

SPEECH

Credit Markets Innovations and Their Implications

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I am grateful to Jeff Lacker for including me in this conference, and my compliments to him and the Richmond Fed for bringing together an excellent group to discuss the implications of recent innovations in credit markets.

The past few years have seen remarkable changes in credit markets, and this is a good time to take stock of what we know about those developments and their implications.

The latest wave of credit market innovations has elicited some concerns about their implications for the stability of the financial system, concerns similar to those associated with earlier periods of rapid change in financial markets. Will the most recent credit market innovations amplify credit cycles, contributing to "excessive" lending in times of relative stability, and then magnify the contraction in credit that follows? Will they introduce greater volatility in financial markets? Will they create greater risk of systemic financial crisis?

These concerns have been heightened in some quarters by the problems currently being experienced in the subprime mortgage sector. It will take some time before the full implications are understood and the full impact can be assessed. As of now, though, there are few signs that the disruptions in this one sector of the credit markets will have a lasting impact on credit markets as a whole.

Indeed, economic theory and recent practical experience offer some reassurance against both these specific concerns and more general worries about the implications of credit market innovations for the performance of the financial system.

The rapid growth in these new types of credit instruments is, of course, a sign of their value to market participants. For borrowers, credit market innovation offers the prospect of increased credit supply; better pricing; and a relaxation of financial constraints. For investors, new credit instruments bring the prospect of broader risk and return opportunities; the ability to diversify portfolios; and increased flexibility. And for lenders, innovations can help free up funding and capital for other uses; they can help improve credit risk and asset/liability management; and they can improve the return on capital and provide new and cheaper funding sources.

By spreading risk more broadly, providing opportunities to manage and hedge risk, and making it possible to trade and price credit risk, credit market innovation should help make markets both more efficient and more resilient. They should help make markets better able to allocate capital to its highest return and better able to absorb stress. Broad, deep and well-functioning capital markets complemented by strong, well-capitalized banks, able to provide liquidity in times of strain, make for a more efficient financial system: one which contributes to better economic growth outcomes over time.

There are therefore compelling arguments in favor of a generally positive assessment of the consequences of innovation. Does experience provide support for these arguments, or are these changes too new for us to know?

The recent changes in credit markets have been dramatic. We have seen rapid growth of structured credit products, credit default swaps and new types of collateralized debt and loan obligations. Although these instruments are very new, they are the natural extension of earlier innovations in credit markets. Over a long period we have seen innovations ranging from the syndication of bank loans and the direct provision of credit through the capital markets, to the spread of asset-backed securities and products that separate different parts of the payments stream and different dimensions of the risk in a credit obligation into different instruments.

These changes have contributed to a substantial reduction in the share of total credit held by banks. They have produced a greater separation or distance between the entity that first arranges a loan and those who end up holding the risk, and more intermediaries in that chain. And they have contributed to a dramatic increase in the number and diversity of creditors to any individual borrower, and a greater capacity to actively trade credit risk.

We are now well into the third decade of experience with the consequences of these earlier innovations, and this history offers some useful lessons for evaluating the probable impact of the latest changes in credit markets.

The ease with which the U.S. financial system absorbed the substantial scale of corporate defaults that peaked in recent years in

2002 provides some support for the argument that broader and deeper capital markets make the system more resilient.

In general, there does not seem to be strong empirical support for the proposition that derivatives increase volatility in financial markets. Volatility is not higher where derivatives are most prevalent.

Credit market innovation does not appear to have resulted in a large increase in leverage in the corporate sector, as some had feared. Indeed, nonfinancial corporate leverage in the United States is currently low by recent historical standards. The overall degree of balance sheet leverage by corporations, for example, is higher in some more traditional financial systems than it is in systems where credit market innovations are more advanced.

Default rates do not appear to have risen, nor recovery rates fallen as these credit innovations have spread, despite concerns they might lead to excess lending, the mis-pricing of credit risk and more messy and more complicated workouts, resulting from the greater diffusion of the investor base.

And although the sources of the broad moderation in GDP volatility observed in the United States over the past two decades are still the subject of debate, the fact that this moderation occurred during a period of extensive innovation in credit and other financial markets should provide some comfort for those who expected the opposite.

Innovations in credit markets are inevitably accompanied by challenges. Indeed, the history of innovation in financial markets provides many examples of periods of rapid change accompanied by fraud and abuse, by challenges in assessing value and risk, by concerns about the adequacy of investor and consumer protection, and by unexpected behavior of prices, defaults and correlations. To some degree, these types of problems are the inevitable consequence of change and innovation.

Although recent experience as well as theory provide some reassurance against the concern that credit market innovation would make markets more volatile and the financial system more vulnerable, these judgments require qualification. Some aspects of this latest wave of innovation are different in substance—therefore potentially in their implications—from their predecessors. And these differences require attention.

There are three aspects of the latest set of changes which I think deserve more reflection.

The first is about the role of market liquidity and liquidity risk in how credit markets work. Credit market innovations have transformed the financial system from one in which most credit risk is in the form of loans, held to maturity on the balance sheets of banks, to a system in which most credit risk now takes an incredibly diverse array of different forms, much of it held by nonbank financial institutions that mark to market and can take on substantial leverage.

U.S. financial institutions now hold only around 15 percent of total credit outstanding by the nonfarm nonfinancial sector: that is less than half the level of two decades ago. For the largest U.S. banks, credit exposures in over-the-counter derivatives is approaching the level of more traditional forms of credit exposure. Hedge funds, according to one recent survey, account for 58 percent of the volume in credit derivatives in the year to the first quarter of 2006.

Financial shocks take many forms. Some, such as in 1987 and 1998, involve a sharp increase in risk premia that precipitate a fall in asset prices and that in turn leads to what economists and engineers call "positive feedback" dynamics. As firms and investors move to hedge against future losses and to raise money to meet margin calls, the brake becomes the accelerator: markets come under additional pressure, pushing asset prices lower. Volatility increases. Liquidity in markets for more risky assets falls.

In systems where credit is more market-based and more credit risk is in leveraged financial institutions outside the banking system, a sharp rise in asset-price volatility and the concomitant reduction in market liquidity, can potentially have greater negative effects on credit markets. If losses in these institutions force them to withdraw from credit markets, credit availability will decline, unless or until other institutions in a stronger financial position are willing to step in. The greater connection between asset-price volatility, market liquidity and the credit mechanism is the necessary consequence of a system in which credit risk is dispersed outside the banking system, including among leveraged funds. This does not make the system less stable, though, only different. For if risk is spread more broadly, shocks should be absorbed with less trauma. Moreover, the system as a whole may be less vulnerable to distortions introduced by the moral hazard associated with the access that banks have to the safety net.

A second issue we need to consider stems from the complexity of the new credit instruments, the challenges they present in terms of valuation and risk measurement and their short history of experience in times of stress.

Even the most sophisticated participants in the markets for these instruments find the risk management challenges associated with these instruments daunting. This raises the prospect of unanticipated losses. Default rates are harder to predict where there has been a substantial change in the financial attributes of borrowers. The prices of instruments may not respond as expected to a given change in losses or in the value of the assets underlying these instruments. Hedging strategies may prove to be less effective than expected. Similarly rated instruments can behave very differently in stress events.

The response of prices and volatility to the downgrades in the automobile sector in the spring of 2005 and the recent experience in subprime mortgages and related asset-backed securities and credit derivatives illustrate different types of surprises faced by the participants in these markets. They are a reminder of the dimensions of uncertainty that exist about the shape of the distribution

of potential returns. This is particularly true of what we might call the adverse tail, or the negative extreme. These challenges exist for all participants in these markets: for the institutions that underwrite, structure and distribute these risks; for those who trade or hold them; and for third parties, like the rating agencies.

These challenges of complexity are significant as well because they can exacerbate the problem of dealing with classic principal-agent problems. You can see this in the subprime mortgage market where, for example, a person may be rewarded for generating new mortgages on the basis of volume, without being directly exposed to the consequences of default; but these problems exist wherever incentives diverge and contracting is imperfect. Financial institutions typically maintain a range of different checks and balances to deal with the risk of misaligned incentives: for example, between a trader and the principal whose resources are at risk, or between the mortgage broker or underwriter and the firm that ultimately ends up holding the risk. But these checks and balances depend in part on the capacity of risk managers to observe and understand the underlying economic risk in these instruments. Where that is harder because of this combination of complexity, imbedded leverage, and short loss history, then market discipline will be weaker.

A third issue relates to the dynamics of failure and the infrastructure that supports these markets. The dramatic growth in the volume of over-the-counter derivatives and the growth in the number and size of leveraged funds inevitably complicate the resolution of the failure of a large financial institution that is active in these markets. The sheer number of financial contracts that would have to be unraveled in the context of a default, the challenge that a former colleague of mine likes to refer to as "unscrambling the eggs," could exacerbate and prolong uncertainty, and complicate the process of resolution.

As is typical during periods of rapid innovation, these markets grew much more quickly than did the supporting infrastructure. Take credit derivatives, for example. For most of the early years of this market, much of the post-trade processing system was not automated and required substantial manual intervention. Positions were assigned without the knowledge of counterparties. Confirmations backlogs rose to very high levels. As Alan Greenspan put it, the market was using 19th century methods of dealing with 21st century financial instruments.

This created a greater risk of operational problems and uncertainty about exposures in the event of stress. The capacity of market participants to mitigate these risks by improving the infrastructure was hampered by classic collective action problems, magnified by the greater number and diversity of participants.

All these challenges merit attention. They describe some of the risks that have accompanied the substantial benefits of credit market innovation. And they help illustrate why these broad changes in financial markets may have contributed to a system where the probability of a major crisis seems likely to be lower, but the losses associated with such a crisis may be greater or harder to mitigate.

What should policymakers do to mitigate these risks?

We cannot turn back the clock on innovation or reverse the increase in complexity around risk management. We do not have the capacity to monitor or control concentrations of leverage or risk outside the banking system. We cannot identify the likely sources of future stress to the system, and act preemptively to diffuse them.

The most productive focus of policy attention has to be on improving the shock absorbers in the core of the financial system, in terms of capital and liquidity relative to risk and the robustness of the infrastructure.

These issues are the principal focus of day-to-day supervision and market oversight in the major financial centers around the world. The Federal Reserve is actively involved in a range of efforts, working closely with the primary supervisors of the major global financial institutions and the critical parts of the financial infrastructure, to encourage further progress. In this context, we are working to put in place a stronger regulatory capital regime and to strengthen the capacity of firms to absorb losses in stress conditions. We are encouraging more sophisticated and more conservative management of credit exposures in over-the-counter derivatives and structured financial products, as well as of exposures to hedge funds. And we are encouraging a range of efforts to modernize the operational infrastructure that underpins the over-the-counter derivatives markets, and to improve the capacity of market participants to manage a major default.

The stronger these shock absorbers, the more resilient markets will be in the face of future shocks, and the more confident we can be that banks will be a source of strength and of liquidity to markets in periods of stress and that the financial system will contribute to improved economic performance over time.

Thank you.
