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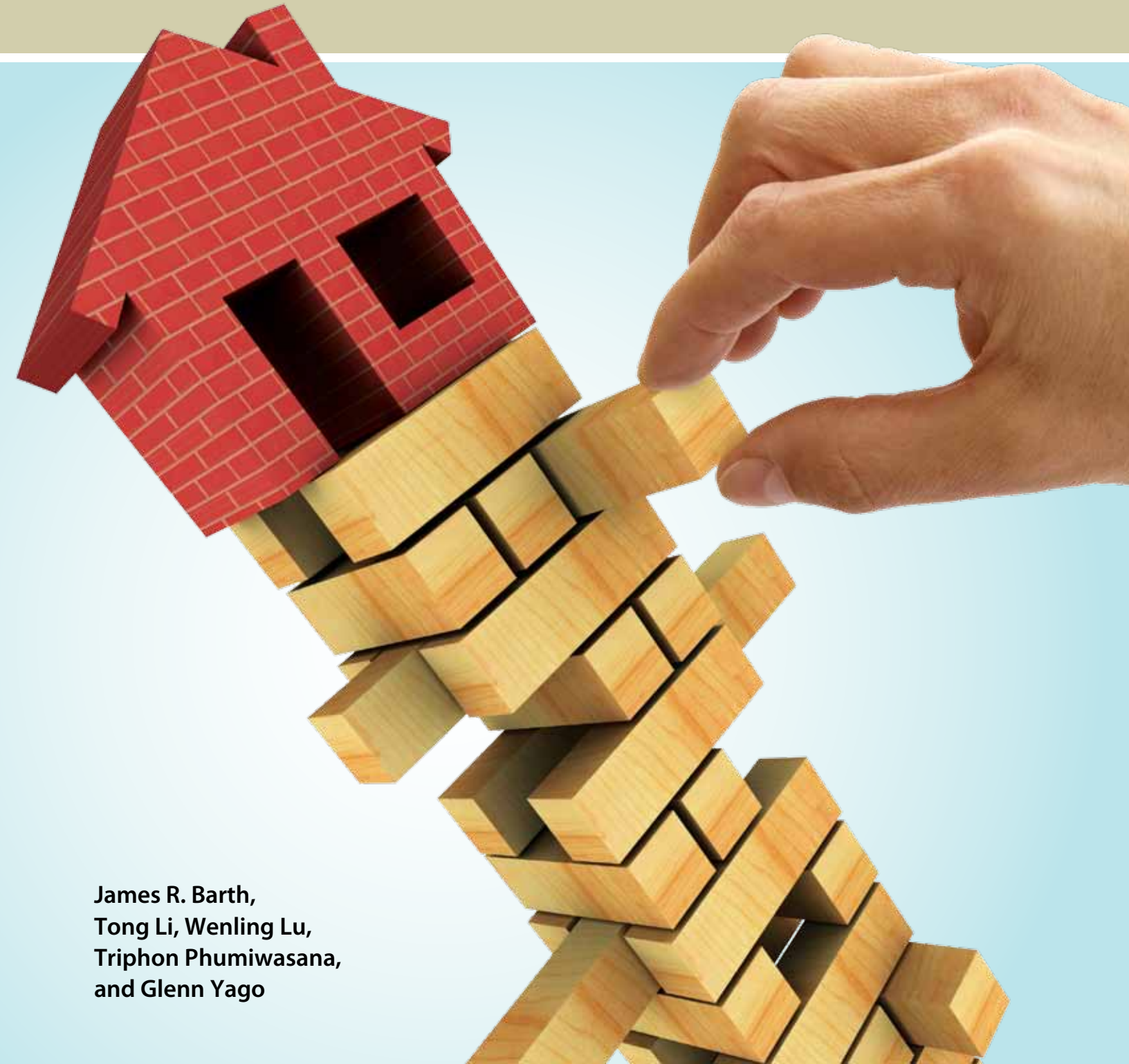
The Rise and Fall of the U.S. Mortgage and Credit Markets

A Comprehensive Analysis of the Meltdown

A full-length book version, published by John Wiley & Sons, will be available in spring 2009.



**James R. Barth,
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January 2009

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This report is excerpted from *The Rise and Fall of the U.S. Mortgage and Credit Markets: A Comprehensive Analysis of the Meltdown*, published by John Wiley & Sons.

It offers a brief preview of the extensive data and analysis found in the full-length book. This in-depth volume will provide a definitive recounting of the mortgage meltdown and the ensuring financial crisis, along with policy recommendations for moving forward.

The Rise and Fall of the U.S. Mortgage and Credit Markets: A Comprehensive Analysis of the Meltdown will be available online and in bookstores in spring 2009.

The Milken Institute is an independent economic think tank whose mission is to improve the lives and economic conditions of diverse populations in the United States and around the world by helping business and public policy leaders identify and implement innovative ideas for creating broad-based prosperity. We put research to work with the goal of revitalizing regions and finding new ways to generate capital for people with original ideas.

By creating ways to spread the benefits of human, financial, and social capital to as many people as possible—by *democratizing* capital—we hope to contribute to prosperity and freedom in all corners of the globe.

Key Findings

The total value of housing units in the United States amounts to $19.3 trillion, with $10.6 trillion in mortgage debt and the remaining $8.7 trillion representing equity in those units as of June 2008.

Of the approximately 80 million houses in the United States, 27 million are paid off, while the remaining 53 million have mortgages. Of those households with mortgages, 5 million (or 9 percent) were behind in their payments and roughly 3 percent were in foreclosure as of mid-2008.

Securitization was a financial innovation that allowed the mortgage market to tap into a broader base for funding. But the shift from an originate-to-hold business model to an originate-to-distribute model opened the door to excessively risky loans, since originators and lenders could pass along risk to other parties.

Fueled by low "teaser" rates, subprime home mortgage originations increased dramatically, rising from 8 percent in 2001 to 21 percent in 2005. Eighty percent of these subprime loans were packaged into mortgage-backed securities (MBS).

Investors relied perhaps too heavily on rating agencies to provide information about the quality of MBS. More than half of all MBS that were rated investment grade from 2005 to 2007 were eventually downgraded.

Financial regulators failed to act on numerous warning signals that the housing market was overheated. These signals should have triggered regulatory actions to tighten overly loose credit policies and to curtail the excessive use of leverage throughout the financial system.

The rate of foreclosures on subprime loans originated increased each year from 1999 to 2007 and accounted for approximately half of all foreclosures over the same period.

As home prices plummeted and losses on loan defaults rippled through the financial system, the markets were further rattled by the uncertainty surrounding the unregulated market for credit default swaps (CDS). The notional amount of CDS increased from less than $1 billion in 2001 to slightly more than $62 trillion in 2007, before declining to $47 trillion on October 31, 2008. The actual exposure to losses is clearly smaller, but it remains to be seen exactly how large the losses will be, which parties will bear those losses, and whether those parties have sufficient capital to absorb them.

As of late November 2008, the federal government has thus far committed some $7.5 trillion in loans, guarantees, and other bailout funding to address the credit crunch and liquidity freeze, and stabilize the financial system.

Policy Recommendations

U.S. banking and financial regulation is currently multilayered, overlapping, inconsistent, and costly. This structure is in dire need of consolidation and streamlining.

Regulators must develop the most appropriate mix of private and governmental responses to the crisis, taking moral hazard issues into account. Market discipline must play a central role.

Debt-equity swaps can be a big help in reducing leverage and rebuilding capital.

As regulation is reformed, more effort must be channeled toward *preventing* crises rather than implementing reforms after they occur. A greater emphasis on liquidity, credit, and capital leverage is needed, monitoring both on- and off-balance-sheet assets.

Some have suggested covered bonds as an alternative to securitizing mortgages. But covered bonds should be viewed as a complement to, not a substitute for, securitization. Improvements should be made to provide greater leeway to modify mortgage loans that have been securitized and to provide greater recourse to originators and lenders.

The establishment of a formal exchange for credit default swaps is an urgently needed step to create greater transparency (and indeed, such an effort is underway as of this writing). A central clearinghouse can set up a fund to cover losses in the event of a member firm default, employ mark-to-market pricing on a daily basis, and liquidate the positions of all members who cannot post additional collateral, thereby reducing the risk of a systemic crisis.

If the government is to continue promoting homeownership, a new approach is needed. Several innovative ideas merit consideration, including shared equity programs, down payment assistance, community land trusts, and lease-to-purchase programs.

One of the possible steps to stemming the tide of foreclosures is to modify the structure of Real Estate Mortgage Investment Conduits (REMICs), giving these entities new flexibility and authority to modify loan terms without legal liability to investors.

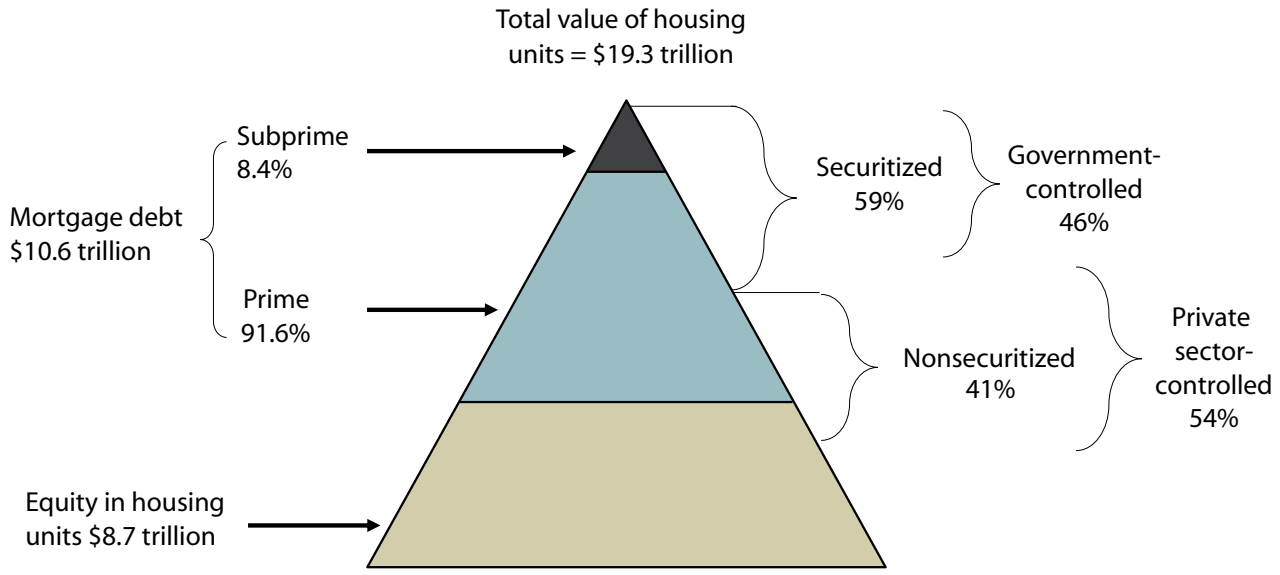
Introduction

For generations, the mortgage market has efficiently and successfully extended credit to millions of families, enabling them to achieve the American dream of owning their own homes. Indeed, the homeownership rate reached a record high of 69.2 percent in the second quarter of 2004. The growth of subprime mortgages that contributed to this record, moreover, meant that many families or individuals deemed to be less creditworthy were provided with greater opportunities to purchase homes.

Unfortunately, a system born of good intentions veered horribly off track, derailed by poor risk-management practices, too many assets funded with too little owner-contributed equity, and lax regulatory oversight.

In the past, the vast majority of mortgages were more carefully vetted and extended on more stringent terms by neighborhood savings and loans, institutions that originated, held, and serviced these loans throughout their lifetimes. But in recent years, the mortgage industry increasingly moved toward securitization (that is, packaging mortgages into securities and selling them into the secondary market, thereby shifting credit risk).

Figure 1: Value of housing units: How much has been borrowed, who are the borrowers, and who funds them? (Q2 2008)

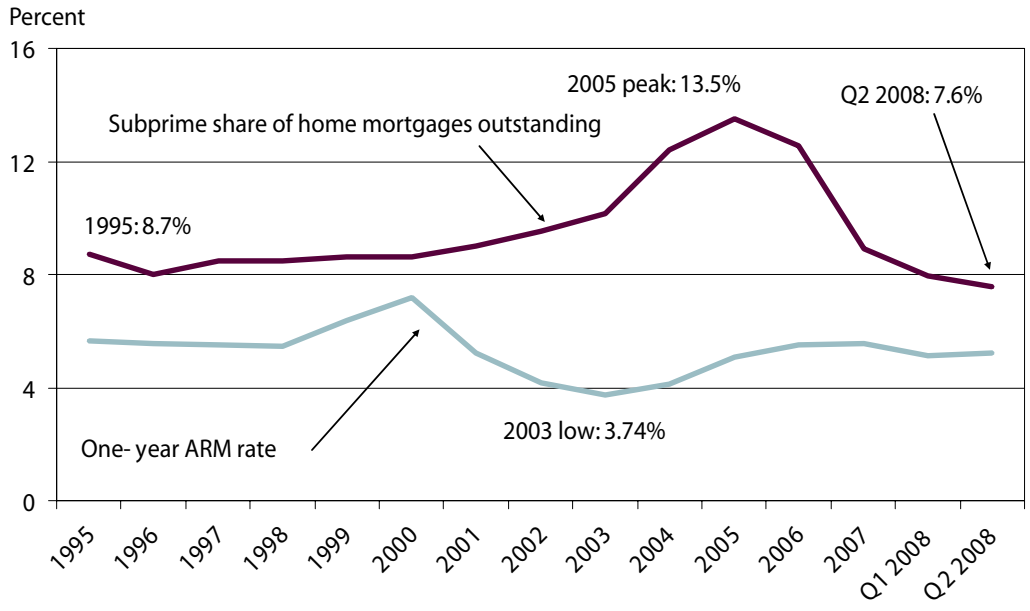


Sources: Federal Reserve, Milken Institute.
Note: The share of mortgage debt that is controlled by the government and by the private sector is based on Q3 2008 data.

This sweeping change provided the mortgage industry with greater liquidity, helping to make new loans accessible to more Americans at different levels of income than ever before. But by 2004, it was becoming ever more apparent that credit was expanding too rapidly, on terms that were too loose. What began as healthy growth in mortgage originations and housing starts swiftly became a home price bubble.

As home values kept escalating, many borrowers were unable to obtain loans on the basis of traditional standards. Mortgage brokers and lenders were able to keep churning out seemingly profitable mortgages in such an environment by casting their nets even wider. Soon many loans were being written on such loose terms that they made homes more affordable, at least initially, but were clearly unsustainable unless home prices continued rising. Real estate agents and many of those originating mortgages earned fees by allowing buyers with shaky credit histories and modest incomes to dive in and then passing the associated credit risk on to others. In the reach for yield, many financial institutions made questionable loans, while the regulatory authorities failed to take steps to slow things down to a more normal pace.

Figure 2: The subprime share of home mortgages grows rapidly before the big decline
(1995–Q2 2008)



Sources: Inside Mortgage Finance, Federal Reserve, Milken Institute.

From Main Street to Wall Street, one common thread runs through all facets of this story: excessive leverage.

When home prices did come plunging back to earth, the outcome was much the same across the nation: too many homeowners found themselves in way over their heads, and too many home builders found themselves with an excess inventory of unsold homes.

But this is not solely a tale of home buyers who overreached and home builders who overbuilt. The damage quickly spread far beyond the scope of the actual mortgage defaults and foreclosures.

Not only did financial institutions suffer losses on mortgages they held; so too did investors who bought mortgage-backed securities in the secondary market. The mortgage-backed securities in essence became another giant bubble, resting on the wobbly foundation of risky home loans. Investors from around the world were clamoring for a piece of the action—after all, rating agencies, essentially blessed by the regulatory authorities, handed out AAA ratings on many of the investment vehicles ultimately backed in whole or in part by subprime mortgages. (Some observers have noted that these agencies are paid by the very parties who issued the securities.) In addition, a large but unknown amount was soon at stake in the form of newer derivatives known as credit default swaps that were issued on these types of securities.

From Main Street to Wall Street, one common thread runs through all facets of this story: excessive leverage. Homeowners and major financial firms alike had assumed too much debt while at the same time taking on too much risk.

As of this writing, the U.S. economy is engaged in a massive wave of deleveraging, a scramble to reduce debt and obtain new capital from any willing source. Even solid companies with no direct connection to the real estate and finance sectors have been affected as credit markets seized up, liquidity became scarce, and a flight to safety ensued.

In many cases, the government has now become the buyer of last, if not first, resort, intervening in the market in ways not seen since the New Deal. As the financial sector lurched from crisis to crisis in 2008, the government's response has been marked by an improvisational quality that has thus far failed to restore full confidence in the financial system and reduce credit spreads.

The sheer size of the bailout, with $7.5 trillion or more committed in capital injections and various guarantees as of late November 2008, has provoked a storm of controversy.

The sheer size of the bailout, with $7.5 trillion or more committed in capital injections and various guarantees as of late November 2008, has provoked a storm of controversy. Many critics have cried foul about the government's lack of transparency in its strategy; others fume that by rescuing firms and individuals that took on too much leverage, the government has created thorny new problems of moral hazard (the concept that shielding parties from the full consequences of their risk taking actually encourages them to take even greater risks in the future). Still others worry that insufficient effort and funds have thus far been devoted to halting the rising tide of home foreclosures.

From its very outset, the Obama administration is faced with the daunting task of quelling a crisis that has metastasized throughout the financial sector and into the real economy. Housing markets need to be stabilized, and the wave of foreclosures must be stemmed. But more than that, greater confidence in the nation's basic financial institutions and regulatory authorities must be instilled, and reforms must be undertaken to better assure financial stability in the future.

The government has taken on enormous amounts of actual and potential debt in an attempt to shore up the financial system, which only worsens the nation's already staggering deficit. Future administrations will be grappling with the ramifications of those decisions for years to come.

In a very real sense, the bill for this bubble has now been handed to taxpayers, and the final tab is still being tallied.

Overview of the Housing and Mortgage Markets

The mortgage market has witnessed several trends in recent years:

- Total loan originations (new loans issued) increased from $500 billion in 1990 to $2.4 trillion in 2007 before declining to $900 billion in the first half of 2008. Total amount outstanding increased from $2.6 trillion to $11.3 trillion over the same period.
- The FHA and VA share of mortgage originations declined sharply, from 16 percent in 1990 to less than 4 percent in 2007, as the private sector become increasingly important for home mortgage funding. This trend was reversed after 2007 in the wake of the mortgage market meltdown.
- From 1990 to 2008, adjustable rate mortgage originations tripled, before declining to $106.7 billion in the first half of 2008. The outstanding amount grew tenfold.
- Mortgage originations to less creditworthy borrowers (in the form of subprime and Alt-A loans) displayed sharp increases during the boom, followed by big drops in their shares after the bubble burst.

Prior to 1980, the vast majority of all home mortgage loans were made by savings and loans, which originated, serviced, and held the loans in their portfolios, in what is widely referred to as an *originate-to-hold model*. But over time, home mortgages were increasingly securitized (i.e., put into pools and packaged into securities backed by the individual loans) and sold in the secondary market; this process is the *originate-to-distribute model*.

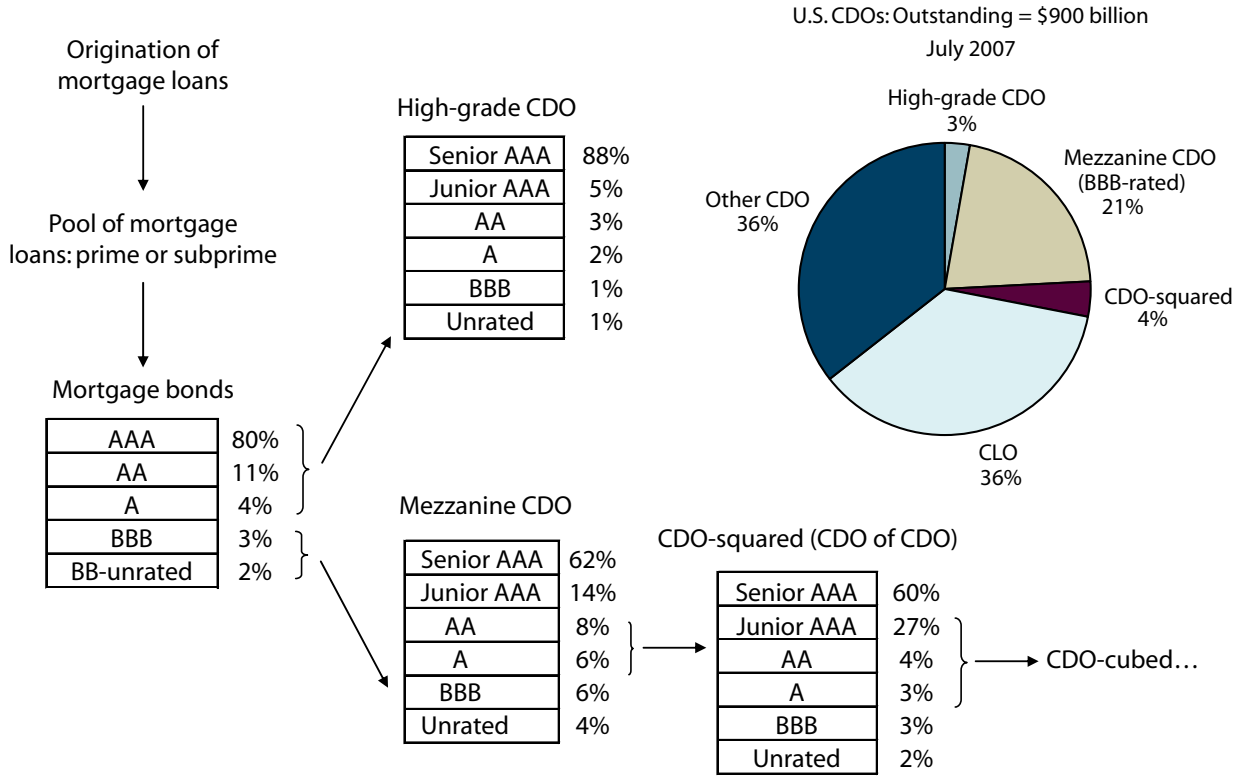
Securitization, which allowed the mortgage market to tap into a broader base for funding, also "unbundled" the three sources of revenue derived from home mortgages. Some firms (mortgage brokers) could handle the origination function, other firms could opt to service the mortgages, and investors could receive the interest and principal payments on the loans. This business model eventually had major ramifications, opening the door to an acceptance of riskier loans by originators, who could shift that risk to others.

During the housing boom, some borrowers used their home equity to juggle debt or finance lifestyles they could not truly afford.

Because they were so removed from the origination process, investors in mortgage-backed securities (MBS) relied on lenders—and even more heavily on rating agencies—to evaluate the quality of the underlying loans. Although credit ratings for MBS provided information for gauging risk, they should never have been considered a substitute for due diligence on the part of investors.

Figure 3: When is a AAA not a AAA?

Multilayered mortgage products create new and higher ratings



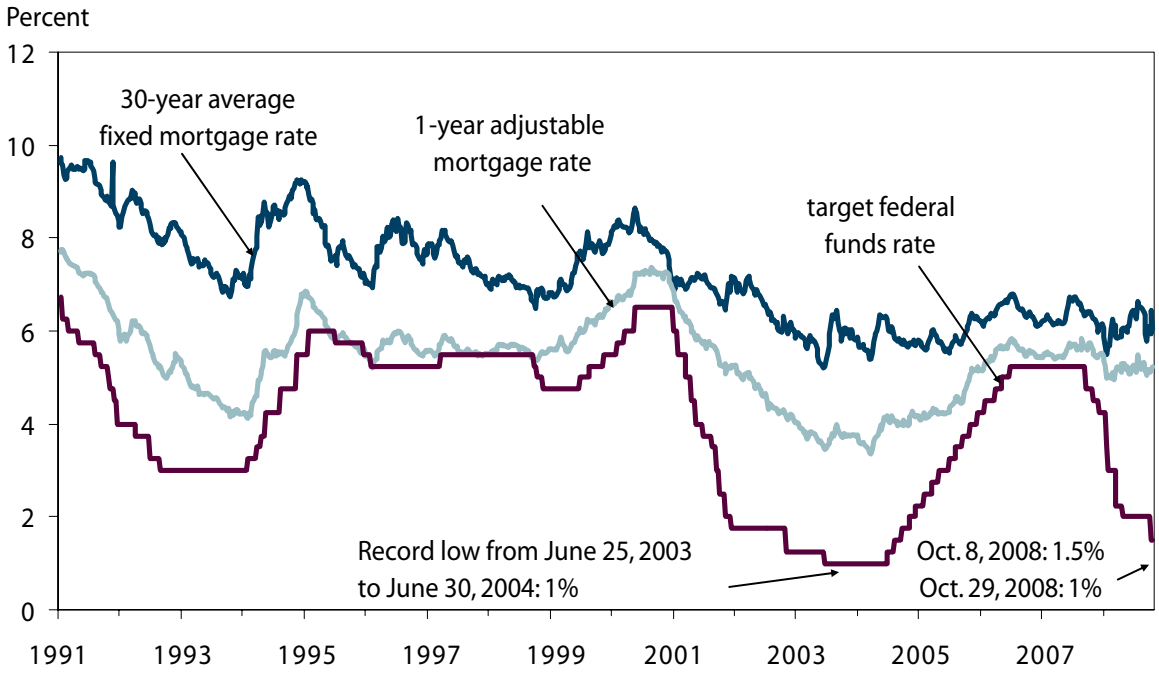
Sources: International Monetary Fund, Milken Institute.

Purchasers of the securities issued by Fannie Mae, Freddie Mac, and Ginnie Mae are guaranteed interest and principal payments, even if there are defaults on the underlying mortgages. MBS from private-label issuers are typically guaranteed by *monoline insurers* (so called because they only provide coverage for securities available in the capital markets). In 2006, these firms had insured $543 billion in MBS worldwide, which represented 25 percent of their total guarantees. The deterioration in the value of MBS in 2007 and 2008 raised concerns about the insurers' ability to honor their guarantees, even for municipal and other securities.

An important contributing factor to the most recent credit boom and the record homeownership rate it produced were the low interest rates that prevailed from 2001 to the end of 2004, as the Federal Reserve took steps to combat the 2001 recession and prevent deflation.

Figure 4: Did the Fed lower interest rates too much and for too long?

Federal funds rate vs. rates on fixed and adjustable mortgages



Sources: Freddie Mac, Federal Reserve, Milken Institute.

The low interest rate environment had another effect on many home buyers: they increasingly opted for adjustable rate mortgages (ARMs) over fixed-rate mortgages (FRMs). ARMs held a clear attraction for lenders, as they shifted interest rate risk to the borrowers. During the housing boom, many borrowers happily took that risk in exchange for the low initial payments that made purchasing homes more affordable.

In addition to funding home purchases, mortgage loans can also allow borrowers to tap into any equity that is built up in their homes. Indeed, nearly 15 percent of all mortgage originations in both 2006 and 2007 were home equity loans, up sharply from only about 5 percent in 2001. During the housing boom, consumers increasingly came to view their homes as ready sources of credit. In fact, some borrowers were using their home equity to juggle debt or finance lifestyles they could not truly afford unless home prices kept rising.

Buildup and Meltdown of the Mortgage and Credit Markets

The demand for residential real estate was seemingly insatiable. After rising at an average annual rate of slightly less than 3 percent during the 1990s, home prices jumped nationally by an average of nearly 9 percent per year from 2000 to 2006—and much higher in some overheated regions.

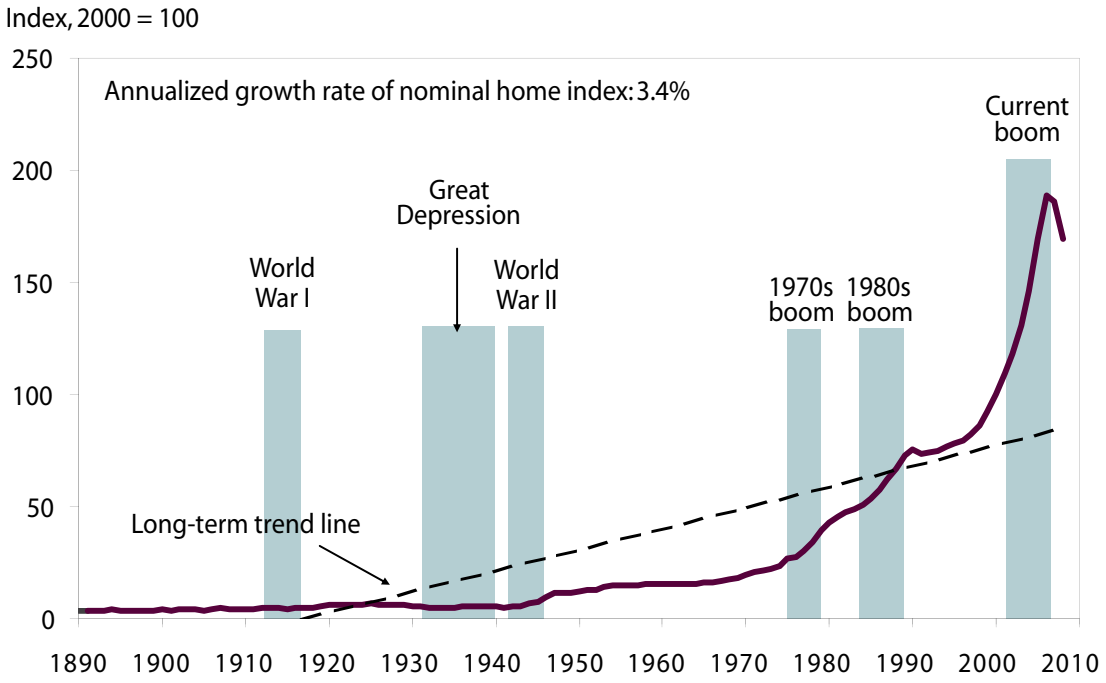
Fueled by low interest rates, subprime home mortgage originations increased dramatically, rising from 8 percent in 2001 to 21 percent in 2005. Eighty percent of these subprime loans were packaged into MBS in 2006, up from 32 percent in 1994.

Mortgage brokers found subprime loans attractive because they could earn fees while passing along the credit risk to those who ultimately funded the loans. In hindsight, many participants in the housing market who should have known better clearly underestimated the risks associated with subprime loans—and there were undoubtedly some players who chose to purposefully exploit the situation for short-term gain. Increased mortgage originations, in turn, pushed housing prices to even higher levels.

The subprime mortgage industry developed a number of innovative products that fueled its growth, including *hybrids* (loans that begin with a low fixed rate for an initial period, then reset to higher variable rates for the remainder of the term of the loan). In 2006, hybrids accounted for nearly two-thirds of all subprime mortgage loans. Many subprime borrowers simply intended to refinance before the rates went higher—and that strategy did work for a time. Some borrowers and lenders alike may have tended to focus only on the borrower's ability to carry the low initial payments.

As for the risks being incurred by lenders, some seem to have operated under the optimistic expectation that home prices would continue rising—or that mortgage loans would simply be securitized, shifting the credit risk to another party. Now that we are in a crisis, it is instructive to look back and examine whether there were ample signs of a housing bubble and whether heeding these warning signs could have mitigated the damage. Figure 5 shows that the recent run-up in prices quickly outstripped historical norms.

Figure 5: The recent run-up of nominal home prices was extraordinary
(1890–Q2 2008)



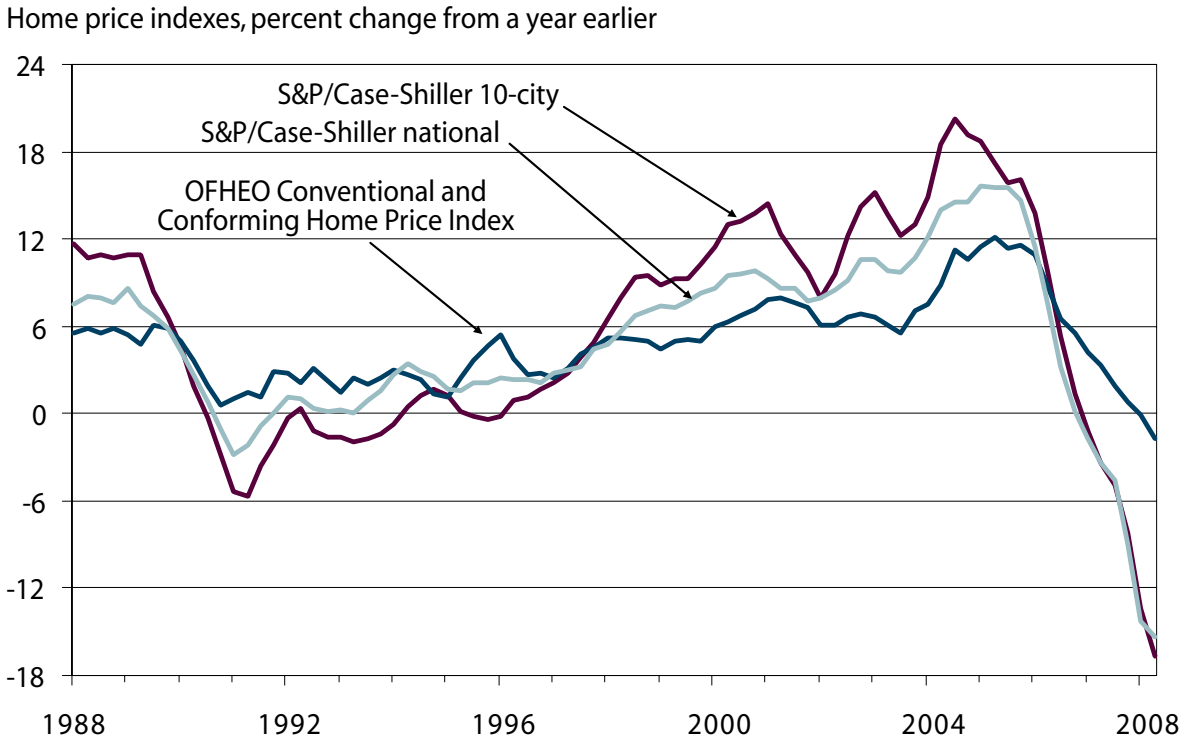
Sources: Shiller (2002), Milken Institute.
Note: The annualized growth rate is the geometric mean.

There were other warning signals. Median home prices rose sharply relative to median household income, showing that borrowers were stretching further and further to buy homes, and rent-to-price ratios also experienced precipitous declines. Given these signs, it is fair to ask why regulators and government officials failed to curtail the boom by, for example, tightening lending standards or increasing capital requirements.

By mid-2007, it was clear that the housing market had fallen into real distress. The most obvious sign was a long, steep plunge in home prices, as chronicled in figure 6 by two S&P/Case-Shiller home price indexes and one regulatory (OFHEO) home price index.

There were 1.3 million foreclosure starts from the third quarter of 2006 to the second quarter of 2008. Behind these numbers are countless stories of families in crisis.

Figure 6: The collapse in home prices begins
(quarterly, Q1 1988–Q2 2008)



Sources: S&P/Case-Shiller, OFHEO, Moody's Economy.com, Milken Institute.

Falling prices unleashed a cascade of consequences, as many homeowners, especially those who bought near the end of the boom, found themselves underwater (owing more than their home's value). Borrowers with ARMs were unable to refinance before their rates reset. Foreclosures rose sharply, especially in Arizona, California, Florida, and Nevada. One-third of homes sold between the third quarter of 2007 and the second quarter of 2008 were sold at a loss.

There were 1.3 million foreclosure starts over the two-year period from the third quarter of 2006 to the second quarter of 2008. Behind these numbers are countless stories of families in crisis. In many neighborhoods, empty properties sit neglected, driving nearby home values down even further. It is striking to note that the rate of foreclosures on subprime loans originated increased each year beginning in 2003. For loans originated in 2006, the foreclosure rate was 5.5 percent *just six months from origination*.

Given the increasing dollar amount of subprime loans being made, regulatory authorities should have initiated corrective action well before August 2007. Indeed, why do we have numerous and well-staffed regulatory agencies at all if they are asleep at the wheel?

The Pain Spreads Throughout the Financial Sector and Beyond

The financial crisis began spreading more widely in August 2007 with the collapse of two Bear Stearns hedge funds that invested heavily in subprime-related securities; many investors grew increasingly concerned about declining asset values and excessive leverage at other financial firms. Suddenly, the crisis on Main Street had arrived on Wall Street's doorstep.

The credit crunch was on: the spread between LIBOR and the overnight index swap rate and the TED spread, both indicators for availability of credit, jumped in July 2007 and remain much higher than their normal levels even as of this writing. The meltdown of the mortgage market had produced a widespread shortage of liquidity in the financial system. Firms with cash were holding onto it, and other firms were rebuilding their capital, making them reluctant to lend. These multifaceted problems soon spilled over to the real economy. Even for nonfinancial firms, credit spreads widened and stock prices declined. The unemployment rate rose as recessionary effects set in. Efforts to help the credit markets and the real economy toward recovery became critical.

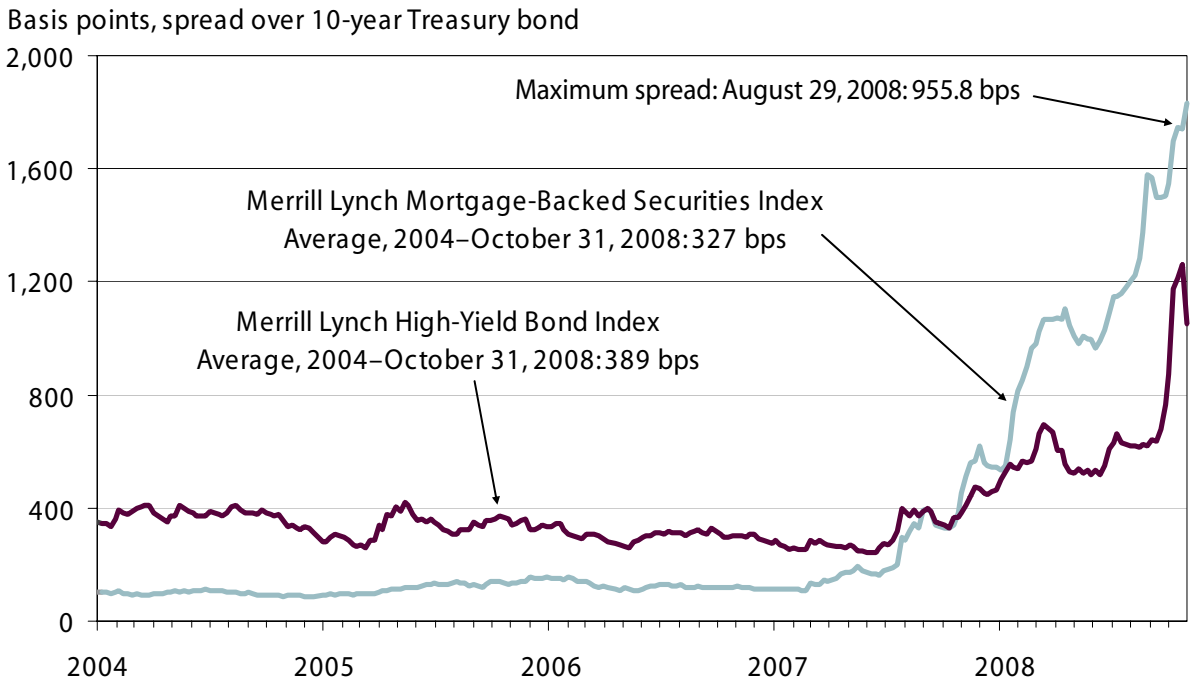
Worldwide through October 31, 2008, financial institutions have taken cumulative losses and write-downs of $685 billion and cut 149,220 jobs. More recently, Citigroup announced it was cutting another 52,000 jobs.

The disruptions in the mortgage and credit markets have been accompanied by unexpected twists—and no one knows for certain what the ultimate cost will be. Estimates from various sources of the likely losses range up to a high of $3 trillion. Worldwide through October 31, 2008, financial institutions have taken cumulative losses/write-downs of $685 billion. They have raised $688 billion in capital and cut 149,220 jobs. More recently, Citigroup alone announced it was cutting another 52,000 jobs. The top ten financial institutions accounted for 63 percent of the losses/write-downs, 58 percent of the capital raised, and 68 percent of the jobs cut.

While financial giants were calculating their mounting losses, millions of ordinary Americans watched in dismay as their investment accounts were shrinking by the day. The effect on current retirees and those nearing retirement age was devastating, and it remains to be seen how these losses, if they are not reversed, will strain the Social Security system in the years to come.

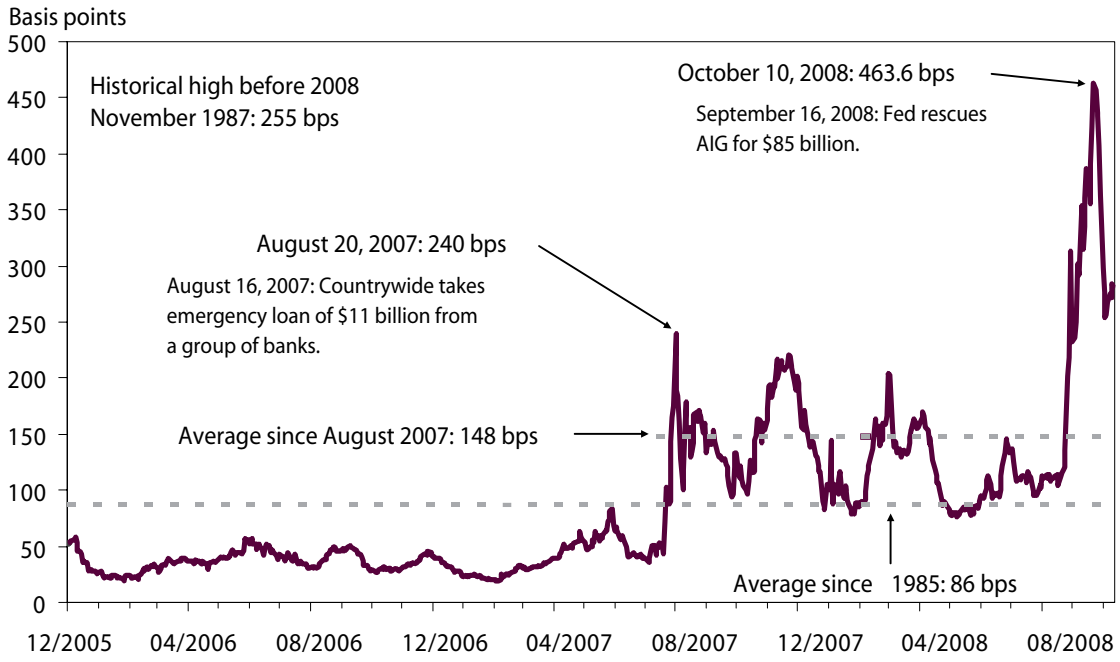
The pain has indeed spread far and wide. Even the yield spread between state and local government (municipal) bonds and ten-year Treasury bonds increased to its highest level since 1970, at almost ten percentage points. This spread is typically negative, because municipal bonds have a tax advantage over Treasury bonds that increases for individuals in higher tax brackets. But now municipal bonds have been harmed by the exposure of the monoline insurers that guaranteed them. Tightening market conditions also reduced the supply of credit available to state and local governments, which increasingly faced shortfalls.

Figure 7: Sign of collapse: Widening spreads between mortgage-backed and high-yield bonds
(weekly, 2004–October 31, 2008)



Sources: Bloomberg, Milken Institute.

Figure 8: Widening TED spread: Spread between three-month LIBOR and T-bill rate
(daily, October 31, 2005–October 31, 2008)



Sources: Bloomberg, Milken Institute.
Note: The TED spread is calculated as the difference between the three-month LIBOR and the three-month T-bill interest rate.

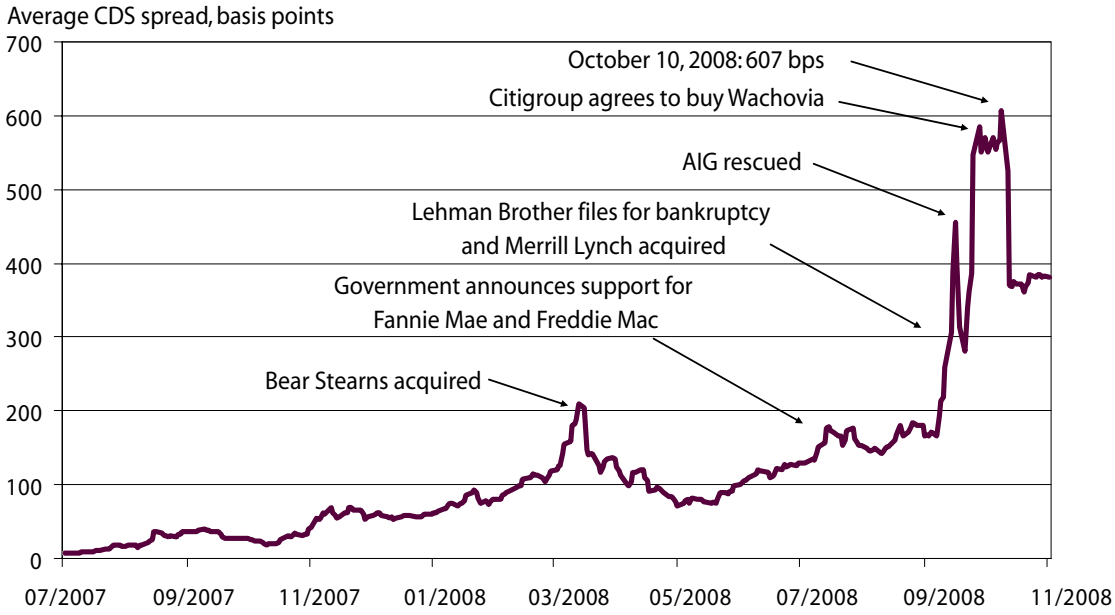
The total amount of commercial paper (short-term debt routinely issued by corporations to cover operating expenses) declined by $366 billion from September 10, 2008, to October 22, 2008. The slump further demonstrates how the subprime mortgage market meltdown had spread throughout and beyond the financial sector.

Even the safety of money market funds was called into question. Investors took withdrawals from their money market funds from twelve of the top twenty institutions in the four days from September 12 to September 16, 2008. During this five-day period, the Reserve Primary Fund suffered massive withdrawals—$24.8 billion, or nearly half of its assets—and on September 16 "broke the buck," which means the value of its shares dropped below a dollar.

All of the factors discussed above shook confidence, but there was another looming cloud: the unregulated market for credit default swaps (CDS), which had grown enormously in recent years. A CDS is a private contract between two parties, traded over the counter, so no one could say with certainty just how big each firm's exposure might be. This murkiness eroded confidence throughout 2008. CDS spreads widened not only for banks, but even more sharply for the travel and leisure industry, with automobiles and parts industry a close second.

There has been mounting concern about the tremendous growth in this market. The notional amount of CDS increased from less than $1 billion in 2001 to slightly more than $62 trillion in 2007, before declining to $47 trillion on October 31, 2008 (partly due to the industry's own efforts and partly due to recent auctions and settlements of Fannie Mae, Freddie Mac, and Lehman Brothers CDS contracts). At the present time, no one can say what amount is ultimately at risk in the CDS market. The notional amount is vast, but the actual exposure to losses is clearly smaller. But it remains to be seen exactly how large any losses will be, which parties will bear the losses, and whether those parties have sufficient capital to absorb them.

Figure 9: Counterparty risk increases for financial firms
(daily, July 2007–October 31, 2008)



Sources: Datastream, Milken Institute.

Note: Credit Derivatives Research (CDR) Counterparty Risk Index averages the market spreads of the credit default swaps of fifteen major credit derivatives dealers, including ABN Amro, Bank of America, BNP Paribas, Barclays Bank, Citigroup, Credit Suisse, Deutsche Bank, Goldman Sachs Group, HSBC, Lehman Brothers, JPMorgan Chase, Merrill Lynch, Morgan Stanley, UBS, and Wachovia.

This uncertainty is the very reason why regulatory authorities are trying to shift these types of credit derivatives to a central exchange: to better reduce the risk that the failure of a single counterparty will cause a systemic crisis. The failure of Lehman Brothers and the massive Federal Reserve loans to AIG in September 2008 sharpened concerns about counterparty risk and intensified interest in establishing a clearinghouse that will enable the netting of offsetting contracts, thereby reducing the notional amount of contracts to a level that actually represents the risk exposure to sellers. Once established, it can set up a fund to cover any losses in the event of a member institution default, employ mark-to-market pricing on a daily basis, and liquidate the positions of all member institutions who cannot post additional collateral, thereby reducing the risk of a systemic crisis. On October 31, 2008, the Depository Trust & Clearing Corporation (DTCC) announced that it will publish aggregate market data from its Trade Information Warehouse, the worldwide central trade registry it maintains on credit derivatives. This type of information should help to alleviate market concerns about transparency.

What Went Wrong . . . ?

The crisis in the housing and credit markets demands a full accounting of what went wrong. It is virtually impossible to prevent a similar disruption in the future (or at least contain its severity) without thoroughly understanding the factors that caused this turmoil.

. . . with Origination Practices and New Financial Products?

Part of what went wrong in the mortgage origination process can be attributed to the simple fact that new products create learning curves for both lenders and borrowers. The process by which lenders and borrowers decide on specific mortgage products is imperfect, and can even result in renegotiations of mortgage terms or the discontinuation of some products. And regulatory authorities should always be vigilant against fraud in mortgage markets, especially during periods of rapid credit expansion.

> Rating agencies received fees from the very issuers of securities who requested the ratings. Almost everything wound up with AAA ratings through the issuance of complex new investment vehicles that were "sliced and diced."

It is clear that origination practices did not always provide adequate information to potential borrowers that would enable them to make informed decisions, especially regarding new products. Some borrowers simply did not understand the terms of their loans.

Instead of trying to limit the products financial institutions can offer, it makes more sense to concentrate efforts on better informing potential customers about the available options and the specific terms of their loans. In November 2008, the U.S. Department of Housing and Urban Development (HUD) began to require mortgage lenders and brokers to provide borrowers with an easy-to-read standard Good Faith Estimate that will clearly help answer the key questions they have when applying for a mortgage.

. . . with Securitization and Rating Agencies?

The broad industry shift to an originate-to-distribute model relies on the ability to sell mortgage-backed securities (MBS) to investors. Rating agencies play a crucial role in providing information about the quality of such securities—but in the wake of the mortgage market meltdown, their performance has been called into question.

As of November 5, 2008, AAA-rated securities accounted for 29 to 45 percent of all rated fixed-income securities (depending on which of three rating agencies was providing the rating) that were issued between January 1, 2000, and September 30, 2008, and are still outstanding. It is interesting to note that around 90 percent or more of the securities were rated investment grade by the three major agencies (Standard & Poor's, Moody's, and Fitch).

Focusing more narrowly on the ratings of MBS from 2005 to 2007, more than half of these securities rated as investment grade were eventually downgraded to below investment grade. Even among the securities rated AAA, roughly one in six were downgraded within three years.

The rating process for securities backed by subprime loans was marked by a fundamental conflict: Agencies received fees from the very issuers who requested the ratings—and almost everything wound up with AAA ratings through the issuance of complex new investment vehicles that were created from the "slicing and dicing" of earlier securities.

Table 1: 56 percent of mortgage-backed securities issued from 2005 to 2007 were eventually downgraded

S&P	Total	Downgraded	Downgraded as a percentage of total
AAA	1,032	156	15.1
AA(+/-)	3,495	1,330	38.1
A(+/-)	2,983	1,886	63.2
BBB(+/-)	2,954	2,248	76.1
BB(+/-)	789	683	86.6
B(+/-)	8	7	87.5
Total	11,261	6,310	56.0

Sources: Inside Mortgage Finance, Milken Institute.
Note: A bond is considered investment grade if its credit rating is BBB- or higher by S&P.

…with Leverage?

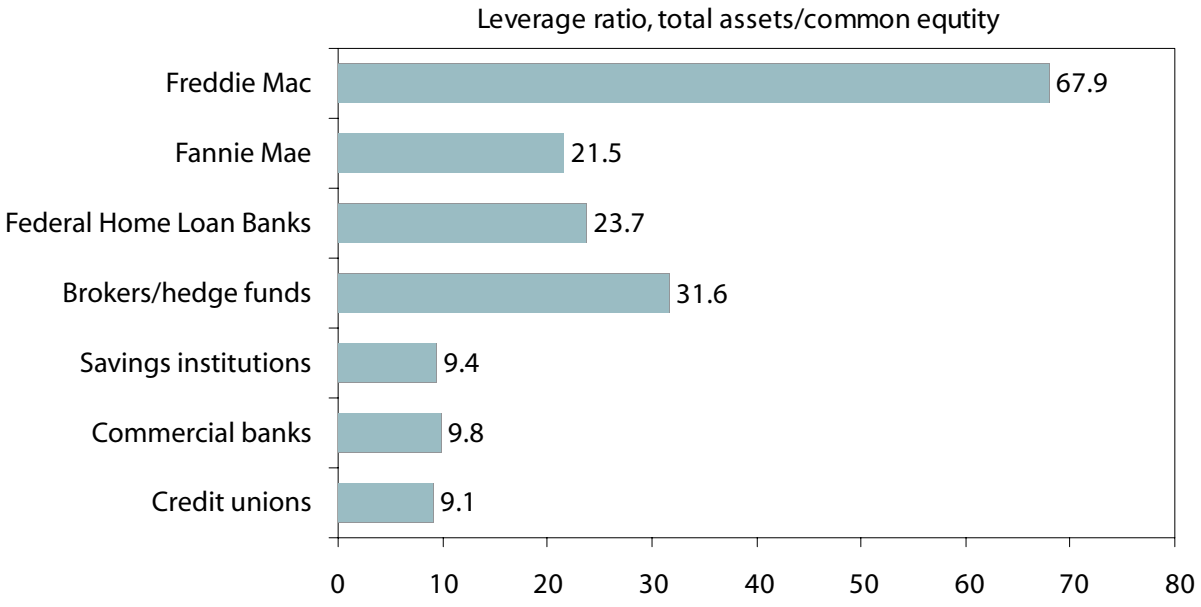
How could $1.2 trillion in subprime mortgages outstanding cause such a large global financial disaster? Leverage is certainly a part of the problem. If banks maintain a leverage ratio of 10:1, only $120 billion of capital can support $1.2 trillion. With such a small amount supporting such risky loans, a 10 percent decline in the $1.2 trillion of assets could wipe out all of the banks' capital. Of course, some institutions were more highly leveraged than 10:1, and in some areas, home prices have fallen much more than 10 percent; so too has the value of the subprime mortgages. (If the ratio were 30:1, which was the case with some firms, then the supporting capital for $1.2 trillion would be only $40 billion.) These situations can force some institutions into insolvency if capital cannot be raised to offset the decline in the value of assets.

Letting regulated institutions grow too big with too little capital is a recipe for disaster.

One fundamental truth governs all financial institutions: the greater the leverage, the smaller the decline in asset values that can be absorbed before insolvency occurs. This is why regulatory authorities overseeing financial institutions set minimum capital requirements.

Figure 10 shows the leverage ratios for different types of financial institutions, as measured by total assets relative to common equity. As of June 2008, the leverage ratios range from 9.1 to 67.9. Letting regulated institutions grow too big with too little capital is a recipe for disaster.

Figure 10: Leverage ratios of different types of financial firms
(June 2008)



Sources: Federal Deposit Insurance Corporation, Office of Federal Housing Enterprise Oversight, National Credit Union Administration, Bloomberg, Google Finance, Milken Institute.

There has been a dramatic decline in the capital-asset ratio and the long-term increase in the leverage of commercial banks. Indeed, each dollar of capital supported $3.56 of assets in 1896, whereas the same dollar supported $9.89 of assets in 2007. The leverage issue for financial firms is compounded by the fact that they also rely on borrowings to fund their assets. In 1994, borrowed funds were 14 percent of total assets, but they had increased to 20 percent by the second quarter of 2008. Heavier reliance on borrowed funds means that banks must be able to roll over those funds to maintain the same total amount of assets, apart from any increases in equity. This puts banks in a more difficult position when asset values decline and the investors from whom they borrow become increasingly reluctant to lend. In such a situation, banks are required to raise additional capital, sell assets, or undertake a combination of the two, even just to be sure there is sufficient cash to meet payrolls and other ongoing operating expenses.

…with Fannie Mae and Freddie Mac?

These two government-sponsored enterprises (or GSEs) became the dominant players in the home mortgage market, holding or guaranteeing more than $5.5 trillion in home mortgages. But both Fannie Mae and Freddie Mac were enormously highly leveraged. With thin capital ratios, any significant decline in the value of their assets would wipe out their capital—and both institutions did indeed suffer substantial losses when housing prices began to decline. On a fair value basis, Fannie Mae reported it was near insolvency in the second quarter of 2008, while Freddie Mac reported it was actually insolvent. One quarter later, however, both institutions were reporting insolvency on a fair value basis.

This dire situation can largely be explained by the fact that both institutions have had a mandate not simply to focus on profits, but to provide funding for affordable housing. Also, both institutions recently were holding relatively large amounts of securities backed by subprime and Alt-A mortgages (Alt-A loans are a notch above subprime, but considered riskier than prime loans). The subprime-backed securities alone accounted for 71 percent of the core capital of Fannie Mae, and 116 percent of the core capital of Freddie Mac. Furthermore, interest-only conventional mortgages securitized by Freddie Mac increased from $25 billion in 2005 to $159 billion, or more than 500 percent, in 2007.

> Going forward, much more effort should be devoted to preemptive actions that can prevent asset bubbles rather than to cleaning up the mess once the bubbles have burst.

…with Regulation and Supervision?

The current crisis cannot be chalked up to a *lack* of regulators. It is not even clear that the existing regulators need more powers. It is worth considering whether there are simply too many regulators with overlapping responsibilities—who did not adequately use the powers already granted to them to contain the emerging problems in the subprime mortgage market before they spread. In addition, there are at least ten U.S. congressional committees that have some jurisdiction over the financial services sector.

There were undeniable signs that a housing price bubble was growing, fueled by the excessive credit being provided to consumers, especially to subprime borrowers. Going forward, much more effort should be devoted to preemptive actions that can prevent asset bubbles rather than to reactive actions designed to clean up the mess once the bubbles have burst.

In recent years, FDIC-insured institutions, particularly commercial banks, were not only funding the subprime mortgage loans on their own balance sheets, but also providing both on- and off-balance sheet funding to other financial firms involved in subprime loans. In addition, they were directly involved in securitizing such loans through special-purpose entities.

Depository institutions have experienced an increase in delinquent loans, which climbed from $49 billion in June 2006 to $163 billion in June 2008. Clearly, the value of troubled loans has been growing faster than the reserves set aside to cover losses. To get back to the same ratio that existed in March 2005, loan-loss reserves would have had to increase by $136 billion.

In times of financial difficulties, the shakiest institutions typically offer the highest rates on their deposits, hoping to grow their way out of their problems. (Right before IndyMac was seized by the FDIC in July 2008, it was offering the nation's highest rates on six-month and twelve-month CDs.) This should be a warning sign that merits closer examination by regulatory agencies.

It is also interesting to note the growing importance of brokered deposits and advances by the Federal Home Loan Banks to FDIC-insured institutions. IndyMac Bank, which had $32 billion in assets, funded about one-third ($10 billion) of them with advances from the Federal Home Loan Bank of San Francisco before its failure, and roughly another one-sixth ($5.5 billion) from brokered deposits. This raises serious issues about the extent to which such advances and brokered deposits help an institution avoid failure—or simply enable it to postpone the inevitable while gambling for resurrection. If so, these particular sources of funds are merely shifting additional risk to the FDIC. The IndyMac Bank failure is estimated by the FDIC to cost $8.9 billion.

…with the Greed Factor?

There is no doubt that old-fashioned greed played some role in what has transpired. In addition to investors and speculators who helped to drive up home prices to dangerous levels, other individuals engaged in fraud (from property flipping with falsely inflated appraisals to lying on loan applications) to the detriment of lending institutions. The number of mortgage fraud cases documented in suspicious activity reports by the Federal Bureau of Investigation grew sharply from 2002 to 2007. The Financial Crimes Enforcement Network (part of the U.S. Treasury Department) also reported that fraudulent activities involved some financial professionals who knew how to exploit vulnerabilities in the loan process.

Even in the absence of fraud, the housing bubble seemed to promise such quick, outsized profits that many market participants simply threw caution to the wind. Investors in securities backed by subprime loans—particularly in the more exotic types—must now more fully appreciate the fact that the marketplace is sometimes quite harsh in punishing those who do not properly evaluate risk.

So Far, Only Piecemeal Fixes

The government has taken a number of steps to try to contain the turmoil spreading throughout the financial sector and prevent it from causing greater harm to the real economy. But in many respects, it has engaged in a series of flip-flops that have exacerbated the uncertainty in the marketplace.

In March 2008, Bear Stearns was bailed out—but six months later, Lehman Brothers was allowed to fail. Within weeks, the government shifted gears yet again, as American International Group (AIG) was rescued. No convincing rationale for this varying treatment of institutions has ever been provided. When the Treasury Department received authorization to spend up to $700 billion to shore up the financial system, officials initially indicated that the money would be used to purchase troubled assets. But shortly thereafter, the first $125 billion was used instead for injecting capital into nine of the biggest institutions. Again, the public received no clear explanation for this sudden switch in strategy.

Even as billions—and indeed trillions—of dollars have been committed through capital injections and guarantees, the public has found the response to be confusing and patchwork at best.

Even as billions—and indeed trillions—of dollars have been committed through capital injections and guarantees, the public has found the response to be confusing and patchwork at best.

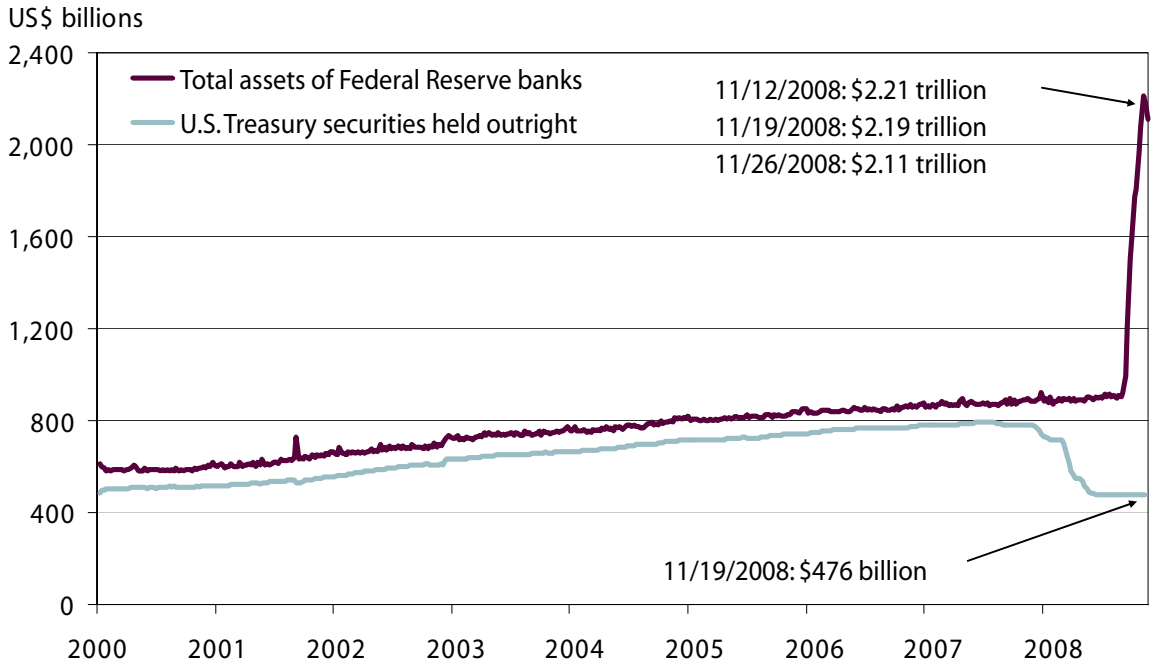
The Federal Reserve Intervenes to Provide Liquidity and Higher-Quality Collateral

The Federal Reserve has not won universally rave reviews for its response to the crisis, making it important to examine the actions it has taken to stem the bleeding in the financial sector and soften the decline in real economic activity.

Beginning on August 17, 2007, the Fed cut the discount rate ten times, from 6.25 percent to of 1.25 percent on October 29, 2008. Similarly, beginning on September 18, 2007, the Fed lowered its target federal funds rate nine times, from 5.25 percent to a low of 1.0 percent on October 29, 2008. But through November 2008, rates remained largely flat for thirty-year fixed-rate mortgages.

In addition to lowering the discount and federal funds rates, the Federal Reserve established a number of new and historic programs between August 2007 and October 2008, changing the composition of its balance sheet dramatically. For the most part, the Fed's initial response involved simply swapping troubled private-sector securities for Treasury securities or making loans to the private sector. It was not adding to the supply of liquidity until recent months. Apparently not until relatively late in the game did the Fed's concerns about inflationary pressures give way to concerns about slowing real economic activity and deflation.

Figure 11: Federal Reserve assets increased but asset quality deteriorated
(weekly, January 5, 2000–November 26, 2008)



Sources: Federal Reserve, Milken Institute

The overall impacts of the recent and largely unprecedented actions by the Fed are summarized in table 2. It is apparent that the balance sheet ballooned tremendously in a relatively short period of time. The Fed's total assets back in mid-2007, before the crisis, were mainly constrained by the public's holdings of cash and depository institutions' holdings of reserves. Since then, the Treasury's deposits have provided additional growth in the balance sheet. As a result, the Federal Reserve's assets now exceed $2.1 trillion and its assumed responsibilities beyond targeting prices have correspondingly grown enormously.[1]

Table 2: Impact of recent actions on the Fed's balance sheet

US$ billions	July 5, 2007	November 26, 2008	Date of announcement of action	Notes
Treasury securities held outright	790.6	476.4	-	Before the crisis, these securities accounted for nearly 90 percent of the Federal Reserve's assets. This figure had declined to 22.5 percent on November 26, 2008.
Miscellaneous	51.6	87.5	-	Including $11 billion in gold certificate account
Foreign currencies and other assets	38.3	514.5	-	U.S. dollars were swapped for foreign currencies so that foreign central banks could satisfy local demand for U.S. dollars.
Term Discount Window Program (TDWP)	-	91.7	10/17/07	The program extends the term of discount window loans from overnight to up to 90 days.
Term Auction Facility (TAF)	-	406.5	12/12/07	The Federal Reserve auctions off loans under the TAF every Thursday for a term of 28 days. It may expand TAF lending to $900 billion by the end of 2008.
Primary Dealer Credit Facility (PDCF)	-	57.9	3/16/08	The PDCF extends overnight borrowing from the Federal Reserve to primary dealers.
Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility (AMLF)	-	53.3	9/19/08	Loans to banks so that they can buy asset-backed commercial paper from money market funds

1. On November 7, 2008, Bloomberg News filed suit in the U.S. District Court, Southern District of New York (Manhattan), to force the Federal Reserve to disclose securities it is accepting as collateral for all the loans it has made to banks.

US$ billions	July 5, 2007	November 26, 2008	Date of announcement of action	Notes
Commercial Paper Funding Facility (CPFF)	-	294.1	10/7/08	Under the CPFF, a special-purpose vehicle (SPV) will purchase from eligible issuers three-month U.S. dollar-denominated commercial paper through the New York Fed's primary dealers.
Money Market Investor Funding Facility (MMIFF)	-	0.0	11/24/08	The MMIFF provides assurance that money market mutual funds can liquidate their investments if cash is needed to cover withdrawals from customers.
Bear Stearns	-	27.0	3/14/08	Market value of the initial $29 billion mortgage-backed securities, acquired by the Federal Reserve from JPMorgan Chase to fund its purchase of Bear Stearns, and now held by Maiden Lane LLC
AIG	-	100.7	9/16/08	This includes: a $85 billion two-year secured loan to AIG on September 16, 2008; an additional $20.9 billion credit line under CPFF on October 30, 2008; a $22.5 billion lending facility to purchase MBS from AIG; and another $30 billion facility to purchase CDOs on which AIG has written CDS contracts (both of these facilities were created on November 10, 2008). As of November 25, 2008, $79.6 billion of credit was extended to AIG and $21.1 billion was extended for purchasing CDOs.
Total assets	880.4	2,109.6		
Memo: Term Securities Lending Facility (TSLF)	-	193.2	3/11/08	The TSLF establishes term swaps between the Federal Reserve and primary dealers. Collateral can be Treasury securities, federal agency securities, and other highly rated debt securities.

Sources: Federal Reserve, Milken Institute.

Congress and the White House Take Steps to Contain the Damage

Congress and the White House made their own attempts to rein in the housing and financial meltdown beginning in late 2007. But as the crisis escalated in the autumn of 2008, the federal government made increasingly dramatic moves. On September 7, the Federal Housing Finance Agency (FHFA) placed Fannie Mae and Freddie Mac into conservatorship, while Treasury announced a temporary program to purchase GSE mortgage-backed securities to help make loan financing more available to home buyers. Less than two weeks later, in an effort to head off a destructive run, Treasury announced a temporary guaranty program for money market mutual funds. On the same day, the Securities and Exchange Commission (SEC) temporarily banned short selling, which some believe was unduly contributing to plunging stock prices.

As of November 21, 2008, Treasury had injected $161.5 billion into fifty-three financial institutions under the TARP program.

The most sweeping action of all came on October 3, 2008, when the Emergency Economic Stabilization Act (EESA) was signed into law. The Act empowers Treasury to use up to $700 billion to inject capital into financial institutions, purchase or insure mortgage assets, and purchase any other troubled assets that Treasury deems necessary for market stability. In a follow-up move, Treasury unveiled the Troubled Assets Relief Program (TARP) with the announced purchase of $250 billion of senior preferred shares, and half of this amount going to nine big financial institutions. As of November 21, 2008, actual capital injections under TARP amounted to $161.5 billion to fifty-three institutions.

On November 12, 2008, Treasury announced that it was evaluating programs that would further leverage the impact of a TARP investment by attracting private capital, potentially through matching investments.

One alternative approach to capital injection is to ask, or require, the debt holders to swap their debt for an equity share in a troubled institution. This particular approach to help recapitalize institutions has not received much attention. Although it is not clear why it was apparently left off the menu of options, it should receive more serious consideration. This could be accomplished by temporarily extending more favorable tax treatment to such transactions.

On November 24, 2008, a portion of $306 billion of Citigroup's assets were guaranteed by the government. Citigroup is set to absorb the first loss up to $29 billion, and any loss in excess of that amount will be shared by the government (90 percent) and Citigroup (10 percent). Treasury (via TARP) takes the second loss up to $5 billion, while FDIC takes the third loss up to $10 billion. The Federal Reserve funds the remaining pool of assets with a nonrecourse loan, subject to Citigroup's 10 percent loss sharing, at a floating rate of overnight interest swap plus 300 basis points.

Attracting little notice at the time, Treasury issued a new regulation (Notice 2008-83) on September 30, 2008, allowing banks—and only banks—that acquire another bank to offset their profits with losses from the loan portfolio of the acquired institution. Since the corporate tax rate is essentially 35 percent, this means acquiring banks can avoid paying $35,000 in taxes for every $100,000 in losses they can use to offset profits. This created tremendous incentives for healthier institutions to acquire troubled institutions.

The FDIC Takes Steps to Instill Greater Confidence in Depository Institutions

In response to several high-profile bank failures, the FDIC took steps to instill greater confidence in all federally insured depository institutions. On October 3, 2008, the EESA temporarily raised the basic limit on federal deposit insurance coverage from $100,000 to $250,000 per depositor (currently the basic deposit insurance limit is scheduled to return to $100,000 after December 31, 2009).

The FDIC's reserves had fallen to $45.2 billion as of June 30, 2008, representing 1.01 percent of insured domestic deposits—well below the statutory ratio of 1.15 percent. To rectify the situation, on October 7, 2008, the FDIC adopted a plan to replenish reserves. It also proposed new rules to increase the rates banks pay for deposit insurance, and adjusted the process by which those rates are set.

On October 14, 2008, Secretary Paulson signed the systemic risk exception to the FDIC Act, enabling the FDIC to temporarily guarantee the senior debt (including promissory notes, commercial paper and inter-bank funding) of all FDIC-insured institutions and their holding companies, as well as deposits in non-interest-bearing deposit transaction accounts. Regulators were to implement an enhanced supervisory framework to assure appropriate use of this new Temporary Liquidity Guarantee Program (TLGP).

The FDIC also adopted a mortgage modification program in August 2008 to address foreclosures after it took over IndyMac Bank (which became IndyMac Federal Bank).

The Government's Actions Drive Up the Deficit

Table 3: A Growing Tab for Taxpayers

Program	Loans, guarantees, and investments	Date announced	How the programs work
Federal Reserve Programs			
Term Discount Window Program (TDWP)	$92 billion as of 11/26/2008	10/17/07	Extends the term of discount window loans from overnight to up to 90 days.
Term Auction Facility (TAF)	$407 billion as of 11/26/2008	12/12/07	The Fed auctions off loans under the TAF every Thursday for a term of 28 days. It may expand TAF lending so that $900 billion of TAF credit will potentially be outstanding over year-end 2008.
Term Securities Lending Facility (TSLF)	$193 billion as of 11/26/2008	3/11/08	Establishes term swaps between the Fed and primary dealers. Collateral can be Treasury securities, federal agency securities, and other highly rated debt securities.
Bear Stearns	Up to $29 billion	3/14/2008	The Fed acquired $29 billion in mortgage-backed securities from JPMorgan Chase to fund its purchase of Bear Stearns. As of November 26, 2008, the market value of these mortgage-backed securities is $27.0 billion.
Primary Dealer Credit Facility (PDCF)	$58 billion as of 11/26/2008	3/16/08	Extends overnight borrowing from the Federal Reserve to primary dealers.
AIG	Up to $173 billion	9/16/2008	AIG received an $85 billion, two-year secured loan on September 16, 2008, in exchange for warrants for a 79.9 percent equity stake in the firm. It was given an additional $37.8 billion on October 8, and another $20.9 billion credit line under CPFF on October 30. On November 10, Treasury purchased $40 billion of newly issued AIG preferred stock under the TARP (potentially reducing the original loan from $85 billion to $60 billion), terminated the $37.8 billion lending facility previously established, created a new lending facility to purchase up to $22.5 billion MBS from AIG, and set-up another facility to lend up to $30 billion to purchase CDOs on which AIG had written CDS. As of November 26, 2008, $79.6 billion of credit was extended to AIG and $21.1 billion was extended to purchase CDOs.

Program	Loans, guarantees, and investments	Date announced	How the programs work
Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility (AMLF)	$53 billion as of 11/26/2008	9/19/2008	Loans to banks so that they can buy asset-backed commercial paper from money market funds.
Expansion of the Federal Open Market's temporary reciprocal currency arrangements (swap lines)	Up to $620 billion	9/29/2008	The Federal Open Market Committee authorized a $330 billion expansion of its swap lines for U.S. dollar liquidity operations by other central banks, raising the total cap to $620 billion (up to $30 billion by the Bank of Canada, $80 billion by the Bank of England, $120 billion by the Bank of Japan, $15 billion by Danmarks Nationalbank, $240 billion by the ECB, $15 billion by the Norges Bank, $30 billion by the Reserve Bank of Australia, $30 billion by the Sveriges Riksbank, and $60 billion by the Swiss National Bank).
Commercial Paper Funding Facility (CPFF)	Up to $1.8 trillion	10/7/08	The CPFF will be structured as a credit facility to a special-purpose vehicle (SPV). The SPV will purchase from eligible issuers three-month U.S. dollar-denominated commercial paper through the New York Fed's primary dealers. Eligible issuers are U.S. issuers of commercial paper, including U.S. issuers with a foreign parent company. The SPV will only purchase U.S. dollar-denominated commercial paper (including asset-backed commercial paper) that is rated at least A-1/P-1/F1 by a major nationally recognized statistical rating organization (NRSRO) and, if rated by multiple major NRSROs, is rated at least A-1/P-1/F1 by two or more major NRSROs. The maximum amount of a single issuer's commercial paper the SPV may own at any time will be the greatest amount of U.S. dollar-denominated commercial paper the issuer had outstanding on any day between January 1 and August 31, 2008. The SPV will not purchase additional commercial paper from an issuer whose total commercial paper outstanding to all investors (including the SPV) equals or exceeds the issuer's limit. As of 11/26/2008, $294 billion was outstanding.

Program	Loans, guarantees, and investments	Date announced	How the programs work
Money Market Investor Funding Facility (MMIFF)	Up to $540 billion	10/21/08	The MMIFF provides assurance that money market mutual funds can liquidate their investments if cash is needed to cover withdrawals from customers. As of November 26, 2008, the outstanding amount was zero.
Term Asset-Backed Securities Loan Facility (TALF)	Up to $200 billion	11/25/2008	TALF loans will have a one-year term, will be nonrecourse to the borrower, and will be fully secured by eligible ABS. Treasury will provide $20 billion of credit protection to the Fed in connection with the TALF. Eligible collateral will include U.S. dollar-denominated cash (that is, not synthetic) ABS that have a long-term credit rating in the highest investment-grade rating category (for example, AAA) from two or more major nationally recognized statistical rating organizations (NRSROs) and do not have a long-term credit rating of below the highest investment-grade rating category from a major NRSRO. The underlying credit exposures of eligible ABS initially must be auto loans, student loans, credit card loans, or small business loans guaranteed by the U.S. Small Business Administration. All U.S. persons that own eligible collateral may participate in the TALF. Collateral haircuts will be established by the FRBNY for each class of eligible collateral. Haircuts will be determined based on the price volatility of each class of eligible collateral.
Purchase of GSE direct obligations and MBS	Up to $600 billion	11/25/2008	The Fed will purchase the direct obligations of housing-related government-sponsored enterprises (GSEs)—Fannie Mae, Freddie Mac, and the Federal Home Loan Banks—and mortgage-backed securities (MBS) backed by Fannie Mae, Freddie Mac, and Ginnie Mae. Purchases of up to $100 billion in GSE direct obligations under the program will be conducted with the Fed's primary dealers through a series of competitive auctions and will begin in the first week of December. Purchases of up to $500 billion in MBS will be conducted by asset managers selected via a competitive process with a goal of beginning these purchases before year-end 2008. Purchases of both direct obligations and MBS are expected to take place over several quarters.

Program	Loans, guarantees, and investments	Date announced	How the programs work
Congress and the Bush administration			
FHA Secure	$50 billion	08/31/2007	Guarantees $50 billion in mortgages.
Economic Stimulus Act	$124 billion	2/13/2008	Provided tax rebates in 2008. Most taxpayers below the income limit received rebates of $300–$600. Also gave businesses a one-time depreciation tax deduction on specific new investment and raised the limits on the value of new productive capital that may be classified as business expenses during 2008. The Congressional Budget Office (CBO) estimates the net cost of the stimulus to be $124 billion.
Housing and Economic Recovery Act of 2008	$24.9 billion	7/30/2008	The CBO estimates that the Act will increase budget deficits by about $24.9 billion over the 2008 to 2018 period.
Purchase of GSE Debt and Equity	*$25 billion*	7/30/2008	Designed to shore up Fannie Mae and Freddie Mac
HOPE for Homeowners	*Up to $300 billion*	7/30/2008	This voluntary program encourages lenders to write down the loan balances of borrowers in exchange for FHA-guaranteed loans up to 90 percent of the newly appraised home value. Program runs through September 2011.
Conservatorship of Fannie Mae and Freddie Mac	Up to $200 billion	9/7/2008	Treasury and FHFA established contractual agreements to ensure that each company maintains a positive net worth. They are indefinite in duration and have a capacity of $100 billion each. Treasury also established a new secured lending credit facility, available to Fannie Mae, Freddie Mac, and the Federal Home Loan Banks. Funding is provided directly by Treasury in exchange for eligible collateral from the GSEs (guaranteed mortgage-backed securities issued by Freddie Mac and Fannie Mae, as well as advances made by the Federal Home Loan Banks). To further support the availability of mortgage financing, Treasury is initiating a temporary program to purchase GSE MBS, with the size and timing subject to the discretion of the Treasury Secretary.

Program	Loans, guarantees, and investments	Date announced	How the programs work
Guaranty Program for Money Market Funds	Up to $50 billion	9/19/2008	To restore confidence in money market funds, Treasury made available up to $50 billion from the Exchange Stabilization Fund.
IRS Notice 2008-83	?	9/30/2008	Allows banks to offset their profits with losses from the loan portfolio of banks they acquire. Initial media reports indicate that Wells Fargo alone may be able to claim more than $70 billion in losses from its acquisition of Wachovia, obtaining tax savings that exceed the market value of Wachovia as of November 7, 2008.
Emergency Economic Stabilization Act	Up to $700 billion	10/3/2008	Empowers Treasury to use up to $700 billion to inject capital into financial institutions, to purchase or insure mortgage assets, and to purchase any other troubled assets necessary to promote financial market stability.
Troubled Assets Relief Program (TARP)	*$179 billion as of November 7, 2008*	10/14/2008	Part of the EESA, TARP allows Treasury to purchase up to $250 billion of senior preferred shares in selected banks. The first $125 billion was allocated to nine of the nation's largest financial institutions on October 28, 2008. An additional $34 billion was allocated to twenty-one banks as of October 29, 2008. On November 23, 2008, Treasury purchased an additional $20 billion of preferred shares from Citigroup.
Federal Deposit Insurance Corporation			
Increase FDIC insurance coverage	?	10/3/2008	A provision of EESA temporarily raised the basic limit on federal deposit insurance coverage from $100,000 to $250,000 per depositor. Limits are scheduled to return to $100,000 after December 31, 2009.

Program	Loans, guarantees, and investments	Date announced	How the programs work
Temporary Liquidity Guarantee Program (TLGP)	$1.5 trillion plus ?	10/14/2008	Temporarily guarantees the senior debt of all FDIC-insured institutions and their holding companies, as well as deposits in non-interest-bearing deposit transaction accounts. Certain newly issued senior unsecured debt issued on or before June 30, 2009, would be fully protected in the event the issuing institution subsequently fails, or its holding company files for bankruptcy. This includes promissory notes, commercial paper, interbank funding, and any unsecured portion of secured debt. Coverage would be limited to June 30, 2012. The other part of the program provides for a temporary unlimited guarantee of funds in non-interest-bearing transactions accounts (the Transaction Account Guarantee Program, or TAG). On November 21, 2008, FDIC strengthened TLGP. Chief among the changes is that the debt guarantee will be triggered by payment default rather than bankruptcy or receivership. Another change is that short-term debt issued for one month or less will not be included in the TLGP. Eligible entities will have until December 5, 2008, to opt out of TLGP.
Treasury, Federal Deposit Insurance Corporation, and Federal Reserve			
Guarantee a portion of an asset pool of loans and securities backed by residential and commercial real estate and other such assets on Citigroup's balance sheet	$249 billion (with $5 billion via TARP)	11/23/2008	Up to $306 billion of Citigroup's assets are guaranteed. Citigroup takes the first loss up to $29 billion, and any loss in excess of that amount is shared by the government (90%) and Citigroup (10%). Treasury (via TARP) takes the second loss up to $5 billion, while FDIC takes the third loss up to $10 billion. The Federal Reserve funds the remaining pool of assets with a nonrecourse loan, subject to Citigroup's 10 percent loss sharing, at a floating rate of overnight interest swap plus 300 basis points.
Loans, guarantees, and investments committed	**$7.5 trillion plus ?**	**As of 11/26/08**	**The final tab for taxpayers will only become known once the crisis is over.**

Where Should We Go from Here?

The bottom line is that greater efforts must be undertaken to be sure that financial institutions are never excessively leveraged, never operate with insufficient liquidity, and never let themselves get into a position from which they are unable to provide credit to the marketplace. A well-functioning financial system is one in which this situation simply does not occur.

More generally, regulators must develop the most appropriate mix of private and governmental responses. It is important to take into account that market discipline becomes virtually nonexistent if there is a general perception that the government can always be counted upon to make sure financial institutions operate safely and soundly, and that if they do not, to cover losses.

The government-supported housing finance system is now in dire need of repair.

The U.S. credit market is by far the most highly evolved in the world. But the financial crisis has called into question the reliability of publicly available information, the complexity of some of the financial products in the marketplace, and the adequacy of our existing regulatory structure. Most importantly, it demonstrates that the foremost goal of regulation should be to prevent a systemic financial crisis that spills over to adversely affect economic growth.

Regulation should not be designed to ensure the solvency of individual financial firms, but instead to prevent broad crises from taking hold in the financial sector. In fact, regulation should facilitate prompt resolution (that is, corrective action to resolve the deteriorating performance of a firm before things get even worse). Prompt resolution at minimum cost reallocates more resources more efficiently than a drawn-out process.

Another goal of regulation is to allocate credit fairly, widely, and productively. To support housing finance, the government has long supported the existence of a separate savings and loan industry and offered tax advantages to home buyers. It also developed a secondary market in home mortgages by creating government-sponsored enterprises. With this support, the enterprises and banking institutions received explicit mandates to provide affordable housing finance to lower-income families and to distressed areas. This housing finance system is now in dire need of repair.

Regulation should promote and maintain competitive markets, intervening only when it is cost effective to do so to offset market failures. This is particularly important given the ongoing integration of global financial markets and the increasing competition among various international financial sectors.

Issues for Policymakers

What type of regulatory reform will minimize, if not entirely eliminate, asset price booms and busts, which are so destructive to wealth accumulation and economic activity?

Clearly, more of the effort to reform the regulation of financial institutions and markets must be channeled toward *preventing* crises rather than implementing reforms after they occur. There were early and ample signals—acknowledged by the regulatory authorities—that a housing price bubble was emerging. These signals should have triggered regulatory actions to tighten overly loose credit policies and to curtail the excessive use of leverage that was becoming common throughout the financial system.

A greater emphasis on liquidity, credit, and capital leverage is needed, paying greater attention to both on- and off-balance-sheet assets. Regulators should also focus on the degree to which both on- and off-balance-sheet assets, or subsets of important assets, are positively correlated with one another, regardless of where they are located in the financial system. In other words, if one financial institution is experiencing difficulties that stem from one particular type of asset, it is important to determine whether other institutions have similar holdings and address that risk proactively throughout all of the institutions.

A regulatory regime must be designed to address the broad issues of systemic risks.

Do differences in the size or composition of financial sectors in countries necessitate different regulatory regimes?

The recent crisis has underscored the fact that financial systems in different countries are interconnected. The turmoil that swept through the U.S. financial sector quickly ensnared other countries around the world. It is crucial that the G-20 nations, in particular, work together to coordinate regulatory policies that can prevent emerging crises from deepening and spreading across national borders.

The challenge is to design a regulatory regime that promotes greater cross-country cooperation while allowing for national differences in financial systems. This also requires a reassessment of whether there should be a supranational regulator or whether bigger roles should be assigned to international organizations such as the Basel Committee on Banking Supervision and the International Monetary Fund.

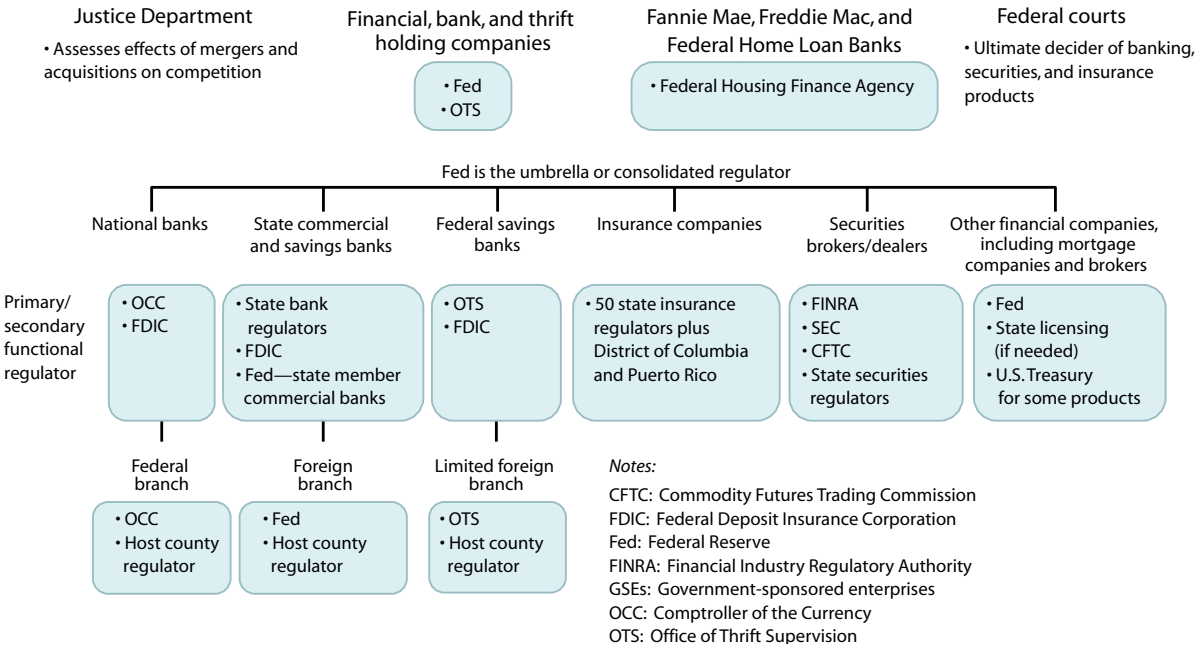
Creating a greater focus on preventing a systemic crisis requires consolidation and streamlining of the regulatory structure to achieve a more uniform and broader degree of oversight.

What is the appropriate structure of regulation?

The United States is currently burdened with multilayered, overlapping, inconsistent, and costly regulation. This structure is in dire need of reform, but the issue is which regulatory structure is most appropriate for the United States.

There is a single supervisor in more than 90 percent of all countries, so the United States is clearly out of step with almost all of the rest of the world. The central bank is a bank supervisor in two-thirds of all countries, including the United States. But in approximately one-third of all the nations, there is a consolidated supervisor for banking, securities, and insurance; the United States has a single supervisor for each of these industries and an umbrella regulator, namely the Federal Reserve, which comes into play when all these activities are conducted within a financial services holding company.

Figure 12: The convoluted U.S. financial regulatory regime



Sources: The Financial Services Roundtable (2007), Milken Institute.

The United States should seriously consider more dramatic consolidation and streamlining to reduce the number of financial regulatory agencies and separate licenses required by financial institutions to provide their services nationwide. Creating a greater regulatory focus on preventing a systemic crisis requires such consolidation to achieve a more uniform and broader degree of regulatory oversight.

Every country regulates banks, but what is a bank?

A bank is defined legally as a firm that makes commercial and industrial (i.e., business) loans, accepts demand deposits, and offers deposits insured by the FDIC. But today, in the United States, if one examines the balance sheet of all banks, one would find that the legally defined bank is a relatively small component of the larger entity. Bank activities now extend far beyond these three services. They provide many different types of loans, offer uninsured deposits, issue different types of securities, invest in different types of securities, and engage in different types of off-balance-sheet activities.

Banks not only need to be adequately capitalized to curtail excessive leverage, but to also have sufficient liquidity and longer-term liabilities in the event of a widespread flight to safety.

Today banks must understand and manage more complex risks—and bank examiners and supervisory authorities must similarly be adequately skilled to fulfill their oversight responsibilities.

In the wake of the financial crisis, many more banks and even nonbank financial institutions have come to better appreciate that deposits are a relatively reliable and low-cost source of funds. Because they had been relying heavily on short-term borrowings or security issuance to fund short-term cash needs, some financial firms found themselves scrambling to acquire and then hoard cash to cover their operating expenses. Even some investment banks that are transforming themselves into banks have come to appreciate the advantages of deposits. There is a new appreciation that banks not only need to be adequately capitalized to curtail excessive leverage, but to also have sufficient liquidity and longer-term liabilities in the event of a widespread flight to safety. It has also become clear that off-balance-sheet activities need to be more carefully monitored and controlled.

Beyond these specific issues, there is the question of what activities are allowable for banks and which organizational form (i.e., a holding company, with separately capitalized subsidiaries, or directly in a bank or the subsidiary of a bank) is most appropriate. The regulatory challenge is to decide on the appropriate composition of the on- and off-balance-sheet activities allowed by banks to ensure adequate liquidity, capital, and duration match of assets and liabilities. A balance must be struck to allow banks to be competitive while ensuring they operate prudently. Greater transparency and more reliance on market discipline are also essential.

How big, complex, and globalized are banks?

Banks in countries like the United States are becoming bigger, more globalized, and more complex in terms of their organizational form and the mix of products they offer.

Citigroup, for example, has complex product and organizational structures that pose severe challenges for both internal risk managers and regulators. Indeed, Citigroup has emerged as a particularly problematic institution as the financial crisis has evolved. From a high of $286 billion in February 2001, its stock market capitalization plunged to just $20 billion in November 2008. This perilous drop reflected enormous losses and potential losses related to the firm's involvement in subprime mortgages and CDOs, among other factors. But because Citigroup has apparently been deemed too big, too interconnected, or too important to be allowed to fail, the government provided a $306 billion package of guarantees, liquidity access, and $20 billion in capital on November 23, 2008 (on top of $25 billion in a capital injection provided just weeks earlier). But did rating agencies provide adequate ratings, and did regulatory authorities take appropriate steps in a timely manner to curtail imprudent activities by the bank?

An even more important issue is what regulatory reforms are necessary to reduce any systemic risk that such institutions collectively pose. Should these behemoths be broken up once things die down?

In addition to those issues, banking institutions have become increasingly global. Citigroup does business in more than 100 countries, has roughly 40 percent of its assets and more than half of its employees outside the United States, and earns nearly half of its income from abroad. This status of Citigroup, as well as other banks that operate internationally, must necessarily involve the cooperation of the bank regulatory authorities in all the countries in which these banks operate.

The regulatory challenge is to decide upon an appropriate measure of concentration that does not stifle competition (possibly even creating a new regulatory authority to specifically address competition), while taking into account contestability. It is also important to assess the most efficient organizational form and product mix, both on- and off-balance sheet, for banking institutions. This should be based upon a cost-benefit analysis of various choices.

Should supervision be on the basis of separate industries or products/services?

There is a wide variety of financial service firms, offering a diversity of products. Some are equivalent, while others are hybrid products. But the regulatory treatment of both firms and products is uneven.

The traditional rationale for focusing regulation on banks is that they offer demand deposits and therefore are susceptible to widespread runs that disrupt the entire payments and credit system. But the recent financial crisis now clearly indicates the importance of the other, currently less heavily regulated financial firms (at least the biggest ones) to overall financial sector stability.

The regulatory challenge is to provide more equal treatment of both firms and products to promote a level playing field as well as overall financial sector stability, taking into account the appropriate balance between self-regulation or market discipline and state versus federal government regulation.

How much and what kind of financial activity is unregulated or lightly regulated?

Many types of bank loans are becoming securitized and involving a wider range of financial players. There has been substantial growth in mortgage-backed securities, contributing in turn to the rise in structured financial collateral (which includes RMBS, CMBS, CMOs, ABS, CDOs, CDS, and other securitized/structured products). Margin requirements and collateral calls have become far more important in financial markets and can therefore significantly affect the liquidity and overall performance of financial institutions. Greater regulatory attention must be given to these products and the various financial players involved in them, including lightly regulated private equity funds and hedge funds.

The securitization of mortgages, in particular, has raised questions about the extent to which this trend was a major culprit in the recent financial crisis. Some have suggested that an alternative to securitizing mortgages (or other loans for that matter) is issuing *covered bonds*. These bonds would be issued by banks and collateralized by specific pools of assets, such as mortgages. If the bank issuing the covered bonds should default, the holders of the bonds would have priority claims against the collateral assets, ahead of other creditors and even the FDIC. The holders of the covered bonds would also have recourse to the bank issuing them.

The challenge is to more closely monitor financial activity that is currently unregulated or lightly regulated, including the off-balance-sheet activity of regulated financial institutions, without imposing a burden that would unduly hamper innovation.

These bonds are utilized in several European countries, most notably Germany. Currently, since the risk of issuing such bonds by banks is shifted to other liability holders, including the FDIC, they are limited by the FDIC to 4 percent of liabilities.

Covered bonds should be viewed as a complement to, not a substitute for, securitization. Improvements, however, should be made so that there is greater leeway to modify mortgage loans that have been securitized in the event of defaults and to provide greater recourse to the various financial players (such as originators who had little of their own money at risk) involved in selecting the mortgage loans that are securitized. With both covered bonds and securitization available, banks can choose between keeping mortgage loans on their balance sheets with required capital backing or securitize them to eliminate a required capital charge. However, banks must take precaution when attempting to securitize assets off their balance sheets so they do not get caught short of capital if they must be brought back onto the balance sheet, as happened during the recent crisis. This, of course, requires greater scrutiny of off-balance-sheet activities of banks by the regulatory authorities and market participants.

Another issue that merits special attention is the use of various derivatives instruments, especially credit default swaps. Creating a formal exchange for derivatives is important (and indeed, such an effort is underway as of this writing) because exchange-traded contracts are centralized, with continuously adjusted margin requirements. Further, if a trader defaults, the clearinghouse absorbs the losses with the capital contributed by the member firms.

The challenge is to devote more attention to financial activity that is unregulated or lightly regulated, including off-balance-sheet activity of regulated financial institutions, without excessive, costly, and intrusive regulation that unduly hampers innovation.

What will promote effective market discipline?

It is asking too much to rely solely on regulators to monitor and safeguard financial institutions and financial market participants. There is an important role to be played by market discipline. But this requires timely and adequate disclosure of information, greater transparency regarding risk, and more transparency in ratings from the rating agencies. Regulators should redouble their efforts to promote market discipline to supplement, if not lessen, their own authority over the major players in the financial sector.

What can policymakers do to prevent financial institutions from becoming so big and so important that, regardless of any reckless behavior on their part, the government feels compelled to bail them out?

Consumers also need better and clearer information, as well as counseling, about complex products and services. This includes the need to simplify and improve mortgage documentation and to focus on increasing financial literacy among the broader public.

Market discipline is weakened to the extent there is a widespread belief that the government will always come to the rescue. Such a belief promotes complacency and, worse yet, an increased culture of risk-taking by individuals and firms. Clearly, many are crying out for something to be done about the moral hazard issues that have already been raised by the government's actions to date. What can policymakers do to prevent financial institutions from becoming so big and so important that, regardless of any reckless behavior on their part, the government feels compelled to bail them out? Also, how can policymakers wind down the extensive intervention into the private marketplace that has already taken place and shift consequences back to financial firms in an orderly manner?

As a start, regulatory authorities must be more careful about endorsing, or seeming to endorse, the ratings conferred on firms and products by the major rating agencies. More effort should be devoted to requiring that better and more comprehensive information be provided to market participants so they can perform their own due diligence to a greater extent when making financial decisions.

What can be done to more safely facilitate homeownership?

At the outset, it is time to admit that there is nothing wrong with being a renter. But if homeownership is to be promoted by the government, the process needs to be improved. It makes no sense to create institutions like Fannie Mae and Freddie Mac that have a dual mandate: earning profits for their shareholders while simultaneously satisfying quotas on the amount of funding that must be provided to low-income families. It is clear by now that this is not a viable business model. It is therefore essential to make a clear decision about what to do with Fannie Mae and Freddie Mac, post-conservatorship.

Beyond dealing with the two mortgage giants, not to mention the Federal Home Loan Banks, there are currently several alternative and not necessarily competing approaches to assisting first-time home buyers:

- **Shared equity programs:** These programs enable households to purchase homes by offering equity loans or the opportunity to buy a share of a home. They support the outright purchase of a home with assistance from an equity loan provided by the government or a private lender. When repaying the equity loan, the homeowner shares in any increase in the property's value with the lender. These programs may be structured to allow individuals to buy a share in a home and pay rent based on the outstanding equity. Purchasers have the option to buy further shares in the property and ultimately achieve full ownership. If the property is sold, the purchaser benefits from any equity that has built up on the share that is owned. These arrangements may also be structured as shared appreciation mortgages, in which the lender agrees to a below-market interest rate in exchange for a share of the appreciated value of the collateral property. The share of the appreciated value is determined and due at the sale of the property or at the termination of the mortgage. In addition to promoting homeownership, shared equity programs may be a useful tool in preventing foreclosures. However, currently U.S. banks are prohibited from engaging in real estate activities, which poses a barrier to implementing such programs.
- **Down-payment assistance:** Down-payment assistance and community redevelopment programs offer affordable housing opportunities to first-time home buyers, low-income and moderate-income individuals, and families. Grant types include seller-funded programs, as well as programs that are funded by the government, often using mortgage-revenue bond funds.
- **Community land trust:** These are private, nonprofit corporations created to provide secure, affordable access to land and housing. Ownership of the house is split from ownership of the land underneath, which rests with the community land trust. This arrangement allows the cost of land to be removed from calculations of building price, thereby lowering costs. This land is conveyed to individual homeowners through a ground lease.
- **Lease-to-purchase options:** An organization leases a home to a household that cannot obtain a mortgage for income or credit reasons, and then works with the household to overcome its barriers to a final purchase.

How can we limit foreclosures?

Keeping families in their homes is a particular problem when home prices are falling and there is a growing inventory of unsold homes. Here are a few of possible approaches to limiting home foreclosures:

- **Bankruptcy modification:** Debtors may modify the terms of all debts in bankruptcy, including those secured by mortgages on their principal residences.
- **Possible new legislation for mortgage restructuring that would support Treasury restructuring programs:** Real Estate Mortgage Investment Conduits (REMICs) are special-purpose vehicles for pooling mortgages and issuing mortgage-backed securities. In many cases, loan modification efforts have been hampered by the complexity of these ownership structures. Modifying the REMIC statute and other laws would give servicers the authority and flexibility to modify loan terms without legal liability to investors. Rules can also be changed to provide servicers with further legal comfort in modifying and selling mortgage loans under any government mortgage restructuring programs.
- **Land bank:** A public authority created to efficiently acquire, hold, manage, and develop tax-foreclosed property, as well as other vacant and abandoned properties.

Concluding Thoughts

What really drove the growth of such dangerous bubbles in the U.S. housing and credit markets? On multiple levels, we have relied too much on credit, which is essential for economic growth and development, by allowing it to grow at unsustainable rates through excessive leverage.

If our nation is to break this cycle, the government must devote much greater effort to identifying and containing emerging crises before they grew to dangerous proportions. If this for whatever reason cannot be done, the government should have a game plan in place before the next financial crisis strikes. Federal, state, and local governments must also be much better prepared to address any surges in budget deficits that result from the inevitable bailouts that occur. Taxpayers deserve no less.

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