U.S.'s patchwork of regulatory regimes (sometimes overlapping) that apply to discrete markets or to discrete classes of financial institutions. The divergent agency reactions to LTCM also highlight the differing, sometimes incompatible, regulatory philosophies and principles which underlie the different regimes.

The CFTC and SEC are market regulators; they are responsible for overseeing specific markets and their jurisdiction is defined by statutory market definitions. The CFTC (like the SEC) regulates defined classes of market intermediaries to implement the CEA's financial integrity, market integrity and customer protection standards. In recent years, the Commission has identified the need to monitor positions held by large futures market participants across related markets, and the financial impact of those cross market activities on market participants, from a systemic risk perspective. Systemic risk considerations are reflected in the Commission's efforts to improve global information sharing among exchanges, clearinghouses and regulators and in the Commission's 1995 amendments to its Rules 1.14 and 1.15 to impose reporting obligations on FCMs with respect to certain trading activities and changes in financial condition of their "Material Affiliated Persons."

In contrast, the banking agencies are not market regulators; they are responsible for overseeing the activities of a defined class of financial institutions -- banks and their affiliates -- to protect customer

deposits and the financial integrity of the banking system. While this oversight extends to bank dealing and trading activities in the financial markets, the focus is on ensuring that those activities do not pose a risk to the safety and soundness of the banks, not on market oversight considerations. Further, because they have not been required to implement a market oversight framework, the banking agencies are not predisposed to assume that markets need government regulation, and generally defer to the ability of markets to police themselves. Similarly, the Department of Labor for pension funds, the SEC for investment companies and state insurance regulators for insurance companies also provide institutional regulation. They, too, oversee the derivatives activities of their constituents, from an institutional but not from a market perspective.

The CFTC's response to LTCM reflects its market-defined focus. The fact that LTCM's difficulties reportedly relate, in part, to OTC derivatives positions is cited by Chairperson Born in Congressional testimony as justification for why the Commission should consider imposing regulation on the OTC derivatives markets. (See Testimony of Brooksley Born, Chairperson, CFTC, Concerning Long-Term Capital Management Before the U.S. House of Representatives Committee on Banking and Financial Services.) The Federal Reserve Board, in contrast, has said that the banking regulators and market participants can deal with the credit extension and leverage issues that LTCM raises within the existing framework of bank oversight coupled with private market responses. In the end, both agencies are trying to achieve the same objective: to protect against cross-market systemic risk in the event of a sizable default, but from different perspectives and different jurisdictional bases.

The LTCM situation highlights the need for cooperation among financial regulators on the President's Working Group to address matters that cut across regulatory boundaries. The Commission itself recognized the need for inter-agency cooperation, especially with respect to systemic risk issues, in its 1993 study on the OTC derivatives markets, when it stated:

> "OTC derivatives are not readily cabined within any single regulatory structure. Equally, the systemic and public policy issues suggested by these products are not confined to any single market or the province of any one regulator. In light of these factors, the Commission supports the establishment of an interagency council to foster additional regulatory coordination in this area and to identify and consider common regulatory issues that may be raised by OTC derivative products." [Report of the Commodity Futures Trading Commission, OTC Derivatives Markets and Their Regulation, p. 126 (October 1993) (footnotes omitted).]

That kind of agency cooperation should not be limited to the OTC markets. For example, better cooperation and consistency is needed with respect to the layered approval process that the futures exchanges face for stock index products under the Shad-Johnson Accord provisions of the CEA. Futures exchanges are required to obtain approval from two agencies, the CFTC and SEC, to offer stock index futures products, while the securities exchanges deal with only one agency, the SEC, for approval of their stock index products and OTC dealers do not seek any agency approval to offer any equity derivatives. Compounding the inconsistencies, under the SEC's reading of Shad-Johnson, futures exchanges are prohibited from basing futures contracts on certain stock indexes which are

deemed perfectly fine for securities exchanges to use for their options products. This situation makes no sense.

To the extent that differences in regulatory philosophy and principles interfere with cooperative efforts or lead to inconsistent regulatory treatment, Congress should reconcile those differences when it considers CEA reform. That process of reconciliation may require changes to other relevant statutes, as well. Given the cross-agency implications, all of the agencies on the President's Working Group should be involved in regulatory reform efforts for the financial markets including modernizing the CEA.

GOVERNMENT POLICY SHOULD GIVE DEFERENCE TO PRIVATE MARKET SOLUTIONS

Private self-policing mechanisms are capable of responding to market disruptions. The U.S. futures exchanges prove this point. We have developed financial safeguards and financial and market oversight programs that are unsurpassed by any other markets, and we did so as private initiatives to protect the financial and price integrity of our markets. The OTC derivatives markets, on a less formalized basis, have also proven resilient in dealing with occasional market problems, and we anticipate that market participants will take steps to protect themselves in the future against the risk of over-extension of counterparty credit and leverage present in the LTCM case. Indeed, as the enclosed paper illustrates, the OTC markets have already adopted certain exchange-like safeguards to address the very type of credit or default risk that LTCM posed, such as multilateral payment netting arrangements, posting of collateral on positions coupled with periodic mark-to-market revaluation of those positions, and use of standardized contracts including standardized credit annex agreements. The LTCM matter may well prompt more wide-spread use of these credit features by OTC market participants and spur further private initiatives to emulate the proven financial safeguards pioneered decades ago by the CBOT and other futures exchanges as responsible self-regulatory organizations.[2]

CONCLUSION

It is time to modernize the CEA to reflect the fact that exchange and OTC markets are converging. There is no justification for currently imposing greater regulation on exchange markets which have proven self-regulatory safeguards and mechanisms, placing them at a competitive disadvantage to OTC markets against which they compete for the same risk management business. These disparities must be removed if the U.S. futures exchanges are to remain competitive globally well into the next

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[2] There may be growing market interest in developing multilateral clearing facilities for OTC swaps transactions. The London Clearing House, for example, has a petition before the Commission seeking expansion of the CFTC's Part 35 exemption to allow LCH to provide swaps clearing to qualifying swaps dealers. As we stated in our September 8, 1998 comment letter on the LCH petition, the CBOT generally supports swaps clearing pursuant to an established regulatory framework available to exchanges and OTC markets alike, but opposes piecemeal, ad hoc expansion of the Part 35 rules for specific proposals.

millennium. The Concept Release provides an excellent forum for the Commission to gather data on how the derivatives markets are changing, as a further step towards the wholesale review of the CEA that Congress needs to undertake. We urge the Commission to use this data to update the October 1993 study on the OTC markets (which it prepared after consulting with the SEC and the FRB) to create an unbiased fact base for Congress to use in that activity. That material ideally should be integrated into the study which the Working Group has been asked to prepare.

Sincerely,

Thomas R. Donovan

COMPETITION, COMPLEMENTARITY, AND STRUCTURAL CONVERGENCE IN EXCHANGE AND OTC DERIVATIVE MARKETS

October 13, 1998

By

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October 13, 1998

COMPETITION, COMPLEMENTARITY, AND STRUCTURAL CONVERGENCE IN EXCHANGE AND OTC DERIVATIVE MARKETS

One of the remarkable developments in finance within the last 15 years is the dramatic volume growth and structural convergence in derivative markets, encompassing both exchange-traded instruments and, more particularly, over-the-counter (OTC) instruments. What makes this dramatic growth all the more astonishing is that instruments traded on exchanges and in OTC markets compete with each other to satisfy the same basic risk management needs of businesses and investors worldwide. Two different market structures — organized exchange markets and informal OTC markets — serve a single purpose: to provide investors and commercial enterprises the tools to control risk and to achieve their overall business goals cheaply and effectively.

The above suggests that exchange markets and OTC markets should be like oil and water, with very little, if any, mixing of the two. Yet nothing could be further from financial marketplace reality. Certain exchange markets and OTC markets are to a large degree symbiotic. OTC market dealers rely on exchange-traded instruments to manage the risks they incur in their derivative activities. The benefit to exchange markets, of course, is the volume of activity generated by OTC dealer institutions, which hedge their risks on the more liquid exchange markets. If the appropriate analogy is not "like oil and water," what is it?

Recent actions taken during the last several years by both exchanges and OTC markets suggest the more appropriate analogy is that exchange and OTC markets have become more of a blend, like "oil and vinegar," rather than like "oil and water." Early introductory textbooks on financial markets posit seemingly vast differences between exchange markets and OTC markets (see Table 1). But recent developments are rendering the textbook view anachronistic as exchange markets become more OTC-like and OTC markets become more exchange-like. This evolutionary convergence is manifested in the growing likeness of the institutions, structures, practices, and policies of the two markets.

This study presents evidence of the evolutionary convergence of exchange and OTC derivatives markets. We begin with a brief overview of the volume growth of derivatives markets in general. Part II discusses the competing and complementary nature of the converging use and users of exchange-traded and OTC instruments. Part III examines recent examples of product design convergence. Part IV presents trends in the convergence of trading market structures. Part V discusses the evolutionary convergence of clearing and settlement practices, policies, and systems. Finally, Part VI draws some conclusions.

Table 1.

"Textbook" Differences Between Exchange-Traded And Over-the-Counter Derivatives

Exchange-Traded Futures Markets	OTC Dealer Markets
Buyers and sellers of exchange-traded products are seeking to satisfy standardized risk management needs.	Buyers and sellers of OTC products are seeking to satisfy customized risk management needs.
Futures contract terms are highly standardized.	OTC contract terms are highly individualistic and customized.
Futures are traded on exchanges through competitive open outcry trading processes with prices widely disseminated to the public.	OTC transactions are privately and singularly negotiated and executed between counterparties with little price transparency.
Exchange-traded transactions are matched, netted multilaterally, collateralized (margined), marked-to-market, and guaranteed by a regulated clearinghouse.	OTC transactions are bilaterally negotiated, not subject to netting requirements, not collateralized and not marked-to-market.

I. Overview: Derivatives Volume Growth

Exchange-traded futures markets have been losing ground to OTC derivative markets for some time. Table 2 on the next page lists the notional values of selected outstanding derivative instruments from 1990 to 1997 that trade on exchange markets and in OTC markets. These data from the Bank for International Settlements (BIS) and International Swaps and Derivatives Association (ISDA) are the latest available. (The BIS has recently begun a regular semi-annual survey of OTC activity. Data of outstanding OTC contracts are being collected and the BIS intends to publish end-June 1998 data by the end of 1998.)

Care should be taken interpreting this table, because the reported indicators of OTC market activity are only partial indicators; aggregate information on OTC derivative markets is less accessible than similar information relating to exchange-traded markets. In short, OTC market size is under-reported. According to the BIS's 1995 Annual Report:

> "OTC business is substantially larger, incorporating a variety of forward and option-type instruments on currencies, fixed income and equity securities as well as a vast array of cross-product swaps and structured securities."

That said, the table makes clear (even when OTC data are understated) the great strides that OTC markets have made relative to their exchange-traded counterparts. Overall, from 1990 through 1997, OTC markets have exceeded exchange-traded

markets in terms of notional principal outstanding. Indeed, the growth in OTC markets has outpaced that of exchange-traded markets over that period (742% growth for OTC markets versus 433% for exchange markets). The table also shows that for certain competing instruments, the gap between OTC activity and exchange activity has widened considerably. For example, in 1990, OTC market activity in interest rate swaps was 1.59 times exchange market activity in interest rate futures. By 1997, the gap had widened to 2.98 times in favor of the OTC market, an 87% increase in the gap. What factors account for this widening gap? A 1995 study by the Organization for Economic Cooperation and Development (OECD) highlights two factors:

> "The shift from trading on exchanges to over-the-counter trading is driven by several factors, in particular the lack of regulatory constraint gives the OTC market a flexibility that is difficult for the exchanges to match. Moreover, OTC derivative products can be tailored to the specific needs of clients with respect to expiration dates, industry composition of indices, etc." ("Trends, Structural Changes and Prospects in OECD Capital Markets," H.J. Blommestein and K. Biltoff in The New Financial Landscape: The Revolution in Banking, Risk Management and Capital Markets, OECD, 1995.)

Table 2.

Markets For Selected Financial Derivative Instruments
(Notional Amounts in U.S.$ billion)

	1990	1991	1992	1993	1994	1995	1996	1997	% Increase 1990 - 97
Exchange-traded instruments	2,290	3,519	4,634	7,771	8,863	9,185	9,885	12,207	433
• Interest Rate futures	1,454	2,157	2,913	4,959	5,778	5,863	5,931	7,489	415
• Interest Rate options	599	1,073	1,385	2,362	2,624	2,742	3,277	3,640	507
• Currency futures	17	18	26	35	40	38	50	52	205
• Currency options	57	63	71	76	56	43	47	33	- 41
• Stock index futures	69	76	80	110	127	172	199	217	213
• Stock index options	94	133	159	230	238	327	380	777	729
OTC instruments	3,450	3,450	5,345	8,474	11,303	17,713	25,453	29,035	742
• Interest rate swaps	2,311	3,065	3,850	6,177	8,816	12,811	19,171	22,291	864
• Currency swaps	577	807	860	899	915	1197	1,561	1,823	170
• Other swap-related derivatives *	566	577	635	1,398	1,573	3,705	4,722	4,920	769

* Caps, collars, floors, and swaptions.
SOURCE: BIS and ISDA.

II. Convergence in Derivatives Use and Users

Risk managers and end-users of derivative products look to both exchange-traded and OTC market vehicles seeking to hedge a variety of exposures while balancing their price and order transparency, order execution liquidity, and product customization needs. Neither exchange nor OTC market structures currently fulfill all of their needs simultaneously. Nevertheless, whether using exchange-traded or OTC-traded instruments, end-users of derivative instruments are the same corporate and financial

institutions. As a Federal Reserve Bank of St. Louis study points out:

> "For most commonly hedged risks (such as exposure to interest rates, foreign exchange rates, or commodity prices) many instruments can be used for hedging. For example, to hedge U.S. interest rates we can use bonds, repurchase agreements, Treasury bond futures, swaps, caps, or collars. The choice among this set would be determined by pricing and transaction costs, match to hedging needs, and accounting implications." ("The New Risk Management: The Good, the Bad, and the Ugly, " P.H. Dybvig and W.J. Marshall, Federal Reserve Bank of St. Louis Review, November/December 1997.)

That OTC markets compete with exchange markets to serve the risk management needs of businesses and investors can be little doubted. Exchange-traded derivatives, such as interest rate futures, are similar to OTC instruments, such as interest rate swaps, in terms of their risk management applications. Case studies and survey data show that end-users of exchange-traded and OTC instruments consider them largely as competing, substitutable products.

The 1995 publication by the Economist Intelligence Unit (EIU), Strategic Derivatives, furnishes useful case studies on how end-users view exchange-traded and OTC derivatives. These case studies demonstrate that companies and investors use both, and that the choice of one over the other in any given circumstance is dictated by specific tactical and strategic considerations in a company-specific or investor-specific context. Two cases drawn from the EIU study help to illustrate the point.

- Smith Kline Beecham (SKB) is a pharmaceutical company headquartered in Brentford, England, with revenue of over $5.2 billion. SKB has a need for derivatives on both the funding side and on the asset or investment side. SKB is very selective in its choice of instruments, always looking at liquidity and counterparty credit. Depending on the specifics of a given transaction, SKB may emphasize one more than the other. The company prefers exchange-traded instruments. The exchanges, according to SKB's treasurer, have superior creditworthiness, in part because of the daily mark-to-market mechanisms. For short-term interest rate risk exposure, SKB insists on exchange-traded instruments, because of SKB's emphasis on liquidity. There are cases, however, in which SKB prefers OTC instruments. With forward foreign exchange contracts, for instance, "the exchanges just don't match the liquidity of the OTC markets," according to the treasurer.

- AT&T, the telecommunications giant (revenues of $64 billion), is headquartered in New York City. It uses derivatives to reduce risks associated with doing business internationally. The company is exposed to, and manages with derivatives, currency risk, interest rate risk, and metals-price risk. AT&T's policy is to be fully hedged against currency price changes. Although AT&T occasionally uses exchange-traded futures and

options, most of its currency hedging is done with OTC forward contracts, primarily because these are the most liquid instruments. AT&T has been a pioneer in metals hedging, with the goal of locking in prices for such metals as gold and copper, which are frequently used in the manufacturing process. Virtually all of AT&T's metals hedging is accomplished with exchange-traded futures and options, mainly because of the greater liquidity offered by exchange markets. In order to hedge its interest rate exposure, AT&T has resorted mainly to the OTC swaps market, where the transactions can be more finely customized to its liking.

As these examples show, exchange-traded derivative instruments and OTC derivative instruments are indeed considered alternative means of achieving risk management goals, a classic indicator that these instruments compete with one another. Formal surveys of derivative usage also support this proposition. For example:

- A 1990 study (Corporate Financial Risk Management Study), conducted for the Chicago Board of Trade (CBOT®) by Institutional Investor's Market Research Department, shows that use of OTC and exchange derivative instruments is non-exclusive. The report concluded that, among corporate users, the use of OTC products is more widespread than the use of exchange-traded products in managing interest rate risk; 56% of firms surveyed used OTC products while 18% used exchange-traded futures and options. However, 70% of the companies using exchange-traded futures and options are also using OTC products, while 22% of those using OTC products are also using exchange-traded futures and options. According to the report, "It would appear that banks have done an excellent job of convincing corporate executives that their products are preferable to futures and options and usage patterns bear this out."

- More recently, the August 1995 report of the Treasury Management Association, 1995 Derivatives Practices and Instruments Survey, shows that exchange-traded and OTC-traded instruments are used by significant portions of industrial concerns which reported using derivative instruments. Specifically, 72% of organizations used OTC forwards, 37% used OTC options, 17% used exchange-traded futures, and 14% used exchange-traded options to manage their interest rate, foreign exchange, and commodity price risks.

- The Wharton School/Chase Manhattan Bank Survey of Derivatives Usage Among U.S. Non-Financial Firms (February 1995) shows that of 530 firms surveyed, more than one-third (34.5%) use derivatives to manage interest rate, foreign exchange, or commodity price risks. What instruments do they use? Consistent with the other surveys, the Wharton/Chase survey shows significant co-usage of exchange-traded and OTC instruments, as seen in Table 3 below:

Table 3. Percent of Firms Using Derivatives to Manage ...

	Foreign Exchange Exposure	Interest Rate Exposure	Commodity Exposure
OTC forwards	43.0%	9.6%	21.1%
Exchange futures	7.2	4.2	24.6
Swaps	19.3	68.9	17.5
OTC options	22.2	12.0	21.1
Exchange options	8.2	5.4	15.8

Source: Wharton School/Chase Manhattan Bank Survey of Derivatives Usage Among Non-Financial Firms, February 1995.

- In its Survey of Industry Practices (March 1994), the Group of Thirty's Global Derivatives Study Group found that, among OTC derivatives dealers:
  - 18% said they used mainly exchange-traded derivatives (relative to OTC-traded derivatives) to take market risk positions.
  - 47% said they used mainly OTC derivatives (relative to exchange-traded derivatives) to take market risk positions.
  - 32% said they used OTC and exchange-traded derivatives equally to take market risk positions.
- Finally, data from the Comptroller of the Currency show that commercial banks in the U.S. held a significant portion (about 15%) of their derivatives in the form of exchange-traded instruments (Table 4A, next page). Data from the Investment Company Institute show that mutual funds of various types also use exchange-traded and OTC derivatives in significant amounts to manage their risks (Table 4B, next page). Lastly, data from a recent Wharton School Working Paper show that insurance companies use both exchange-traded and OTC derivatives to manage their risks (Table 4C, next page).

Table 4A. Banks' Use Of Derivatives ($ million)

Total: $26,049,179

Consisting of:	Amount	Percent of total
Exchange-traded futures	$2,245,878	8.6
Exchange-traded options	1,639,626	6.3
OTC forwards	7,134,066	27.4
OTC swaps	10,060,167	38.6
OTC options	4,878,024	8.7
OTC credit derivatives	91,419	0.4

SOURCE: Fact Sheet: Derivatives Data – 1st Quarter 1998, Comptroller of the Currency, Table 1.

Table 4B. Mutual Funds' Use Of Derivatives ($ million)

Total: $54,292 **63.6%** **36.4%**

Fund Type:	Amount	% OTC	% Exchange-Traded
Equity funds	$14,632	30.8	69.2
Fixed – income funds	33,934	80.6	19.4
Balanced funds	5,726	47.2	52.8

SOURCE: Investment Company Institute Derivative Securities Survey, 1994.

Table 4C. Insurance Companies' Use Of Derivatives ($ million)

Total: $107,630

Consisting of:	Notional Amount Year-end 1994	% Total
Financial options owned	$39,370	36.6
Financial options written	6,058	5.6
Swaps, forwards, collars	52,302	48.6
Futures	9,900	9.2

SOURCE: Cummins, Phillips and Smith, "Corporate Hedging in the Insurance Industry: The Use of Financial Derivatives by U.S. Insurers," Table 2, Wharton School Working Paper 96-26-B, 1996.

It is easy to see how exchange markets and OTC markets might regard themselves as adversaries, given the degree to which the markets compete for risk management business. But these markets not only compete, they complement one another. The evolution of OTC dealer activities helps to explain why this is so.

- In the beginning, all dealers acted purely as brokers, matching counterparties with offsetting requirements on notional amounts, currencies, type of interest

to be paid, frequency of payments, and maturity. As a broker, the financial institution matching the counterparties earned a fee but assumed neither credit nor market risk; it did not assume positions in its own right.

- Soon, to better serve their customers, financial institutions began to intermediate customers' requirements. That is, they began to act as dealers, taking on positions of their own. Yet all transactions were promptly matched on all details of the trade. In this case, the dealer is in the middle of the two perfectly matched transactions and is exposed to credit risk only.

- In the third stage of development, dealers began to warehouse derivative transactions. That is, trades would be accepted even if a matched opposing transaction could not be promptly consummated. By warehousing, dealers were accepting greater credit and market risks. A swap transaction would be typically hedged with a cash security or a futures position until a matched transaction could be found to replace the temporary hedge. By acting as warehousers of swaps, dealers began to play a role similar to that of a de facto clearinghouse, which carried over to the next stage of development.

- Currently, dealers have moved from the warehousing approach to a portfolio approach, in which the dealer takes the transaction into its book or portfolio and manages the *net* risk of its overall position. Again, as in the earlier evolutionary stages, the desire on the part of financial institutions was to better serve their customer base. Under the portfolio approach, the focus of risk management for dealers has changed from individual transactions to portfolio exposures. The risks in the portfolio are decomposed into the component risk factors and these are managed separately, oftentimes using futures exchanges to hedge the net interest rate, foreign exchange, and commodity price risks. As Hannah Sorcher, a vice president of Citibank, states:

> "Current market practice for managing a derivatives position is for a dealer to hedge on a portfolio basis. This is done by using a variety of liquid instruments, such as government notes and futures, to manage the net residual risk that results after breaking all transactions into their component cash flows and netting these positions." (Quoted in "Coming Clean," Treasury & Risk Management, July-August 1995.)

Trading certain futures contracts has become an integral part of OTC dealer activities due to current risk management practices in the OTC derivatives market. Such trading satisfies the risk management needs of dealers, and, at the same time, provides order flow to the organized exchanges. A look at bank participation in the markets for exchange-traded interest rate futures shows that their participation is quite extensive (see Table 5). In part, this reflects banks' use of these instruments to hedge their OTC derivatives positions.

Table 5.

Bank Positions in Selected Exchange-Traded Financial Futures Contracts in the U.S. * (percent of total open interest)

		Bank Positions	
Chicago Board of Trade	**Total Open Interest**	**Long Futures**	**Short Futures**
30-Day Fed Fund futures	19,318	7,115 (36.8%)	4,278 (22.1%)
2-Year Treasury Note futures	44,510	2,004 (4.5%)	4,155 (9.3%)
5-Year Treasury Note futures	296,685	15,376 (5.2%)	36,243 (12.2%)
Chicago Mercantile Exchange			
1-Month Eurodollar futures	38,419	14,547 (37.9%)	12,416 (32.3%)
3-Month Eurodollar futures	3,017,136	778,402 (25.8%)	789,099 (26.2%)

* Data are as of August 4, 1998.

SOURCE: CFTC Bank Participation Report.

Simply put, the astounding growth of OTC derivatives markets would not have been possible without the existence of liquid exchange-traded futures and options markets. As a Federal Reserve Bank of New York study observes:

> "The growth of OTC derivatives has also helped boost turnover in certain exchange-traded derivatives. The liquidity of exchange-traded derivatives generally makes them convenient hedging tools for OTC derivatives dealers. In particular, the strong growth of Eurodollar futures and other interest rate futures may be traced to their use by swap dealers for hedging temporary positions in interest rate swaps." ("The Recent Growth of Financial Derivative Markets," Eli M. Romolona, Federal Reserve Bank of New York Quarterly Review, Winter 1992-1993.)

The complementarity between certain exchange-traded markets and OTC markets was underscored in the April 1995 survey of OTC markets by 26 central banks under the auspices of the BIS. Reviewing some of the results of the survey, a Federal Reserve Bank of New York study notes:

> "The survey suggests that the over-the-counter derivatives markets and the exchange-traded futures markets might not be entirely in competition. The products of the two markets are also complementary to the extent that over-the-counter derivatives activity generates hedging demand on futures markets. The flexibility of over-the-counter contracts allows dealers to structure a contract's cash flows and maturities to meet the specific trading or hedging demands of a customer at relatively low cost, thus generating the trading exposures to price risk on a scale that would not otherwise occur. This larger trading volume in the over-the-counter markets thus creates demand for standardized and liquid exchange-traded derivatives as dealers

> hedge their net exposures from meeting customer demand in the over-the-counter markets." ("Price Risk Intermediation in the Over-the-Counter Derivatives Markets: Interpretation of a Global Survey," John Kambhu, Frank Keane, and Catherine Benadon, Federal Reserve Bank of New York Economic Policy Review, April 1996.)

The relationship between exchange-traded markets and OTC markets is perhaps best characterized by economists for the International Monetary Fund (IMF) and the European Investment Bank (EIB) in their prize-winning essay:

> "Although the OTC markets and the exchanges are competing for derivative business, the OTC markets are dependent on the exchanges for the hedging of their residual positions. In this sense, the exchanges function as markets of last resort. In the terminology of the payments systems, the contracts traded on the futures exchanges are the 'currency' of the derivative markets: they are always acceptable and always liquid." (David Folkerts-Landau (IMF) and Alfred Steinherr (EIB), "The Wild Beast of Derivatives: To Be Chained Up, Fenced In or Tamed?," The Amex Bank Review Prize Essays, Oxford University Press, 1994.)

The above stresses the complementarity of the OTC swaps market and certain exchange-traded futures markets in terms of hedging risks. Exchange-traded markets serve OTC swap markets in other ways as well. For example, short-dated swaps (swaps of less than two years in maturity) are usually priced off a futures strip, or a sequence of futures contracts. According to The Swaps Handbook, the most important group of futures for pricing short-dated swaps are Eurodollar futures traded on the Chicago Mercantile Exchange (CME). (The Swaps Handbook: Swaps and Related Risk Management Instruments, Kenneth R. Kapner and John F. Marshall, New York Institute of Finance, 1990.)

III. Exchange and OTC Product Convergence

The textbook view of exchange and OTC-traded products is that exchange-traded contracts have terms that are highly standardized and OTC products have terms that are highly individualistic and customized. But trends begun in the 1980s for OTC products and 1990s for exchange products indicate OTC products are now predominantly "plain vanilla" (exchange-like) while new exchange products are becoming increasingly customized (OTC-like). These convergent trends show that derivatives product design, like markets in general, is neither universal nor timeless but is subject to a continuing metamorphosis. The following examples illustrate the extent of customization that has been or is being designed into exchange products:

- **"Flex" equity and interest rate options:** Flexible options on equity indices were introduced on the Chicago Board Options Exchange (CBOE) in 1993. The flex concept was extended to interest rate options by the CBOT in 1994. The flex concept has proven incredibly successful and is being copied at

exchanges around the world. With CBOT flex options, a customer can specify the strike price, the expiration date, exercise style (American or European), and amount in multiples of $100,000 in U.S. Treasury securities. The customized elements of flex options, therefore, closely resemble some of the custom design elements of OTC option products. Two advantages of exchange-traded flex options are: (a) greater price transparency and (b) performance guarantees by the exchange-clearing corporation. Thus, flex options combine the benefits of customized OTC options with the financial guarantee and price transparency of exchange-traded products.

- **"Flex" currency options:** The flex concept was extended to listed currency options by the Philadelphia Stock Exchange (PHLX), which pioneered listed currency options in 1982. Late in 1994, the PHLX introduced the "United Currency Options Market," which allows investors to customize currency option contracts to meet their specific needs in a regulated exchange environment where trades are guaranteed by the Options Clearing Corporation.

- **Treasury Yield Curve Spreads.** The CBOT developed Yield Curve Spread futures and options, which create exchange markets for six yield curve spreads, with the spreads reflecting differences in yield between the most recently issued (on-the-run) cash Treasury securities. On-the-run yield curve trading is commonplace in the OTC market.

- **"Rolling Spot" and exchange forward currency contracts:** Introduced by the CME and copied at several overseas exchanges, these guaranteed contracts are designed to replicate OTC foreign exchange cash and forward transactions. The CME rolling spot contracts, for example, allow firms to replicate spot transactions but without the automatic settlement after two days (as is customary in the cash market) and without the exchange of gross amounts. (Rolling spot contracts are not actively traded at the CME.)

- **LiborFinancedBonds ("LFB"):** LIFFE (a London-based derivatives exchange) is expected to launch, on October 15, 1998, a futures contract that is designed to replicate the interest rate and price sensitivity of an interest rate swap. The contract, called LFB futures, is a hybrid design that adopts some of the conventions of traditional coupon-based futures contracts and interest rate swaps. The LFB concept is an attempt to capitalize on the "commoditization" of the vanilla swap market.

- **Exchange-traded vanilla swaps and forward rate agreements (FRAs):** In the mid-1990s, vanilla swap and FRA products were listed by OM (a Swedish derivatives exchange) and swap-like commodity and index spreads were listed by BM&F (a Brazilian derivatives exchange). Because of the small size

of the Swedish swap and FRA markets, the OM products have attracted little attention. The BM&F swap-like spreads have experienced greater success. Recently, the CME submitted for CFTC approval a vanilla FRA product whose terms are not completely specified in the contract market rules but rather remain flexibly open to determination.

As the above examples illustrate, the foray by exchanges into creating products that were thought to be OTC turf was begun by U.S. exchanges, with European and other foreign exchanges participating later. The objective and motivation for the moves are simple and compelling: to create products that would enable exchanges to compete more effectively with the growing presence of plain vanilla OTC products. Plain vanilla OTC products are standardized according to their contracting terms, product terms and definitions, and deal matching and confirmation practices. Although public data are not available to indicate the extent to which plain vanilla products are in use, most informal measures indicate that from 75% to 80% of all OTC derivatives traded are plain vanilla. The evolution of plain vanilla originated from a standardization movement that began in the mid-1980s and was lead by ISDA, an association that was organized by the major OTC derivatives dealers. ISDA's primary responsibilities are to set standards for market practices and address the legal and public policy issues that affect the OTC derivatives market. To a large degree, these standard-setting and legal advisory roles resemble some of the self-regulatory roles of exchanges and their rulebooks.

The ISDA standards that contributed most to the evolution of vanilla products were standard master agreements, collateral (margin) agreements, product definitions, and trade confirmations. According to a 1998 BIS study:

> "Dealers in all G-10 countries use master agreements to establish the terms and conditions of OTC derivatives transactions, both with other dealers and with end-users...The master agreements used by dealers are almost always standard form agreements. The most widely used are those published by ISDA." (OTC Derivatives: Settlement Procedures and Counterparty Risk Management, BIS, September 1998.)

The evolution of exchange-like plain vanilla OTC products began with swaps, FRAs, and interest rate options. As ISDA standards continue to evolve, the plain vanilla concept likely will spread to OTC commodity and credit index swaps and options in the near future. In addition to the development of plain vanilla products, a number of other non-customized products, such as those described below, have been launched further illustrating the far-reaching extent to which the OTC dealer community is embracing the non-customized product design concept.

- **Treasury Basis Products:** A Treasury basis product involving the simultaneous pricing and execution of cash Treasury securities and related Treasury futures was launched on CBB (Chicago Board Brokerage) on September 18, 1998 (see summary discussion below). Basis trading has been occurring in a less formal fashion for a long time in the dealer market

and U.S. futures exchanges through the EFP (Exchange for Physical) mechanism. EFPs are the only type of futures transaction allowed to take place outside of exchange facilities and are permitted by specific exchange and CFTC rules. Basis trading facilities have been in operation in the dealer market for some time through interdealer brokers (IDBs). IDBs provide basis quotes on screens and by telephone but must execute the two legs of the trade separately. The CBB Treasury Basis product is expected to bring significant cost and pricing efficiencies to the Treasury basis market.

- **Foreign Exchange Difference Settled ("FXDS") contracts:** In hopes of addressing market concerns with foreign exchange settlement risk, credit risk, and liquidity, the Federal Reserve Bank of New York-sponsored Foreign Exchange Committee (FEC), in August 1998, recommended introducing nondeliverable foreign exchange transactions involving key currencies and spot-value transactions: FXDS (for Foreign Exchange, Difference Settled). Also referred to as "contracts for differences" (CFDs), FXDS contracts are similar to one-day FRAs, the former replacing deliverable transactions to manage foreign exchange risk and the latter replacing deposit markets to manage interest rate risk. Several months earlier, nondeliverable forward transactions were introduced involving emerging market currencies and longer-dated maturities. Meanwhile, continued development of the CFD version of these contracts is being pursued by a group of London dealer banks under the auspices of EBS (Electronic Broking Service).

- **Standardized spot and forward repos:** Standardized spot and forward-dated repos are being considered as part of a proposal by the Government Securities Clearing Corporation (GSCC) to launch a repo service called GCF Repo Service (see below). GCF forward-dated repos are expected to have standardized features typically found in exchange-traded contracts. Their similarity to futures has raised concerns that have led CFTC staff to initiate an inquiry to ascertain whether such repos are futures for purposes of the Commodity Exchange Act.

- **Repo swaps:** Delta Clearing Corporation is proposing to trade and clear standardized swaps on repos through a service called Repurchase Agreement Instrument Transactions (RAITs). RAITs are essentially swap agreements in which one party pays floating-rate interest and receives fixed-rate interest, and the other party receives fixed-rate interest and pays floating-rate interest. The floating rate will be determined by the daily weighted average interest rate paid on overnight Treasury security repos. The fixed rate and maturity would be determined by the counterparties. Similar to GSCC's proposal (above), CFTC staff has initiated an inquiry to ascertain whether RAITs fall within the ambit of CFTC futures regulation.

IV. Convergence In Trading Market Structures

Exchanges, dealers, and brokers are intermediaries that provide the same basic trade execution service of transforming orders into trades. According to standard paradigms of trading market microstructure, three characteristic features of intermediary markets include: (1) a communication system for assimilating and displaying orders, (2) an execution system for transforming orders into executed trades, and (3) rules that govern the operations of the two systems. (See, for example, Yakov Amihud and Haim Mendelson, Evaluation of Alternative Execution Procedures In Futures Markets, CBOT, 1998.) The microstructures of conventional exchange and dealer intermediary markets are well known. Exchanges assimilate multiple orders for collective negotiation and execution by competing market-makers in centralized auctions. Dealers and brokers assimilate individual orders for singular negotiation and execution in decentralized telephone markets.

Technological innovation, in particular, the adoption of electronic trading systems for both exchange and certain OTC markets is perhaps the most dramatic evidence of the convergence of trading market structures. The adoption by exchanges of electronic trading systems modernizes the conventional telephone and manual process of placing, negotiating, and executing orders by adopting something akin to "point and click" technology. However, the adoption by OTC dealer markets of the same "point and click" technology does far more; it completely transforms the OTC dealer trade execution structure. No longer will these dealer markets assimilate, negotiate, and execute orders singularly. No longer will these dealer markets be decentralized telephone networks. By adopting the "point and click" technology of electronic trading, dealer markets become very exchange-like markets. The following examples illustrate the parade of technological innovations in both exchange and OTC dealer trading markets that underscore their continuing structural convergence.

- **Global Electronic Exchange Terminal Networks:** Because of the growing acceptance of electronic trading in exchange markets, electronic trading volumes are now reaching a critical mass. Today, electronic trading volume in futures and options on futures accounts for about 25% to 30% of total volume. Although this volume is mainly executed on overseas exchanges, the global dimension of exchange markets is causing the impact of electronic trading outside of the U.S. to impact U.S. exchange markets as well. The result in U.S. exchange markets has been to introduce concurrent electronic and conventional pit trading and create global technology alliances. The full scope of the current wave of electronic linkages is not known, as Richard Grasso, Chairman and CEO of the New York Stock Exchange, stated at a recent technology conference:

> "It's important to recognize that we are still in a very early formative state of worldwide linkage of exchanges. Whether that linkage takes the form of

formal partnerships or of intermediaries that are truly global in their business bases, those market centers that traditionally provided vertical services to national markets must redefine themselves." (The Impact of New Technology on the Future of Exchanges, Global 24 Teleconference, July 8, 1998; as reported by Bloomberg, 8/5/98.)

Based on some of the new alliances being considered (CBOT / Eurex, CME / MATIF (the French futures exchange), NASDAQ / Frankfurt Stock Exchange, London and Frankfurt Stock Exchanges), their scope is likely to be far greater than the more restricted exchange alliances of the 1980s. The new alliances appear to be designed to create global networks of exchange terminals that will provide a trading market structure that will be as geographically disperse as OTC telephone platforms, covering broad classes of products and, perhaps, providing trade access beyond exchange members.

- **Electronic OTC trading platforms:** Although full electronic trading is not yet a reality in all OTC derivatives markets, the systems summarized below indicate that the launch of full electronic OTC trading is just over the horizon.

  - PositFRA (Portfolio System for Institutional Trading) is an electronic crossing system for FRAs. It was designed by BARRA International and the interdealer broker Prebon Yamane in 1997. PositFRA is used by dealers to execute FRAs in conjunction with their swap resets. PositFRA posts matrices of mid-market one-, three- and six-month FRA yields. Dealers enter FRA orders into the matrices anonymously. PositFRA then matches the inputted positions via a crossing algorithm, which forces the notional amount of buys and sells to be equal. Matched positions are sent to the dealers' backoffice. Dealers are obliged to enter into the matched positions.

  - Full electronic trading for FRAs and FX forwards is expected to be launched by EBS before year-end 1998. The EBS platform was introduced as an electronic trading system for FX spot transactions in 1993. EBS was competing with Reuters Dealing 2000-2 (launched in 1992) and MINEX (launched in early 1993). EBS merged with MINEX in 1996 giving the FX market a near-standard trading platform. EBS is expected to expand into derivatives, i.e., FX forwards and FRAs, which are the OTC market equivalent of short-term interest rate futures, later this year. These FRAs are designed to match many of the terms of the CME's popular Eurodollar futures contract. Further expansion of the EBS product base into CFDs and swaps appears likely in the near future.

  - The Government Securities Clearing Corporation (GSCC) is proposing to implement the GCF Repo service, which will allow dealer members of

GSCC to trade electronically general collateral spot and forward-dated repurchase agreements. In addition to facilitating electronic trading of repo agreements, GCF repos would receive the GSCC's settlement guarantee.

- Delta Clearing Corporation is planning to electronically trade repo swaps called RAITs (see above).

- **Enhancing conventional OTC and exchange order flows and trade dissemination:** In addition to adopting electronic trading mechanisms, both exchanges and dealers are using technology to enhance their conventional approaches to order assimilation, negotiation, and execution.

  - In recent years, most major open-outcry exchanges (CBOT, LIFFE, CME, NYMEX) have introduced electronic order routing systems to supplement their conventional telephone and manual-based order-entry mechanisms.

  - In 1997, FRA and swap dealers began using S.W.I.F.T.'s Accord to supplement their conventional telephone and manual-based order negotiation and confirmation processes. The Accord system matches and confirms negotiated orders and manages ex-trade date cash flows (i.e., FRA settlements, swap settlements and resets).

  - Vendors have made swap prices increasingly transparent. Vendors now consider swap and other derivatives data to have fundamental value in the pricing of many cash instruments and now include these data on their screens. Telerate, for example, now includes real time swap rates and spreads on its U.S. Treasury security pages. Bloomberg recently redesigned its listing of derivatives data to be fully integrated with its price pages for corporate, U.S. Treasury, and money market instruments. Derivatives Strategy Technology says of the recent Bloomberg upgrade: "In the last three or four years, the company's derivatives service has come of age. Its data and analytics service incorporates derivatives functionality for all types of underlying securities. This functionality is not a stand-alone module, but is fully integrated with all other security pricing and analytics, news, and messaging." ("Test Drive: Bloomberg's Secret", May 1997). In 1997, GovPX and Garvin Guybutler initiated SwapPX, a service that provides real-time tick-by-tick movement on a range of swaps, options, and FRAs. This year ISDA, in conjunction with Reuters and Intercapital Brokers, inaugurated a screen service providing mid-market swap and swaption rates in the major currencies and swap spreads for U.S. dollar instruments to users and dealers to "establish authoritative values against which exercised swap options can be settled, as well as to serve other valuation needs," according to ISDA. By enhancing the price transparency of the OTC derivative markets, both of these services erode somewhat the traditional transparency advantage of the exchange-traded

markets.

- **Voice brokers:** Voice brokers (also known as interdealer brokers (IDBs), brokers' brokers and blind brokers) have been intermediating orders between dealers and institutional customers since the 1920s. Generally, IDBs broker orders using private telephone and screen contacts with their customers. IDB screens display the real-time bids and offers of their customers. IDBs are key centralized players in government securities and foreign exchange markets. Marcia Stigum labeled them "unlicensed exchanges" (Marcia Stigum, The Money Market, 3d ed., 1990.). Indeed, the Securities and Exchange Commission (SEC), in its concept release on alternative trading mechanisms, summarizes their evolution from being bilateral intermediaries to centralized exchange-like intermediaries.

> "[IDBs] centralize trading interest and provide a mechanism for agreeing to the terms of a trade in much the same way as registered exchanges and alternative markets. This is a significant change from the way [IDBs] operated just 30 years ago, when they disseminated last sale information to customers individually, rather than centrally, and operated under less formalized procedures." (Securities Exchange Act Release No. 38672, 62 Federal Register 30485, May 23, 1997.)

In addition to their heavy use in government securities and foreign exchange markets, brokers are used quite extensively by dealers in the OTC derivatives market, particularly for plain vanilla transactions. According to a 1998 BIS study, "most dealers use brokers for around 50% (and in some cases 75%) of their single-currency interest rate swaps and FRAs." (OTC Derivatives: Settlement Procedures and Counterparty Risk Management, BIS, September 1998.)

- **A voice-brokered "exchange":** One of the strongest examples of trading market structural convergence is the recent approval by the CFTC of the Cantor Financial Futures Exchange (CFFE) to trade Treasury futures that are clones of CBOT contracts. The approval presages a sea change in the way in which U.S. futures exchanges have heretofore conducted trading operations. For the most part, U.S. exchanges use public open-outcry trading methods, where prices are determined competitively in an open marketplace. The trading mechanism of the CFFE, on the other hand, is modeled after the trading mechanism used by IDBs in the OTC cash Treasury securities market (see above), which relies on private telephone-and-screen contact between traders and brokers to execute trades. While executing orders, the two initial executing traders can work-up their orders with their broker and while doing so lock out other traders wanting to execute orders. In essence, the CFFE trade execution mechanism codifies in its rules discrete market freezes during which only two executing traders compete. According to a recent study that focussed on the economics of CFFE's operations, its trading mechanism violates the common standards of an open and competitive marketplace, and is, essentially, a block trading facility. (Yakov

Amihud and Haim Mendelson, Evaluation of Alternative Execution Procedures in Futures Markets, CBOT, 1998.)

- **Standardizing OTC trading practices:** The evolution of uniform trading rules and policies among IDBs (see above) and the recent development of voluntary codes of conduct or statements of "best practices" for OTC market participants further emphasizes an increasing standardization of OTC derivatives trading mechanisms. (See, for example, Wholesale Transactions Code of Conduct, Federal Reserve Bank of New York, 1995; London Code of Conduct, Bank of England, 1995.)

- **Exchange basis-trading facilities:** As discussed above, basis-trading facilities have existed in dealer markets in the U.S. for some time. Exchanges are now entering the market by providing basis-trading platforms.

  - LIFFE, in 1995, launched its Basis Trading Facility (BTF), which allows the simultaneous purchase or sale of a bond in the cash market with an offsetting purchase or sale in the futures market. The BTF allows traders to transact large orders away from the open-outcry trading pit. According to LIFFE director Philip Bruce:

    > "It is not a coincidence that [BTF] is being launched at the same time as Flex [at LIFFE]. It is bringing the exchange closer to the cash and OTC markets." ("Forward to Basis," Emma Davey and Neil Wilson, Futures and Options World, July 1995.)

  - Basis trading facilities exist at other exchanges, notably Eurex Deutschland (formerly DTB), an electronic German futures exchange.

  - Basis trading was launched September 18, 1998, on the Chicago Board Brokerage (CBB)/Clearing Corporation for Options and Securities (CCOS) platform. CBB is a wholly owned CBOT subsidiary that will offer electronic trading for cash U.S. government securities and related products, including basis trades involving cash securities and futures. CCOS, a subsidiary of the Board of Trade Clearing Corporation, is a SEC-regulated clearing organization that will clear, settle, and guarantee all transactions on CBB.

V. Convergence in Clearing and Settlement Mechanisms

The increasing standardization in OTC derivative markets evident today bears a striking resemblance to the emergence of exchange trading of futures contracts at the CBOT in the middle 1800s and the parallel emergence of exchange clearinghouses. The motivations for both are largely the same, namely, enhancing trading efficiency and concerns regarding potential credit or performance risks and costs.

The CBOT was founded in 1848 by merchants whose purpose was, in part, to provide a place where buyers and sellers of grain could meet to exchange commodities. During the CBOT's early years, forward contracts were used. But, as later developed, trading in the nonstandardized forward contracts revealed certain drawbacks, one of which was that merchants often did not honor or fulfill their forward commitments. Then, in 1865, the CBOT formalized grain trading by developing standardized agreements called futures contracts. That same year, a margining system was initiated to ameliorate the problem of buyers and sellers not fulfilling their contracts.

The clearing and settlement concerns in today's OTC markets are similar to those faced by the pioneering inventors of exchange clearinghouses. As OTC market structures and products converge to become more exchange-like, OTC financial safeguards also are becoming more exchange clearinghouse-like. Much of this activity is motivated by credit risk and cost concerns in the OTC markets. The importance of credit risk has been noted in the past. The 1993 House Banking Committee's report on derivatives transactions states that of all the risks involved in transacting a derivatives contract (i.e., credit, market, settlement, operating, liquidity, legal, interconnection, and systemic risks), the most important may be credit risk. (Financial Derivatives, House Banking Committee Minority Staff, November 1993.) Former CFTC Chairman Philip McBride Johnson describes the credit sensitivity issues as follows:

> "To be accepted in [the OTC] world, a counterparty must satisfy high thresholds of financial strength, commercial reputation and sophistication. While these attributes, as we are reminded frequently, do not guarantee against disastrous losses from time to time, they are nevertheless the pedigree required for admittance into the exclusive OTC club. The general public, and even most of the corporate world, will never be welcome there." (Risk Magazine, July 1998.)

A dealer's credit rating is a measure of the level and quality of a dealer's capital and financial protection and it greatly influences a dealer's capacity to transact in OTC products. A decline in dealer credit quality during the early 1990s threatened the capacity of their derivatives business. In search of a solution, some dealers created credit-enhanced subsidiaries called derivative product companies (DPCs). According to Moody's, there are currently 21 DPCs in operation sponsored by 18 derivatives dealers (including Merrill Lynch, Goldman-Sachs, Morgan Stanley, Lehman Brothers, Salomon Brothers, Credit Lyonnais, Sumitomo, Westpac, Paribas, and Tokai).

The textbook view of the financial safeguards used for OTC derivatives is that they are not subject to netting requirements, they are not collateralized and they are not regularly marked-to-market. However, things are changing. Recent trends in the marketplace indicate:

- **Clearinghouse-like payment netting continues to grow.** According to the most recent survey by the Central Payment and Settlement System Steering

Group on Settlement Risk in Foreign Exchange Transactions (the Steering Group), the use of bilateral netting arrangements for settlement payments is now being used by more than three-fourths of the major global banks (see Table 6). Multilateral netting is expected to grow significantly after the launch in the year 2000 of CLS (standing for Continuous Linked Settlement) Bank. CLS Bank is a clearing and settlement bank being created by a group of the largest OTC dealers. According to a recent report by the Steering Group,

Table 6. Banks' Use of Bilateral Netting In Global Settlements

Percent of Banks ...	1996 Survey	1997 Survey
with no netting arrangements	33%	23%
with some netting arrangements	67%	77%
Dollar value of bank settlement flows subject to netting	$227 billion	$344 billion

SOURCE: Reducing Foreign Exchange Settlement Risk: A Progress Report, Committee on Payment and Settlement Systems of the G-10 Central Banks, July 1998.

CLS Bank will act as a settlement intermediary between the two participating counterparties. In addition to accepting individual transactions, CLS Bank will also accept bilateral and multilateral net positions from CLS Services (formerly ECHO and Multinet, two early FX clearinghouse initiatives).

The importance of having netting agreements is expanding beyond arrangements with traditional counterparties. In London, new capital rules may require that firms must have in place proper netting agreements with all counterparties of derivative transactions, including derivative transactions with exchanges and clearinghouses.

- **The use of collateral and mark-to-market continues to grow.** OTC market participants increasingly collateralize transactions and mark-to-market open positions. Collateralized and margined bilateral contracts are nowadays commonplace. As a 1998 BIS study observes:

> "Collateralisation of credit exposures in the OTC derivatives market has increased rapidly in recent years. Most dealers said that they now collateralise exposures arising from OTC derivatives to some degree ... Almost all expect to increase the use of collateral in the future." (OTC Derivatives: Settlement Procedures and Counterparty Risk Management, BIS, September 1998.)

To tap into this apparent market opportunity, the CBOT, CME, the Spanish futures exchange, MEFF RF, and the two Euromarket clearing organizations, Cedel Bank, through its Global Credit Support Services (GCSS) subsidiary,

and Euroclear have each experimented with offering OTC market participants collateral management and valuation services. To date, only GCSS and Euroclear have been successful in offering these services for swaps.

- **OTC dealer markets are increasingly turning to the exchange-clearinghouse concept to manage risk.** Three projects on the drawing board illustrate the growing interest in OTC dealer markets to adopt the exchange-clearinghouses concept.

  - **LCH SwapClear:** As mentioned above, OM currently clears standardized exchange-traded swaps, with little success, and BM&F clears various swap-like index and commodity spreads. The most ambitious effort is the recent proposal by the London Clearing House (the clearinghouse for London's futures exchanges) to create a swap clearinghouse, SwapClear, for traditional OTC vanilla interest rate swaps and FRAs. The SwapClear concept will not employ the services of an exchange nor a standardized contract (although the "acceptable product parameters" do serve to further "vanilla-ize" conventional vanilla OTC products).

  - **Delta and GSCC Repos:** As mentioned above, Delta Clearing Corporation is proposing to clear repo swaps called RAITs, and GSCC is proposing to clear repo forwards.

VI. Conclusion

As the actions of exchanges and OTC market participants attest, financial market structures are not immutable. The growing convergence between exchange and OTC markets has blurred the distinctions between their roles. The increase in the price transparency of OTC financial markets, for instance, has significant implications for regulatory treatment of exchange markets. One of the bases for the heavy regulation of exchange markets is that they perform a price-discovery or price-basing function. However, exchange markets do not uniquely discover prices, as Federal Reserve Chairman Alan Greenspan points out:

> "We need to think carefully about the characteristics of exchange trading per se that differentiate such markets from off-exchange markets. One argument is that the exchange markets perform a price-basing or price-discovery function that off-exchange markets do not. This argument is probably valid for certain exchange-traded agricultural contracts. However, I am not aware that any significant volume of off-exchange transactions is priced solely on the basis of exchange-traded financial contracts. In the case of interest rate and exchange rate contracts, deep and liquid cash markets provide an alternative source of information that market participants find quite adequate for price-discovery purposes." (Remarks at the Financial Markets Conference of the Federal Reserve Bank of Atlanta, Coral Gables, Florida, February 21, 1997. See also Myron Kwast, "An Overview

> of Financial Futures and Options in the U.S. Economy," in Financial Futures and Options in the U.S. Economy, a study by the staff of the Board of Governors of the Federal Reserve System, 1986, stating that price discovery and price basing are not major roles for financial futures in light of highly developed and liquid off-exchange markets.)

The economists for the IMF and EIB in their essay estimate that the overwhelming majority (75%) of OTC contracts are plain vanilla and little different from exchange-traded products. (See David Folkerts-Landau and Alfred Steinherr, "The Wild Beast of Derivatives: To Be Chained Up, Fenced In or Tamed?," The Amex Bank Review Prize Essays, Oxford University Press, 1994.) A lead editorial in the Financial Times (of London) points out that governments:

> "have good reason to look at the case for a more level playing field between OTC and exchange-traded derivatives, not least because financial stability is an important public good. That is why increasing the transparency of the derivatives markets should be a high priority in any reform of the regulatory framework." ("Regulating Derivatives," Financial Times, December 30, 1994.)

A main focus of public policy should be ensuring that markets can compete fairly, thereby allowing the market to determine the most effective way of meeting risk management needs.