

Maintaining Stability in a Changing Financial System:  
Some Lessons Relearned Again?

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It is a pleasure to be in Sydney today to participate in this meeting and to offer my perspectives on some of the recent events in financial markets and their implications for financial stability. Over the past three decades, we have experienced an increased number of financial crises in many countries around the world. These crises have taken place in many different parts of the financial system, including: banking and payments systems, housing finance systems, securities markets, and currency markets. Central banks and other authorities charged with maintaining financial stability have drawn important lessons from each of these crises and have instituted regulatory and policy changes that have helped strengthen the financial system in the wake of these crises. Indeed, forums like this meeting are extremely helpful in providing a venue for discussion of these crises and possible policy responses.

Despite our best efforts, much like a virus responds to the body's immune system defenses, financial crises have continued to return in modified form, requiring ongoing vigilance by policymakers. Moreover, the task of maintaining financial stability has become more difficult over time because of the changing structure of the financial system. As you may know, many countries are in the process of shifting from a bank-based system of financial intermediation to a capital markets-based system. The pace of change has risen as well, with many new financial products and many new players in the financial landscape. In addition, the intermediation process has become increasingly complex, posing difficulties both for market participants and policymakers. And, with the increased global linkages among financial markets, disruptions in one market may spread quickly around the world.

Unfortunately, we have not adapted our regulatory and policy framework at the same speed as financial market developments. Our main regulatory and supervisory policies and our central bank liquidity facilities are best positioned to deal with traditional banking crises, and appear less adequate to deal with crises that increasingly originate in financial markets and outside the banking system.

In my remarks today, I would like to use the recent subprime mortgage crisis to motivate a broader discussion of how we can maintain financial stability in a changing financial system. While the recent crisis has revealed some new and unexpected vulnerabilities in the financial system, it has also highlighted the need to remember some of the lessons we have learned from past crises—as indicated by the title of my speech.

#### Recent Evolution of the Financial System

Let me begin my discussion with some general comments on the sweeping changes we are seeing in financial systems around the world. The key development in this changing framework is the evolution from a bank-based system of financial intermediation to a market-based system. Banks retain an important but increasingly different role in financial intermediation. For the larger banking organizations, activities and earnings are now focused more on loan originations and credit risk management services, and less on holding loans on the balance sheet to generate interest income.

While some of these developments may be further along in the United States, similar trends are evident throughout the world. In this new system, investors can be very far removed from borrowers, relying on a number of agents to ensure the smooth functioning of the system. With the increased linkages among financial systems around

the world, financial instruments and claims pass through many hands and often wind up far from their origins.

Several factors are behind these dramatic changes in the financial framework. One key factor is the enormous growth in the amount of funds managed by large institutional investors such as pension and mutual funds. Equally important are technological innovations in information processing and telecommunications. The significance of these innovations can be seen in the greatly expanded access to timely financial information by investors and institutions, the substantial reduction in the cost of gathering and processing such data, and the unimpeded flow of information and communications around the world.

Accompanying these developments are advances in financial theory, which have made it possible for market participants to develop mathematical models to price a wide variety of new financial instruments. This financial engineering is also allowing banks and others to break up the payment flows on debt obligations and partition them into a wide array of risk tranches, thus allowing firms and investors to actively manage their risk exposures and select the level of risk they are willing to incur.

The rising importance of market-based finance is leading to several significant changes in the banking industry. With lending for their own portfolios declining in importance, banks are expanding their operations in other areas, including trading, market making, investment banking, and risk management products for themselves and others. And while the banking industry is still the largest holder of credit market obligations in the United States, this lending has moved away from large corporate lending and now

includes more credit card and real estate construction lending, and loan origination and securitization activities.

This changing loan focus, in part, reflects the increased availability of information in financial markets and the efficiencies in using these markets. At the same time, the regulatory and supervisory framework is shaping what banks can do. For example, regulation and capital requirements may be making it too costly for banks to hold high-quality assets on the balance sheet and to compete directly in certain market segments.

One important consequence of these changes in financial structure is that we have seen an evolution in the nature and location of financial crises. Key events in recent crises, for instance, have often originated outside of the banking system. In fact, the name most commonly ascribed to recent events has been “market turmoil.” Another characteristic of recent events and crises is that they have spread across countries and, in many cases, through surprising and unexpected linkages. These developments have raised new challenges for policymakers about how the effects of these crises can be contained and whether conventional policy tools will provide the most desirable and effective response. But, they also raise new concerns about moral hazard.

### A Conceptual Framework

Before I talk more specifically about the recent subprime mortgage crisis and its ramifications, it may be helpful to review the key factors that underpin the functioning of the financial system and the need for policy intervention to maintain financial stability. At a very basic level, financial intermediation, whether bank-centered or market-centered, requires overcoming asymmetric information and agency problems. And,

financial intermediation has associated externalities that provide an important role for public policy.

Traditional methods of overcoming problems of asymmetric information include: establishing long-term relationships with borrowers, requiring specific equity or capital levels to be maintained, requiring collateral in support of a loan, imposing restrictions on a borrower's activities and use of loan proceeds, and asking for third-party guarantees of loan contract performance. Fundamentally, the shift of intermediation from banks to markets can be understood in terms of markets gaining access to more information on which to base their funding decisions and having the tools, such as credit scoring, to use this information efficiently.

Agency problems also complicate the intermediation process when the incentives of agents are not aligned well with the principles they represent. In a bank-based system of intermediation, banks serve to internalize many of these agency problems. In the new market-based system of finance, the growing complexity of the intermediation process and the increasing number of players that are involved in intermediated transactions are leaving investors, savers, and borrowers much more dependent on the actions and advice of others, many of whom may have competing objectives and incentives. This misalignment of incentives may play a role in destabilizing parts of the intermediation process and, more generally, the financial system.

Finally, the financial system exhibits important externalities that can lead to a market failure and require public intervention to address or realign the focus of market participants. Moreover, given the interconnected nature of financial markets and payments systems—both on a domestic and an international level—the shocks or

breakdowns in one sector caused by externalities can be readily transmitted to other sectors, thereby having systemic implications.

The presence of externalities justifies a strong role for public policy in maintaining and improving the efficiency and stability of the financial system. At a micro or institutional level, these policies include standard setting, regulation, and supervision. But there are also connections at the macro level where overall macroeconomic stability can promote financial stability and where financial instability can affect and impair macroeconomic performance.

As we step back and look at the recent subprime crisis, I find it very helpful to frame my thoughts in terms of these issues. For example, my take on the recent subprime crisis is that the mechanisms that have been developed to overcome asymmetric information and agency problems in financial markets are much less robust than we may have thought. In the case of externalities, my sense is that our traditional policy approaches, which are designed for a bank-based financial system, may not be as well-suited to our new, market-based financial system.

#### A Closer Look at Recent Events

With these ideas providing a frame of reference, I would now like to take a closer look at the recent U.S. subprime mortgage crisis and its ramifications for the financial system. Rather than providing a detailed discussion of the evolution of the crisis, which has been well-documented by others, I would like to highlight three areas that I believe policymakers should focus on as we try to strengthen the financial system in response to these developments.

*Liquidity strains*

While the root of the subprime crisis lies in traditional concerns about credit quality and credit risk, I believe more attention should focus on the severe liquidity strains that enveloped financial markets and which continue, to some extent, even today. As you may know, much of U.S. mortgage finance in recent years has flowed through institutions outside of the depository system and outside of the formal bank supervisory and regulatory process. Many of these institutions behaved like traditional depository institutions in borrowing short and lending long. With no deposit base, these institutions obtained funding in short-term money markets using asset-backed commercial paper.

When concerns about subprime credit quality heightened over the summer, investors ran for cover. Those institutions without backup lines of credit were forced to sell assets, typically at a large loss, and a number were liquidated. Those institutions with backup lines of credit with banks were, in many but not all cases, able to obtain funding. However, banks were not well-positioned to meet these demands, and their funding requirements placed enormous strains on money markets in Europe and the United States. And, as you know, these funding pressures necessitated massive amounts of reserve provision by central banks through open market operations and lending facilities.

In many respects, these are events we have seen before in periods of banking crises. What is new is that the initial problems are arising in institutions outside of our regulatory and supervisory purview and without direct access to traditional elements of the safety net—deposit insurance and access to central bank lender-of-last-resort facilities. Moreover, the problems are spilling over very quickly into the banking system. In addition to direct exposure through lines of credit, banks have taken an active role in



setting up some of these off-balance-sheet entities and may be holding similar securities in their investment and trading portfolios.

But there is another new dimension to liquidity that has raised the ante in coping with financial crises. As we have shifted from a bank-based system to a market system of finance, the functioning of markets in periods of crisis has become critical. Beginning with the U.S. stock market crash in 1987; then in the Asian, Long-Term Capital Management, and international debt crisis in 1997-98; and now in the subprime mortgage crisis, we have seen repeated instances in which markets have seized up and ceased to function, just when they are most needed. This poses serious problems for those financial institutions that do not have adequate portfolio liquidity and rely on markets to obtain liquidity. In addition, without well-functioning markets to establish prices for securities, it becomes extremely difficult to do the valuation exercises that are required by our mark-to-market accounting systems.

#### *Asset valuation*

Indeed, the difficulty in valuing assets in the recent crisis raises a second serious concern about our increased reliance on asset valuation models. These models require good data on the credit experience and volatilities of the underlying assets. But, they also require good judgment in their application. The subprime crisis has revealed appalling weaknesses in both regards. Subprime loans do not have a very long history, and their recent history is somewhat deceptive because many were made in a period of rapidly rising house prices. Thus, valuation of these loans relied very heavily on a judgmental bet that the benign market conditions of recent years would continue. In addition, valuation exercises did not appear to make sufficient distinctions between types of

mortgage contracts offered to subprime borrowers. A fixed-rate, 80 percent loan-to-value ratio loan is a very different product from a variable-rate, 100 percent loan-to-value loan even if they are made to subprime borrowers with the same credit score.

I do not think these valuation problems are confined to assets backed by subprime loans. Indeed, they are likely to be very pervasive across asset classes because of the benign financial conditions of recent years and the proliferation of nonstandard terms in contracts and bond covenants.

#### *Problems in asymmetric information*

A third issue that I would like to focus on is weaknesses that have been exposed in financial markets mechanisms for overcoming asymmetric information and agency problems. As I noted earlier, the phenomenal growth of financial markets in recent decades is largely a result of the development of methods to get around these problems. In particular, credit ratings have become extremely important in supporting the growth in asset-backed lending. Why else would investors around the world buy assets backed by loans to U.S. borrowers with low credit ratings? Until a few months ago, investors viewed credit ratings on privately issued mortgage backed securities as almost equivalent to the implicit government guarantees on GSE-backed securities. Many investors have now discovered the difference between an opinion and a guarantee.

Because credit ratings play such an important role in the functioning of markets and in Basel II standards, I believe it is extremely important to understand what went wrong. Despite the self-serving responses of some of the rating agencies, I believe there are some very serious issues to be addressed. One important issue is the incentive conflict that arises because the agencies receive compensation from the companies who

are obtaining the ratings. Another issue is the models used by the agencies to rate structured securities and the judgment used in the rating process.

As an example, consider a recent story by Allan Sloan in *Fortune* magazine. According to Sloan, a mortgage trust assembled by a prominent investment bank had a portfolio of second mortgage loans that had essentially no borrower equity and had little or no documentation on more than half the loans. Amazingly, 93 percent of the tranches were rated investment grade by the two main credit-rating agencies. As of September, 18 percent of the loans had defaulted, wiping out many of the lower-rated tranches.

Another lesson that markets have “relearned” from recent events is the importance of equity in disciplining behavior. Many of the subprime loans made in recent years contained very low homeowner equity. Moreover, as the example above indicates, much of the so-called equity in these loans was in fact borrowed from other lenders through a second mortgage. With no equity and with interest rate resets requiring much higher payments, the viability of these loans depended almost entirely on rapid appreciation in house prices. Of course, issues of excessive leverage in financial markets are not confined to subprime mortgage lending.

There are similar incentive problems in the mortgage loan origination process, much of which now occurs outside the regulated banking system. Mortgage brokers, realtors, and appraisers make money through the volume of transactions, but bear little or no responsibility for the quality of the loans that are made.

Of course, the same incentive problems for borrowers and intermediaries have always been present in bank-based lending. But, over the years, supervision, regulation, and banks’ own risk management and corporate governance practices have provided

important checks and balances on these incentive problems. Unfortunately, our new market-based system of finance does not appear to have addressed these incentive issues appropriately or in a very robust manner.

### Policy Challenges

I would like to close my remarks today with a brief look at some of the policy issues that have been raised by these recent events. I will touch briefly on four topics: liquidity issues, information and disclosure, incentive problems, and moral hazard concerns.

#### *Liquidity issues*

Providing liquidity to the financial system in times of stress is, of course, a primary responsibility of central banks. However, because central bank liquidity facilities are generally directed toward the banking system, it is less clear whether the traditional liquidity facilities are well-positioned to meet liquidity pressures that emerge from outside the banking system. As a case in point, the Federal Reserve's Discount Window facility was not used as much as we might have liked in the recent crisis. Part of the difficulty was the historical stigma issue that has caused banks to be reluctant to use the window, part was the relatively high price of Discount Window credit, and part was a unique feature of the current crisis in which pressures were concentrated in term funding rather than overnight funding. While the Federal Reserve made a number of temporary modifications to discount procedures to try to enhance the window's effectiveness, a broader rethinking of the structure of lending facilities may be in order. As part of this exercise, it may be useful to consider whether lending facilities should be accessible to a broader range of institutions than has been the case historically.

A broader question regarding liquidity is who should be responsible for providing it: institutions or central banks? In recent years, the U.S. banking system has seen a decline in on-balance-sheet liquidity as banks have relied more on liability management and purchased funds. The reasons are obvious: as markets have grown, they have provided increased liquidity in normal times, and the provision of a liquidity buffer that is needed only occasionally by banks is very costly. So, as we examine how to improve central banks' methods for providing liquidity, perhaps we should also consider whether the banking system should play a larger role as well.

The second type of liquidity issue that I mentioned earlier, market liquidity, is a more complex issue. I really believe that we need to focus more attention on research into the microstructure of financial markets to understand why liquidity pressures develop and why markets seize up in times of crisis. Until we have this understanding, we will be forced to deal with these pressures indirectly via the banking system.

#### *Disclosure of information*

In much of the commentary on recent events, there has been a considerable emphasis on additional disclosure of information to help financial market participants make better decisions. While I have been a long-time advocate of greater disclosure, especially in the banking system, I wonder whether these concerns are somewhat misplaced. In this new information age, we have plenty of information. For many of the more complex structured products that have been developed in recent years, it is possible to obtain most of the underlying data needed to analyze the products. In a sense, the real problem may be that we have so much information that, combined with the complexity of the financial products, investors cannot possibly make appropriate risk assessments

without relying on other agents. Even sophisticated analysts, such as the rating agencies, may not be able to do a thorough and complete analysis. So, I think the information problems go much deeper than suggested by calls for additional disclosure.

#### *Correcting incentive problems*

In terms of incentives, I think it is important to ask whether markets are likely to correct some of the problems themselves or whether they will need substantial assistance. Indeed, there are currently a number of legislative proposals in the U.S. Congress designed to address some of these problems. These include greater standardization of mortgage products, licensing and regulation of mortgage lenders, and requirements that borrowers have real equity behind their loans. To be effective, however, some of these changes will require supervision and/or significant financial penalties.

Two more difficult problems involve the rating agencies and nondepository lenders. Given the importance that ratings play both in the new structure of financial markets and in Basel II, some reform of the credit-rating system is imperative, but the solution is not obvious. In the case of nondepository lenders, even though they do not operate under explicit safety net protection and bank regulation, their behavior does have systemic implications, and they may have ties to larger financial organizations that are considered too big to fail. While I don't have an answer to whether or how they should be regulated, this is an issue that policymakers may have to address in the future.

#### *Moral hazard issues*

Finally, with regard to moral hazard issues, there has been a lot of talk in the financial media about the implications of policymakers' response to financial crises as creating moral hazard and sowing the seeds for future crises. I believe that some of this

talk is clearly off the mark in the sense that responsible parties are in many cases bearing the fruit of their bad decisions. They are not being “bailed out.”

However, there are some deeper issues here that should give us concern. First, to the extent that some large, systemically important institutions are protected through forbearance or temporary relaxation of regulations, policymakers *are* making decisions about who will bear the losses.

Second, those of you who are familiar with the macroeconomics literature are no doubt aware of the relevance of the Lucas Critique to these issues. The Lucas Critique informs us that policymakers must be aware, and take into account, how their actions affect the expectations of market participants. The reason this point is labeled a “critique” is that up to the mid-1970s, this style of thinking wasn't common among policymakers. Today, we recognize that if policymakers change their behavior, market participants will take this into account and expect policymakers to behave similarly in the future.

Thus, there is no doubt in my mind that financial market participants have taken note of central bank actions and will factor these actions into what they expect in the future. So, in this sense, we must recognize that actions that seem appropriate in dealing with the current crisis do have future consequences. One example that I have referred to earlier today and on numerous occasions in the past is “too-big-to-fail.” Another is the recent granting of exemptions between bank and financial affiliates under Section 23A of the Federal Reserve Act. Please note that I am not being critical of changes that policymakers implement in times of crises. Indeed, we may find that some temporary

changes are very necessary, and perhaps some should be made permanent. But such actions have consequences.

In a similar macroeconomic vein, I believe that to the extent policymakers respond effectively to financial crises, they do alter the behavior of asset prices and default probabilities. Since this information serves as the “history” for our asset valuation models, it may become more difficult to use these models effectively in pricing securities or in conducting risk-sensitivity simulation exercises.

#### Concluding Comments

In conclusion, let me acknowledge that there are many other important issues raised by recent events that are beyond the scope of my comments. These include how the more widespread implementation of Basel II will change the financial landscape that we operate in and how recent events may cause us to rethink how we structure capital requirements going forward. In any event, I believe we can rest assured that financial markets and institutions will continue to evolve so that we will likely need to reconvene at a future date to address a new set of important policy issues.