

Board of Governors of the Federal Reserve System

Speech

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Productivity and Innovation in Financial Services

I am pleased to participate in this panel discussion on the importance of the growth and productivity of the financial sector for monetary policy. I am certain that when the European Money and Finance Forum and the Central Bank of Luxembourg planned their conference, they did not imagine how significant the topic would be.¹

We are in the midst of very difficult times for world financial markets and economies. Over the past several decades, we witnessed a rapid expansion of financial intermediation and financial instruments around the globe. We always understood that the new financial relationships were substantially influencing the characteristics of economic activity--especially in recent years, U.S. mortgage markets and residential construction, in particular, and household borrowing and spending more generally. Unfortunately, that long period of innovation and heightened financial activity exploded into an unsustainable credit boom that was marked by a failure to appropriately evaluate risks in lending to households and businesses, excessive leverage by both borrowers and lenders, and increased reliance on complex and opaque financial instruments that were poorly understood and fragile under stress. The resulting financial strains and severity of their effects on real activity have clearly shown the limits of our ability to anticipate how and where problems in the financial sector would emerge and of our understanding of the channels through which the financial stresses could lead to a broad-based pullback in lending and adverse spillovers into the real economy. The recent experience has also underscored the difficulties associated with measuring financial services and the productivity of financial firms.

The Financial Sector and Economic Activity

Banks and other financial institutions allocate credit. At the most fundamental level, they take savings from the household sector and elsewhere and lend it to firms, households, and governments that want to borrow to spend. In the best circumstances, the operation of financial markets is transparent to the macroeconomy. The financial system allocates credit efficiently to firms that invest in capital resources that improve the productivity of other inputs (for example, labor) and contribute to the growth of the economy. The financial system also offers households choices about how they allocate consumption over time. Financial institutions can be viewed as reducing information asymmetries that impede borrowers' access to credit, and they provide transaction services to borrowers. And by reducing the cost of external finance to firms generally, productivity gains in the financial sector can foster gains in a wide array of other industries as well.

Even before the proliferation of financial institutions and products, the translation of the economic concept of financial services into a workable measure of output posed very thorny problems. This conference is an indication that important research continues quite actively on a variety of issues related to the measurement of the output of financial services and the efficiency of financial institutions.

More important from a policymaker's perspective is the need to assess the contribution to economy-wide productivity and stability of the extraordinary expansion in the size and scope of the financial sector that occurred in the past several decades. Certainly, as financial innovations accelerated, we had solid reasons to believe that those advances were contributing to the pickup in overall productivity and, possibly, to the moderation in fluctuations of economic activity. Increased technical capabilities, together with enhanced mathematical applications, permitted the development of products such as derivatives and loan securitizations that provided new ways to unbundle risks. We thought that risks were being redistributed more efficiently to individuals and firms according to their risk tolerances and their abilities to absorb risk. And evidence suggested that opening credit

markets to more households, by enabling them to smooth spending in response to shocks, was contributing to the overall moderation in business cycles.

Information technology also appeared to be making intermediation more efficient by reducing the cost and uncertainty of processing information that helps financial intermediaries make superior investment choices with better risk and return characteristics. Information technology also made possible the creation, valuation, and exchange of complex financial instruments on a global basis. Financial transactions were occurring faster and were less expensive to initiate and complete. The assumption was that markets were becoming deeper and more liquid.

These innovations did produce lasting gains, but these gains were clearly accompanied by increasing vulnerabilities. In the United States, financial innovation, especially in the origination and distribution of subprime mortgages, ended up contributing to an excess supply of houses at prices well above long-term sustainable levels. And innovations enabled households to liquefy the wealth embedded in houses, thereby boosting loan amounts relative to the value of the house. Moreover, both borrowers and lenders badly mispriced and misunderstood risks, which often became embedded in new, complex, financial instruments. Neither was protected against a substantial decline in the price of houses. And that mispricing was not just confined to the housing sector. Compensation for risk was too low across a broad array of credits. Ironically, an important contributor to these misalignments in spending and lending was the long period of economic expansion and low inflation over the past 25 years, interrupted only a few times by mild recession. This good economic performance provided skewed data and bred complacency: House prices could only go up; income interruptions and problems servicing debt were likely to be short lived; financial markets would always be liquid. Models based on theory and estimated with data from the 1990s and early 2000s fit well--too well. Complacency, in turn, contributed to the unwillingness of many financial market participants to enhance their risk-management systems sufficiently to take full account of the new (perhaps unknown) risks they were taking on.

In this environment, financial institutions stretched the amount of capital they were holding, building leverage. With better models, sophisticated contracts, and the belief that risks had been distributed more efficiently, many market participants believed that less capital was needed. Because the amount of capital held by financial institutions on their balance sheets was so small, productivity in the financial sector looked as though it had increased dramatically when the amount of securitization and other off-balance-sheet activities (for example, derivatives) increased. But many of those off-balance-sheet instruments came back onto the balance sheet when markets started to seize up. Finally, many market participants also had inadequate liquidity backstops, apparently because they (wrongly) assumed that markets would be sufficiently liquid to smoothly adjust risk profiles to new developments in markets and the broader economy. Thus, capital and liquidity cushions fell short of what was needed for the complexity of instruments that were created, for the funding risks being incurred, and for the broad array of market and other risks to the firms and to the financial system more generally. Systemic risk is an externality that results from exposures that cannot be diversified away.

The financial turmoil that we have been experiencing for more than a year originated in the market for subprime mortgages, in which the combination of falling house prices and poor underwriting standards triggered a rapid rise in delinquencies. Multilayered securitizations made it more difficult to implement loan modifications and other time-honored mechanisms to reduce default costs and other negative consequences of foreclosures. What has occurred since then has revealed how closely interwoven the global array of highly leveraged financial structures and investors had become. Risk did not go away when it was sliced and diced across market participants, and it was not as distributed and diversified as had been thought--in short, the amount of capital to insure against such risks should not have been reduced as much as it was. With the viability of counterparties in question, financial institutions needed to conserve capital and liquidity. Perceptions of inadequate capital and liquidity cushions sparked a flight to liquidity and safety by those lending to financial institutions, beginning an unwinding of leverage that, in turn, has exacerbated economic weakness. As the market price of risk increased, more capital was needed for risks that had already been undertaken. The financial decelerator engaged: Households and businesses needed more collateral and net worth to qualify for loans; lenders, in turn, needed more collateral and capital to back their own liabilities, which had become more costly to issue. The resulting tightening of lending terms and conditions and reduction in credit availability has restrained spending--first in housing and then, as financial distress spread, in many other sectors.

Robust, dynamic markets are the lifeblood of market economies. They are the source of rising productivity and, as such, of increasing standards of living. But the dynamic functioning of markets

also means that productivity advances will not necessarily occur smoothly--and, indeed, are likely to involve some cyclical overshooting and undershooting, often exacerbated by waves of optimism and pessimism that seem to be inherent in human nature. Innovation by its nature is risky; some innovations work better than others, and, thus, some new ideas and the businesses that invest in or use them must be allowed to fail.

In many instances, these cyclical swings in productivity--such as the boom and bust in high-technology investment in the late 1990s--occur in sectors with limited spillovers to the functioning of the financial markets. Risks are borne by private investors who reap the rewards or bear the losses associated with the economic outcomes of their investments. And they are often funded by equity, not debt, so financial intermediaries are not at risk. The gains to aggregate economic activity from successful innovation--as in the high-tech case--are realized over time. When overinvestment occurs, market returns respond, new investment slows, and the capital stock eventually adjusts. In the end, productivity is higher than it would have been otherwise.

In contrast, as we have seen, when the innovations heavily involve the financial sector, the unwinding of any resulting boom can quickly begin to entail more far-reaching and deeper effects on the functioning of credit markets and, thus, can pose a more serious threat to economic stability. Although we are far from having written the final chapter on the current situation, we can identify several challenges that it has raised for central banks.

The Challenges for Central Banks

The most immediate and important challenge is to take actions that will help restore the financial system to productive functioning and put our economies on a path to growth and price stability. Government authorities and central banks have responded to the current crisis with forceful and innovative measures to rebuild confidence in the financial system, improve the ability of financial institutions to raise capital from private sources, and free up the flow of credit to businesses and households. For central banks, these measures have entailed lowering policy interest rates and opening or expanding liquidity facilities to banks and others to augment the credit that private parties are unable or unwilling to extend to each other. Although we have seen signs of improvement, financial market functioning remains impaired in many ways, and we will need to continue to consider whether additional steps are needed to re-open credit flows and support the economy.

When, in the future, the financial system stabilizes and our economies start to recover, central banks will need to decide how best to phase out these extraordinary liquidity actions and credit-market interventions. In many cases, the rates charged for credit under these facilities have been set to be attractive when markets are disrupted, but uneconomical for users once more-normal functioning returns, and usage should naturally decline as risk-taking returns. But, in addition, we will need to decide the appropriate timing of the winding-down of many of the special lending facilities. The actions taken by the Federal Reserve to intervene directly in some financial markets, such as the commercial paper market, are clearly emergency operations only. Except in the most extreme circumstances, when market functioning breaks down and systemic risk reaches unacceptable levels, central banks should distance themselves from decisions about the allocation of credit among private parties.

The most critical challenge policymakers are facing involves deciding what steps they can take to minimize the risk that such a severe financial crisis will be repeated. To this end, central banks are already considering what lessons they can draw from their experiences for the design of their policy instruments in a financial environment where borders between countries, institutions, and instruments have all eroded, producing tight linkages among previously disparate markets. Some of what we have done--for example, swaps with other central banks and auctions of discount window credit--might be part of our permanent tool kit, kept on standby to contain the effects of a future emergency.

As I indicated in my opening remarks, we must improve our understanding of the financial structure and, as it evolves, of where it may be vulnerable when stressed. In broad terms, policymakers must look for ways to identify those waves of innovation and expansion in financial services--or in any other sector, for that matter--that may be accompanied by a buildup of destabilizing forces, such as rapidly rising asset prices or excessive leverage. We should not underestimate the difficulty of this problem. As the recent financial boom continued, many policymakers did indeed worry about the overpricing of houses and the underpricing of risk, but we were only partly successful in identifying the circumstances and channels that have seemed to trigger the most distress. Almost by definition, it is the unanticipated event that causes the most problems.

And the way financial turmoil resonated through the global financial system indicates that the linkages among lenders and borrowers through leverage, complex interdependent counterparty relationships, and backup liquidity agreements propagated and intensified financial distress in ways neither the private nor the public sector understood very well. Clearly, to improve the likelihood that we can contain systemic risk, we need to continue to learn more about financial products and market functioning.

A related challenge is to improve our understanding of the linkages between the financial sector and real activity. The recent experience indicates that we did not fully appreciate how financial innovation interacted with the channels of credit to affect real economic activity--both as credit and activity expanded and as they have contracted. In this regard, the macroeconomic models that have been used by central banks to inform their monetary policy decisions are clearly inadequate. These models incorporate few, if any, complex relationships among financial institutions or the financial-accelerator effects and other credit interactions that are now causing stresses in financial markets to spill over to the real economy. Rather, these models abstract from institutional arrangements and focus on a few simple asset-arbitrage relationships, leaving them incapable of explaining recent developments in both credit volumes and risk premiums. Economists at central banks and in academia will need to devote much effort to overcoming these deficiencies in coming years.

However these models are adapted, recent events suggest that central banks should be wary of placing too much faith in model-based analyses, which are necessarily predicated on past empirical correlations and relationships. As we have seen, financial innovation can induce structural changes that can importantly alter the way financial institutions, markets, and the broader economy respond to shocks. For this reason, policymakers should take a critical approach to evaluating analyses of this sort, and should always probe to find the sensitivity of results to unstated assumptions that may no longer be valid.

Given our limited understanding, the first line of defense against systemic risk must be building more robust and resilient financial systems. Private parties are doing a great deal to increase capital and liquidity and enhance risk-management practices. But policymakers must also adapt their supervisory and regulatory structures to promote a robust financial system that can withstand occasional shocks, even severe ones, without systemic problems that become destabilizing. We must ensure that financial firms--especially those central to the functioning of our highly interlinked markets--have sufficient capital, liquidity, and management resources to back financial intermediation activities both on and off their balance sheets. Another important consideration should be to make sure that our regulatory policies do not exacerbate credit and business cycles. And we should be considering ways to promote transparency that would enhance market functioning and the ability of investors to bring their own discipline to bear on decisions to buy and sell. A central challenge will be to structure financial oversight to both deter unwanted and excessive risk-taking and permit the innovation that can ultimately boost economic growth. Because central banks are ultimately responsible for financial stability, they must work closely with legislators and with other supervisory authorities at home and abroad to ensure that these goals are met.

Can the conduct of monetary policy also be adapted to reduce the odds of systemic financial events, and should the manipulation of short-term interest rates take account of the potential for imbalances and price bubbles as well as the traditional objectives of price stability and economic growth? Here I think the lessons of the current episode need to be studied further.

Before the recent experience, I believed that the appropriate strategy for conventional monetary policy was to focus exclusively on the stability of economic activity and overall prices for goods and services over the next several years. Under such a policy, a central bank would respond to signs of a potentially destabilizing rise in asset prices or leverage by incorporating the implications of those developments for future output and inflation into its deliberations. However, it would not go further and try to lean against the speculative component of asset prices per se, on the assumption that such an attempt would likely not work. Instead, a central bank would do better to wait for an asset bubble to run its course, and then deal with the consequences when values inevitably returned to normal. This is how the Federal Reserve thought about asset markets as it made monetary policy.

Whether a different approach would have produced a better outcome is still in my view an open question. Would somewhat higher interest rates a few years ago have damped the speculation in housing and the deterioration of lending standards? Have we learned enough about the formation and propagation of credit-market problems to identify them in a timely manner? Are we able to look sufficiently far enough ahead to be reasonably certain that responding to a perceived speculative boom with tighter monetary policy will yield longer-run benefits without undue shorter-run costs? I

believe the answers to these critical questions are still unclear.

Certainly, policymakers at central banks and elsewhere have a full agenda before them. I have been encouraged by the way in which governments around the globe have collaborated to craft new approaches to problems. A continued spirit of cooperation can help as we face the challenges that this panel is discussing. Our economies have proved resilient in the face of other economic shocks, and I am certain that we will ultimately succeed in restoring a stronger and more robust financial system that can support solid and sustainable economic expansion.

Footnotes

1. The views expressed are my own and not necessarily those of my colleagues on the Federal Reserve Board. Joyce Zickler, [David Reifschneider](#), [Diana Hancock](#), and [Paul Lengermann](#), of the Board staff, contributed to these remarks. [Return to text](#)

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