

Housing and Financial Markets

In the summer of 2008, the disruptions in credit markets that began in 2007 worsened to the point that the global financial system was in crisis. The crisis was sparked by substantial declines in house prices, rising default rates on residential mortgages, and a resulting sharp decline in the value of mortgages and mortgage-backed securities, in part created by excesses in the mortgage market. These assets were held by institutions that play a vital role in the functioning of financial markets.

Many of those institutions were vulnerable to these losses because they were highly levered and, in particular, were highly dependent on short-term funding. In other words, those institutions had borrowed extensively against their long-term assets, and a large part of their debt was short-term, so that their existing debt needed to be paid off and replaced with new short-term debt with some frequency. As their losses mounted, those firms attempted to deleverage by selling assets or raising new capital. But several major firms failed in these efforts, either because their losses made them fundamentally insolvent or because their reliance on short-term funding did not give them enough time and flexibility to strengthen their financial positions.

The failure and near-failure of these firms, combined with broad-based declines in asset prices, including assets with little or no relationship to the mortgage market, placed enormous stress on world financial markets. Credit markets froze, and confidence in the financial system eroded. The Federal Reserve and the Administration acted aggressively to restore stability to the U.S. financial system; the Federal Reserve injected massive amounts of liquidity into the markets through existing and new facilities, and the Administration took several actions, including the creation of new authorities under the Emergency Economic Stabilization Act of 2008 (EESA). These unprecedented efforts laid the foundation for a recovery in credit markets.

The key points of this chapter are:

- The roots of the current global financial crisis began in the late 1990s. A rapid increase in saving by developing countries (sometimes called the “global saving glut”) resulted in a large influx of capital to the United States and other industrialized countries, driving down the return on safe assets. The relatively low yield on safe assets likely encouraged investors to look for higher yields from riskier assets, whose yields also went down. What turned out to be an underpricing of risk across a number of markets (housing, commercial real estate, and leveraged buyouts, among

others) in the United States and abroad, and an uncertainty about how this risk was distributed throughout the global financial system, set the stage for subsequent financial distress.

- The influx of inexpensive capital helped finance a housing boom. House prices appreciated rapidly earlier in this decade, and building increased to well-above historic levels. Eventually, house prices began to decline with this glut in housing supply.
- Considerable innovations in housing finance—the growth of subprime mortgages and the expansion of the market for assets backed by mortgages—helped fuel the housing boom. Those innovations were often beneficial, helping to make home ownership more affordable and accessible, but excesses set the stage for later losses.
- The declining value of mortgage-related assets has had a disproportionate effect on the financial sector because a large fraction of mortgage-related assets are held by banks, investment banks, and other highly levered financial institutions. The combination of leverage (the use of borrowed funds) and, in particular, a reliance on short-term funding made these institutions (both in the United States and abroad) vulnerable to large mortgage losses.
- Vulnerable institutions failed, and others nearly failed. The remaining institutions pulled back from extending credit to each other, and inter-bank lending rates increased to unprecedented levels. The effects of the crisis were most visible in the financial sector, but the impact and consequences of the crisis are being felt by households, businesses, and governments throughout the world.
- The U.S. Government has undertaken a historic effort to address the underlying problems behind the freeze in the credit markets. These problems, the subject of much of this chapter, are a sudden increase in the desire for liquidity, a massive reassessment of risk, and a solvency crisis for many systemically important institutions. The Government has worked to preserve the stability of the overall financial system by preventing the disorderly failures of important financial institutions; taken unprecedented action to boost liquidity in short-term funding markets; provided substantial new protections for consumers, businesses, and investors; and cooperated closely with its international partners.
- Looking forward, the global financial crisis presents several additional challenges for the U.S. Government. Among them are the need to modernize financial regulation, unwind temporary programs in an orderly fashion, and develop long-term solutions for the government-sponsored enterprises (privately-owned, publicly-chartered entities) Fannie Mae and Freddie Mac.

Origins of the Crisis

The roots of the global financial crisis can be traced back to before the beginning of this decade and were, in part, caused by a rise in saving by developing economies.

The Global Saving Glut

Countries in Asia and the Middle East started saving enormous sums in the late 1990s. This increase in saving was primarily due to two factors. First, a number of developing countries experienced financial crises in the 1990s. As these crises abated, these countries began accumulating extensive savings as a buffer against any future crises. Second, sharp increases in oil prices over the past few years generated large revenues for oil exporters, including Russia, Nigeria, Venezuela, and countries in the Middle East. With productive economies and strong legal regimes, the United States and other industrialized countries attracted a good portion of that saving, and foreign investors purchased low-risk assets such as Treasury bonds, debt issued by government-sponsored enterprises Fannie Mae and Freddie Mac, and mortgage-backed securities, as well as riskier assets. From 1996 to 2007, industrialized countries went from a current account surplus (recording a surplus in net trade in goods and services, and net income and transfers from abroad) of \$14 billion to a current account deficit of almost \$500 billion. At the same time, developing countries went from a current account deficit of \$82 billion to a surplus of \$760 billion.

As this influx of capital became available to fund investments, interest rates fell broadly. The return on safe assets was notably low: the 10-year Treasury rate ranged from only 3.1 percent to 5.3 percent from 2003 to 2007, whereas the average rate over the preceding 40 years was 7.5 percent. While to some extent the low rates reflected relatively benign inflation risk, the rate on risky assets was even lower relative to its historical average: the rate on a 10-year BAA investment-grade (medium-quality) bond ranged from only 5.6 percent to 7.5 percent from 2003 to 2007, whereas the average over the preceding 40 years was 9.3 percent. The net effect was a dramatic narrowing of *credit spreads*. A credit spread measures the difference between the yield on a risky asset, such as a corporate bond, and the yield on a riskless asset, such as a Treasury bond, with a similar maturity. Risky assets pay a premium for a number of reasons, including liquidity risk (the risk that it will be difficult to sell at an expected price in a timely manner) and default risk (the risk that a borrower will be unable to make timely principal and interest payments).

Credit spreads declined as these premiums shrank. From 2003 to mid-2007, for example, credit spreads on junk bonds fell by 5.5 percentage

points, to a historical low of 2.4 percent. Credit spreads on AAA (high-quality) and BAA investment-grade bonds also fell over this time period. (See Chart 1-9 in Chapter 1.) While some market participants may have argued that declining credit spreads reflected an actual decline in the level of risk, we see in hindsight that many of these assets continued to be quite risky. Declining spreads reflected, at least in part, a temporary increase in demand for risky but higher-yielding assets. The underpricing of risk across a number of markets—including housing, commercial real estate, and leveraged buyouts—in the United States and abroad set the stage for a subsequent financial crisis.

The Global Credit Boom and the Housing Market

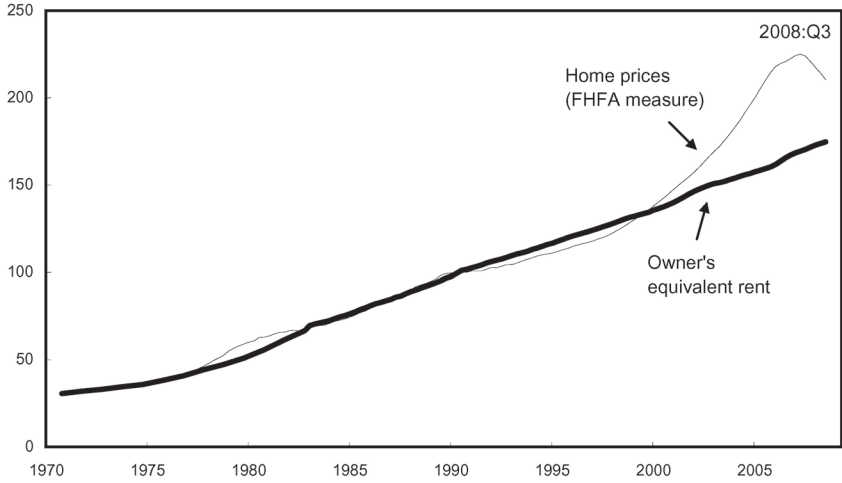
The underpricing of risk made loans readily available to borrowers, especially to riskier borrowers, and gave rise to a global credit boom. At the epicenter of the global credit boom was the U.S. residential housing market. During the credit boom, the ease of credit financing encouraged rapid increases in demand for housing, leading to extraordinary house price increases. According to the S&P/Case-Shiller National Index, house prices increased by 11 percent in 2002, 11 percent in 2003, 15 percent in 2004, and 15 percent in 2005—stunning rates by historical standards. The Federal Housing Finance Agency (FHFA) purchase-only price index, which covers only homes purchased with conforming mortgages (that is, it excludes both subprime and large “jumbo” mortgages), rose more moderately but still climbed an impressive 9 percent in 2004 and 9 percent in 2005 (see Chart 2-1).

Measures of long-term balance in the housing market, such as the ratio of home prices to rents, reached record highs over this period. The components of this ratio are shown in Chart 2-1. As home prices rose much faster than rents after 2000, the ratio (not shown) of the two lines climbed beyond its historical range. This ratio had remained relatively stable from 1982 to 1999, but as house prices began to climb, the ratio of prices to rents soared to unprecedented heights, suggesting that owner-occupied housing became more expensive relative to rental housing.

In addition to expanded credit availability, the price increases reflected a number of other factors, such as income growth and extremely optimistic expectations about future house price gains. All of these factors likely increased demand for housing, which put upward pressure on house prices. Dramatic house price increases encouraged well-above-average residential investment and a decline in underwriting standards in the mortgage market.

Chart 2-1 Home Prices and Owner's Equivalent Rent
 The ratio of house prices to rents reached record highs in 2006.

Index (1990=100)



Note: Before 1991, the FHFA purchase-only index was spliced with the FHFA total index. Before 1983, the CPI-U owner's equivalent rent of primary residence was spliced with the PCE price index for owner-occupied dwellings. Sources: Federal Housing Finance Authority, Department of Labor (Bureau of Labor Statistics), and Federal Reserve Board.

Excesses in the Primary Mortgage Market

Over the past decade, there has been tremendous innovation and expansion in the market in which borrowers obtained loans from mortgage originators, also known as the *primary mortgage market*. Some innovation was beneficial, increasing mortgage affordability and structuring payment terms that fit borrowers' individual circumstances. For example, the increase in *subprime lending*, defined as lending to higher-risk groups, usually at interest rates high enough to imply a large risk premium, opened up new opportunities for borrowers with weaker or limited credit histories to purchase a home. Subprime lending expands access to credit to previously underserved households—albeit at restrictive and expensive terms.

The very competitive lending environment encouraged and intensified myopia among both lenders and borrowers, both of whom took on too much risk. For example, both likely assumed that risky mortgages could be easily refinanced or that homes could be easily sold if borrowers found themselves unable to afford their mortgage payments. Underwriting standards were loosened, even for subprime borrowers, and terms became less restrictive. In some cases, down payment requirements were relaxed to the point that borrowers' mortgages were greater than the value of their

homes, as apparently both lenders and borrowers expected near-term house price appreciation. Furthermore, increasing numbers of mortgage loans were originated with limited documentation; that is, the mortgage lenders did not require borrowers to provide evidence (such as previous years' tax returns) of income or assets to affirm their ability to repay the loans.

Products appropriate for a limited group of borrowers were also offered to borrowers for whom these products were not well suited. For example, payment-option adjustable-rate mortgages ("option ARMs"), which allow monthly mortgage payments to vary so that the payment may cover only the interest owed or some of the principal owed as well, were initially targeted to borrowers with variable income, such as the self employed. Most option ARMs allowed minimum monthly payments below accrued interest so that borrowers choosing to make the minimum payment would have negative amortization, or rising loan balances. During the credit boom, option ARMs were offered to a much broader class of borrowers as a way of stretching loan affordability.

Excesses in the Market for Mortgage-Related Assets

Other developments helped set the stage for mortgage defaults. The rise of mortgage securitization, led both by government-sponsored enterprises (GSEs) Fannie Mae and Freddie Mac as well as private institutions, reduced the incentive for originators (which increasingly included non-bank mortgage specialists) to properly evaluate risk.

For many years, lenders followed an "originate-to-hold" model in which they kept the loans they originated. Securitization allowed lenders to move to an "originate-to-distribute" model by transforming collections of individual mortgages into *mortgage-backed securities* (MBS)—tradable securities backed by the loans—and selling the MBS to other investors. (Box 2-1 defines "mortgage-backed securities" and other financial terms.) Lenders that sold MBS used the cash to originate more loans and create new MBS, benefiting themselves as well as borrowers and investors. Securitization under the originate-to-distribute model seemed to work well. Borrowers benefited from lower mortgage rates, and investors benefited from being able to diversify their investments across a wider set of assets.

Lost in the frenzy of lending, borrowing, and securitization was the fact that the benefits of securitization come with a cost. In an originate-to-hold model, the loan originator will lose if the borrower defaults, and so the originator has the incentive to gather information on the borrower to be sure the borrower can afford to pay the mortgage. In contrast, in an originate-to-distribute model, the private-label MBS investor, not the originator, bears the default risk. Because originators do not expect to bear the risk, they do not have as much incentive to make sure the borrowers can pay. Moreover, the incentive for lenders to originate excessively risky loans becomes tempting. Because

Box 2-1: Definitions of Select Financial Terms

Asset-backed security (ABS): A security whose cash flows are backed by the principal and interest payments of a collection of loans, such as credit cards, automobile loans, and student loans.

Auction rate security (ARS): A long-term debt instrument whose interest rate is reset periodically (typically every 7, 28, or 35 days) through an auction process.

Collateralized mortgage obligation (CMO): A complex mortgage-backed security in which cash flows from the mortgage payments are split into tranches (slices), and each tranche is sold as a separate security.

Commercial mortgage-backed security (CMBS): A mortgage-backed security backed by mortgages on commercial property.

Commercial paper (CP): Short-term loans issued by corporations. CP terms range from 1 day (“overnight”) to 270 days. Asset-backed commercial paper (ABCP) is commercial paper that is secured by assets. Commercial paper can be issued by financial institutions as well as non-financial institutions.

Government-sponsored enterprise mortgage-backed security (GSE MBS): A mortgage-backed security that includes a credit guarantee from a government-sponsored enterprise (Fannie Mae or Freddie Mac).

London interbank offered rate (LIBOR): The interest rate at which banks offer to lend unsecured funds to other banks. The 3-month LIBOR, the rate at which banks offer to lend for a 3-month term, is a key reference rate used for many financial contracts.

Mortgage-backed security (MBS): security whose cash flows are backed by the principal and interest payments of a collection of mortgage loans.

Mortgage-related asset: Any original mortgage loan or MBS.

Non-agency mortgage-backed security (non-agency MBS): A mortgage-backed security that does not include a credit guarantee from a government agency or government-sponsored enterprise. Also known as private-label MBS.

Residential mortgage-backed security (RMBS): A mortgage-backed security backed by mortgages on residential property.

Secured debt: A loan that is backed by collateral. If the borrower defaults on repayment, the lender can seize the collateral, sell it, and use the proceeds to repay the debt.

TED spread: The difference between the 3-month LIBOR and the 3-month Treasury Bill rate, a commonly used indicator of financial market distress.

Unsecured debt: A loan that is not backed by collateral. The loan is supported only by the borrower’s creditworthiness.

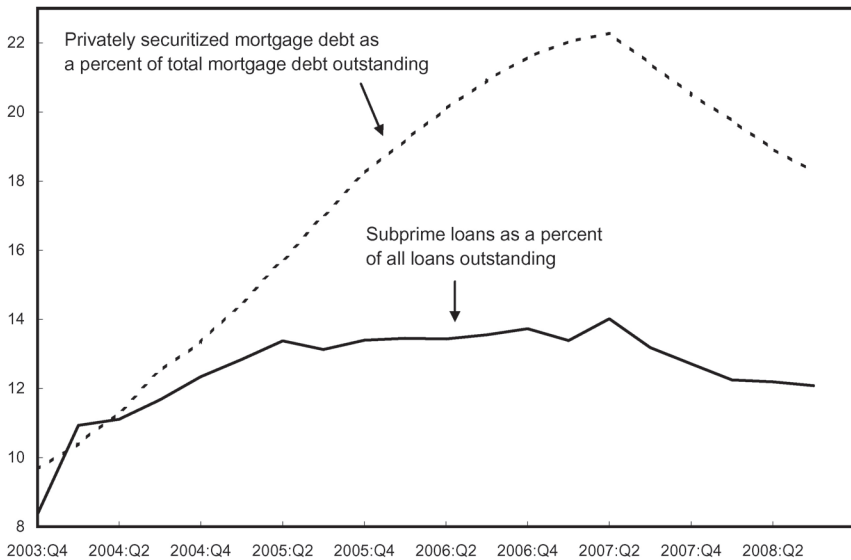
MBS are complex securities, many investors relied on credit rating agencies to provide them with information on default risk rather than conducting their own due diligence. For their part, credit rating agencies made initial assessments that, in hindsight, used faulty assumptions and led to a significant number of downgrades. To their detriment, many market participants relied heavily on ratings that turned out to be overly optimistic.

Chart 2-2 shows the fraction of total mortgages outstanding that are securitized by private institutions (private-label MBS) as well as the share of total mortgage originations accounted for by subprime mortgages. Data on subprime mortgages have a limited history, which is perhaps not surprising given how recently this market became important. While a number of factors led to the surge in subprime lending, the increase in privately-issued MBS, and the increase in securitization more generally, likely played an important role.

Mortgage-backed securities were often repackaged into even more complex securities, reflecting an increased demand from investors for customized investment products called structured products. A *collateralized mortgage obligation* (CMO), for example, is a mortgage-backed security in which cash flows from the mortgage payments are ordered into “tranches” (slices), and each tranche is sold as a separate security. The tranches are typically ranked in descending order of repayment from highest (super senior) to lowest (equity). Senior tranches have a priority claim on the cash flow from the underlying

Chart 2-2 **Privately Securitized Mortgages and Subprime Mortgage Loans**

Privately securitized mortgages and subprime loans have become a larger share of the market since 2003. Percent



Sources: Mortgage Bankers Association and Federal Reserve Board.

collateral and must be paid before junior tranches. The middle tranches of a CMO could be repackaged yet again into even more complex securities.

A combination of overreliance on credit rating agencies' assessments of complex securities and flaws in the assumptions underlying those assessments, along with insufficient risk management at financial firms and regulatory policies that failed to mitigate risk-management weaknesses, created a situation in which many financial firms held mortgage-related assets that turned out to be far more risky than anticipated.

The Credit Crunch

Eventually, the number of houses on the market began rising faster than sales, and prices started to fall. Nationally, home price appreciation began to slow in 2005, and price levels began to fall in the third quarter of 2007, according to the FHFA purchase-only house price index. In some mortgage markets and in some regions, prices began their decline a year before the national average. The inventory of new homes for sale rose rapidly relative to the pace of new home sales, contributing to price declines. The residential construction industry reacted to a decline in housing demand, and by 2006, this sector experienced job losses as new housing starts plunged (Chart 2-3).

Chart 2-3 **Single-Family Housing Starts**

Housing starts have fallen more than 75 percent from their peak in 2006 to the lowest level on record.

Millions of units



Source: Department of Commerce (Bureau of the Census).

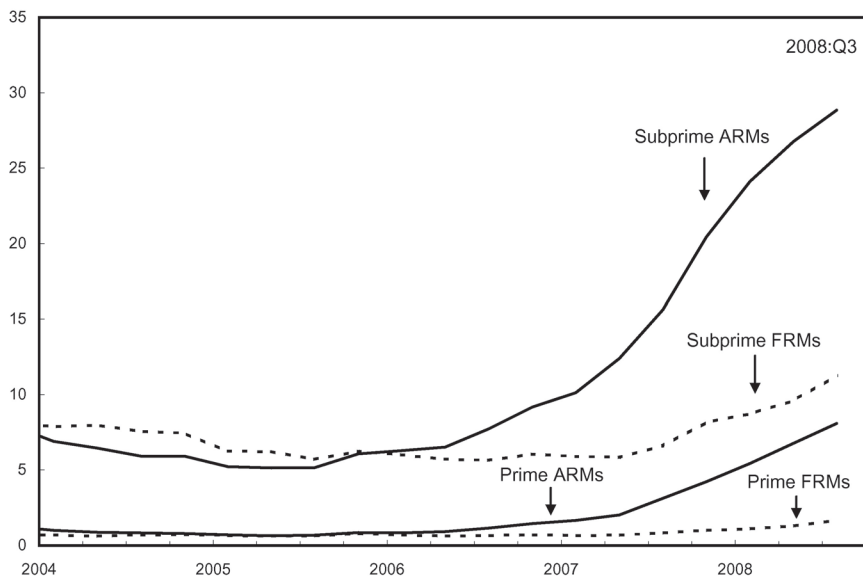
As house prices faltered, borrowers with little or no equity in their homes quickly found that they owed more to lenders than their homes were now worth in the market. Such borrowers are often referred to as being “underwater.” Some borrowers were unable to afford their mortgage payments either because of financial circumstances or because their mortgage payments rose, as their mortgage contract included a sizable increase in monthly payments over the life of the loan. If these borrowers were also underwater, they were not able to refinance, making them likely to default. In fact, among subprime loans that were securitized in the second half of 2006, over 7 percent of these loans were at least 60 days past due within the first 6 months, exposing the weakening in underwriting standards over time and the effect of house prices faltering. By way of comparison, among subprime loans securitized in the first half of 2005, less than 3 percent of these loans were at least 60 days past due within the first 6 months.

Chart 2-4 shows that the rates of serious delinquency (defined as 90 days past due or in default) for both prime and subprime mortgages have risen since 2005. Rates for both fixed-rate mortgages (FRMs) and adjustable-rate mortgages (ARMs) have increased. Delinquency rates are considerably higher in the subprime market than in the prime market; however, rates of serious delinquency in both the subprime and prime mortgage markets have reached their highest levels since the Mortgage Bankers Association began collecting these data in 1979.

Chart 2-4 Percent of Mortgages 90 Days Past Due or in the Process of Foreclosure

Subprime adjustable-rate mortgages (ARMs) have performed particularly poorly over the past year.

Percent of loans



Source: Mortgage Bankers Association.

Lenders and investors that held mortgages and mortgage-backed securities, particularly risky subprime mortgages, incurred losses as default rates rose. Lenders demanded higher risk premiums in the form of higher mortgage spreads (mortgage interest rates charged in excess of long-term Treasury rates), and the supply of mortgage credit—at any given spread—decreased. In fact, new subprime lending began to dry up altogether beginning in 2007. With the unexpected increase in default rates, the value of the mortgages declined, and uncertainty over the future value of the complex securities that were backed by, or derived from, these mortgages increased. Demand for mortgage-related assets plummeted, particularly for subprime mortgages held as whole loans (original mortgage loans) and non-agency mortgage-backed securities for which uncertainty was the greatest. As a result, the market price for these assets fell dramatically.

Mortgage-related assets are very widely held. Domestic and international banks hold about three-fourths of the whole loans held outside of the GSEs, and banks hold about one-half of mortgage-related securities held outside of the GSEs. Insurance companies hold some whole loans and hold almost one-fourth of mortgage-related securities. Pensions and hedge funds also have substantial positions in mortgage-related securities. As of the end of 2008, global financial institutions that invested in these assets reported over \$1 trillion in losses.

Leverage and Reliance on Short-Term Funds

The declining value of mortgages and mortgage-backed securities threatened the ability of systemically important financial institutions to meet their financial obligations (that is, their “solvency”) because portions of the financial system are highly exposed to shocks. That exposure takes two basic forms: high *leverage* and reliance on *short-term funding*. Leverage is the use of borrowed funds (debt), as opposed to investment capital (equity), to finance assets. Short-term funding is the use of debt financing that must be paid back within a short period of time.

Before the financial crisis, the major investment banks were levered roughly 25 to 1. This means that every \$100 in assets was funded by \$96 in debt, leaving only \$4 in equity. In other words, investment banks owned complex investment portfolios with only 4 percent down. Such leverage was a fundamental source of fragility—the capital base of those institutions would be eliminated by just a 4 percent decline in asset values. (Commercial banks, in contrast, were levered about 12 to 1.)

In addition, many major financial firms rely on short-term funding, requiring them to continually replace existing debt with new debt (a process called “rolling over” debt) and thereby putting them at the mercy of changes in the availability of liquidity. Put another way, if a bank is levered using

long-term debt, it can survive as long as it can make debt service payments; if a bank is levered using short-term debt, it has to pay off the entire debt every few weeks, which it typically does by taking out new short-term debt. During the credit boom, liquidity was easily available, and firms could roll over enough debt to satisfy their short-term funding needs. Firms began to rely even more heavily on short-term debt and created financial innovations, such as auction rate securities (ARS) and structured investment vehicles (SIVs), to address those demands. But, when doubts arose about the availability of liquidity, those financing methods broke down, and firms faced a considerable risk of not being able to roll over their financing.

The collapse of Bear Stearns in March 2008 provides an example of how high leverage, combined with a heavy reliance on short-term term funding, can make a financial institution more fragile than it ought to be. In 2007, Bear Stearns was one of the largest global investment banks. Bear Stearns's assets were highly concentrated in mortgage-backed securities. In fact, two of Bear Stearns's managed hedge funds collapsed in June 2007 because of subprime mortgage losses.

During the week of March 10, 2008, rumors spread about liquidity problems at Bear Stearns, resulting in a "run." As the rumors spread, Bear Stearns was unable to borrow funds from other financial institutions, despite the fact that Bear Stearns pledged high-quality financial assets as collateral to secure repayment of many of its short-term loans. In a secured funding arrangement, the borrower agrees to forfeit the collateral if it defaults on the loan. However, possibly because the legal process of transferring ownership of collateral is quite lengthy, many of Bear Stearns's secured lenders refused to continue ("roll over") their short-term lending arrangements. As a result, Bear Stearns could not meet its short-term funding needs.

On Friday, March 14, 2008, the Federal Reserve Bank of New York (FRBNY) provided emergency funding to Bear Stearns. However, the FRBNY funding could not stop Bear Stearns's downward spiral, and Bear Stearns concluded that it would need to file for bankruptcy protection, unless another firm purchased it. On Sunday, March 16, 2008, Bear Stearns announced that it would be acquired by JP Morgan Chase, with financing support from the FRBNY.

Macroeconomic Consequences of the Crisis

The effects of the crises in the housing and financial markets were most visible for Wall Street firms like Bear Stearns, but their impact has been felt by businesses, consumers, and governments throughout the world. The

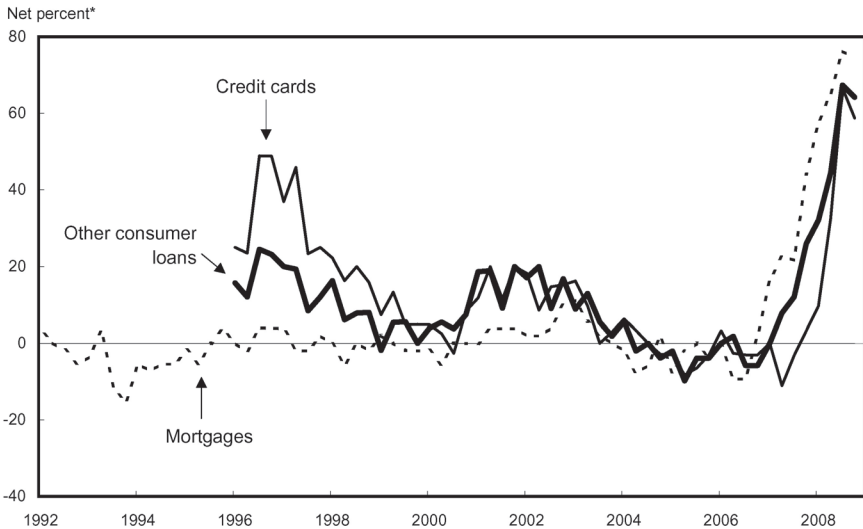
precipitous drop in the stock market has drastically eroded the value of Americans' stock portfolios, 401(k) accounts, and other retirement accounts. The tightening of credit has made it more expensive and difficult for many families to borrow money for cars, homes, and college tuition. Many healthy businesses have found it harder to get loans to expand their operations and to create jobs.

Banks Reduced Lending to Consumers and Businesses

As default rates for household debt rose, lenders became increasingly reluctant to make any but the least risky loans. Many banks and other creditors tightened standards on mortgages and consumer debt. The Federal Reserve's Senior Loan Officer Survey on Bank Lending Practices reports changes in the supply of bank loans to businesses and households. As Chart 2-5 shows, the net percent of domestic lending institutions reporting that they tightened lending standards began rising at the end of 2007. Tighter standards reduce the availability of credit for households and, as a result, hinder households' ability to maintain spending in difficult economic times.

Chart 2-5 **Domestic Banks Tightening Lending Standards**

Banks have been tightening lending standards on a variety of loan products since the end of 2007.



Note: "Net percent" refers to the percent of respondents tightening less the percent of respondents loosening. The values for mortgages for the second quarter of 2007 through the fourth quarter of 2008 were calculated as a weighted average of prime, subprime, and nontraditional loans using weights estimated by the Council of Economic Advisers. Source: Federal Reserve Board.

Similar survey responses on banks' standards for commercial and industrial loans show that banks tightened lending standards for business loans starting in mid-2007. The weakness in the business sector seen in business investment and outlays reflects, in part, this reduced access to credit from banks and other lenders, forcing businesses to tap cash reserves to fund investment and expenditures.

The Onset of the Crisis

Within a 9-day period in September 2008, the crisis deepened abruptly with a series of stunning events. On Sunday, September 7, 2008, the Federal Housing Finance Authority (FHFA) placed the ailing mortgage giants Fannie Mae and Freddie Mac into conservatorship because the FHFA determined that the values of Fannie Mae's and Freddie Mac's mortgage-related assets had deteriorated to the point that these institutions could no longer operate safely and soundly. Conservatorship gave the FHFA powers typically associated with Fannie Mae's and Freddie Mac's directors, officers, and shareholders, including all actions necessary and appropriate to put each company in a sound and solvent condition, carry on each company's business, and conserve the property and assets of each company. In addition to the FHFA conservatorship, the Treasury Department entered into commitments to inject up to \$100 billion in capital into each firm in exchange for preferred stock and warrants (options to buy equity shares at a predetermined price) for common stock, created a temporary lending facility to provide secured funding for Fannie Mae and Freddie Mac in exchange for government-sponsored enterprise mortgage-backed security (GSE MBS) collateral, and initiated a program to purchase GSE MBS in the open market.

One week later, on Sunday, September 14, 2008, the investment bank Lehman Brothers filed for bankruptcy, and another investment bank, Merrill Lynch, negotiated an acquisition by Bank of America. Both investment banks suffered billions of dollars of writedowns (losses from declines in value) of mortgage-related assets.

Two days later, on Tuesday, September 16, 2008, the Federal Reserve announced the creation of a credit facility (lending arrangement) in exchange for a majority equity stake in the insurance giant American International Group (AIG). AIG suffered billions of dollars of losses from entering into *credit default swap* (CDS) contracts to insure against losses on complex MBS.

A credit default swap is a type of *derivative* contract that has become very popular in recent years. The value of a CDS contract is "derived from" an underlying credit instrument, such as a bond or an MBS, where one party—say a borrower—owes money to another party. The buyer of a CDS contract agrees to make a series of payments (similar to an insurance premium) to

the seller over time. If the borrower who owes money according to the underlying credit instrument defaults, the seller of the CDS agrees to make a pre-specified payoff to the buyer. Essentially, the buyer of the CDS has taken out insurance on the default risk of a credit instrument, and the seller of the CDS is the insurance provider.

In the case of AIG, most of its CDS counterparties were banks that bought CDS contracts because they wanted to hedge against declines in the MBS held on their balance sheets. Contractual features in AIG's CDS required AIG to post cash collateral to their counterparties as the values of the MBS declined. The collateral calls were so large that AIG did not have the cash to post, and AIG faced a liquidity crisis. The increased burden to honor CDS contracts also undermined AIG's solvency.

Credit Market Investors Reduced Lending to Businesses

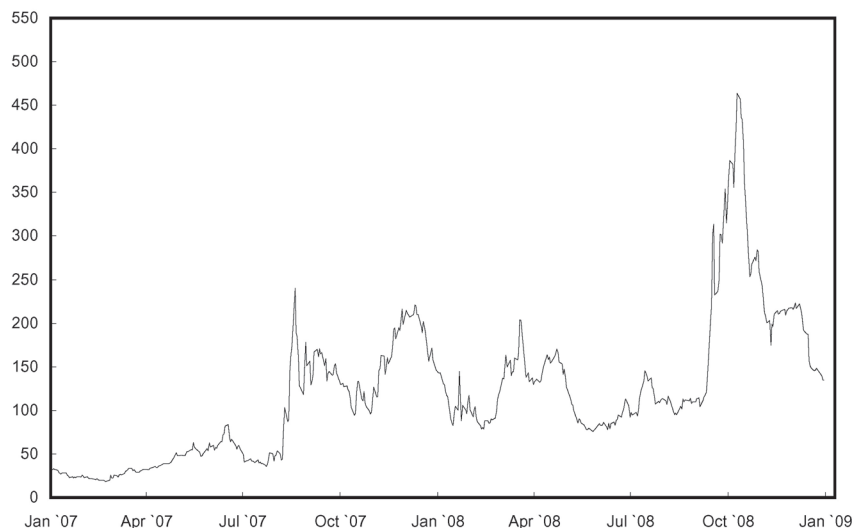
Following these events, reassessments of risk led to a flight to quality. This flight to quality extended beyond mortgage-related assets and affected a number of non-bank institutions and assets that businesses use to pledge as collateral for secured funding. For long-term debt funding (and equity funding), businesses rely on *capital markets*, where mutual funds, hedge funds, and pension funds, for example, invest in long-term bonds issued by corporations and State and local governments. For short-term funding, businesses rely on the *money market*. An important source of lending in the short-term credit markets are *money market mutual funds* (or money funds), which often invest in instruments called "paper." *Commercial paper* (CP) is short-term funding used by corporations, and it is often issued as asset-backed commercial paper (ABCP), which is secured by collateral. Other money market instruments include Treasury bills and *repurchase agreements* (or repos), where a borrower agrees to sell securities to a lender for cash and simultaneously agrees to buy back those securities at a later date at a higher price. A repo is economically similar to a secured loan, with the buyer/lender receiving securities as collateral to protect against default.

As lenders sacrificed yield for the safety of Treasury securities, interbank lending rates rose to unprecedented levels. Financial institutions pulled back from extending credit to each other, except at the very shortest maturities, because of an aversion to counterparty risk or concerns about their own liquidity needs. As shown in Chart 2-6, the *TED spread* increased dramatically in September 2008 above already elevated levels. The TED spread is the difference between the 3-month *London Interbank Offered Rate* (LIBOR) and the 3-month Treasury Bill rate. LIBOR is the rate at which banks offer unsecured loans to other banks. The dramatic increase in the TED spread indicates considerable distress in interbank lending.

Chart 2-6 The TED Spread

The spread between the 3-month London Interbank Offered Rate (LIBOR) and yields on 3-month Treasury bills grew to historic highs during 2008, indicating distress in interbank lending.

Interest rate spread (basis points)



Sources: British Bankers Association and the Treasury Department.

When large financial institutions faced perceptions of insolvency, creditors became less willing to lend to them, even in the very short term. Companies that relied on what had been perceived as low-risk secured funding, such as ABCP and repos, were also affected by the freeze in lending. Left unchecked, the progression would have led to “runs.” Institutions that were not able to obtain funding due to perceptions of insolvency would have faced a liquidity crisis. Without the ability to roll over their short-term debt, institutions that relied heavily on short-term financing would have to sell their assets at “fire sale” prices to meet their financial obligations. Such actions can lead to an actual (rather than perceived) insolvency crisis, which would likely have led to widespread financial and economic failure.

Money funds themselves can face a run if investors lose confidence in the fund’s ability to protect them from a loss of principal. Principal protection is most visible in the fact that money funds seek to maintain a stable \$1.00 net asset value (NAV). While money funds are required by law to invest in short-term low-risk securities, investment losses are possible. In September 2008, money market funds that had invested in Lehman Brothers commercial paper faced losses when Lehman Brothers declared bankruptcy. Over time, investment gains in other securities held in the diversified portfolios of

money funds are usually big enough to offset the rare loss in an individual security. However, if an increase in investor anxiety causes a run in the form of large-scale redemptions, the money fund may be forced to liquidate other assets at below-market prices. If that happens, the fund may be unable to support a \$1.00 NAV and thus “break the buck.”

The Effect of the Crisis on the Non-Financial Economy

The financial crisis spread beyond financial institutions. It also affected households and non-financial businesses in the non-financial (“real”) economy.

The Effect of the Crisis on Households

The financial crisis has affected households through a number of channels, including a sharp loss in stock market wealth (as discussed in Chapter 1), a further tightening in household credit markets, prospects for a slower recovery in the housing market, and increased pessimism regarding current and future economic conditions.

In the wake of the financial crisis, banks also began to further restrict households’ access to credit. As mentioned earlier and shown in Chart 2-5, banks began tightening standards on household loans by the end of 2007. As the financial crisis deepened in September 2008, credit became even more expensive and less available. For example, interest rates on 30-year fixed-rate mortgages rose 0.7 percentage point by the end of October 2008 from their September weekly low of 5.8 percent. Continued tightness in mortgage credit markets could reduce demand for housing and could slow the recovery in this market.

Chart 2-7 shows measures of consumer confidence from both the Reuters/University of Michigan survey and the Conference Board survey, which reveal substantial pessimism among consumers in the recent data. In fact, in October 2008 the Conference Board measure of confidence reached the lowest level ever seen in the index’s 51-year history.

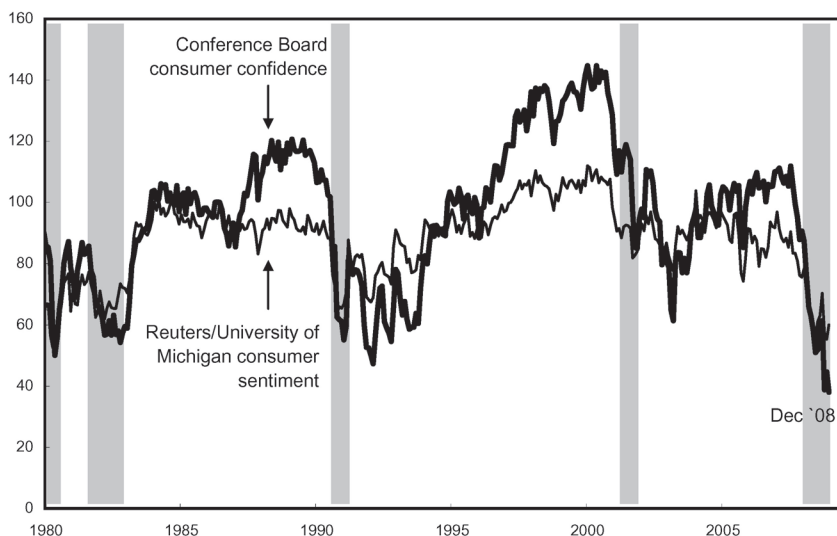
The Effect of the Crisis on Businesses

The financial crisis has also affected non-financial businesses through a number of channels, including a tightening in business credit markets and weaker demand both domestically and abroad. As mentioned above, businesses on the whole have had a difficult time raising funds in private debt and equity markets because of more expensive financing terms and reduced access. As a result, businesses’ ability to finance ongoing operations, to invest, and to increase hiring has been curtailed, particularly beginning in the fall of 2008.

Chart 2-7 **Consumer Confidence**

Consumer confidence has declined sharply since the start of credit market disruptions in August 2007.

Index



Note: Grey shading indicates recession.

Sources: Reuters/University of Michigan and Conference Board.

However, businesses have also reduced their demand for funds to expand operations. As consumer demand has weakened, businesses have become less willing to make investments to expand production. In addition, the crisis in credit markets has made it more difficult for consumers to finance some purchases, especially of “big ticket” durable goods such as automobiles. These difficulties result from disruptions in the market for asset-backed securities (ABS). Like mortgage-backed securities, asset-backed securities are tradable financial instruments that are backed by pools of individual loans—in this case, consumer loans. Since the financial crisis deepened in the fall of 2008, the demand for ABS has notably declined. These consumer credit market disruptions have led to a decline in consumer purchasing that has further reduced business demand for credit.

Businesses also have faced weaker demand abroad as the financial crisis has worsened the outlook for global economic growth. As a result of all these factors, business confidence has fallen notably since the fall of 2008.

Policy Responses to the Crisis

The global financial crisis is massive in scale and far-reaching in scope. The complexity of the financial system, as well as the financial instruments that are traded in various markets, has meant that the Government has had to take many new and drastic actions very quickly to limit further turmoil. While many different responses have been undertaken by different Government agencies, all of the responses have been designed to achieve the overarching goals of preserving the stability of financial institutions and boosting liquidity in financial markets.

Policy Responses in 2007

After the disruption in credit markets in the summer of 2007, the Administration and the Federal Reserve responded through a series of coordinated actions aimed at providing liquidity to financial markets and stabilizing housing markets. In the second half of 2007, for example, the Federal Reserve lowered interest rates and injected liquidity into financial markets by taking the following steps:

- Lowering the target for the Federal Funds rate (the interest rate at which U.S. banks lend to other banks overnight) by a total of 1 percentage point between September 2007 and December 2007 to reduce banks' funding costs.
- Expanding the Federal Reserve's lending through the discount window (the lending facility of last resort for depository institutions such as banks) to provide term financing for periods as long as 90 days, and establishing a Term Auction Facility (TAF) to further increase the availability of liquidity for depository institutions. Longer financing terms allow borrowers to roll over debt less frequently.
- Establishing reciprocal currency arrangements ("swap lines") with the European Central Bank (ECB) and the Swiss National Bank (SNB) to facilitate those banks' provision of dollar liquidity to institutions in their jurisdictions.

The Administration also took several steps to address difficulties in the housing market:

- In August 2007, the Administration launched a new program at the Federal Housing Administration (FHA) called *FHASecure*. The FHA insures (but does not originate) mortgages for qualified low- and moderate-income borrowers who have less-than-perfect credit and little savings for a down payment. The *FHASecure* initiative offers homeowners who have adjustable-rate mortgages, current or delinquent, the ability to refinance into a fixed-rate FHA-insured mortgage.

- In August 2007, the Administration repeated its call for Congress to pass a reform package for the GSEs Fannie Mae and Freddie Mac. Congress ultimately passed the Housing and Economic Recovery Act of 2008 (HERA) in July 2008 to strengthen the regulator charged with overseeing the GSEs.
- In October 2007, HOPE NOW, a private sector alliance of mortgage industry participants, was launched to encourage servicers, housing counselors, and investors to work together to help streamline the process of modifying mortgages for borrowers with adjustable-rate mortgages who can afford their current mortgage payments but will have trouble when their interest rates rise.

Policy Responses in 2008

As the crisis worsened over the course of 2008, the Administration and the Federal Reserve took additional and extraordinary steps to prevent systemwide failures in financial markets, provide protections for households' savings, and encourage the renegotiations of mortgages to prevent unnecessary foreclosures.

Intervention in Troubled Institutions

The Government has focused on preserving the stability of the overall financial system and acted to prevent disorderly failures of several large, interconnected firms—and did so in a way that protects taxpayers. For example, the failure of Fannie Mae and Freddie Mac would have materially exacerbated financial market turmoil and added to the disruptions in the mortgage market, putting more downward pressure on house prices. Examples of interventions in other troubled institutions are discussed above.

Injecting Liquidity

The Government has taken unprecedented action to inject liquidity—the grease that keeps the gears of the financial system turning. The Federal Deposit Insurance Corporation (FDIC) has temporarily guaranteed most new unsecured debt issued by insured banks; that is, the FDIC has agreed to make scheduled principal and interest payments in the event the issuer fails to make those payments. As a result, banks have found it easier to borrow.

The Federal Reserve has used a variety of tools to inject hundreds of billions of dollars in new liquidity into the financial system. The Federal Reserve has expanded the availability of term financing provided to depository institutions through the discount window and the Term Auction Facility (TAF). To support the liquidity of primary dealers, the Federal Reserve expanded its securities lending program by broadening the securities that can be used as collateral as well as extending the terms of the loans. More information

on the securities lending program is on the Federal Reserve Bank of New York’s website. In addition, the Federal Reserve established a Primary Dealer Credit Facility (PDCF) to meet the short-term funding needs of primary dealers, which are banks and securities broker-dealers that are authorized to trade directly with the Federal Reserve. Over the course of 2008, the Federal Reserve further reduced the target for the Federal Funds rate by over 4 percentage points. Moreover, it expanded its swap lines with foreign central banks and established a number of special programs designed to address strains in financial markets, including facilities structured to provide support to money market mutual funds, the commercial paper market, and the asset-backed securities markets.

Protecting Consumers, Businesses, and Investors

The Government has provided substantial new protections for consumers, businesses, and investors. The FDIC has temporarily expanded the amount of money insured in bank and thrift checking accounts, savings accounts, and certificates of deposit from \$100,000 to \$250,000 per depositor. The FDIC has also temporarily removed insurance limits for non-interest-bearing transaction accounts, which are used by many small businesses to finance daily operations. The Treasury has offered temporary government insurance for money market mutual funds. The Securities and Exchange Commission is vigorously investigating fraud, manipulation, and abuse in the securities markets, with an emphasis on abusive practices involving “short sales” (see Box 2-2). The programs being undertaken by Federal agencies are aimed at providing greater stability for the financial system.

Box 2-2: Short Sales

A short sale involves the sale of a stock by an investor who does not own it. To deliver the stock to the purchaser, the short seller must borrow the stock from a broker or from another investor. Later, the short seller closes out the position by purchasing the stock on the open market. Short sales are profitable if the stock price declines, because the short seller can buy the stock at the lower price. But if the price rises, the short seller will need to buy the stock at a higher price and, therefore, incur a loss.

Short sales are a part of many useful investment and trading strategies. Short sales are valuable to an investor who believes that the stock price will fall because the stock is overvalued. In this case, the short sale is used in the same way that an investor who believes that a security is currently undervalued will buy the stock. Short sales can be used

continued on the next page

Box 2-2 — continued

by market-makers in response to buyer demand for a stock that they do not currently own. Market-makers provide liquidity to other market participants by quoting buying prices (bids) and selling prices (asks) on stocks. They hope to profit on the difference, or spread, between the bid and ask prices, rather than on any price movement. Thus, short sales provide the market with an important benefit—liquidity. Short sales also provide the market with a second benefit—pricing efficiency—because efficient markets are characterized by prices that fully reflect both buying and selling interests.

Although short selling serves useful market purposes, in some rare instances it may be used to illegally manipulate stock prices (just as stock purchases may, in rare instances, be used to manipulate stock prices). One example is the “bear raid” in which a trader engages in heavy short selling in an attempt to drive down prices in the hope of triggering a cascade of sell orders from others that depresses prices further. The Securities and Exchange Commission (SEC), the primary overseer of U.S. securities markets, has promulgated many rules to prevent stock price manipulation and has aggressively pursued abusive short-selling practices that involve insider trading and other federal securities law violations.

At the same time, the SEC has adopted a balanced approach in pursuit of its mission to protect investors; maintain fair, orderly, and efficient markets; and facilitate capital formation. For example, the SEC has suspended short sale price restriction rules (for example, the uptick rule, which requires that a short sale must occur at a price above the most recent different transaction price) after carefully considering the solid empirical evidence based on research conducted by the SEC and independent academic economists that shows that the purported benefits of the rules no longer justify the costs. Also, the SEC has enacted rules that govern short sales immediately before stock offerings in an effort to maintain the integrity of the capital-raising process.

Stabilizing the Housing Market

The Administration continued its efforts to mitigate effects of the declining housing market and to help responsible homeowners in danger of defaulting on their mortgages. The FHA has provided countercyclical support for the mortgage market as conventional financing has partly withdrawn from the market. Between the time *FHASecure* was launched in August 2007 and December 2008, FHA helped more than 450,000 families, many of whom were facing the loss of their homes, refinance into a more affordable FHA-insured mortgage. In the midst of all of this, the FHA has been a leader

in contacting FHA-insured homeowners in trouble to work out solutions. In 2008, FHA servicers completed more than 100,000 loss-mitigation actions. The Department of Housing and Urban Development (HUD) also launched the Neighborhood Stabilization Program in September 2008, which provides emergency assistance to State and local governments to acquire and redevelop foreclosed properties that might otherwise be abandoned and become blight.

In September 2008, the Treasury began purchasing GSE MBS and related products to support the mortgage financing market, as authorized by the Housing and Economic Recovery Act of 2008 (HERA). More recently, the Federal Reserve announced its intentions to purchase large volumes of agency debt and MBS backed by Fannie Mae, Freddie Mac, and Ginnie Mae (a government-owned corporation within HUD) in an effort to lower mortgage rates and increase the availability of mortgage credit.

In October 2008, additional mortgage assistance for homeowners at risk of foreclosure was introduced. The HOPE for Homeowners program, also authorized by HERA, refinances mortgages for borrowers who are having difficulty making their payments but can afford a new fixed-rate mortgage insured by the FHA. That refinancing is available, however, only if lenders are willing to write down the existing mortgage to below the new appraised value of the home, creating home equity for a borrower who may have been underwater. Some lenders may be willing to do so in order to avoid foreclosures that might be even costlier. In return, the borrower agrees to share the equity created at the beginning of this new mortgage and any future appreciation in the value of the home if the home is sold or refinanced. Unfortunately, some limitations of the program that were written into the law have limited the program's flexibility and made it less attractive to participants than it otherwise might be.

The HOPE NOW Alliance launched a new program in November 2008 that will make it easier and faster for the most at-risk homeowners to modify their mortgages and stay in their homes. The Streamlined Modification Plan expands upon the existing efforts of many lenders. Under the plan, lenders use an expedited process to modify, or restructure, a mortgage so that the homeowner can afford the monthly payments. The streamlined process will apply to at-risk borrowers who are at least 90 days late on their existing mortgages and whose loans are owned by a lender or servicer in the HOPE NOW alliance or are owned by Freddie Mac or Fannie Mae. The Streamlined Modification Plan also applies to all mortgage types.

In November 2008, HUD published a final rule reforming the regulations for the Real Estate Settlement Procedures Act (RESPA) to simplify the mortgage settlement process and improve consumers' ability to knowledgeably shop for mortgage loans. Included in the RESPA reform, which will become fully effective in January 2010, is a new uniform Good Faith Estimate (GFE) form that will inform borrowers of the charges they should expect at loan

settlement and identify key features of the loan being offered, including whether the interest rate, monthly amount owed, and loan balance can rise, and if so, by how much. These disclosures will inform borrowers about potentially risky features of loan offers and vastly improve consumers' ability to compare loan offers, which should lead to improved loan terms and lower origination fees.

International Cooperation

The United States has also been at the forefront of a number of international reform efforts. U.S. Government officials have played leading roles in advancing reform measures that are being undertaken at the Financial Stability Forum, the Basel Committee on Banking Supervision, the Committee on Payment and Settlement Systems, and the International Organization of Securities Commissions. Since the onset of the global crisis, the Administration and the Federal Reserve have been cooperating even more closely with overseas partners. For example, in October 2008, the Federal Reserve and other central banks around the world enacted a remarkable coordinated cut in interest rates, which will help ease the pressure on credit markets around the world. In addition, starting at the end of 2007, the United States bolstered U.S. dollar liquidity in European financial markets by setting up dollar *swap facilities* (or *swap lines*) with European central banks, including the Bank of England, the European Central Bank, and the Swiss National Bank, among others. A dollar swap facility allows a foreign central bank to swap its currency for U.S. dollars from the Federal Reserve at a predetermined exchange rate. European central banks use swap lines to provide dollars to European commercial banks to help them meet their dollar-denominated funding needs during a period when investors are unwilling to be counterparties to dollar-denominated liabilities. European central banks swapped local currency for dollars with the Federal Reserve in order to limit disruptions to financial and currency markets. Starting in October 2008, the Federal Reserve removed the limits on swap lines for a number of foreign central banks and provided limited swap lines to other countries, including new \$30 billion swap facilities for Brazil, Mexico, Singapore, and South Korea.

On November 15, 2008, the United States hosted the first of what is expected to be a series of summits of leaders of major developed and developing countries to move forward in addressing the financial crisis in its international dimensions. These efforts build on the ongoing international efforts to better coordinate financial disclosure and regulation standards. To this end, the United States has participated fully in the efforts of a special working group of the Financial Stability Forum (FSF) formed in 2007. (For an explanation of the FSF, see "Looking Forward" below.)

Recapitalizing the Financial Sector

The Government has undertaken a historic effort to address the underlying problem behind the freeze in the credit markets. In October 2008, Congress passed bipartisan legislation, the Emergency Economic Stabilization Act of 2008 (EESA), authorizing the Treasury Department to use up to \$700 billion in a Troubled Asset Relief Program (TARP) to stabilize financial markets. Under its authority, the Treasury Department announced that it would purchase up to \$250 billion in non-voting preferred stock (a stock that represents ownership in a corporation with a higher claim on assets and earnings than common stock) in Federally regulated banks and thrifts in a Capital Purchase Program (CPP). In addition to stock, the Treasury would also receive warrants (options to buy additional shares of stock at a predetermined price) from the participating institutions. By the end of December 2008, Treasury had invested \$177.5 billion in 215 U.S. financial institutions through the CPP. The new capital will help banks fill the gaps created by losses during the financial crisis, so that the banks can resume lending to businesses and consumers. In addition to banks, the Treasury has purchased preferred stock in systemically important non-bank financial institutions, which have also experienced large losses. For example, \$40 billion of the \$700 billion TARP fund has been used to purchase preferred shares in insurance giant AIG.

Results So Far

Although it is much too soon to be able to conduct a complete evaluation of the results of government responses to the global financial crisis, some signs of improvement in financial conditions are already emerging. The first, and perhaps most important, sign is that the financial system is noticeably more stable than just a few months ago. Ongoing capital injections under the TARP are providing necessary capital as banks begin to decrease their reliance on financial leverage, a process called “deleveraging.”

TARP-provided capital is also addressing concerns about the potential insolvency of systemically important financial institutions. Government guarantee programs are providing confidence in money funds and FDIC-insured deposit accounts. As a result, the uncertainty that led to runs has abated and financial institutions now can rely on a more secure deposit base.

The increased confidence in a more stable financial system has laid the foundation for credit market improvements. Although conditions are still strained, banks are beginning to lend to each other again. Interbank lending rates, while still elevated, have fallen dramatically since mid-October

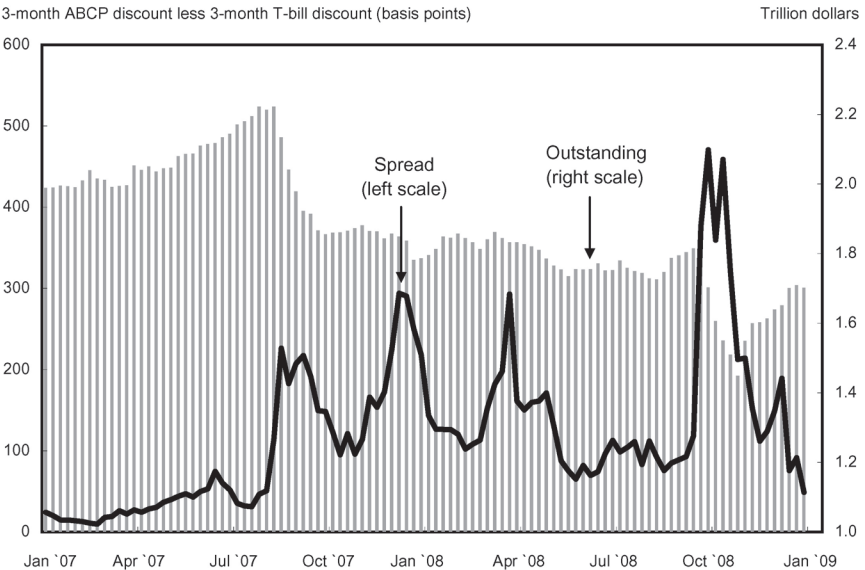
(see Chart 2-6). Credit spreads on bank debt are declining from their recent peaks. Federal Reserve credit facilities are providing the necessary liquidity for money funds to invest in commercial paper. Chart 2-8 shows that commercial paper spreads have been decreasing and that volumes are beginning to recover. These trends suggest that firms relying on access to short-term funding are able to borrow at reasonable rates again.

As shown in Chart 2-9, mortgage rates have also declined from their recent peaks. Rates on *conforming mortgages*, which are mortgages that conform to loan purchasing guidelines set by Fannie Mae and Freddie Mac, have benefited the most from recent actions such as the Federal Reserve’s announced intentions to purchase large volumes of agency debt and MBS backed by agencies. Rates on non-conforming mortgages, such as “jumbos” (mortgages that exceed the conforming loan limits), have also benefited. However, rates still appear high relative to long-term Treasury rates, suggesting that investors continue to attach a substantial risk premium to risky assets, such as mortgage-related assets.

Improvements in long-term capital markets have been slower. The stock market is still volatile. However, highly rated corporate and municipal bond issuers have been able to issue bonds at slightly lower interest rates than before the crisis came to a head in the summer of 2008.

Chart 2-8 **Commercial Paper**

Outstanding commercial paper fell dramatically as asset-backed commercial paper (ABCP) spreads spiked in the summer of 2007 and the early fall of 2008 before recovering in late fall.

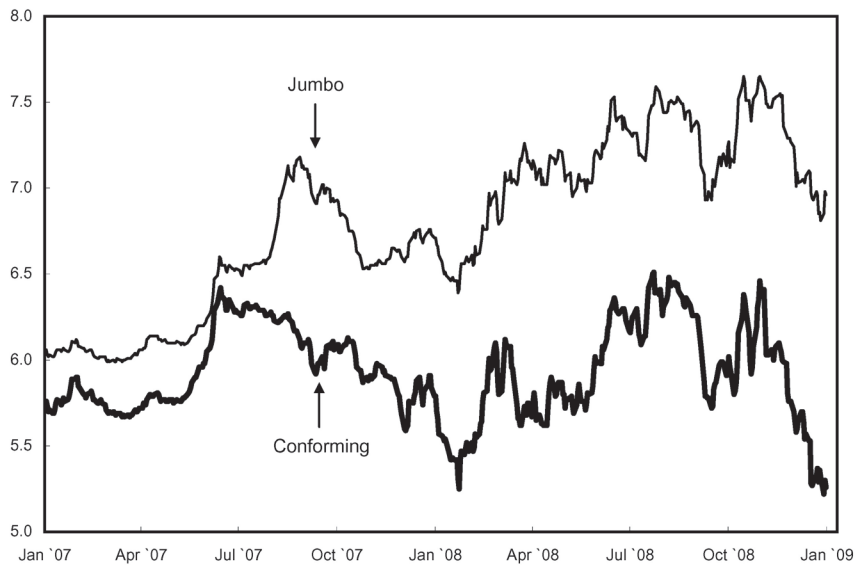


Sources: Federal Reserve Board and the Treasury Department.

Chart 2-9 **Conforming and Jumbo Mortgage Rates**

Interest rates on jumbo and conforming 30-year fixed-rate mortgages fell at the end of 2008.

Percent annual rate



Source: Bankrate.com.

Looking Forward

The current global financial crisis will create challenges for some time to come. These challenges include developing a new regulatory structure for financial markets, carefully unwinding programs put in place to stem the crisis, and developing a sustainable framework for mortgage financing.

Developing a New Regulatory Structure for Financial Markets

The current financial system has outgrown its supervisory and regulatory structures, which were designed decades ago. The new structure requires balancing the need to encourage vital innovation with the need to deter excessive risk taking. The new structure also requires the flexibility to adapt to market innovations.

The Treasury Blueprint for a Modernized Financial Structure

In March 2007, the Treasury convened a panel to discuss the competitiveness of U.S. capital markets. Industry leaders and policymakers alike agreed that the competitiveness of our financial services sector is constrained by an outdated financial regulatory framework. The panel released its blueprint

in March 2008, which presents a series of recommendations for reforming the U.S. regulatory structure. These recommendations include merging of some of the regulatory agencies that oversee banks with some of the agencies that oversee other financial institutions, taking into account the blurring distinctions between types of financial products; creating an optional Federal charter for insurance to encourage a more competitive U.S. insurance industry; and creating an objectives-based regulatory approach. More information on these recommendations is on the Treasury's website.

PWG Initiatives to Strengthen Oversight and the Infrastructure of the OTC Derivatives Market

The President's Working Group on Financial Markets (PWG), which consists of the Secretary of the Treasury, the Chair of the Board of Governors of the Federal Reserve System, the Chair of the Securities and Exchange Commission, and the Chair of the Commodity Futures Trading Commission, announced a series of initiatives to strengthen oversight and the infrastructure of the *over-the-counter* derivatives market. Many derivatives are traded over the counter (OTC), which means that they are privately negotiated and traded between counterparties, without going through an organized exchange or intermediary. One type of derivative contract that has become very popular in recent years is the *credit default swap* (CDS). (See the section "The Onset of the Crisis" earlier in this chapter for an explanation of CDS contracts.) While appropriate use of CDS contracts can help market participants manage some risks, these contracts bring with them exposure to additional firms and additional risks.

On November 14, 2008, the PWG established four specific policy objectives for the OTC derivatives market, with a primary focus on credit default swaps. The first objective is to improve market transparency and integrity for CDS so regulators and investors can access information that could help them effectively monitor the CDS market and make efficient investment decisions. The second objective is to enhance risk management of OTC derivatives by encouraging market participants to adopt standard best practices, including public reporting, liquidity management, senior management oversight, and counterparty credit risk management. The third objective is to strengthen the derivatives market infrastructure. For example, the PWG is supporting industry efforts to establish a central counterparty clearing facility for derivatives that would help to reduce systemic risk and make clear how a major participant's failure would be addressed. The fourth objective is to continue cooperation among regulatory authorities by expanding existing frameworks for cooperation, coordination, and information sharing among U.S. regulatory agencies, as well as international jurisdictions with significant OTC derivatives activity.

Developing Common International Principles

Leaders from the United States and other major nations are holding a series of summits to discuss efforts to strengthen economic growth, respond to the financial crisis, and lay the foundation for reform to help ensure that a similar crisis does not happen again. The initial “Summit on Financial Markets and the World Economy” took place on November 15, 2008, in Washington, D.C., and the leaders from the participating countries agreed on common principles for reforming financial markets and keeping international markets open to trade and investment. The leaders agreed to implement financial market reforms that include addressing weaknesses in accounting and disclosure standards for “off-balance-sheet vehicles” (explained in the next section); ensuring that credit rating agencies avoid conflicts of interest, provide greater disclosure to investors, and differentiate ratings for complex products; ensuring that firms maintain adequate capital; developing enhanced guidance to strengthen banks’ risk-management practices; establishing processes whereby national supervisors that oversee globally active financial institutions meet and share information; and expanding the Financial Stability Forum (FSF) to include a broader membership of emerging economies.

The Financial Stability Forum is an organization whose members are senior representatives from national financial authorities (Australia, Canada, France, Germany, Hong Kong, Italy, Japan, the Netherlands, Singapore, Switzerland, the United Kingdom, and the United States), international groups (for example, the International Monetary Fund and the World Bank), and central bank committees. The FSF’s stated mandate is to assess vulnerabilities affecting the international financial system, to identify and oversee action needed to address these, and to improve coordination and information exchange among the various authorities responsible for financial stability. Leaders at the November 15, 2008, financial summit called upon the FSF to take an active role in drawing lessons from the current crisis, improving transparency in accounting standards, and strengthening prudential regulatory standards.

Unwinding Temporary Programs

The Government’s efforts to restore stability and provide liquidity to the financial system introduced many programs whose continued existence the Government must evaluate as the crisis abates. Some programs should be phased out according to a preannounced schedule, while others should be phased out naturally as the costs of participation come to outweigh the benefits.

One program that is set to end in less than 1 year is the Treasury temporary guarantee program for money market funds that were deposited before September 19, 2008. This program was set up with an initial term of several months, after which the Secretary of the Treasury would review the need and terms for the program and the costs to provide the coverage. If the program is extended, funds will have the opportunity to renew their purchase of ongoing coverage. The Secretary has the option to extend the program until September 2009 at the latest.

Two programs that will likely be phased out over the next 5 years are the Federal Reserve's new credit facilities and the Treasury's Capital Purchase Program (CPP). Aside from the Federal Reserve's term auction facility, the new credit facilities' preannounced termination dates are all within the next 2 years, unless the Federal Reserve determines that conditions warrant postponing these dates. The Treasury's authority to make additional capital purchases expires at the end of 2009. In addition, the CPP provides a strong incentive for participants to raise private capital to pay off the Government capital injection within 5 years, as the cost of these funds rises over time. That is, the senior preferred shares issued to the U.S. Treasury in the program carry a 5 percent dividend for the first 5 years, rising to 9 percent thereafter.

The FDIC has several programs with preannounced end dates in 2009. The Temporary Liquidity Guarantee Program is a new program that guarantees the unsecured medium-term debt of all FDIC-insured institutions and grants unlimited insurance for non-interest-bearing transaction accounts used by many small businesses. Another program is the expansion of the existing deposit insurance program for savings accounts, checking accounts, and certificates of deposits from \$100,000 to \$250,000.

Modernizing Financial Regulation

The global financial crisis revealed that current financial regulation standards and practices, in the United States and throughout the world, are ineffective in preventing a major financial crisis that spans countries and different institutions. While no practical system of regulation could likely have prevented such a crisis altogether, a number of important lessons are clear.

Addressing Innovation and Restructuring in Financial Markets

First, financial regulation must be adapted to account for the major innovations and restructuring in financial markets in recent decades. The current U.S. financial regulatory framework is fraught with redundancies and gaps, in part produced by more than one regulator overseeing individual institutions.

Depository institutions, such as commercial banks and savings associations, are overseen by five Federal regulators as well as State regulators. Large holding companies with depository institutions, investment banks, and insurance companies may face a complex system of multiple regulators.

While it is clear that an overhaul of financial regulation is necessary, what is less clear is exactly how a new regulatory framework should be structured. The new financial regulatory framework needs to balance several objectives. Protecting investors and consumers and establishing a stable financial system are two necessary requirements for any successful regulatory system, but regulators must be careful to balance these goals against potential detrimental effects on capital formation and the desire to promote beneficial innovation.

Strengthening Disclosure Requirements

Second, regulators need to strengthen disclosures related to complex financial instruments, particularly those that are held “off balance sheet.” A firm’s balance sheet is one of many financial statements the firm prepares to provide useful information to investors, creditors, and regulators. The purpose of a balance sheet is to present a snapshot of the firm’s financial position. The basic components of a balance sheet are assets, liabilities, and equity. *Assets* are things that provide probable future economic benefit to the firm. *Liabilities* are claims on those assets, such as debt issued to finance the purchase of assets. *Equity* is the residual interest in the assets that remains after deducting the liabilities.

While the above definitions appear straightforward, many questions and issues arise regarding whether certain items should be reported as liabilities or as equity. In addition, questions arise in determining which items should be reflected on the balance sheet at all. The formal accounting standards that are used to distinguish between on- and off-balance-sheet items are very complicated and are open to judgment. As a result, some companies may hold large amounts of off-balance-sheet items that do indeed affect a company’s health and stability. For example, at the outset of the financial crisis, some large financial institutions had *structured investment vehicles* (SIVs) holding billions of dollars in mortgage-related assets that were not reflected on their balance sheets.

SIVs are investment funds that issue short-term debt, such as commercial paper, to finance the purchase of long-term assets, such as mortgage-backed securities. Leading up to the financial crisis, SIVs were often highly levered with a great deal of debt relative to their capital. In fact, some SIVs were used to circumvent regulatory capital requirements that restricted the amount of leverage that could be used by the parent financial institutions. In the end, the SIVs’ combination of leverage and reliance on short-term funding made

their parent financial institutions vulnerable to large mortgage losses. Many investors were surprised because institutions had disclosed little about the risks posed by the off-balance-sheet SIVs.

The challenge for financial market regulators is to address weaknesses in accounting and disclosure standards for off-balance-sheet items. Once complete and accurate information on the financial condition of firms is disclosed, regulators can more effectively measure firm-specific and system-wide risks. Then regulators can prudently manage those risks as appropriate.

Addressing the Pro-Cyclical Regulatory Capital Requirements

Third, problems with pro-cyclical regulatory capital requirements need to be addressed. During good economic times, values of financial assets increase, thus increasing a firm's capital and its ability to increase its liabilities, which helps to feed credit booms. During difficult times, values of financial assets decline. The firm's capital declines in value, and it is forced to reduce its liabilities or somehow increase its capital to satisfy regulatory requirements, which feeds the economic downturn.

The combination of mark-to-market accounting, illiquid markets, and forced sales to satisfy regulatory capital requirements during a downturn can lead to a vicious cycle. *Mark-to-market* accounting is one method for determining an asset's fair value. A *fair value* is the price that would be received if an asset were sold in an orderly transaction between market participants. The mark-to-market approach uses observable market prices to calculate an asset's fair value. An alternative valuation method is the *mark-to-model* approach, which relies on standard financial models that use factors such as interest rates, the probability of default, and related cash flows to calculate an asset's fair value.

Some observers have blamed mark-to-market accounting for driving asset prices well below the values determined by the asset's underlying fundamentals, such as interest rates and probabilities of default. These observers argue that understated asset values undermine investor confidence and have forced many firms to raise capital or sell assets to satisfy regulatory requirements. However, as discussed previously, problems at many financial institutions today are due less to their asset values being undervalued and more to the firms having too many troubled assets (such as MBS), engaging in poor risk management, and becoming too dependent on short-term borrowing. Mark-to-market accounting has helped bring attention to these problems by exposing which firms were very heavily invested in these troubled assets, but it did not cause them.

Investors and regulators can best evaluate a firm when they are aware of the market value of a firm's assets. Transparency is vital to the healthy functioning of financial markets. To effectively address the pro-cyclical

problem, in which firms may be forced to undertake actions in a downturn that worsen the downturn, financial accounting rules should be distinguished from the regulatory policies that establish standards for capital requirements. The purpose of financial accounting is to provide reliable information about a firm's financial situation so that investors and creditors can make sound economic decisions. From that perspective, mark-to-market accounting is useful because it improves the quality of information in the marketplace.

As noted earlier, some observers have argued that falling asset prices in acutely distressed markets have led firms to report reduced levels of capital. Then, in order to comply with regulatory capital requirements, firms have sold assets, thus driving prices lower. Even if this selling of assets in order to comply with requirements is responsible for the subsequent asset price declines, mark-to-market accounting is not the root cause. Instead, the problem lies with a regulatory policy that is too rigid in determining capital requirements. When most asset values are falling, massive sales of assets to meet the required ratio of capital to assets are likely to be destabilizing. To reduce this problem, regulators could maintain more flexible and forward-looking standards in distressed markets, so that capital requirements themselves do not create unhealthy firms.

The Future of Mortgage Financing and Fannie Mae and Freddie Mac

Over the first half of 2008, investors became increasingly concerned about the capital positions of the GSEs Fannie Mae and Freddie Mac, following a string of quarterly losses by both firms due to reductions in the value of their portfolio holdings of MBS and mortgage loans, and because of greater-than-expected credit losses. Eroding investor confidence in the GSEs endangered not only the U.S. mortgage market but the global financial system more generally, given the central role the GSEs play in mortgage financing and how broadly their debt and MBS are held around the world. At the recommendation of the Administration, Congress passed a bill in July 2008 that, among other things, created a new and stronger regulator for the GSEs, the Federal Housing Finance Agency (FHFA), and provided the Treasury with powers to purchase GSE debt and equity.

In September 2008, Fannie Mae and Freddie Mac were placed under conservatorship of the FHFA as serious concerns surfaced about the financial stability of these systemically important financial institutions. (See "Onset of the Crisis" above.) While conservatorship can provide necessary stability over a period of months, a long-term plan to reestablish the link between mortgage lenders and financial markets is critical to the future of the mortgage market.

Any plan for the long-term restructuring of Fannie Mae and Freddie Mac should have at its core at least three goals: to promote the efficient functioning of the mortgage market, even during periods of systemwide financial stress; to minimize systemic risk, which likely implies that government support should be either explicit or absent; and to protect the taxpayer.

Liquidation of the GSEs and Replacement by a Fully Private Market

One approach is to liquidate the GSEs and allow the private market alone to handle mortgage financing, maximizing the benefits of private market competition. The structure would be one in which private banks and other financial institutions securitize mortgages as a part of their business model, but no single firm would be a dominant player in this market, and the mortgage securitization business would make up only a fraction of the total business of each institution. This solution would dramatically reduce taxpayer risk, maintain a functioning mortgage market in most situations, and eliminate distortions. The elimination of any implicit or explicit government guarantee would, however, increase mortgage interest rates somewhat. This is one reason that the full privatization of mortgage financing may not be the best option in the near term, despite its attractive features.

Importantly, recent experience suggests that fully private financing may not be viable under stressed financial conditions. As an example, the recent financial crisis led to a near-halt in private mortgage securitization in the United States. In contrast, Fannie Mae and Freddie Mac continued to produce and sell large quantities of MBS throughout 2008, with private demand remaining somewhat secure. Apparently, investors valued GSE MBS because of the instruments' implied government support, suggesting that some form of backstop provided by the Government or widely dispersed private reinsurers may be necessary to maintain mortgage financing during periods of systemwide financial stress.

Government-Provided Insurance of MBS

The Government could sell insurance to GSEs and other financial institutions that apply for a charter to create MBS from conforming mortgages. This structure would foster competition among institutions, as the GSEs would have no institutional advantage over private institutions. Such a structure, with its explicit but limited role for government involvement, may be a good near-term solution for mortgage financing. Taxpayers would bear risk, but would be compensated by the insurance premiums paid by participating institutions. Depending on where the price of the insurance is set, the private sector could eventually compete with the Government by offering alternative mortgage products that could replace the Government insurance.

Nationalizing the GSEs

Another GSE structure that has been proposed by some but poses many challenges is nationalization. In this alternative, the GSEs could be taken out of conservatorship and be fully nationalized. As government corporations, they would be set up to guarantee conforming mortgages or MBS directly. What is less clear is how nationalization would be accomplished: Would the GSEs' debt become the Government's debt? What would happen to the equity held by existing shareholders? In addition, if Government prices for this guarantee were below the costs incurred by private markets, private competition for securitization would be precluded. Although systemic risk would be eliminated and the GSEs would have little incentive to engage in excessively risky behavior for short-run profits without shareholders, taxpayers could bear substantial risk. Finally, the terms of mortgage financing would be set by the Government, a role that can be fulfilled by the private sector.

Turning the GSEs into a Public Utility

Alternatively, Fannie Mae and Freddie Mac could be combined and turned into one public utility. This regulated private corporation would directly issue MBS, presumably with some government backing. Prices of the MBS and their rates of return would be set by a commission, and regulations would place tight limits on the company's investment portfolio. Public utilities are generally established in natural monopoly settings (because, for example, building duplicate telephone or power lines is inefficient) as a second-best solution to prevent monopoly pricing and guarantee public service. The mortgage market is not a natural monopoly, however, and can be easily served by many firms without duplicative inefficiency. As a consequence, a public utility would result in many distortions and disadvantages without significant offsetting positives.

Implicit Guarantees

The issue of distortions arising from implicit government guarantees is not limited to Fannie Mae and Freddie Mac. An increasingly important source of financing for depository institutions in recent years has been the Federal Home Loan Banks (FHLBs). As of the third quarter of 2008, the FHLBs had granted nearly \$1 trillion in loans. These loans, often backed by real estate-related collateral, have been extended to the majority of depository institutions in the United States. The FHLBs raise funds at below-market rates because they have advantages over other debt issuers, such as certain exemptions from State and local taxes and an assumed implicit government guarantee even though the FHLBs are private member-owned cooperatives. Some of these savings are passed along to member banks, who, as a result,

rely—in some cases very heavily—on financing from the FHLBs. Any long-term plan for mortgage financing must eliminate the distortions in credit markets created by implicit guarantees of this nature.

Conclusion

The United States experienced a crisis in both financial markets and housing markets in 2008. One factor that led to this crisis was an abundance of inexpensive capital that helped finance a housing boom. This boom was fueled by the growth of subprime mortgages and expanded mortgage securitization. As the boom proved unsustainable, the crisis was exacerbated by unprecedented declines in house prices, rising default rates on residential mortgages, and a resulting sharp decline in the value of mortgage-related assets. The assets were held by a wide range of institutions, some of which were highly levered and highly dependent on short-term funding. The resulting failure and near-failure of some of these firms, combined with broad-based declines in asset prices, placed enormous stresses on world financial markets. Credit markets froze, and confidence in the financial system eroded.

The Administration and the Federal Reserve aggressively responded to restore stability to the U.S. financial system and support the functioning of financial markets and firms. The Government has taken unprecedented action to boost liquidity in short-term funding markets; provided substantial new protections for consumers, businesses, and investors; and cooperated closely with its international partners. Looking ahead, the global financial crisis presents several challenges for the United States. Among them are the need to improve financial regulation, unwind temporary programs in an orderly fashion, and develop long-term solutions for Fannie Mae and Freddie Mac.