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It is a great pleasure to be here today at the annual SIBOS conference. For 17 years, this conference has brought together representatives from over 700 financial institutions operating in over 85 countries. The meeting contributes importantly to the dialogue on international payment and settlement issues among all our countries. It is widely recognized as the major international operations event for the financial services industry.

For the first time this year, foreign exchange settlement risks will be discussed at the conference in some detail. I have a personal and professional interest in that topic, both as a former commercial banker and in my capacity as president of the Federal Reserve Bank of New York. Financial market participants in New York are acutely aware of payments risk, not only because of the dollar's role in payments worldwide, but also because New York is the last major time zone before one settlement day ends and the next one begins. Problems that begin in Asia and Europe can land on our doorstep. This has become especially worrisome as average daily trading volumes have increased dramatically in recent years, from $1 billion in 1974 to over $1 trillion today.

I am also interested in the topic in my capacity as chairman of the G-10 Committee on Payment and Settlement Systems. That committee is currently in the midst of efforts to define and understand Herstatt risk more clearly, and suggest ways of mitigating its severity, if not eliminating it.
In recent years, the growth of cross-border financial activity and the worldwide inter-relationship of payment and settlement systems have heightened the importance of payment issues to all of us concerned about maintaining the safety and soundness of the global financial system. Today, markets are so inter-connected that payment problems in any market can spread quickly around the world. Such systemic risk is troublesome for central bankers responsible for overseeing the smooth functioning of payments systems worldwide, as well as managers of financial institutions who deal with the daily flow of payments.

Settlement risk in the foreign exchange market, so-called Herstatt risk, is especially troublesome because it goes beyond national borders and affects the financial system globally.

Herstatt risk derives its name from an incident in Germany in 1974 which caused foreign exchange counterparties to the financial institution, Bankhaus Herstatt, to incur substantial losses. Bankhaus Herstatt, having completed its foreign currency transactions in Europe, was closed down at the end of a German business day, but before completing its U.S. dollar transactions. As a result, counterparties due to receive dollars were not paid. In the days following Herstatt's closure, payments that normally flowed through the major international payment systems were significantly disrupted.

Yet as troublesome as the Herstatt incident may have been, it did have a positive consequence. The incident focused awareness on the problem created by settling different legs of the same
transaction in different markets and time zones, thereby leading to unavoidable counterparty settlement risk.

In the twenty years since Herstatt, we have witnessed dramatic changes in the foreign exchange markets. Greater capital flows, the substantial increase in cross-border financial investments, the lifting of capital controls, and growing inter-connectedness of markets have enabled both the volume and the average size of transactions to grow explosively. An average spot transaction in 1974 was $750 thousand; today it's $10 million.

Unfortunately, though, the basic processes for completion of foreign exchange transactions, despite the surge in trading volumes, are essentially the same they were twenty years ago. Most foreign exchange transactions still are settled on a trade-by-trade basis, even though a number of institutions execute several thousand trades per day. The method of gross payments is used in the great majority of all foreign exchange transactions, a two-day settlement period still exists, and there are neither linkages between settlements nor much monitoring of settlement exposures intra-day. Given the huge daily volumes in the foreign exchange market, even small errors in sending payment instructions can be quite costly.

Although back office processes still need improvement, front office technology has been up-graded and expanded in response to the many changes in the foreign exchange market since the 1970s. Improved technology has allowed traders to keep up with the increasingly fast pace of the market while giving them the ability
to deal on a global basis. It is now possible, for example, to
trade across time zones because of the advances in communications
networks that gave traders more sophisticated phone links,
electronic brokering systems and electronic payments networks.
Other innovative front office technologies, such as direct dealer
input, on-line P&L, and an inter-relationship between deal-capture
systems that has allowed more straight-through type processing,
also have facilitated expanded, more global trading.

Advances in technology have made some back office functions
more efficient. Many standard procedures, such as the sending of
payment instructions and SWIFT messages, have been automated and
can be executed with great speed and accuracy. In addition, a
number of firms employ straight through processing, so that once a
trader has entered a deal, confirmation and payment are completely
automated.

Still other important changes have been put in place since
1974 that have improved the settlement process in foreign exchange
transactions. Strong risk controls now exist in CHIPS, in part
because of intensive discussions between the Fed and the New York
Clearing House. The implementation of bilateral and multilateral
caps, as well as collateral requirements, are significant
achievements in helping to reduce settlement risk.

Another market initiative to reduce settlement risk is payment
netting. Given the large volume of transactions in the market
today, legally binding contracts to net payment flows are highly
desirable and beneficial. These contracts limit the number and
size of payments a bank must make, and thereby reduce the amount actually at risk. Unfortunately, while legally binding netting of payments has begun to take hold in the market on a bilateral bank-to-bank basis, it is still not a widespread practice. Many firms do not yet have the technological capability to net, which involves considerable alterations to internal accounting methods. What's more, acquisition or development of this technology is expensive.

Several banks have begun efforts to establish foreign exchange clearing houses that would net on a multilateral basis. While some of those efforts have been under way for many years, no clearing houses are up and running yet. The process of developing clearing houses has been difficult, to say the least. As the participants involved in the process know, the standards set out in the Lamfalussy report issued by the Bank for International Settlements four years ago are quite rigorous. These standards are designed to enhance the likelihood that clearing houses will be sources of strength and not sources of weakness in times of market stress. However, even when actual exposures are reduced, unless multilateral systems are well designed and operated, they can shift and concentrate risks in ways that could aggravate systemic risk by increasing the likelihood that one institution's failure will undermine the condition of others.

The public sector has joined the private sector in making changes to payments systems that will reduce settlement risks. A number of countries are introducing domestic payments arrangements or changing existing systems to enhance the intra-day finality of
payments. These changes alone will not eliminate the settlement risk in foreign exchange, but, in conjunction with other arrangements, they can be part of an overall solution.

Finding that ultimate solution, though, will require a lot more change -- change in technologies, change in operations and change in the mindset of some market participants. Many banks, for example, have decided that the most cost-effective way to deal with payments exposures is to be prepared to withhold payments during periods of stress or when worried about a counterparty. However, this alleged "solution" alone is not acceptable. It is a recipe for market gridlock or, at least, severe liquidity pressures on a weakened counterparty. This pseudo-solution is particularly troubling because the lack of transparency in financial statements caused by off-balance-sheet instruments makes accurate counterparty evaluation extremely difficult. I recommend the Fisher Report, issued by the governors of the G-10 central banks through the BIS, to you for careful consideration on this topic. Such approaches certainly are not happy prospects for central bankers like me who oversee payments systems and serve as lender of last resort to depository institutions.

On the positive side, the New York Foreign Exchange Committee has been working for the last ten months to find a solution to Herstatt risk and open a dialogue with central bankers about it. Just last week, the Committee released a study on the ways banks have viewed settlement risk traditionally. The study also included
recommendations about how private-sector market participants can help themselves reduce this risk.

Let me recap three of the most powerful conclusions of the study.

First, and most importantly, the study found that the duration of settlement risk is much longer than anyone previously thought. The internal procedures of each bank is the largest source of the duration of settlement risk. The study also showed clearly that these internal procedures, can be altered by the banks themselves in order to reduce their settlement exposures.

Second, the study found that netting is a powerful tool for active market makers. Legally binding netting of payments enables market makers to reduce significantly the enormous sums that are at risk on any given day.

Third, for most firms, the current finality rules of the local payments systems are an important factor in determining the extent of settlement risk. In fact, for firms operating with close-to-the-current-best industry practices, settlement risk could be decreased if full intra-day finality prevails. When it does, final payments could, if necessary, be made and reconciled much sooner. This change, in turn, would shorten the duration of settlement risk.

I found the Committee's conclusions quite thought-provoking. They show how much the private sector can do on its own to reduce foreign exchange settlement exposures by implementing many types of procedures that are already in existence. For me, I must admit,
this result was a bit surprising, considering that when the Committee began its project, there was no useful summary of settlement practices in a number of countries, and no uniform definition of settlement risk. The Committee did find that much of the debate in the market about possible changes to global payments systems was not grounded in a clear understanding of the causes of settlement risk, and that many market participants have been quick to focus on solutions without a thorough understanding of the underlying problems.

Traditionally, some market participants have thought of settlement risk as the inevitable result of differences in time zones and operating hours in different payments systems. But, if we think about settlement risk in today's global marketplace, we begin to see that market practices also contribute to settlement risk. For example, the failure of some market participants to take full advantage of overlapping operating hours in Europe and North America contributes to unnecessary settlement risk involving the dollar and European currencies. In this case, settlement risk exists because a bank's exposure extends from the time it makes an irrevocable payment instruction to the time that the payment it receives from its counterparty is final and has been reconciled. This period of exposure is not intra-day, as some banks think; in fact, it may last for several days.

Along the same lines, it is interesting to note that many firms also harbor the belief that they can escape settlement risk by receiving payments in an Asian time zone when transacting from
the U.S. or Europe. But the reality is that most do not. Our survey showed that the majority of internal procedures involve and irrevocable commitment of a dollar payment before actually receiving a yen payment. Even in that case, current market practices can extend actual settlement risk for several days, making the duration of exposure much longer than had been thought previously.

The Committee used its findings to develop over a dozen recommended "Best Practices" to help the industry and individual banks reduce Herstatt risk. The report's recommendations were put forth in order to stimulate individual banks to act and to promote a dialogue on the issues involved. My intention today is not to endorse or reject any specific Committee proposal. I do, however, refer all of them to the banking community for discussion and consideration. Until now, much of the discussion has focused on solutions that seemed to depend totally on the public sector to develop and implement; the Foreign Exchange Committee's recommendations, in contrast, do not. Copies of that report, which I commend to your attention, are available at the Federal Reserve Bank of New York.

Four of the Committee's recommendations merit special attention because they are measures that banks can take on their own. If they are followed, they will be risk-reducing, no matter what external payments systems developments come down the road.

First, the Committee recommends that firms reduce the amount of time they are at risk by improving internal procedures and
negotiating correspondent bank arrangements. Such arrangements
would give firms some flexibility in sending irrevocable payment
instructions, and the ability to reconcile trades either
immediately upon finality or very soon thereafter. Improving
internal procedures and obtaining the best available correspondent
bank services have been shown to have the greatest impact in
reducing settlement exposure.

Second, the Committee urges market participants to implement
legally-sound netting of payments. Currently, few market
participants engage in bilateral netting of payments. The driving
force behind many bilateral netting agreements, such as the
International Foreign Exchange Master Agreement, has been the
bankruptcy close-out provisions required under FAS 105 for the
netting of balance sheet reportables. Many of these bilateral
agreements also allow the firms to comply with the amended Basle
Accord for recognition of netting benefits in the calculation of
capital requirements. But because the back-office operations of
many institutions have not been adapted to actually net payments,
firms continue to settle trades individually. Consequently, they
do not receive the settlement risk-reducing benefits of netting.
I firmly believe that payment netting can markedly reduce the
enormous daily payment flows, and thus is key to reducing foreign
exchange settlement risk.

The Committee's third key recommendation is that senior
managers mandate "ownership" of Herstatt risk within their
organizations, much as many banks today have standard arrangements
for identifying the ownership of credit risk in their derivative transactions. Several firms operating in the derivatives markets transfer the risk to their credit area and then pay staff there for assuming the risk. As a result, the credit area of many firms manages derivatives risk along with others. I believe that it is possible to make similar arrangements for foreign exchange settlement risk. Once a firm can explicitly identify the amount and duration of a settlement exposure, it can be assigned to an appropriate area of the firm for management on an ongoing basis. Such practices are in their early stages of development, but they hold out great hope for giving the right incentives to reduce settlement exposures.

Finally, I want to draw your attention to the Committee's recommendation that firms be prepared to deal with crisis situations. Crises require special sensitivity to the potential ramifications of risk-reducing actions, whether the situation be systemic or counterparty-related. A firm's decision to withhold a settlement payment from a counterparty, for example, could precipitate a domino effect either by creating liquidity problems for that counterparty or in the payment system itself. Indeed, recent experience has demonstrated that market reaction to a perceived crisis may actually be more dangerous than the precipitating event itself.

Because of the magnitude and potential repercussions of major settlement failures in the market, it is important that senior management lead the effort to devise a strategy for dealing with
crisis situations well before the onset of a problem. Senior management involvement in any decision regarding stopping trading with a major counterparty is particularly important.

From my perspective, the work of the Foreign Exchange Committee is a major, industry response to the BIS report, "Central Bank Payment and Settlement Services with Respect to Cross-Border and Multi-Currency Transactions", commonly called the Noel report. That report outlined central banks' thinking on ways to address settlement risks. The Noel report was analytical, designed to advance current understanding of the issues involved in reducing or eliminating Herstatt risk. The report deliberately did not produce recommendations and sought only to evoke industry reactions.

Central banks have been taking the Noel report to heart. Recently, the BIS Payment Committee that I head began some work on what might be considered the second stage of the Noel report. A steering committee of central bank payments experts chaired by Peter Allsopp of the Bank of England has begun a coordinated look at the dimensions and sources of Herstatt risk. Central bank members of that steering group have initiated a series of interviews with financial market participants in countries around the globe. That work is not yet complete, but it represents the central banks' attempt to identify potential vulnerabilities that exist in current arrangements, and to seek methods of dealing with them. At this point, it would be wise for central banks and market participants alike to keep their options open as to the mix of
arrangements that will be necessary to deal effectively with Herstatt risk.

On the whole, I am heartened by the high level of attention being paid by the public and private sectors as we all grapple with foreign exchange settlement risk. Given the enormous resources that both the public and the private sectors have dedicated to developing measures to reduce Herstatt risk, a solution may be closer at hand than previously thought. The public sector has put the issue before the industry with a series of important reports. The private sector, in turn, is responding in a variety of ways, most notably with the New York Foreign Exchange Committee's report.

It is my belief that new ways of looking at Herstatt risk will eventually suggest new answers that will, in turn, prompt changes in the market. It is my hope that the private and public sectors will continue to work together to find a solution to Herstatt risk that is cost effective while at the same time ensuring safe and sound payment systems. Now is the time to attack the problem. Many new payments methodologies around the world are coming on-line, and we have a unique window of opportunity to work together to develop international as well as domestic systems that are satisfactory to market participants, governments and central banks alike.

Thank you very much.

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