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CAPITAL MARKET INNOVATIONS IN THE FIXED INCOME MARKETS

Remarks by

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I. Introductory Remarks

I appreciate the opportunity to participate in this conference of fixed income analysts. I've been asked to talk about the "track record" of capital market innovations. It certainly is an appropriate topic in light of the conference's theme of enhancing returns. To say the least, the pace of innovation in the cash and derivatives markets over the past 25 years has certainly been remarkable. We have seen the introduction of the first mortgage pass-through securities and currency futures in the early 1970's, then the development of CMO's and swaps in the 1980's, and now indexed notes and amortizing swaps. Financial innovations too numerous to mention have offered expanding opportunities to enhance returns relative to risk.

Hopefully, from today's discussion of past track records, we can glean insights regarding current conditions and potential future directions. In this spirit, I will start by identifying some of the basic elements and catalysts responsible for many of the innovations we have seen over the past 25 years. I'll then turn to some of the current public policy issues and challenges posed by the recent pace of financial innovation. In the course of my remarks, I will identify both public and private sector initiatives to address some of these challenges. Finally, I will offer my views on work that yet needs to be done with the hope that groups such as this one will pursue the issues further.

II. Identifying Elements and Catalysts of Financial Innovation.

Let me start by identifying some of the elements and catalysts of financial innovation over the past 25 years. Clearly, one important element is the level of volatility in

the markets. A myriad of events over the past 25 years has served to increase the volatility and dynamics of financial markets. These events range from the breakdown of fixed-exchange rates in the 1970's, to the lifting of Regulation Q and the changes in the conduct of monetary policy in the late 1970's and early 1980's. More recently, events surrounding European unification have contributed to volatility in exchange and European markets. This increased volatility has been, perhaps, the most important factor underlying financial innovation. Indeed, uncertainty arising from volatility is the source of financial innovation. It creates demand for new techniques, technologies, and instruments to manage both risks and returns.

Advances and refinements in financial theory have also fueled innovation. As already recognized by several Nobel prizes, new constructs in portfolio management and asset pricing theory have helped to identify objectives for the design of many new financial instruments. Advances in valuing both explicit and embedded options have made important contributions. Financial instruments are now, as a matter of course, broken down into their basic risk/return components of forwards and options. Options are further dissected into deltas, gammas, and the rest of fraternity row. To make an analogy, the theoretical principles that facilitate the decomposition of financial instruments can be compared to advances in bio-engineering. Like gene splitting, these theoretical advances have provided a map for investigating the DNA of financial instruments. They enable the targeting of specific risk/return "character traits", both positive and negative. Once the traits are targeted, new instruments can be designed and manufactured to accentuate desired outcomes

and counteract undesired results. Of course, we can only take this analogy so far, since, in the financial markets, there has to be a demand for the other side of the transaction.

Technology is a third major factor underlying financial innovation. Whereas volatility and advances in financial theory have been the most important elements of financial innovation, one could argue that the most important catalyst of financial innovation has been the dramatic advances in data-processing and communication technologies. Only through technological advances have practitioners been able to apply new financial theories and techniques to meet investors' varied demands to manage market risks. Although it may be an overused observation, one must truly marvel at the advances in computer and communications technologies that have been made just in the past five years -- let alone the past twenty five. The use of Monte-Carlo simulation techniques is a prime example. Such simulations were once the province of large mainframes and super-computers, but are now routinely produced on personal computers. These technological advances have not only given financial engineers the tools to design new instruments tailored to specific risk/return needs, but they have also served to dramatically reduce transaction costs and increase market efficiency. For those of you who can't remember, imagine what life would be like in the fixed-income markets without Fax machines or without the analytical capabilities routinely available on many wire service terminals.

Another interesting element underlying financial innovation is the role of government. Ironically, government has had both direct and indirect roles in spurring financial innovation. The most vivid example of government's direct hand is the creation of GNMA, FNMA, and Freddie Mac. Clearly, these government and government sponsored

entities have revolutionized housing finance -- dramatically reducing consumer borrowing costs and giving rise to a myriad of financial instruments designed to meet investor's specific risk/return needs.

Government regulation has also influenced financial innovation. Indeed, some have argued that the reaction of market participants to regulations, tax laws and other formal constraints has been the primary force driving financial innovation. The "regulatory effect" includes not only the direct actions of regulators, but also the efforts by market participants to avoid the restrictiveness of rules and regulations.

Many financial innovations can trace their roots to regulation and can claim the title of true innovations because they survived even after the initial regulatory impetus disappeared. For example, many tie the initial development and expansion of the Eurodollar market to asymmetries in domestic and foreign currency banking regulations in both Europe and the U.S. Innovations in the zero coupon market arose out of a tax loop-hole. Both survived because they identified and met alternative needs of investors. Moreover, this process is dynamic, with innovations building upon innovations. Cash settlement of futures is just one example. The Eurodollar futures contract was the first contract on which the CFTC allowed cash settlement. This leap paved the way for expanding cash settlement to other instruments.

Perhaps the most dramatic example of the effect of regulation is the current trend to risk-based capital requirements for banks and insurance companies. Such requirements have led institutions to focus on holding capital commensurate with the perceived risks they take. Clearly, an argument could be made that much of the innovation

underway in the securitization of assets reflects risk-based capital analysis. These innovations range from securitizing credit card loans to commercial real estate loans.

III. Summary of the Track Record of Financial Innovation

Financial innovation has provided enormous benefits in managing risks and enhancing returns. Overall, the increased efficiencies arising from financial innovation have benefitted consumers, small investors, institutional investors, and financial institutions alike. From enhancing yields to hedging risks, the track record of financial innovation in the fixed income markets is both positive and impressive. The markets themselves confirm this view. Innovation is a source of ever increasing revenue at many larger institutions as they respond to market demands. The plethora of fixed income mutual funds offers impressive evidence of innovation in the fixed income markets.

However, such innovation has also sharply increased the complexity of both financial instruments and financial management. Portfolio values can often be determined only through the use of sophisticated models. This situation has created a black box syndrome that makes it increasingly difficult for all parties involved to assess the risks and returns of many new instruments. Senior management finds the risks far from transparent. This condition, in turn, raises certain public policy issues. As illustrated by the various industry studies conducted over the past two years and the congressional hearings held last October, interest has been especially keen in off-balance-sheet derivative instruments. I hasten to point out, however, that cash instruments such as CMO's or mortgage and Treasury strips can have the same risk profiles and logically should raise similar issues.

The concerns expressed generally revolve around three primary issues. Do the innovators and end users adequately understand and manage the risks involved in these new financial instruments? Is there adequate disclosure and representation of both the actual and potential effects of these instruments on financial results? And, finally, are there adequate protections in place for unsophisticated investors -- both institutions and individuals?

To address these concerns, there have been several initiatives to identify sound management practices. Key among these initiatives is the study released this past summer by the Group of Thirty, or G-30, the Comptroller of the Currency's supervisory guidance and a Supervisory Letter sent by the Federal Reserve Board to examiners in December. The Federal Reserve Supervisory Letter highlighted certain considerations for the examination of the risk management process and internal controls of both cash and derivative trading activities at state member banks and bank holding companies. It summarized more detailed guidance that is provided in a recently completed bank examination manual on capital markets and trading activities. The guidance provided in this letter is broadly consistent with the risk management practices recommended in the G-30 study. In fact, both efforts advance fundamental risk management principles that extend beyond their targets of derivatives and trading activities -- principles that should be just as meaningful to the investment activities of all financial institutions and institutional investors.

Chief among these basic principals are: (1) the active involvement of senior management and the board of directors in overseeing the risk management process; (2) independent management and review of the risk management process; (3) thorough and timely audits to identify control weaknesses; and, (4) risk measurement and management

information systems. Such systems should include marking positions to market, stress testing, appropriate risk limits and overall contingency planning for both adverse market conditions and operational difficulties.

I would note that the role of stress testing and contingency planning in the management of trading and derivatives activities will be given greater emphasis by Federal Reserve examiners. I believe it deserves your increasing attention also. This evolving supervisory approach reflects the regulator's growing use of modern technology and financial theory, building on the foundation of scenario analysis laid by the FFIEC for high risk mortgage securities. Going forward, we expect to place much more emphasis on evaluating banks' assessments of worst case scenarios and on testing the implications of underlying assumptions embedded in internal models.

To understand the source of this concern regarding worse case scenarios and the appropriateness of assumptions, take for example mortgage prepayment assumptions. Recent structural shifts in mortgage prepayment behavior played havoc with many institutions' standard prepayment models last year. If you recall, the slight increase in rates in the first quarter of 1993 had prepayment effects that were opposite of those predicted by most models. Consumers rushed to their mortgage banker to refinance and "lock-in" rates before they went higher rather than delaying the prepayment of mortgages in the face of rising rates. Structural behavior changes, as well as market behavior during stress conditions, emphasize the importance of testing the implications of what happens when generally accepted assumptions underlying many models are no longer operative.

The second area of public policy concern surrounding recent financial innovations is the issue of adequate disclosure, including representation of both the actual and potential effects of derivatives on financial performance. While this issue has received increasing attention with regard to banks' positions in derivative instruments, it is not limited to banking or to derivatives. There appears to be broad agreement that existing disclosures of the risk of derivatives and complex cash instruments needs improvement. And this need extends across a number of industries -- from banking to insurance to pension fund and investment management services. There is less agreement, however, on the appropriate items and standards for such disclosure.

Both qualitative and quantitative disclosures are being discussed and implemented. On the qualitative side, the G-30 recommendations on disclosure represent a good starting point. They call for a discussion of management's attitude toward financial risks, how various instruments are used, and how risks are monitored and controlled. On the quantitative front, measures such as value-at-risk or the results of scenario analyses and stress tests seem, to me, to be entirely appropriate. While it might be argued that such disclosures could be misleading since they represent only a snapshot of an institution's risk profile, they, nonetheless, provide a source for confirming qualitative disclosures. Even then, there is significant room for developing quantitative measures that do not suffer the "snapshot" syndrome. Measures that relate exposures over time such as average monthly or quarterly value-at-risk calculations are obvious examples.

In my mind, the issue is not just one of public disclosure. Sound risk management practices dictate that senior management and directors have adequate

information relating to the firm's risk profile. If such profiles are adequately described both quantitatively and qualitatively and if they truly identify management's risk tolerances, there should be little to fear from public disclosure. Indeed, I suspect that the lack of disclosure may be giving the wrong signals that management is unaware of the risks of some of these complex instruments.

The final public policy issue I would like to address deals with ethics and sales practices in an environment of financial innovation. With the increasing complexity of both cash and derivative instruments, a natural concern is that there may not be adequate protection for unsophisticated investors, both institutions and individuals. This is certainly a concern on Capital Hill. The Federal Reserve's recent supervisory letter takes what I believe is a common sense approach to this matter by reminding banks that one of the soundest business practices around is to "know your customer". While investors are ultimately responsible for their transactions, banks that recommend transactions to unsophisticated parties should ensure that the counterparty has adequate information to evaluate the recommendation. This is simply good business; a customer who is unfavorably surprised will not be a customer for long.

While such advice seems basic, we occasionally hear of dealers selling institutions mortgage derivatives that are so complex that even the dealer cannot adequately explain them. There are also tales of high risk mortgage securities sold to unsophisticated individual investors. While these incidents may be isolated, they tend to reflect badly on financial innovation. At the same time, little attention gets paid to the benefits of many

financial innovations. In this environment, it is important that market participants be somewhat circumspect in analyzing and communicating the risks.

IV. Conclusion

The public policy challenges relating to derivatives and other complex financial market innovations will undoubtedly come under increasing scrutiny in the coming months. For example, the General Accounting Office should soon release its long-awaited study of derivatives. Several congressional committees appear poised to call hearings once that study is released. Representative Leach, the ranking minority member of the House Banking Committee, has already introduced legislation targeted at derivatives. His bill would create a new Federal Derivatives Commission to coordinate the regulation of derivatives activities. Then the scheduled congressional reauthorization of the CFTC this year will likely also shine the public eye on derivatives issues.

At the same time and from a regulatory perspective, the recent pace of financial innovation poses undeniable challenges. Nevertheless, I believe these challenges are manageable without new legislative initiatives. Regulators and the industry can adequately address the relevant concerns. Perhaps it is time to shift some of the focus on derivatives from instrument design to risk management, appropriate capital levels, and adequate communication of risk profiles. Through their use of supervisory initiatives and efforts to implement sound management techniques, the regulatory and financial communities can develop the necessary disclosures and ensure that common sense ethical standards are in place. Achievement of these goals will require efforts by both financial market participants and their regulators.

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