I am very pleased to welcome each of you to this important conference on financial markets, and I am optimistic that we shall all gain some new insights into developments surrounding derivatives and other important financial market issues. This evening, I would like to talk about three items related to risk—education, technology, and cooperation—that I think bear upon the purpose of this conference.

Education and Risk Management

First, let me turn to education. A knowledge of how to measure and manage risk is essential for all those who deal with financial markets, but, in the case of those who deal in the newest, most complex instruments and transactions, such knowledge must be broad and deep. Those investment and commercial firms that are large enough to have their own experts on board can look to their knowledge in determining risk factors. But those firms not big enough to hire in-house experts cannot afford to be without expert help. First, they must decide how they want to manage their risk and then decide whether derivatives and other novel applications will be part of the plan. If they decide to proceed, then such firms must be willing to hire third-party expertise that understands the risks on both the buy side and the sell side. Fortunately, this kind of educated expertise is increasingly available, from consulting firms and the academic world.
With that in mind, I would like to take a few moments to acknowledge that there are some people here from the so-called buy side of the markets. Your presence implies a recognition of the need to educate yourselves about the risks involved in certain instruments and transactions. Ours is a world in which it is almost too easy for sellers to come up with new and seemingly risk-free instruments. For instance, a finance professor I know told me it took him about three minutes to devise an example for his class of a new instrument that would ensure investors of a rate of return twice that of the LIBOR rate—as long as U.S. interest rates were constant, decreasing, or even going up slightly. He pointed out that if he were a salesperson, it would have been easy for him to come up with some persuasive arguments as to why someone should buy his new instrument.

I can describe the situation even more bluntly by paraphrasing a Wall Street salesperson who was quoted in the Wall Street Journal: "I don't plan to make money selling these instruments to smart people," he said. "I plan on making my money selling them to dumb people." My point is that it is critical to be well-versed in the risks associated with any instrument someone tries to sell. The principle of *caveat emptor* has never been more useful, and the buyer must have expertise on hand to purchase wisely. For many, that means pursuing objective information outside of the buyer-seller relationship. More broadly, however, even for those who do have in-house expertise, coming to a conference such as this is an excellent way to become more educated about risk.
On this first day of our Financial Markets conference, we have already had an interesting talk featuring one central banker's struggle to define systemic risk and four excellent papers on topics such as the pricing of default risk in derivatives. For those of you who were not here for these academic presentations, you will find copies of the papers in your conference folders. Even if you are not personally interested in the technical details, members of your staff may find them useful.

From a conceptual perspective, these papers represent the kind of innovative and sophisticated research that is going on today in regard to financial instruments, transactions, and markets. As such, they are a kind of point to the counterpoint of the next two days, in which panels of experts will discuss financial market issues from a more practical perspective. Four important topics will be covered tomorrow and Saturday: the transmission of shocks in global markets, regulation of derivatives (or perhaps I should say whether derivatives should be singled out for special treatment), new and innovative instruments, and, finally, systemic risk. Our focus here will be specifically on how derivatives and financial markets contribute to systemic risk. This topic is one on which I would like to dwell this evening by focusing on the other two issues I mentioned at the beginning of my remarks: technology and cooperation.

Technology and Systemic Risk

The context for any discussion of systemic risk in today's financial markets must begin with an appreciation of their dynamism and the technology that feeds that dynamism. As each of you knows, we are fortunate to live in an era of tremendous financial innovation and in a
country where this innovation finds fertile soil in which to take root. The breadth and depth of our financial markets is unparalleled in the world, and the freedom with which they operate contributes critically to their success in accommodating an ever-changing array of instruments and transactions. Moreover, while it has become almost a cliché to talk about the "global interconnection of markets," this phrase is a valid description of what has actually happened in financial markets.

In the last few years, we have witnessed what appears to many in business to be an acceleration in the pace of change in financial markets. It seems like only a few years ago that swaps offered a new way for many businesses to manage risk, whether in the area of foreign exchange or traditional domestic finance. But the permutations and combinations from the plain-vanilla swap have been most amazing. And even the names of today's new instruments--such as look-back options, inverse floaters, and circus swaps--is truly mind-boggling.

At the same time that we stand in veritable awe of recent technological changes and their impact, another important development that must be acknowledged is our increased awareness of the risks associated with certain market practices. Widely publicized losses in derivatives by both public and private sector organizations have raised new concerns about the public policy implications of what is going on in our financial markets. Added to this concern are the same factors that I just praised--technology and the global interconnection of financial markets. Although new trading technology in and of itself does not necessarily add more risk to the system, the ramifications of an adverse development simply can move faster now. In other
words, 99.999 percent—and I could go on—of the time, everything works well, and technology helps to make possible incredibly swift and sophisticated financial transactions. But there is still that extremely small percent of the time when things do not work well, and technology will be just as fast to transmit the adverse development. Thus, systemic risk has taken on new proportions because of the very developments that make today's financial markets so efficient.

A Spirit of Cooperation

This observation leads me to my third point, namely, what should we do about systemic risk? I will be the first to admit that we in the public policy arena who are most concerned with it have not yet modeled or even defined systemic risk as well as we could. This situation is analogous to monetary policy and the macroeconomic models we use. I hope this is not a news flash to anyone sitting here, but the Fed does not have perfect models to describe the economy. And yet, that does not mean that we can wait to act until we devise the perfect model. Since the Fed and other regulators must work in the real world, rather than in the realm of pure theory, we must try to solve problems in the absence of perfect information.

As I see it, the real issue with systemic risk is not, how do we model it, but rather, what do we do about it? We already know it exists, because we have seen it in action with foreign exchange instruments that are much simpler than today's instruments. For example, the failure of the Herstatt Bank in the 1970s, which led directly to the establishment of the Basle Committee in Switzerland, was based on foreign-exchange trading.
Let us assume—and not naively I hope—that the large investment banks and commercial banks that engage in derivatives trading have fairly sophisticated models to hedge their individual situations to prevent a deal from going sour. The problem for regulators, however, goes beyond whether one deal falls through. Derivatives may help individual firms to manage risk, but, in the aggregate, there is usually still some risk. Put another way: no matter how well models work in the micro-environment, they may not aggregate well to determine the risk at the macro-level—and this risk at the macro- or system level is the essential problem for regulators. To borrow a nautical analogy, not everyone can climb into the lifeboat at the same time.

Additionally, developments that lead to systemic risk often cannot be forecast. In either case, the central bank and others concerned with public policy are drawn into the situation. Thus, we must prepare to deal with a situation that goes beyond existing theories and models. To avoid dealing with such an eventuality in an ad hoc manner, I believe we need to move forward in a spirit of cooperation with the private sector. For example, much of the data that can be used to understand the possibility of systemic risk must come from practitioners who deal in derivatives. Using this data, perhaps we can work cooperatively to develop an understanding of where the pressure points lie for potential problems—albeit not all-encompassing, but something that would at least help us to understand the probable fall-out in particular sectors.

To foster the spirit of cooperation that I am describing requires a shift in attitude. We need to put aside the still widespread view that, because derivatives used in isolation are of low risk, individuals can be unconcerned about the possibility that a new instrument may contribute
to systemic risk. In the end, such a moderation of viewpoints will also help to protect the public from having to rescue the markets in the event of a catastrophe, just as Americans were called upon to finance the clean-up of the savings-and-loan system following its debacle.

Knowing in advance that we will never find the Holy Grail of models, I must remind you of the point with which I began, to wit, education. Regulators look to each of you who works with these instruments to measure your own risk. I can promise that we will continue to try to be prepared for large problems in the markets. But, at the heart of the matter, we are all here to remind each other of our different roles and what we should do to keep the whole financial system healthy. I am impressed with the level of knowledge we have on hand, and I believe one manifestation of the spirit of cooperation I referred to is the fact that we are all gathered here at this conference. Let us hope that we can advance the cause of finding a framework for dealing with the practical effects of systemic risk.

Now, let me close by saying that I look forward to the exchange of ideas and knowledge during the next two days. Such an interchange will certainly help each of us do a better job of ensuring that our financial markets continue to operate as the free-est and best-regulated in the world.