

Subprime mortgage crisis

The U.S. **subprime mortgage crisis** was a set of events and conditions that led to the late-2000s financial crisis, characterized by a rise in subprime mortgage delinquencies and foreclosures, and the resulting decline of securities backed by said mortgages.

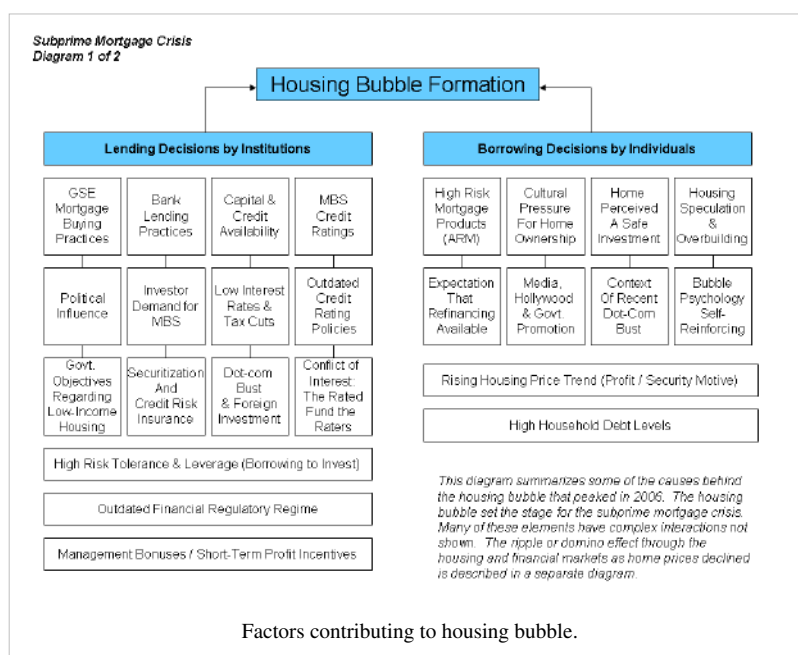
The percentage of new lower-quality subprime mortgages rose from the historical 8% or lower range to approximately 20% from 2004 to 2006, with much higher ratios in some parts of the U.S.^{[1][2]} A high percentage of these subprime mortgages, over 90% in 2006 for example, were adjustable-rate mortgages.^[3] These two changes were part of a broader trend of lowered lending standards and higher-risk mortgage products.^{[3][4]} Further, U.S. households had become increasingly indebted, with the ratio of debt to disposable personal income rising from 77% in 1990 to 127% at the end of 2007, much of this increase mortgage-related.^[5]

After U.S. house sales prices peaked in mid-2006 and began their steep decline forthwith, refinancing became more difficult. As adjustable-rate mortgages began to reset at higher interest rates (causing higher monthly payments), mortgage delinquencies soared. Securities backed with mortgages, including subprime mortgages, widely held by financial firms, lost most of their value. Global investors also drastically reduced purchases of mortgage-backed debt and other securities as part of a decline in the capacity and willingness of the private financial system to support lending.^[1] Concerns about the soundness of U.S. credit and financial markets led to tightening credit around the world and slowing economic growth in the U.S. and Europe.

Background and timeline of events

The immediate cause or trigger of the crisis was the bursting of the United States housing bubble which peaked in approximately 2005–2006.^{[6][7]} High default rates on "subprime" and adjustable rate mortgages (ARM), began to increase quickly thereafter. Lenders began originating large numbers of high risk mortgages from around 2004 to 2007, and loans from those vintage years exhibited higher default rates than loans made either before or after.^[1]

An increase in loan incentives such as easy initial terms and a long-term trend of rising housing prices had encouraged borrowers to assume difficult mortgages in the belief they would be able to quickly refinance at more favorable terms. Additionally, the increased market power of originators of subprime mortgages and the declining role of Government

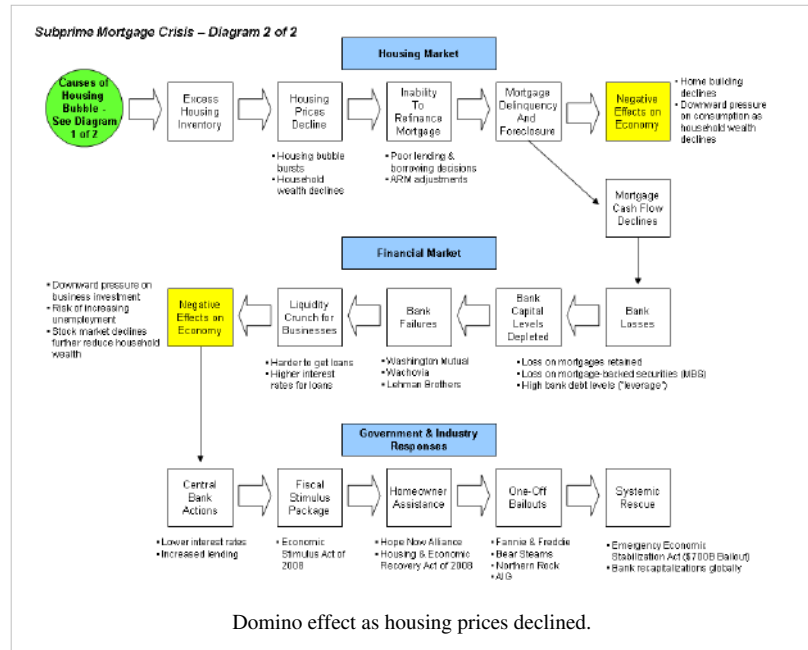


Sponsored Enterprises as gatekeepers increased the number of subprime mortgages provided to consumers who would have otherwise qualified for conforming loans.^[1]

The worst performing loans were securitized by private investment banks, who generally lacked the GSE's market power and influence over mortgage originators.^[1] Once interest rates began to rise and housing prices started to drop moderately in 2006–2007 in many parts of the U.S., refinancing became more difficult. Defaults and foreclosure activity increased dramatically as easy initial terms expired, home prices failed to go up as anticipated, and ARM interest rates reset higher. Falling prices also resulted in 23% of U.S. homes worth less than the mortgage loan by September 2010, providing a financial incentive for borrowers to enter foreclosure.^[8] The ongoing foreclosure epidemic, of which subprime loans are one part, that began in late 2006 in the U.S. continues to be a key factor in the global economic crisis, because it drains wealth from consumers and erodes the financial strength of banking institutions.

In the years leading up to the crisis, significant amounts of foreign money flowed into the U.S. from fast-growing economies in Asia and oil-producing countries. This inflow of funds combined with low U.S. interest rates from 2002–2004 contributed to easy credit conditions, which fueled both housing and credit bubbles. Loans of various types (e.g., mortgage, credit card, and auto) were easy to obtain and consumers assumed an unprecedented debt load.^{[9][10]}

As part of the housing and credit booms, the amount of financial agreements called mortgage-backed securities (MBS), which derive their value from mortgage payments and housing prices, greatly increased. Such financial innovation enabled institutions and investors around the world to invest in the U.S. housing market. As housing prices declined, major global financial institutions that had borrowed and invested heavily in MBS reported significant losses. Defaults and losses on other loan types also increased significantly as the crisis expanded from the housing market to other parts of the economy. Total losses are estimated in the trillions of U.S. dollars globally.^[11]



U.S. Median Price of Houses Sold (\$ and Index)



U.S. Median Price of Homes Sold

While the housing and credit bubbles were growing, a series of factors caused the financial system to become increasingly fragile. Policymakers did not recognize the increasingly important role played by financial institutions such as investment banks and hedge funds, also known as the shadow banking system. Shadow banks were able to mask their leverage levels from investors and regulators through the use of complex, off-balance sheet derivatives and securitizations.^[12]

These instruments also made it virtually impossible to reorganize financial institutions in bankruptcy, and contributed to the need for government bailouts.^[12] Some experts believe these institutions had become as important as commercial (depository) banks in providing credit to the U.S. economy, but they were not subject to the same regulations.^[13] These institutions as well as certain regulated banks had also assumed significant debt burdens while providing the loans described above and did not have a financial cushion sufficient to absorb large loan defaults or MBS losses.^[14]

These losses impacted the ability of financial institutions to lend, slowing economic activity. Concerns regarding the stability of key financial institutions drove central banks to take action to provide funds to encourage lending and to restore faith in the commercial paper markets, which are integral to funding business operations. Governments also bailed out key financial institutions, assuming significant additional financial commitments.

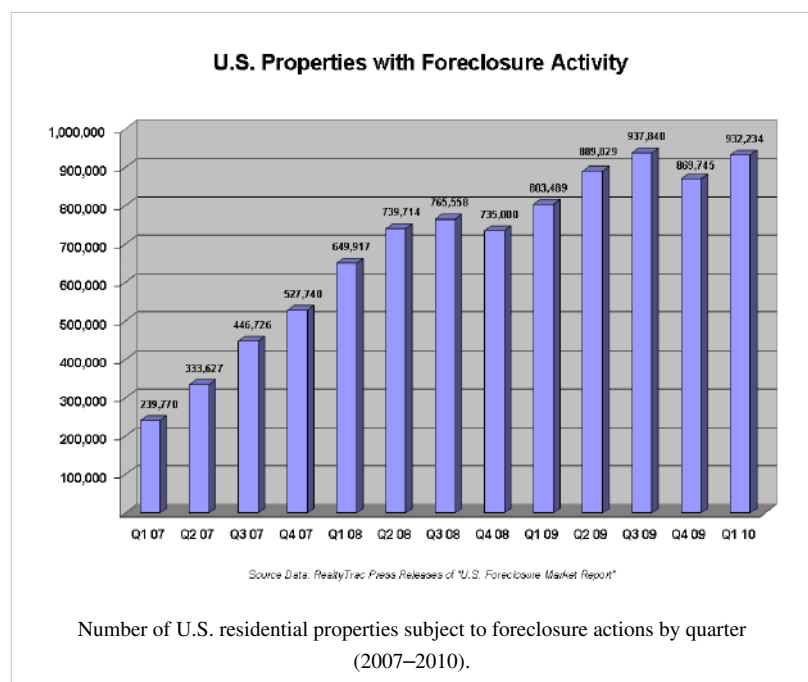
The risks to the broader economy created by the housing market downturn and subsequent financial market crisis were primary factors in several decisions by central banks around the world to cut interest rates and governments to implement economic stimulus packages. Effects on global stock markets due to the crisis have been dramatic. Between 1 January and 11 October 2008, owners of stocks in U.S. corporations had suffered about \$8 trillion in losses, as their holdings declined in value from \$20 trillion to \$12 trillion. Losses in other countries have averaged about 40%.^[15]

Losses in the stock markets and housing value declines place further downward pressure on consumer spending, a key economic engine.^[16] Leaders of the larger developed and emerging nations met in November 2008 and March 2009 to formulate strategies for addressing the crisis.^[17] A variety of solutions have been proposed by government officials, central bankers, economists, and business executives.^{[18][19][20]} In the U.S., the Dodd–Frank Wall Street Reform and Consumer Protection Act was signed into law in July 2010 to address some of the causes of the crisis.

Mortgage market

Subprime borrowers typically have weakened credit histories and reduced repayment capacity. Subprime loans have a higher risk of default than loans to prime borrowers.^[21] If a borrower is delinquent in making timely mortgage payments to the loan servicer (a bank or other financial firm), the lender may take possession of the property, in a process called foreclosure.

The value of American subprime mortgages was estimated at \$1.3 trillion as of March 2007,^[22] with over 7.5 million first-lien subprime mortgages outstanding.^[23] Between 2004–2006 the share of subprime



mortgages relative to total originations ranged from 18%–21%, versus less than 10% in 2001–2003 and during 2007.^{[24][25]} The boom in mortgage lending, including subprime lending, was also driven by a fast expansion of non-bank independent mortgage originators which despite their smaller share (around 25 percent in 2002) in the market have contributed to around 50 percent of the increase in mortgage credit between 2003 and 2005.^[26] In the third quarter of 2007, subprime ARMs making up only 6.8% of USA mortgages outstanding also accounted for 43% of the foreclosures which began during that quarter.^[27]

By October 2007, approximately 16% of subprime adjustable rate mortgages (ARM) were either 90-days delinquent or the lender had begun foreclosure proceedings, roughly triple the rate of 2005.^[28] By January 2008, the delinquency rate had risen to 21%^[29] and by May 2008 it was 25%.^[30]

According to RealtyTrac, the value of all outstanding residential mortgages, owed by U.S. households to purchase residences housing at most four families, was US\$9.9 trillion as of year-end 2006, and US\$10.6 trillion as of midyear 2008.^[31] During 2007, lenders had begun foreclosure proceedings on nearly 1.3 million properties, a 79% increase over 2006.^[32] This increased to 2.3 million in 2008, an 81% increase vs. 2007,^[33] and again to 2.8 million in 2009, a 21% increase vs. 2008.^[34]

By August 2008, 9.2% of all U.S. mortgages outstanding were either delinquent or in foreclosure.^[35] By September 2009, this had risen to 14.4%.^[36] Between August 2007 and October 2008, 936,439 USA residences completed foreclosure.^[37] Foreclosures are concentrated in particular states both in terms of the number and rate of foreclosure filings.^[38] Ten states accounted for 74% of the foreclosure filings during 2008; the top two (California and Florida) represented 41%. Nine states were above the national foreclosure rate average of 1.84% of households.^[39]

Causes

Further information: Causes of the 2007–2012 global financial crisis

The crisis can be attributed to a number of factors pervasive in both housing and credit markets, factors which emerged over a number of years. Causes proposed include the inability of homeowners to make their mortgage payments (due primarily to adjustable-rate mortgages resetting, borrowers overextending, predatory lending, and speculation), overbuilding during the boom period, risky mortgage products, increased power of mortgage originators, high personal and corporate debt levels, financial products that distributed and perhaps concealed the risk of mortgage default, bad monetary and housing policies, international trade imbalances, and inappropriate government regulation.^{[1][40][41][42][43]}

Three important catalysts of the subprime crisis were the influx of money from the private sector, the banks entering into the mortgage bond market and the predatory lending practices of the mortgage lenders, specifically the adjustable-rate mortgage, 2–28 loan, that mortgage lenders sold directly or indirectly via mortgage brokers.^[44] On Wall Street and in the financial industry, moral hazard lay at the core of many of the causes.^[45]

In its "Declaration of the Summit on Financial Markets and the World Economy," dated 15 November 2008, leaders of the Group of 20 cited the following causes:

During a period of strong global growth, growing capital flows, and prolonged stability earlier this decade, market participants sought higher yields without an adequate appreciation of the risks and failed to exercise proper due diligence. At the same time, weak underwriting standards, unsound risk management practices, increasingly complex and opaque financial products, and consequent excessive leverage combined to create vulnerabilities in the system. Policy-makers, regulators and supervisors, in some advanced countries, did not adequately appreciate and address the risks building up in financial markets, keep pace with financial innovation, or take into account the systemic ramifications of domestic regulatory actions.^[46]

During May 2010, Warren Buffett and Paul Volcker separately described questionable assumptions or judgments underlying the U.S. financial and economic system that contributed to the crisis. These assumptions included: 1) Housing prices would not fall dramatically;^[47] 2) Free and open financial markets supported by sophisticated

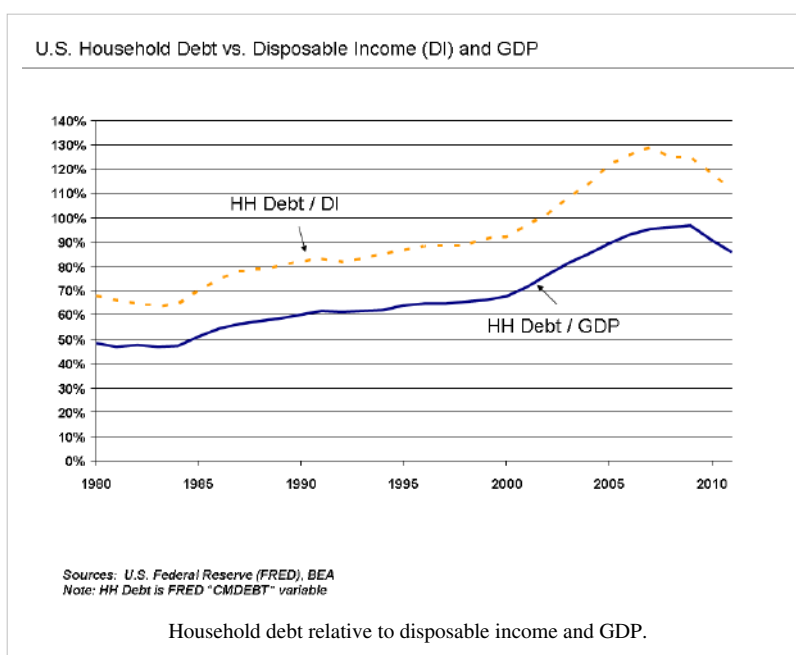
financial engineering would most effectively support market efficiency and stability, directing funds to the most profitable and productive uses; 3) Concepts embedded in mathematics and physics could be directly adapted to markets, in the form of various financial models used to evaluate credit risk; 4) Economic imbalances, such as large trade deficits and low savings rates indicative of over-consumption, were sustainable; and 5) Stronger regulation of the shadow banking system and derivatives markets was not needed.^[48]

The U.S. Financial Crisis Inquiry Commission reported its findings in January 2011. It concluded that "the crisis was avoidable and was caused by: Widespread failures in financial regulation, including the Federal Reserve's failure to stem the tide of toxic mortgages; Dramatic breakdowns in corporate governance including too many financial firms acting recklessly and taking on too much risk; An explosive mix of excessive borrowing and risk by households and Wall Street that put the financial system on a collision course with crisis; Key policy makers ill prepared for the crisis, lacking a full understanding of the financial system they oversaw; and systemic breaches in accountability and ethics at all levels."^[49]

Boom and bust in the housing market

Low interest rates and large inflows of foreign funds created easy credit conditions for a number of years prior to the crisis, fueling a housing market boom and encouraging debt-financed consumption.^[50] The USA home ownership rate increased from 64% in 1994 (about where it had been since 1980) to an all-time high of 69.2% in 2004.^[51] Subprime lending was a major contributor to this increase in home ownership rates and in the overall demand for housing, which drove prices higher.

Between 1997 and 2006, the price of the typical American house increased by 124%.^[52] During the two decades ending in 2001, the national median home price ranged from 2.9 to 3.1 times median household income. This ratio rose to 4.0 in 2004, and 4.6 in 2006.^[53] This housing bubble resulted in quite a few homeowners refinancing their homes at lower interest rates, or financing consumer spending by taking out second mortgages secured by the price appreciation. USA household debt as a percentage of annual disposable personal income was 127% at the end of 2007, versus 77% in 1990.^[54]



While housing prices were increasing, consumers were saving less^[55] and both borrowing and spending more. Household debt grew from \$705 billion at yearend 1974, 60% of disposable personal income, to \$7.4 trillion at yearend 2000, and finally to \$14.5 trillion in midyear 2008, 134% of disposable personal income.^[56] During 2008, the typical USA household owned 13 credit cards, with 40% of households carrying a balance, up from 6% in 1970.^[57]

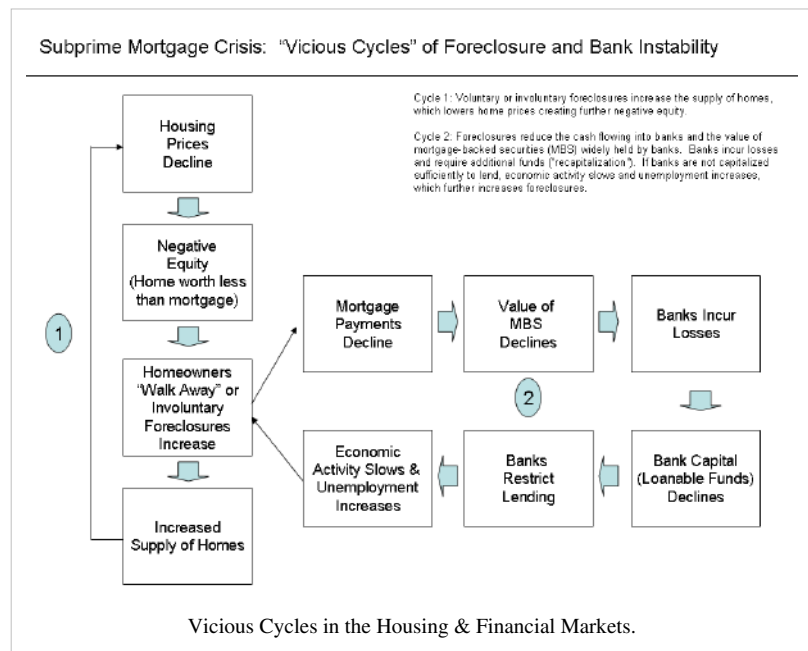
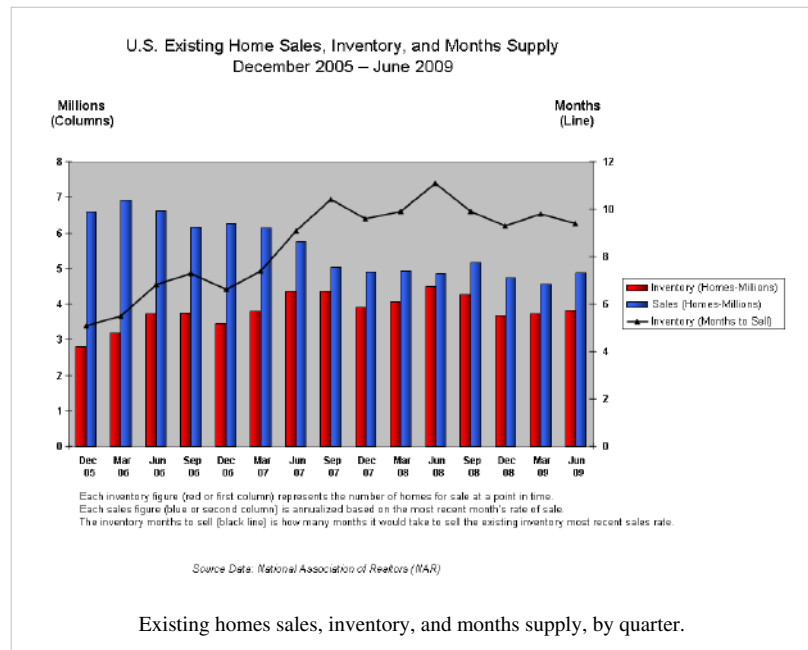
Free cash used by consumers from home equity extraction doubled from \$627 billion in 2001 to \$1,428 billion in 2005 as the housing bubble built, a total of nearly \$5 trillion dollars over the period.^{[58][59][60]} U.S. home mortgage debt relative to GDP increased from an average of 46% during the 1990s to 73% during 2008, reaching \$10.5 trillion.^[61] From 2001 to 2007, U.S. mortgage debt almost doubled, and the amount of mortgage debt per household rose more than 63%, from \$91,500 to \$149,500, with essentially stagnant wages.^[62]

This credit and house price explosion led to a building boom and eventually to a surplus of unsold homes, which caused U.S. housing prices to peak and begin declining in mid-2006.^[63] Easy credit, and a belief that house prices

would continue to appreciate, had encouraged many subprime borrowers to obtain adjustable-rate mortgages. These mortgages enticed borrowers with a below market interest rate for some predetermined period, followed by market interest rates for the remainder of the mortgage's term.

Borrowers who would not be able to make the higher payments once the initial grace period ended, were planning to refinance their mortgages after a year or two of appreciation. But refinancing became more difficult, once house prices began to decline in many parts of the USA. Borrowers who found themselves unable to escape higher monthly payments by refinancing began to default.

As more borrowers stop paying their mortgage payments (this is an on-going crisis), foreclosures and the supply of homes for sale increases. This places downward pressure on housing prices, which further lowers homeowners' equity. The decline in mortgage payments also reduces the value of mortgage-backed securities, which erodes the net worth and financial health of banks. This vicious cycle is at the heart of the crisis.^[64]



By September 2008, average U.S. housing prices had declined by over 20% from their mid-2006 peak.^{[65][66]} This major and unexpected decline in house prices means that many borrowers have zero or negative equity in their homes, meaning their homes were worth less than their mortgages. As of March 2008, an estimated 8.8 million borrowers – 10.8% of all homeowners – had negative equity in their homes, a number that is believed to have risen to 12 million by November 2008. By September 2010, 23% of all U.S. homes were worth less than the mortgage loan.^[8]

Borrowers in this situation have an incentive to default on their mortgages as a mortgage is typically nonrecourse debt secured against the property.^[67] Economist Stan Leibowitz argued in the Wall Street Journal that although only 12% of homes had negative equity, they comprised 47% of foreclosures during the second half of 2008. He concluded that the extent of equity in the home was the key factor in foreclosure, rather than the type of loan, credit worthiness of the borrower, or ability to pay.^[68]

Increasing foreclosure rates increases the inventory of houses offered for sale. The number of new homes sold in 2007 was 26.4% less than in the preceding year. By January 2008, the inventory of unsold new homes was 9.8 times the December 2007 sales volume, the highest value of this ratio since 1981.^[69] Furthermore, nearly four million existing homes were for sale,^[70] of which almost 2.9 million were vacant.^[71]

This overhang of unsold homes lowered house prices. As prices declined, more homeowners were at risk of default or foreclosure. House prices are expected to continue declining until this inventory of unsold homes (an instance of excess supply) declines to normal levels.^[72] A report in January 2011 stated that U.S. home values dropped by 26 percent from their peak in June 2006 to November 2010, more than the 25.9 percent drop between 1928 to 1933 when the Great Depression occurred.^[73]

Homeowner speculation

Speculative borrowing in residential real estate has been cited as a contributing factor to the subprime mortgage crisis.^[74] During 2006, 22% of homes purchased (1.65 million units) were for investment purposes, with an additional 14% (1.07 million units) purchased as vacation homes. During 2005, these figures were 28% and 12%, respectively. In other words, a record level of nearly 40% of homes purchased were not intended as primary residences. David Lereah, NAR's chief economist at the time, stated that the 2006 decline in investment buying was expected: "Speculators left the market in 2006, which caused investment sales to fall much faster than the primary market."^[75]

Housing prices nearly doubled between 2000 and 2006, a vastly different trend from the historical appreciation at roughly the rate of inflation. While homes had not traditionally been treated as investments subject to speculation, this behavior changed during the housing boom. Media widely reported condominiums being purchased while under construction, then being "flipped" (sold) for a profit without the seller ever having lived in them.^[76] Some mortgage companies identified risks inherent in this activity as early as 2005, after identifying investors assuming highly leveraged positions in multiple properties.^[77]

Nicole Gelinas of the Manhattan Institute described the negative consequences of not adjusting tax and mortgage policies to the shifting treatment of a home from conservative inflation hedge to speculative investment.^[78] Economist Robert Shiller argued that speculative bubbles are fueled by "contagious optimism, seemingly impervious to facts, that often takes hold when prices are rising. Bubbles are primarily social phenomena; until we understand and address the psychology that fuels them, they're going to keep forming."^[79] Keynesian economist Hyman Minsky described how speculative borrowing contributed to rising debt and an eventual collapse of asset values.^{[80][81]}

Warren Buffett testified to the Financial Crisis Inquiry Commission: "There was the greatest bubble I've ever seen in my life...The entire American public eventually was caught up in a belief that housing prices could not fall dramatically."^[47]

High-risk mortgage loans and lending/borrowing practices

In the years before the crisis, the behavior of lenders changed dramatically. Lenders offered more and more loans to higher-risk borrowers,^{[1][82]} including undocumented immigrants.^[83] Lending standards particularly deteriorated in 2004 to 2007, as the GSEs market share declined and private securitizers accounted for more than half of mortgage securitizations.^[1]

Subprime mortgages amounted to \$35 billion (5% of total originations) in 1994,^[84] 9% in 1996,^[85] \$160 billion (13%) in 1999,^[84] and \$600 billion (20%) in 2006.^{[85][86][87]} A study by the Federal Reserve found that the average difference

between subprime and prime mortgage

interest rates (the "subprime markup") declined significantly between 2001 and 2007. The combination of declining risk premiums and credit standards is common to boom and bust credit cycles.^[88]

In addition to considering higher-risk borrowers, lenders had offered increasingly risky loan options and borrowing incentives. In 2005, the median down payment for first-time home buyers was 2%, with 43% of those buyers making no down payment whatsoever.^[89] By comparison, China has down payment requirements that exceed 20%, with higher amounts for non-primary residences.^[90]

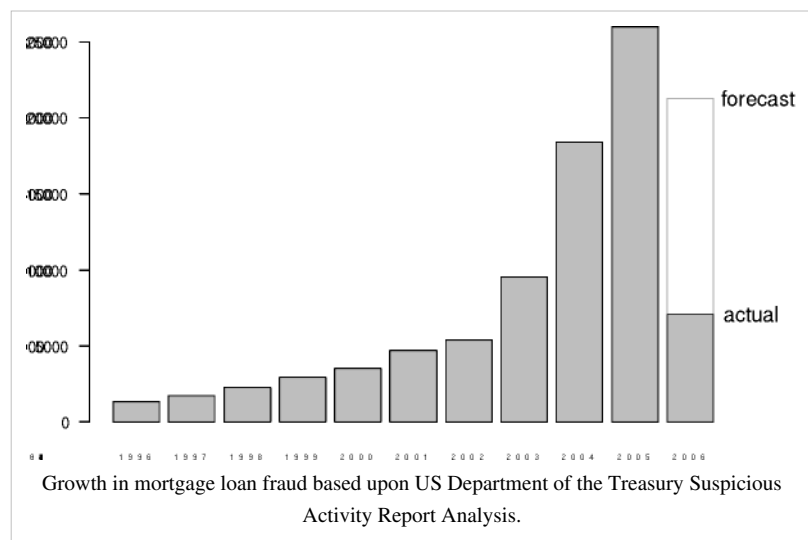
The mortgage qualification guidelines began to change. At first, the stated income, verified assets (SIVA) loans came out. Proof of income was no longer needed. Borrowers just needed to "state" it and show that they had money in the bank. Then, the no income, verified assets (NIVA) loans came out. The lender no longer required proof of employment. Borrowers just needed to show proof of money in their bank accounts. The qualification guidelines kept getting looser in order to produce more

mortgages and more securities. This led to the creation of NINA. NINA is an abbreviation of No Income No Assets (sometimes referred to as Ninja loans). Basically, NINA loans are official loan products and let you borrow money without having to prove or even state any owned assets. All that was required for a mortgage was a credit score.^[91]

Another example is the interest-only adjustable-rate mortgage (ARM), which allows the homeowner to pay just the interest (not principal) during an initial period. Still another is a "payment option" loan, in which the homeowner can pay a variable amount, but any interest not paid is added to the principal. Nearly one in 10 mortgage borrowers in 2005 and 2006 took out these "option ARM" loans, which meant they could choose to make payments so low that their mortgage balances rose every month.^[62] An estimated one-third of ARMs originated between 2004 and 2006



A mortgage brokerage in the US advertising subprime mortgages in July 2008.



had "teaser" rates below 4%, which then increased significantly after some initial period, as much as doubling the monthly payment.^[85]

The proportion of subprime ARM loans made to people with credit scores high enough to qualify for conventional mortgages with better terms increased from 41% in 2000 to 61% by 2006. However, there are many factors other than credit score that affect lending. In addition, mortgage brokers in some cases received incentives from lenders to offer subprime ARM's even to those with credit ratings that merited a conforming (i.e., non-subprime) loan.^[92]

Mortgage underwriting standards declined precipitously during the boom period. The use of automated loan approvals allowed loans to be made without appropriate review and documentation.^[93] In 2007, 40% of all subprime loans resulted from automated underwriting.^{[94][95]} The chairman of the Mortgage Bankers Association claimed that mortgage brokers, while profiting from the home loan boom, did not do enough to examine whether borrowers could repay.^[96] Mortgage fraud by lenders and borrowers increased enormously.^[97]

The Financial Crisis Inquiry Commission reported in January 2011 that many mortgage lenders took eager borrowers' qualifications on faith, often with a "willful disregard" for a borrower's ability to pay. Nearly 25% of all mortgages made in the first half of 2005 were "interest-only" loans. During the same year, 68% of "option ARM" loans originated by Countrywide Financial and Washington Mutual had low- or no-documentation requirements.^[62]

So why did lending standards decline? At least one study has suggested that the decline in standards was driven by a shift of mortgage securitization from a tightly controlled duopoly to a competitive market in which mortgage originators held the most sway.^[1] The worst mortgage vintage years coincided with the periods during which Government Sponsored Enterprises were at their weakest, and mortgage originators and private label securitizers were at their strongest.^[1]

Why was there a market for these low quality private label securitizations? In a Peabody Award winning program, NPR correspondents argued that a "Giant Pool of Money" (represented by \$70 trillion in worldwide fixed income investments) sought higher yields than those offered by U.S. Treasury bonds early in the decade. Further, this pool of money had roughly doubled in size from 2000 to 2007, yet the supply of relatively safe, income generating investments had not grown as fast. Investment banks on Wall Street answered this demand with financial innovation such as the mortgage-backed security (MBS) and collateralized debt obligation (CDO), which were assigned safe ratings by the credit rating agencies.

In effect, Wall Street connected this pool of money to the mortgage market in the U.S., with enormous fees accruing to those throughout the mortgage supply chain, from the mortgage broker selling the loans, to small banks that funded the brokers, to the giant investment banks behind them. By approximately 2003, the supply of mortgages originated at traditional lending standards had been exhausted. However, continued strong demand for MBS and CDO began to drive down lending standards, as long as mortgages could still be sold along the supply chain. Eventually, this speculative bubble proved unsustainable. NPR described it this way:^[98]

The problem was that even though housing prices were going through the roof, people weren't making any more money. From 2000 to 2007, the median household income stayed flat. And so the more prices rose, the more tenuous the whole thing became. No matter how lax lending standards got, no matter how many exotic mortgage products were created to shoehorn people into homes they couldn't possibly afford, no matter what the mortgage machine tried, the people just couldn't swing it. By late 2006, the average home cost nearly four times what the average family made. Historically it was between two and three times. And mortgage lenders noticed something that they'd almost never seen before. People would close on a house, sign all the mortgage papers, and then default on their very first payment. No loss of a job, no medical emergency, they were underwater before they even started. And although no one could really hear it, that was probably the moment when one of the biggest speculative bubbles in American history popped.

Mortgage fraud

In 2004, the Federal Bureau of Investigation warned of an "epidemic" in mortgage fraud, an important credit risk of nonprime mortgage lending, which, they said, could lead to "a problem that could have as much impact as the S&L crisis".^{[99][100][101][102]}

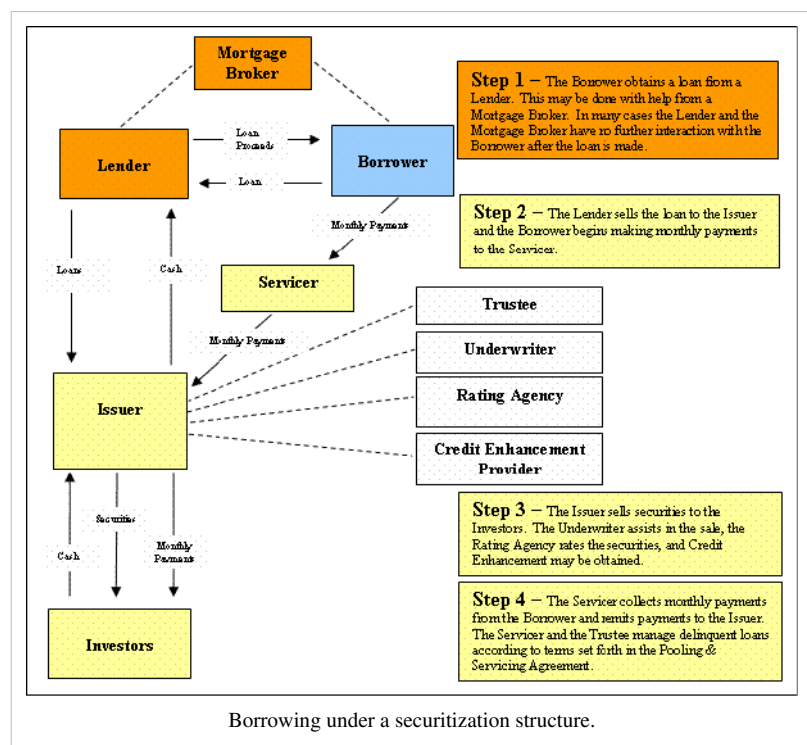
The Financial Crisis Inquiry Commission reported in January 2011 that: "...mortgage fraud...flourished in an environment of collapsing lending standards and lax regulation. The number of suspicious activity reports – reports of possible financial crimes filed by depository banks and their affiliates – related to mortgage fraud grew 20-fold between 1996 and 2005 and then more than doubled again between 2005 and 2009. One study places the losses resulting from fraud on mortgage loans made between 2005 and 2007 at \$112 billion. Lenders made loans that they knew borrowers could not afford and that could cause massive losses to investors in mortgage securities."^[62]

New York State prosecutors are examining whether eight banks hoodwinked credit ratings agencies, to inflate the grades of subprime-linked investments. The Securities and Exchange Commission, the Justice Department, the United States attorney's office and more are examining how banks created, rated, sold and traded mortgage securities that turned out to be some of the worst investments ever devised. As of 2010, virtually all of the investigations, criminal as well as civil, are in their early stages.^[103]

Securitization practices

Further information:
Securitization and Mortgage-backed security

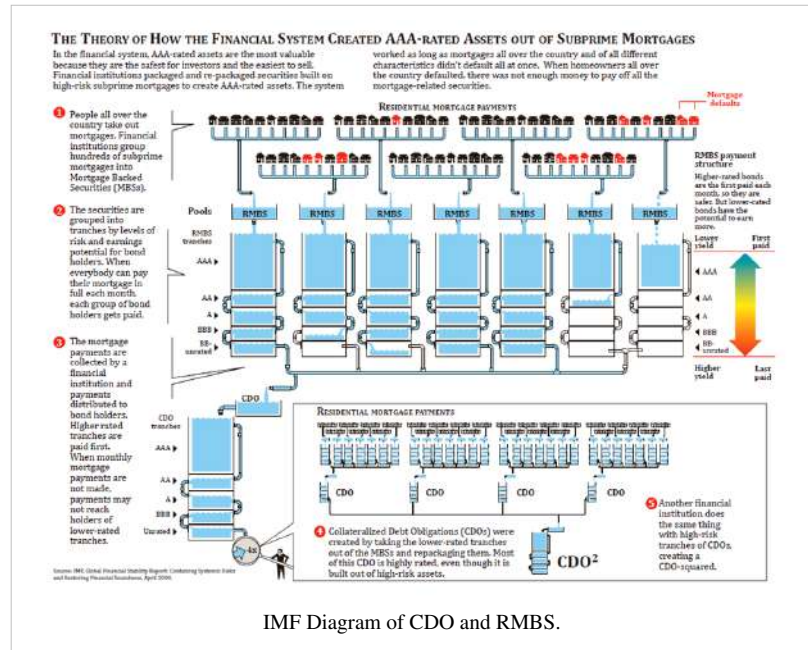
The traditional mortgage model involved a bank originating a loan to the borrower/homeowner and retaining the credit (default) risk. Securitization is a process whereby loans or other income generating assets are bundled to create bonds which can be sold to investors. The modern version of U.S. mortgage securitization started in the 1980s, as Government Sponsored Enterprises (GSEs) began to pool relatively safe conventional conforming mortgages, sell bonds to investors, and guarantee those bonds against default on the underlying mortgages.^[1]



A riskier version of securitization also developed in which private banks pooled non-conforming mortgages and generally did not guarantee the bonds against default of the underlying mortgages.^[1] In other words, GSE securitization transferred only interest

rate risk to investors, whereas private label (investment bank or commercial bank) securitization transferred both interest rate risk and default risk.^[1]

With the advent of securitization, the traditional model has given way to the "originate to distribute" model, in which banks essentially sell the mortgages and distribute credit risk to investors through mortgage-backed securities and collateralized debt obligations (CDO). The sale of default risk to investors created a moral hazard in which an increased focus on processing mortgage transactions was incentivized but ensuring their credit quality was not.^{[104][105]}



In the mid-2000s, GSE securitization declined dramatically as a share of overall securitization, while private label securitization dramatically increased.^[1] Most of the growth in private label securitization was through high-risk subprime and Alt-A mortgages.^[1] As private securitization gained market share and the GSEs retreated, mortgage quality declined dramatically.^[1] The worst performing mortgages were securitized by the private banks, whereas GSE mortgages continued to perform better than the rest of the market, including mortgages that were not securitized and were instead held in portfolio.^[1]

Securitization accelerated in the mid-1990s. The total amount of mortgage-backed securities issued almost tripled between 1996 and 2007, to \$7.3 trillion. The securitized share of subprime mortgages (i.e., those passed to third-party investors via MBS) increased from 54% in 2001, to 75% in 2006.^[88] A sample of 735 CDO deals originated between 1999 and 2007 showed that subprime and other less-than-prime mortgages represented an increasing percentage of CDO assets, rising from 5% in 2000 to 36% in 2007.^[106]

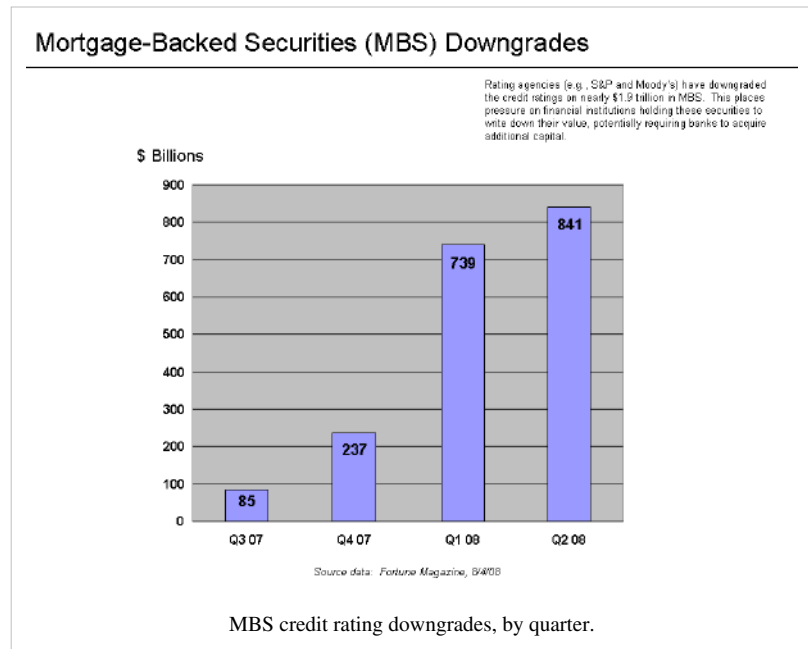
American homeowners, consumers, and corporations owed roughly \$25 trillion during 2008. American banks retained about \$8 trillion of that total directly as traditional mortgage loans. Bondholders and other traditional lenders provided another \$7 trillion. The remaining \$10 trillion came from the securitization markets. The securitization markets started to close down in the spring of 2007 and nearly shut-down in the fall of 2008. More than a third of the private credit markets thus became unavailable as a source of funds.^{[107][108]} In February 2009, Ben Bernanke stated that securitization markets remained effectively shut, with the exception of conforming mortgages, which could be sold to Fannie Mae and Freddie Mac.^[109]

A more direct connection between securitization and the subprime crisis relates to a fundamental fault in the way that underwriters, rating agencies and investors modeled the correlation of risks among loans in securitization pools. Correlation modeling – determining how the default risk of one loan in a pool is statistically related to the default risk for other loans – was based on a "Gaussian copula" technique developed by statistician David X. Li. This technique, widely adopted as a means of evaluating the risk associated with securitization transactions, used what turned out to be an overly simplistic approach to correlation. Unfortunately, the flaws in this technique did not become apparent to market participants until after many hundreds of billions of dollars of ABSs and CDOs backed by subprime loans had been rated and sold. By the time investors stopped buying subprime-backed securities – which halted the ability of mortgage originators to extend subprime loans – the effects of the crisis were already beginning to emerge.^[110]

Nobel laureate Dr. A. Michael Spence wrote: "Financial innovation, intended to redistribute and reduce risk, appears mainly to have hidden it from view. An important challenge going forward is to better understand these dynamics as the analytical underpinning of an early warning system with respect to financial instability." ^[111]

Inaccurate credit ratings

Credit rating agencies are now under scrutiny for having given investment-grade ratings to MBSs based on risky subprime mortgage loans. These high ratings enabled these MBSs to be sold to investors, thereby financing the housing boom. These ratings were believed justified because of risk reducing practices, such as credit default insurance and equity investors willing to bear the first losses. However, there are also indications that some involved in rating subprime-related securities knew at the time that the rating process was faulty. ^[112]



Critics allege that the rating agencies suffered from conflicts of interest, as they were paid by investment banks and other firms that organize and sell structured securities to investors. ^[113] On 11 June 2008, the SEC proposed rules designed to mitigate perceived conflicts of interest between rating agencies and issuers of structured securities. ^[114] On 3 December 2008, the SEC approved measures to strengthen oversight of credit rating agencies, following a ten-month investigation that found "significant weaknesses in ratings practices," including conflicts of interest. ^[115]

Between Q3 2007 and Q2 2008, rating agencies lowered the credit ratings on \$1.9 trillion in mortgage-backed securities. Financial institutions felt they had to lower the value of their MBS and acquire additional capital so as to maintain capital ratios. If this involved the sale of new shares of stock, the value of the existing shares was reduced. Thus ratings downgrades lowered the stock prices of many financial firms. ^[116]

The Financial Crisis Inquiry Commission reported in January 2011 that: "The three credit rating agencies were key enablers of the financial meltdown. The mortgage-related securities at the heart of the crisis could not have been marketed and sold without their seal of approval. Investors relied on them, often blindly. In some cases, they were obligated to use them, or regulatory capital standards were hinged on them. This crisis could not have happened without the rating agencies. Their ratings helped the market soar and their downgrades through 2007 and 2008 wreaked havoc across markets and firms." The Report further stated that ratings were incorrect because of "flawed computer models, the pressure from financial firms that paid for the ratings, the relentless drive for market share, the lack of resources to do the job despite record profits, and the absence of meaningful public oversight." ^[62]

Government policies

Government over-regulation, failed regulation and deregulation have all been claimed as causes of the crisis. In testimony before Congress both the Securities and Exchange Commission (SEC) and Alan Greenspan claimed failure in allowing the self-regulation of investment banks.^{[117][118]}

In 1982, Congress passed the Alternative Mortgage Transactions Parity Act (AMTPA), which allowed non-federally chartered housing creditors to write adjustable-rate mortgages. Among the new mortgage loan types created and gaining in popularity in the early 1980s were adjustable-rate, option adjustable-rate,

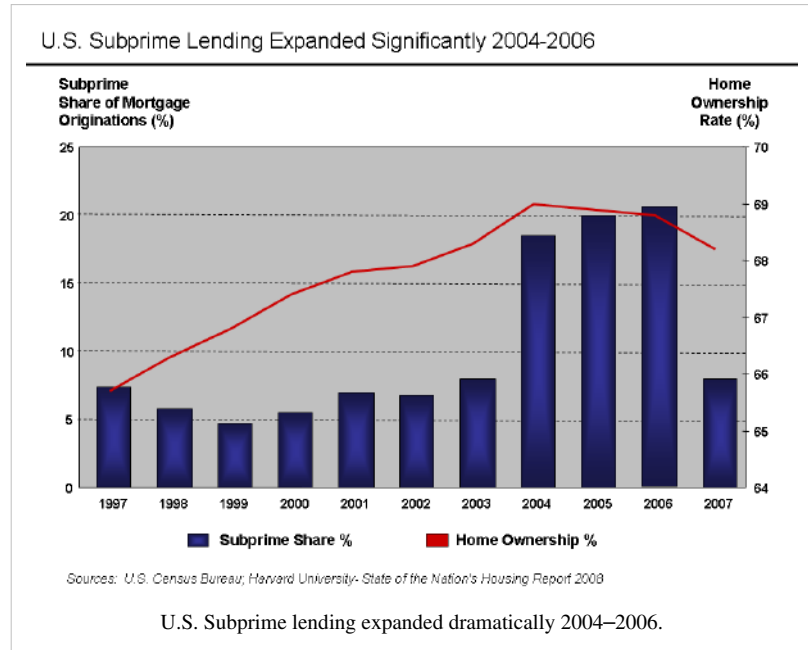
balloon-payment and interest-only mortgages. These new loan types are credited with replacing the long standing practice of banks making conventional fixed-rate, amortizing mortgages. Among the criticisms of banking industry deregulation that contributed to the savings and loan crisis was that Congress failed to enact regulations that would have prevented exploitations by these loan types. Subsequent widespread abuses of predatory lending occurred with the use of adjustable-rate mortgages.^{[44][119]} Approximately 90% of subprime mortgages issued in 2006 were adjustable-rate mortgages.^[3]

Although a number of politicians, pundits, and financial industry-funded think tanks have claimed that government policies designed to promote affordable housing were an important cause of the financial crisis, detailed analyses of mortgage data by the Financial Crisis Inquiry Commission, Federal Reserve Economists, and independent academic researchers suggest that this claim is probably not correct.^{[1][120]} Community Reinvestment Act loans outperformed other "subprime" mortgages, and GSE mortgages performed better than private label securitizations.

Increasing home ownership has been the goal of several presidents including Roosevelt, Reagan, Clinton and George W. Bush.^[121] In 1995, the GSEs like Fannie Mae began receiving government tax incentives for purchasing mortgage backed securities which included loans to low income borrowers.^[122] In 1996, HUD set a goal for Fannie Mae and Freddie Mac that at least 42% of the mortgages they purchase be issued to borrowers whose household income was below the median in their area. This target was increased to 50% in 2000 and 52% in 2005.^[123]

From 2002 to 2006, as the U.S. subprime market grew 292% over previous years, Fannie Mae and Freddie Mac combined purchases of subprime securities rose from \$38 billion to around \$175 billion per year before dropping to \$90 billion per year, which included \$350 billion of Alt-A securities. Fannie Mae had stopped buying Alt-A products in the early 1990s because of the high risk of default. By 2008, the Fannie Mae and Freddie Mac owned, either directly or through mortgage pools they sponsored, \$5.1 trillion in residential mortgages, about half the total U.S. mortgage market.^[124]

The GSE have always been highly leveraged, their net worth as of 30 June 2008 being a mere US\$114 billion.^[125] When concerns arose in September 2008 regarding the ability of the GSE to make good on their guarantees, the Federal government was forced to place the companies into a conservatorship, effectively nationalizing them at the taxpayers' expense.^{[126][127]}



The Financial Crisis Inquiry Commission reported in 2011 that Fannie & Freddie "contributed to the crisis, but were not a primary cause."^{[128][129]} GSE mortgage securities essentially maintained their value throughout the crisis and did not contribute to the significant financial firm losses that were central to the financial crisis. The GSEs participated in the expansion of subprime and other risky mortgages, but they followed rather than led Wall Street and other lenders into subprime lending.^[62]

The Glass-Steagall Act was enacted after the Great Depression. It separated commercial banks and investment banks, in part to avoid potential conflicts of interest between the lending activities of the former and rating activities of the latter. Economist Joseph Stiglitz criticized the repeal of the Act. He called its repeal the "culmination of a \$300 million lobbying effort by the banking and financial services industries...spearheaded in Congress by Senator Phil Gramm." He believes it contributed to this crisis because the risk-taking culture of investment banking dominated the more conservative commercial banking culture, leading to increased levels of risk-taking and leverage during the boom period.^[130]

Conservatives and libertarians have also debated the possible effects of the Community Reinvestment Act (CRA), with detractors claiming that the Act encouraged lending to uncreditworthy borrowers,^{[131][132][133][134]} and defenders claiming a thirty year history of lending without increased risk.^{[135][136][137][138]} Detractors also claim that amendments to the CRA in the mid-1990s, raised the amount of mortgages issued to otherwise unqualified low-income borrowers, and allowed the securitization of CRA-regulated mortgages, even though a fair number of them were subprime.^{[139][140]}

Federal Reserve Governor Randall Kroszner and Federal Deposit Insurance Corporation Chairman Sheila Bair have stated their belief that the CRA was not to blame for the crisis.^{[141][142]}

Economist Paul Krugman argued in January 2010 that the simultaneous growth of the residential and commercial real estate pricing bubbles undermines the case made by those who argue that Fannie Mae, Freddie Mac, CRA, or predatory lending were primary causes of the crisis. In other words, bubbles in both markets developed even though only the residential market was affected by these potential causes.^[143]

The Financial Crisis Inquiry Commission reported in January 2011 that "the CRA was not a significant factor in subprime lending or the crisis. Many subprime lenders were not subject to the CRA. Research indicates only 6% of high-cost loans – a proxy for subprime loans – had any connection to the law. Loans made by CRA-regulated lenders in the neighborhoods in which they were required to lend were half as likely to default as similar loans made in the same neighborhoods by independent mortgage originators not subject to the law."^[62]

The George W. Bush administration was accused of blocking ongoing state investigations into predatory lending practices as the bubble continued to grow.^[144] However, in 2003 when George W. Bush called for an investigation and more controls on Fannie Mae and Freddie Mac, Congressman Barney Frank vocally objected, saying "These two entities – Fannie Mae and Freddie Mac – are not facing any kind of financial crisis. The more people exaggerate these problems, the more pressure there is on these companies, the less we will see in terms of affordable housing"^[145] Frank has dismissed the charge that he influenced the debate over increased oversight, as his party was in the minority in 2003. Frank says, "Yes, I was wrong in 2003, but I wasn't in charge...Remember, I was in the minority from 1995 to 2006. They were in charge."^[146]

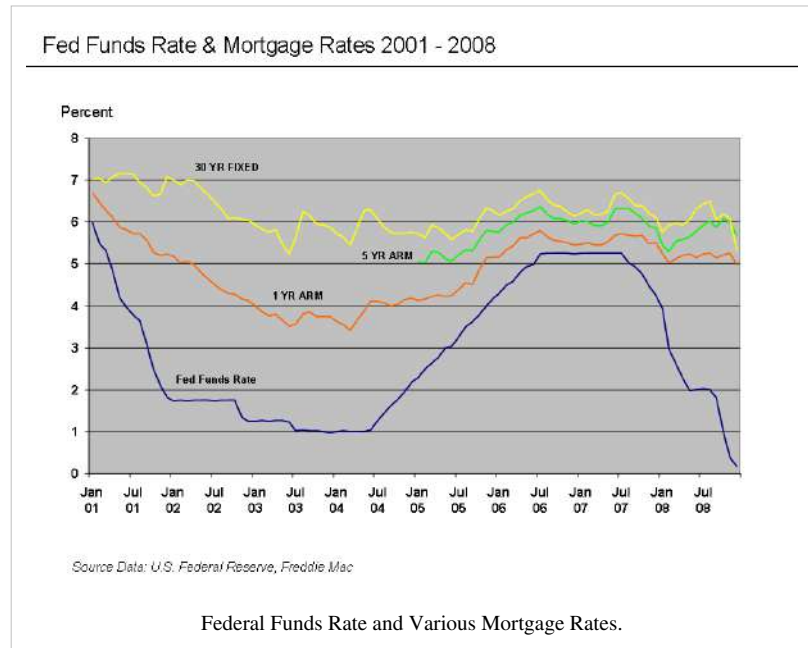
Republican Mike Oxley, the former chairman of the House Financial Services Committee, has pointed out that the House of Representatives did in fact pass a law strengthening regulation of the GSEs (the Federal Housing Finance Reform Act of 2005) but the Bush White House scuttled it. In Oxley's words, "All the hand wringing and bedwetting is going on without remembering how the House stepped up on this. What did we get from the White House? We got a one-finger salute."^[147]

On December 2011, the Securities and Exchange Commission charged the former Fannie Mae and Freddie Mac executives, accusing them of misleading investors about risks of subprime-mortgage loans.^[148] According to one analyst, "The SEC's facts paint a picture in which it wasn't high-minded government mandates that did the GSEs wrong, but rather the monomaniacal focus of top management on marketshare. With marketshare came bonuses and

with bonuses came risk-taking, understood or not."^[149]

Policies of central banks

Central banks manage monetary policy and may target the rate of inflation. They have some authority over commercial banks and possibly other financial institutions. They are less concerned with avoiding asset price bubbles, such as the housing bubble and dot-com bubble. Central banks have generally chosen to react after such bubbles burst so as to minimize collateral damage to the economy, rather than trying to prevent or stop the bubble itself. This is because identifying an asset bubble and determining the proper monetary policy to deflate it are matters of debate among economists.^{[150][151]}



Some market observers have been concerned that Federal Reserve actions could give rise to moral hazard.^[45] A Government Accountability Office critic said that the Federal Reserve Bank of New York's rescue of Long-Term Capital Management in 1998 would encourage large financial institutions to believe that the Federal Reserve would intervene on their behalf if risky loans went sour because they were "too big to fail."^[152]

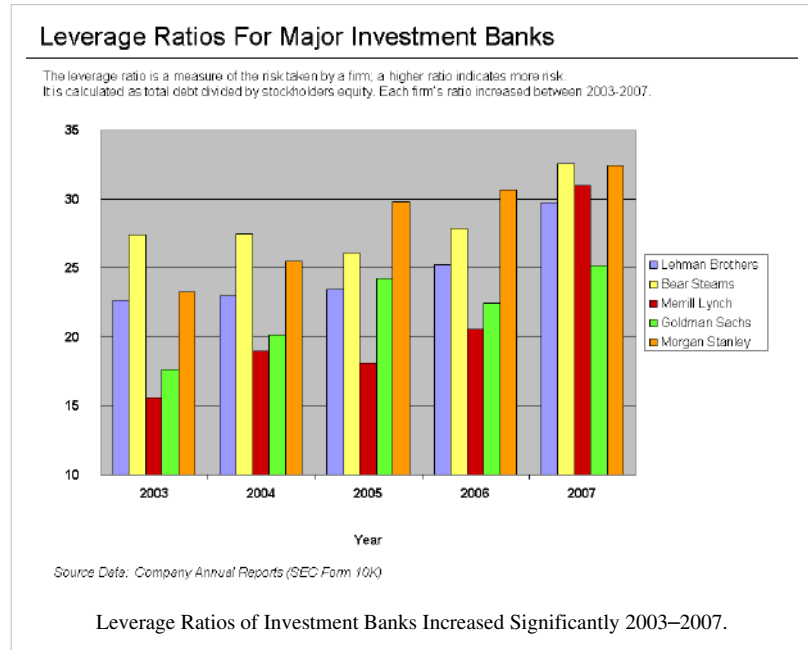
A contributing factor to the rise in house prices was the Federal Reserve's lowering of interest rates early in the decade. From 2000 to 2003, the Federal Reserve lowered the federal funds rate target from 6.5% to 1.0%.^[153] This was done to soften the effects of the collapse of the dot-com bubble and of the September 2001 terrorist attacks, and to combat the perceived risk of deflation.^[150]

The Fed believed that interest rates could be lowered safely primarily because the rate of inflation was low; it disregarded other important factors. Richard W. Fisher, President and CEO of the Federal Reserve Bank of Dallas, said that the Fed's interest rate policy during the early 2000s (decade) was misguided, because measured inflation in those years was below true inflation, which led to a monetary policy that contributed to the housing bubble.^[154] According to Ben Bernanke, now chairman of the Federal Reserve, it was capital or savings pushing into the United States, due to a world wide "saving glut", which kept long term interest rates low independently of Central Bank action.^[155]

The Fed then raised the Fed funds rate significantly between July 2004 and July 2006.^[156] This contributed to an increase in 1-year and 5-year ARM rates, making ARM interest rate resets more expensive for homeowners.^[157] This may have also contributed to the deflating of the housing bubble, as asset prices generally move inversely to interest rates and it became riskier to speculate in housing.^{[158][159]}

Financial institution debt levels and incentives

The Financial Crisis Inquiry Commission reported in January 2011 that: "From 1978 to 2007, the amount of debt held by the financial sector soared from \$3 trillion to \$36 trillion, more than doubling as a share of gross domestic product. The very nature of many Wall Street firms changed – from relatively staid private partnerships to publicly traded corporations taking greater and more diverse kinds of risks. By 2005, the 10 largest U.S. commercial banks held 55% of the industry's assets, more than double the level held in 1990. On the eve of the crisis in 2006, financial sector profits constituted 27% of all corporate profits in the United States, up from 15% in 1980."^[62]



Many financial institutions, investment banks in particular, issued large amounts of debt during 2004–2007, and invested the proceeds in mortgage-backed securities (MBS), essentially betting that house prices would continue to rise, and that households would continue to make their mortgage payments. Borrowing at a lower interest rate and investing the proceeds at a higher interest rate is a form of financial leverage. This is analogous to an individual taking out a second mortgage on his residence to invest in the stock market. This strategy proved profitable during the housing boom, but resulted in large losses when house prices began to decline and mortgages began to default. Beginning in 2007, financial institutions and individual investors holding MBS also suffered significant losses from mortgage payment defaults and the resulting decline in the value of MBS.^[160]

A 2004 U.S. Securities and Exchange Commission (SEC) decision related to the net capital rule allowed USA investment banks to issue substantially more debt, which was then used to purchase MBS. Over 2004–07, the top five US investment banks each significantly increased their financial leverage (see diagram), which increased their vulnerability to the declining value of MBSs. These five institutions reported over \$4.1 trillion in debt for fiscal year 2007, about 30% of USA nominal GDP for 2007. Further, the percentage of subprime mortgages originated to total originations increased from below 10% in 2001–2003 to between 18–20% from 2004–2006, due in-part to financing from investment banks.^{[24][25]}

During 2008, three of the largest U.S. investment banks either went bankrupt (Lehman Brothers) or were sold at fire sale prices to other banks (Bear Stearns and Merrill Lynch). These failures augmented the instability in the global financial system. The remaining two investment banks, Morgan Stanley and Goldman Sachs, opted to become commercial banks, thereby subjecting themselves to more stringent regulation.^{[161][162]}

In the years leading up to the crisis, the top four U.S. depository banks moved an estimated \$5.2 trillion in assets and liabilities off-balance sheet into special purpose vehicles or other entities in the shadow banking system. This enabled them to essentially bypass existing regulations regarding minimum capital ratios, thereby increasing leverage and profits during the boom but increasing losses during the crisis. New accounting guidance will require them to put some of these assets back onto their books during 2009, which will significantly reduce their capital ratios. One news agency estimated this amount to be between \$500 billion and \$1 trillion. This effect was considered as part of the stress tests performed by the government during 2009.^[163]

Martin Wolf wrote in June 2009: "...an enormous part of what banks did in the early part of this decade – the off-balance-sheet vehicles, the derivatives and the 'shadow banking system' itself – was to find a way round regulation."^[164]

The New York State Comptroller's Office has said that in 2006, Wall Street executives took home bonuses totaling \$23.9 billion. "Wall Street traders were thinking of the bonus at the end of the year, not the long-term health of their firm. The whole system – from mortgage brokers to Wall Street risk managers – seemed tilted toward taking short-term risks while ignoring long-term obligations. The most damning evidence is that most of the people at the top of the banks didn't really understand how those [investments] worked."^{[53][165]}

The incentive compensation of traders was focused on fees generated from assembling financial products, rather than the performance of those products and profits generated over time. Their bonuses were heavily skewed towards cash rather than stock and not subject to "claw-back" (recovery of the bonus from the employee by the firm) in the event the MBS or CDO created did not perform. In addition, the increased risk (in the form of financial leverage) taken by the major investment banks was not adequately factored into the compensation of senior executives.^[166]

Credit default swaps

Credit default swaps (CDS) are financial instruments used as a hedge and protection for debtholders, in particular MBS investors, from the risk of default, or by speculators to profit from default. As the net worth of banks and other financial institutions deteriorated because of losses related to subprime mortgages, the likelihood increased that those providing the protection would have to pay their counterparties. This created uncertainty across the system, as investors wondered which companies would be required to pay to cover mortgage defaults.

Like all swaps and other financial derivatives, CDS may either be used to hedge risks (specifically, to insure creditors against default) or to profit from speculation. The volume of CDS outstanding increased 100-fold from 1998 to 2008, with estimates of the debt covered by CDS contracts, as of November 2008, ranging from US\$33 to \$47 trillion. CDS are lightly regulated, largely because of the Commodities Futures Modernization Act of 2000. As of 2008, there was no central clearing house to honor CDS in the event a party to a CDS proved unable to perform his obligations under the CDS contract. Required disclosure of CDS-related obligations has been criticized as inadequate. Insurance companies such as American International Group (AIG), MBIA, and Ambac faced ratings downgrades because widespread mortgage defaults increased their potential exposure to CDS losses. These firms had to obtain additional funds (capital) to offset this exposure. AIG's having CDSs insuring \$440 billion of MBS resulted in its seeking and obtaining a Federal government bailout.^[167] The monoline insurance companies went out of business in 2008–2009.

When investment bank Lehman Brothers went bankrupt in September 2008, there was much uncertainty as to which financial firms would be required to honor the CDS contracts on its \$600 billion of bonds outstanding.^{[168][169]} Merrill Lynch's large losses in 2008 were attributed in part to the drop in value of its unhedged portfolio of collateralized debt obligations (CDOs) after AIG ceased offering CDS on Merrill's CDOs. The loss of confidence of trading partners in Merrill Lynch's solvency and its ability to refinance its short-term debt led to its acquisition by the Bank of America.^{[170][171]}

Economist Joseph Stiglitz summarized how credit default swaps contributed to the systemic meltdown: "With this complicated intertwining of bets of great magnitude, no one could be sure of the financial position of anyone else-or even of one's own position. Not surprisingly, the credit markets froze."^[172]

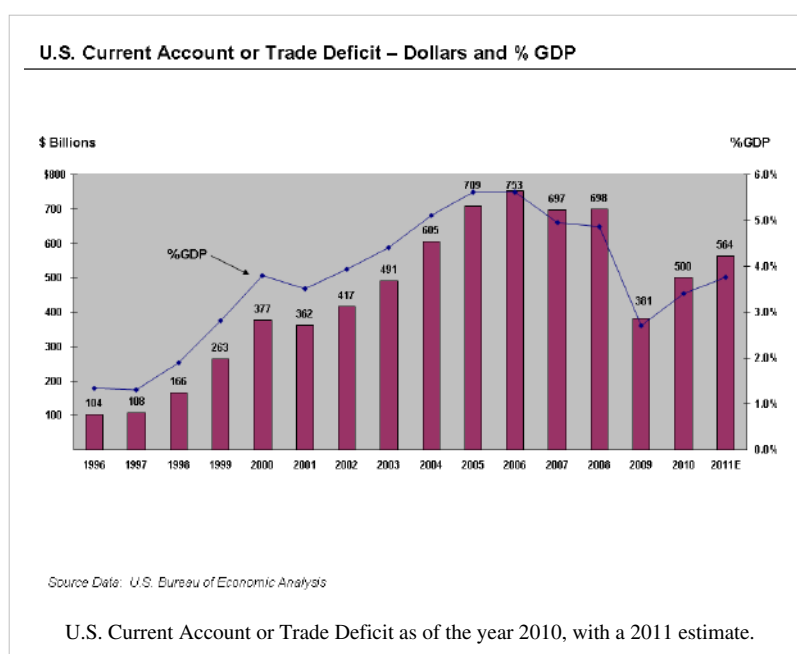
Author Michael Lewis wrote that CDS enabled speculators to stack bets on the same mortgage bonds and CDO's. This is analogous to allowing many persons to buy insurance on the same house. Speculators that bought CDS insurance were betting that significant defaults would occur, while the sellers (such as AIG) bet they would not. A theoretically infinite amount could be wagered on the same housing-related securities, provided buyers and sellers of the CDS could be found.^[173]

In addition, Chicago Public Radio, Huffington Post, and ProPublica reported in April 2010 that market participants, including a hedge fund called Magnetar Capital, encouraged the creation of CDO's containing low quality mortgages, so they could bet against them using CDS. NPR reported that Magnetar encouraged investors to purchase CDO's while simultaneously betting against them, without disclosing the latter bet.^{[174][175][176]} Instruments called synthetic CDO, which are portfolios of credit default swaps, were also involved in allegations by the SEC against Goldman-Sachs in April 2010.^[177]

The Financial Crisis Inquiry Commission reported in January 2011 that CDS contributed significantly to the crisis. Companies were able to sell protection to investors against the default of mortgage-backed securities, helping to launch and expand the market for new, complex instruments such as CDO's. This further fueled the housing bubble. They also amplified the losses from the collapse of the housing bubble by allowing multiple bets on the same securities and helped spread these bets throughout the financial system. Companies selling protection, such as AIG, were not required to set aside sufficient capital to cover their obligations when significant defaults occurred. Because many CDS were not traded on exchanges, the obligations of key financial institutions became hard to measure, creating uncertainty in the financial system.^[62]

Globalization, technology and the trade deficit

In 2005, Ben Bernanke addressed the implications of the United States's high and rising current account deficit, resulting from U.S. investment exceeding its savings, or imports exceeding exports.^[178] Between 1996 and 2004, the U.S. current account deficit increased by \$650 billion, from 1.5% to 5.8% of GDP. The U.S. attracted a great deal of foreign investment, mainly from the emerging economies in Asia and oil-exporting nations. The balance of payments identity requires that a country (such as the U.S.) running a current account deficit also have a capital account (investment) surplus of the same amount. Foreign investors had these funds to lend, either because they had very high personal savings rates (as high as 40% in China), or because of high oil prices.



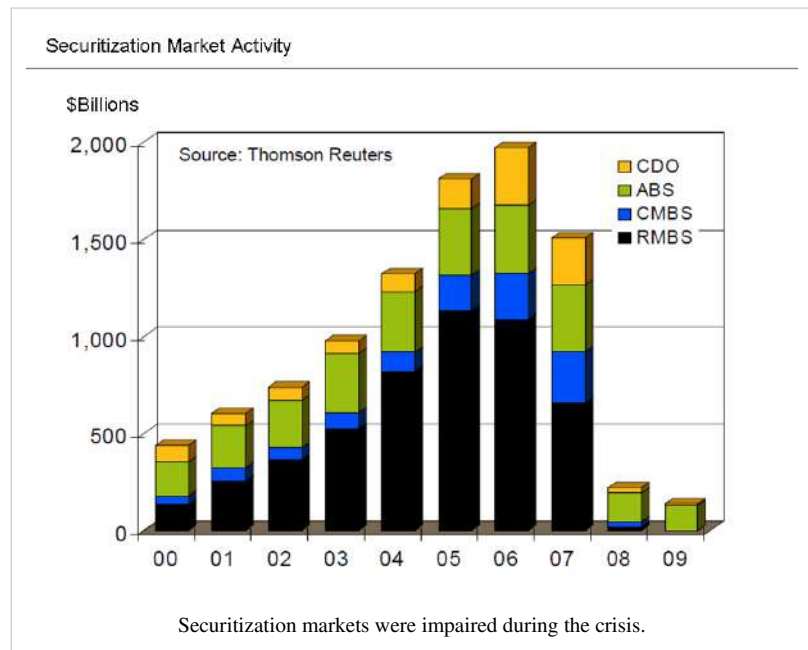
Bernanke referred to this as a "saving glut"^[155] that may have *pushed* capital into the United States, a view differing from that of some other economists, who view such capital as having been *pulled* into the U.S. by its high consumption levels. In other words, a nation cannot consume more than its income unless it sells assets to foreigners, or foreigners are willing to lend to it. Alternatively, if a nation wishes to increase domestic investment in plant and equipment, it will also increase its level of imports to maintain balance if it has a floating exchange rate.

Regardless of the push or pull view, a "flood" of funds (capital or liquidity) reached the U.S. financial market. Foreign governments supplied funds by purchasing U.S. Treasury bonds and thus avoided much of the direct impact of the crisis. American households, on the other hand, used funds borrowed from foreigners to finance consumption or to bid up the prices of housing and financial assets. Financial institutions invested foreign funds in mortgage-backed securities. American housing and financial assets dramatically declined in value after the housing bubble burst.^{[179][180]}

Economist Joseph Stiglitz wrote in October 2011 that the recession and high unemployment of the 2009–2011 period was years in the making and driven by: unsustainable consumption; high manufacturing productivity outpacing demand thereby increasing unemployment; income inequality that shifted income from those who tended to spend it (i.e., the middle class) to those who do not (i.e., the wealthy); and emerging market's buildup of reserves (to the tune of \$7.6 trillion by 2011) which was not spent. These factors all led to a "massive" shortfall in aggregate demand, which was "papered over" by demand related to the housing bubble until it burst.^[181]

Boom and collapse of the shadow banking system

In a June 2008 speech, President of the NY Federal Reserve Bank Timothy Geithner, who later became Secretary of the Treasury, placed significant blame for the freezing of credit markets on a "run" on the entities in the "parallel" banking system, also called the shadow banking system. These entities became critical to the credit markets underpinning the financial system, but were not subject to the same regulatory controls as depository banks. Further, these entities were vulnerable because they borrowed short-term in liquid markets to purchase long-term, illiquid and risky assets. This meant that disruptions in credit markets would make them subject to rapid deleveraging, selling their long-term assets at depressed prices.^[13]



He described the significance of these entities: "In early 2007, asset-backed commercial paper conduits, in structured investment vehicles, in auction-rate preferred securities, tender option bonds and variable rate demand notes, had a combined asset size of roughly \$2.2 trillion. Assets financed overnight in triparty repo grew to \$2.5 trillion. Assets held in hedge funds grew to roughly \$1.8 trillion. The combined balance sheets of the then five major investment banks totaled \$4 trillion. In comparison, the total assets of the top five bank holding companies in the United States at that point were just over \$6 trillion, and total assets of the entire banking system were about \$10 trillion." He stated that the "combined effect of these factors was a financial system vulnerable to self-reinforcing asset price and credit cycles."^[13]

Nobel laureate Paul Krugman described the run on the shadow banking system as the "core of what happened" to cause the crisis. "As the shadow banking system expanded to rival or even surpass conventional banking in importance, politicians and government officials should have realized that they were re-creating the kind of financial vulnerability that made the Great Depression possible – and they should have responded by extending regulations and the financial safety net to cover these new institutions. Influential figures should have proclaimed a simple rule: anything that does what a bank does, anything that has to be rescued in crises the way banks are, should be regulated like a bank." He referred to this lack of controls as "malign neglect."^{[182][183]}

The securitization markets supported by the shadow banking system started to close down in the spring of 2007 and nearly shut-down in the fall of 2008. More than a third of the private credit markets thus became unavailable as a source of funds.^[107] According to the Brookings Institution, the traditional banking system does not have the capital to close this gap as of June 2009: "It would take a number of years of strong profits to generate sufficient capital to

support that additional lending volume." The authors also indicate that some forms of securitization are "likely to vanish forever, having been an artifact of excessively loose credit conditions."^[108]

Economist Mark Zandi testified to the Financial Crisis Inquiry Commission in January 2010: "The securitization markets also remain impaired, as investors anticipate more loan losses. Investors are also uncertain about coming legal and accounting rule changes and regulatory reforms. Private bond issuance of residential and commercial mortgage-backed securities, asset-backed securities, and CDOs peaked in 2006 at close to \$2 trillion...In 2009, private issuance was less than \$150 billion, and almost all of it was asset-backed issuance supported by the Federal Reserve's TALF program to aid credit card, auto and small-business lenders. Issuance of residential and commercial mortgage-backed securities and CDOs remains dormant."^[184]

The Economist reported in March 2010: "Bear Stearns and Lehman Brothers were non-banks that were crippled by a silent run among panicky overnight "repo" lenders, many of them money market funds uncertain about the quality of securitized collateral they were holding. Mass redemptions from these funds after Lehman's failure froze short-term funding for big firms."^[185]

The Financial Crisis Inquiry Commission reported in January 2011: "In the early part of the 20th century, we erected a series of protections – the Federal Reserve as a lender of last resort, federal deposit insurance, ample regulations – to provide a bulwark against the panics that had regularly plagued America's banking system in the 20th century. Yet, over the past 30-plus years, we permitted the growth of a shadow banking system – opaque and laden with short term debt – that rivaled the size of the traditional banking system. Key components of the market – for example, the multitrillion-dollar repo lending market, off-balance-sheet entities, and the use of over-the-counter derivatives – were hidden from view, without the protections we had constructed to prevent financial meltdowns. We had a 21st-century financial system with 19th-century safeguards."^[62]

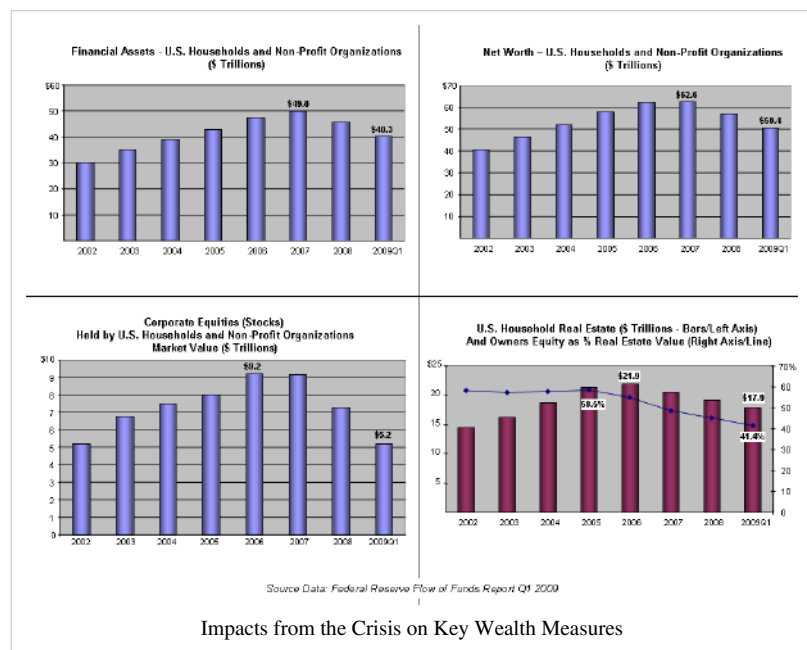
Impacts

Impact in the U.S.

Between June 2007 and November 2008, Americans lost more than a quarter of their net worth. By early November 2008, a broad U.S. stock index, the S&P 500, was down 45 percent from its 2007 high. Housing prices had dropped 20% from their 2006 peak, with futures markets signaling a 30–35% potential drop. Total home equity in the United States, which was valued at \$13 trillion at its peak in 2006, had dropped to \$8.8 trillion by mid-2008 and was still falling in late 2008.^[186]

Total retirement assets, Americans' second-largest household asset, dropped by 22 percent, from \$10.3

trillion in 2006 to \$8 trillion in mid-2008. During the same period, savings and investment assets (apart from retirement savings) lost \$1.2 trillion and pension assets lost \$1.3 trillion. Taken together, these losses total \$8.3 trillion.^[187]

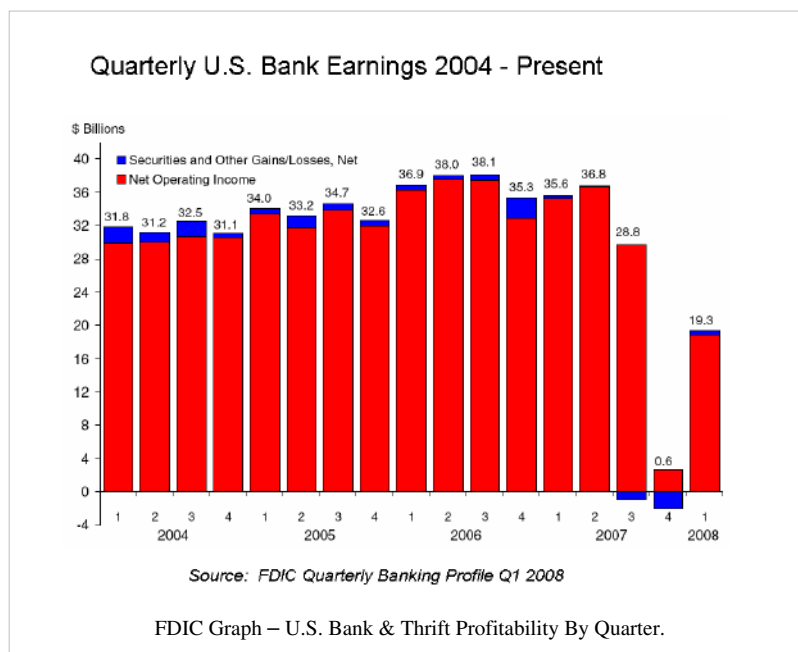


Members of USA minority groups received a disproportionate number of subprime mortgages, and so have experienced a disproportionate level of the resulting foreclosures.^{[188][189][190]} The crisis had a devastating effect on the U.S. auto industry. New vehicle sales, which peaked at 17 million in 2005, recovered to only 12 million by 2010.^[191]

Financial market impacts, 2007

Further information: List of writedowns due to subprime crisis

The crisis began to affect the financial sector in February 2007, when HSBC, the world's largest (2008) bank, wrote down its holdings of subprime-related MBS by \$10.5 billion, the first major subprime related loss to be reported.^[192] During 2007, at least 100 mortgage companies either shut down, suspended operations or were sold.^[193] Top management has not escaped unscathed, as the CEOs of Merrill Lynch and Citigroup resigned within a week of each other in late 2007.^[194] As the crisis deepened, more and more financial firms either merged, or announced that they were negotiating seeking merger partners.^[195]



During 2007, the crisis caused panic in financial markets and encouraged investors to take their money out of risky mortgage bonds and shaky equities and put it into commodities as "stores of value".^[196] Financial speculation in commodity futures following the collapse of the financial derivatives markets has contributed to the world food price crisis and oil price increases due to a "commodities super-cycle".^{[197][198]} Financial speculators seeking quick returns have removed trillions of dollars from equities and mortgage bonds, some of which has been invested into food and raw materials.^[199]

Mortgage defaults and provisions for future defaults caused profits at the 8533 USA depository institutions insured by the Federal Deposit Insurance Corporation to decline from \$35.2 billion in 2006 Q4 to \$646 million in the same quarter a year later, a decline of 98%. 2007 Q4 saw the worst bank and thrift quarterly performance since 1990. In all of 2007, insured depository institutions earned approximately \$100 billion, down 31% from a record profit of \$145 billion in 2006. Profits declined from \$35.6 billion in 2007 Q1 to \$19.3 billion in 2008 Q1, a decline of 46%.^{[200][201]}

Financial market impacts, 2008

Further information: Indirect economic effects of the subprime mortgage crisis

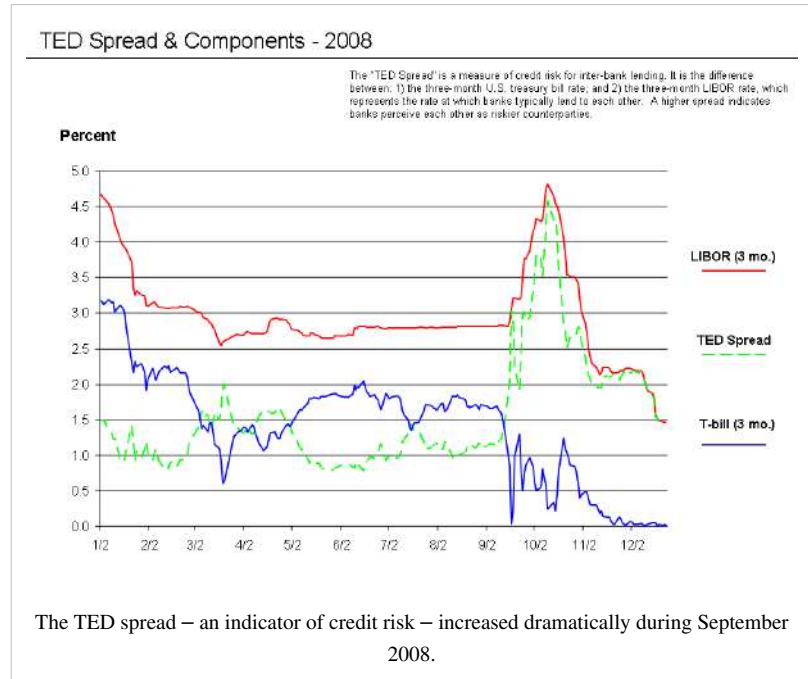
As of August 2008, financial firms around the globe have written down their holdings of subprime related securities by US\$501 billion.^[202] The IMF estimates that financial institutions around the globe will eventually have to write off \$1.5 trillion of their holdings of subprime MBSs. About \$750 billion in such losses had been recognized as of November 2008. These losses have wiped out much of the capital of the world banking system. Banks headquartered in nations that have signed the Basel Accords must have so many cents of capital for every dollar

of credit extended to consumers and businesses. Thus the massive reduction in bank capital just described has reduced the credit available to businesses and households.^[203]

When Lehman Brothers and other important financial institutions failed in September 2008, the crisis hit a key point.^[204] During a two day period in September 2008, \$150 billion were withdrawn from USA money funds. The average two day outflow had been \$5 billion. In effect, the money market was subject to a bank run. The money market had been a key source of credit for banks (CDs) and nonfinancial firms (commercial paper). The TED spread (see graph above), a measure of the risk of interbank lending, quadrupled shortly after the Lehman failure. This credit freeze brought the global financial system to the brink of collapse. The response of the USA Federal Reserve, the European Central Bank, and other central banks was immediate and dramatic. During the last quarter of 2008, these central banks purchased US\$2.5 trillion of government debt and troubled private assets from banks. This was the largest liquidity injection into the credit market, and the largest monetary policy action, in world history. The governments of European nations and the USA also raised the capital of their national banking systems by \$1.5 trillion, by purchasing newly issued preferred stock in their major banks.^[203]

However, some economists state that Third-World economies, such as the Brazilian and Chinese ones, will not suffer as much as those from more developed countries.^[205] However, other analysts have seen Brazil as entering their own sub-prime crisis.^[206]

The International Monetary Fund estimated that large U.S. and European banks lost more than \$1 trillion on toxic assets and from bad loans from January 2007 to September 2009. These losses are expected to top \$2.8 trillion from 2007–10. U.S. banks losses were forecast to hit \$1 trillion and European bank losses will reach \$1.6 trillion. The IMF estimated that U.S. banks were about 60 percent through their losses, but British and eurozone banks only 40 percent.^[207]

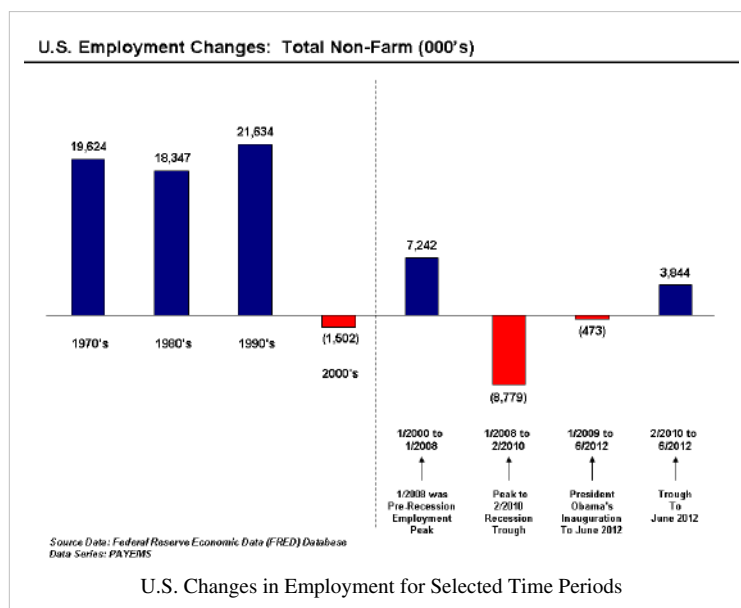


Sustained effects

In Spring, 2011 there were about a million homes in foreclosure in the United States, several million more in the pipeline, and 872,000 previously foreclosed homes in the hands of banks. Sales were slow; economists estimated that it would take three years to clear the backlogged inventory. According to Mark Zandi, of Moody's Analytics, home prices were falling and could be expected to fall further during 2011. However, the rate of new borrowers falling behind in mortgage payments had begun to decrease.^[208]

Economist Carmen Reinhart stated in August 2011: "Debt de-leveraging [reduction] takes about seven years...And in

the decade following severe financial crises, you tend to grow by 1 to 1.5 percentage points less than in the decade before, because the decade before was fueled by a boom in private borrowing, and not all of that growth was real. The unemployment figures in advanced economies after falls are also very dark. Unemployment remains anchored about five percentage points above what it was in the decade before."^[209]



Responses

Further information: Subprime mortgage crisis solutions debate

Various actions have been taken since the crisis became apparent in August 2007. In September 2008, major instability in world financial markets increased awareness and attention to the crisis. Various agencies and regulators, as well as political officials, began to take additional, more comprehensive steps to handle the crisis.

To date, various government agencies have committed or spent trillions of dollars in loans, asset purchases, guarantees, and direct spending. For a summary of U.S. government financial commitments and investments related to the crisis, see CNN – Bailout Scorecard^[210].

Federal Reserve and central banks

The central bank of the USA, the Federal Reserve, in partnership with central banks around the world, has taken several steps to address the crisis. Federal Reserve Chairman Ben Bernanke stated in early 2008: "Broadly, the Federal Reserve's response has followed two tracks: efforts to support market liquidity and functioning and the pursuit of our macroeconomic objectives through monetary policy."^[29] The Fed has:

- Lowered the target for the Federal funds rate from 5.25% to 2%, and the discount rate from 5.75% to 2.25%. This took place in six steps occurring between 18 September 2007 and 30 April 2008;^{[211][212]} In December 2008, the Fed further lowered the federal funds rate target to a range of 0–0.25% (25 basis points).^[213]
- Undertaken, along with other central banks, open market operations to ensure member banks remain liquid. These are effectively short-term loans to member banks collateralized by government securities. Central banks have also lowered the interest rates (called the discount rate in the USA) they charge member banks for short-term loans.^[214]
- Created a variety of lending facilities to enable the Fed to lend directly to banks and non-bank institutions, against specific types of collateral of varying credit quality. These include the Term Auction Facility (TAF) and Term

Asset-Backed Securities Loan Facility (TALF).^[215]

- In November 2008, the Fed announced a \$600 billion program to purchase the MBS of the GSE, to help lower mortgage rates.^[216]
- In March 2009, the Federal Open Market Committee decided to increase the size of the Federal Reserve's balance sheet further by purchasing up to an additional \$750 billion of government-sponsored enterprise mortgage-backed securities, bringing its total purchases of these securities to up to \$1.25 trillion this year, and to increase its purchases of agency debt this year by up to \$100 billion to a total of up to \$200 billion. Moreover, to help improve conditions in private credit markets, the Committee decided to purchase up to \$300 billion of longer-term Treasury securities during 2009.^[217]

According to Ben Bernanke, expansion of the Fed balance sheet means the Fed is electronically creating money, necessary "...because our economy is very weak and inflation is very low. When the economy begins to recover, that will be the time that we need to unwind those programs, raise interest rates, reduce the money supply, and make sure that we have a recovery that does not involve inflation."^[218]

Economic stimulus

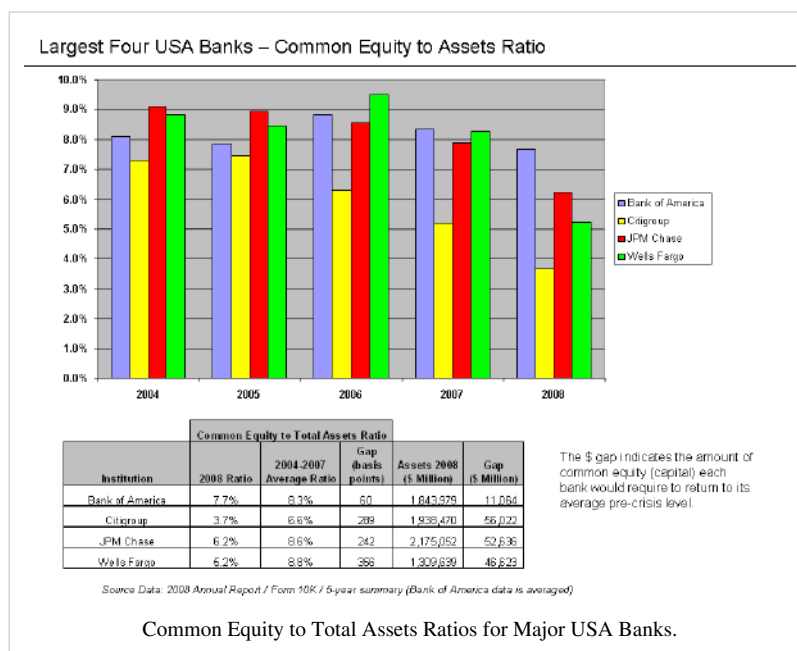
On 13 February 2008, President George W. Bush signed into law a \$168 billion economic stimulus package, mainly taking the form of income tax rebate checks mailed directly to taxpayers.^[219] Checks were mailed starting the week of 28 April 2008. However, this rebate coincided with an unexpected jump in gasoline and food prices. This coincidence led some to wonder whether the stimulus package would have the intended effect, or whether consumers would simply spend their rebates to cover higher food and fuel prices.

On 17 February 2009, U.S. President Barack Obama signed the American Recovery and Reinvestment Act of 2009, an \$787 billion stimulus package with a broad spectrum of spending and tax cuts.^[220] Over \$75 billion of which was specifically allocated to programs which help struggling homeowners. This program is referred to as the Homeowner Affordability and Stability Plan.^[221]

Bank solvency and capital replenishment

Losses on mortgage-backed securities and other assets purchased with borrowed money have dramatically reduced the capital base of financial institutions, rendering many either insolvent or less capable of lending. Governments have provided funds to banks. Some banks have taken significant steps to acquire additional capital from private sources.

The U.S. government passed the Emergency Economic Stabilization Act of 2008 (EESA or TARP) during October 2008. This law included \$700 billion in funding for the "Troubled Assets Relief Program" (TARP), which was used to lend funds to banks in exchange for dividend-paying preferred stock.^{[222][223]}



Another method of recapitalizing banks is for government and private investors to provide cash in exchange for mortgage-related assets (i.e., "toxic" or "legacy" assets), improving the quality of bank capital while reducing

uncertainty regarding the financial position of banks. U.S. Treasury Secretary Timothy Geithner announced a plan during March 2009 to purchase "legacy" or "toxic" assets from banks. The Public-Private Partnership Investment Program involves government loans and guarantees to encourage private investors to provide funds to purchase toxic assets from banks.^[224]

For a summary of U.S. government financial commitments and investments related to the crisis, see CNN – Bailout Scorecard^[210].

For a summary of TARP funds provided to U.S. banks as of December 2008, see Reuters-TARP Funds^[225].

Bailouts and failures of financial firms

Further information: List of bankrupt or acquired banks during the financial crisis of 2007–2008, Federal takeover of Fannie Mae and Freddie Mac, National City acquisition by PNC, Government intervention during the subprime mortgage crisis, and Bailout

Several major financial institutions either failed, were bailed-out by governments, or merged (voluntarily or otherwise) during the crisis. While the specific circumstances varied, in general the decline in the value of mortgage-backed securities held by these companies resulted in either their insolvency, the equivalent of bank runs as investors pulled funds from them, or inability to secure new funding in the credit markets. These firms had typically borrowed and invested large sums of money relative to their cash or equity capital, meaning they were highly leveraged and vulnerable to unanticipated credit market disruptions.^[226]

The five largest U.S. investment banks, with combined liabilities or debts of \$4 trillion, either went bankrupt (Lehman Brothers), were taken over by other companies (Bear Stearns and Merrill Lynch), or were bailed-out by the U.S. government (Goldman Sachs and Morgan Stanley) during 2008.^[227] Government-sponsored enterprises (GSE) Fannie Mae and Freddie Mac either directly owed or guaranteed nearly \$5 trillion in mortgage obligations, with a similarly weak capital base, when they were placed into receivership in September 2008.^[228] For scale, this \$9 trillion in obligations concentrated in seven highly leveraged institutions can be compared to the \$14 trillion size of the U.S. economy (GDP)^[229] or to the total national debt of \$10 trillion in September 2008.^[230]

Major depository banks around the world had also used financial innovations such as structured investment vehicles to circumvent capital ratio regulations.^[231] Notable global failures included Northern Rock, which was nationalized at an estimated cost of £87 billion (\$150 billion).^[232] In the U.S., Washington Mutual (WaMu) was seized in September 2008 by the USA Office of Thrift Supervision (OTS).^[233] This would be followed by the shotgun wedding of Wells Fargo & Wachovia after it was speculated that without the merger Wachovia was also going to fail. Dozens of U.S. banks received funds as part of the TARP or \$700 billion bailout.^[234] The TARP funds gained some controversy after PNC Financial Services received TARP money, only to turn around hours later and purchase the struggling National City Corp., which itself had become a victim of the subprime crisis.

As a result of the financial crisis in 2008, twenty-five U.S. banks became insolvent and were taken over by the FDIC.^[235] As of August 14, 2009, an additional 77 banks became insolvent.^[236] This seven month tally surpasses the 50 banks that were seized in all of 1993, but is still much smaller than the number of failed banking institutions in 1992, 1991, and 1990.^[237] The United States has lost over 6 million jobs since the recession began in December



People queuing outside a Northern Rock bank branch in Birmingham, United Kingdom on September 15, 2007, to withdraw their savings because of the subprime crisis.

2007.^[238]

The FDIC deposit insurance fund, supported by fees on insured banks, fell to \$13 billion in the first quarter of 2009.^[239] That is the lowest total since September, 1993.^[239]

According to some, the bailouts could be traced directly to Alan Greenspan's efforts to reflate the stock market and the economy after the tech stock bust, and specifically to a February 23, 2004 speech Mr. Greenspan made to the Mortgage Bankers Association where he suggested that the time had come to push average American borrowers into more exotic loans with variable rates, or deferred interest.^[240] This argument suggests that Mr. Greenspan sought to enlist banks to expand lending and debt to stimulate asset prices and that the Federal Reserve and US Treasury Department would back any losses that might result. As early as March 2007 some commentators predicted that a bailout of the banks would exceed \$1 trillion, at a time when Ben Bernanke, Alan Greenspan and Henry Paulson all claimed that mortgage problems were "contained" to the subprime market and no bailout of the financial sector would be necessary.^[240]

Homeowner assistance

Both lenders and borrowers may benefit from avoiding foreclosure, which is a costly and lengthy process. Some lenders have offered troubled borrowers more favorable mortgage terms (i.e., refinancing, loan modification or loss mitigation). Borrowers have also been encouraged to contact their lenders to discuss alternatives.^[241]

The Economist described the issue this way: "No part of the financial crisis has received so much attention, with so little to show for it, as the tidal wave of home foreclosures sweeping over America. Government programmes have been ineffectual, and private efforts not much better." Up to 9 million homes may enter foreclosure over the 2009–2011 period, versus one million in a typical year.^[242] At roughly U.S. \$50,000 per foreclosure according to a 2006 study by the Chicago Federal Reserve Bank, 9 million foreclosures represents \$450 billion in losses.^[243]

A variety of voluntary private and government-administered or supported programs were implemented during 2007–2009 to assist homeowners with case-by-case mortgage assistance, to mitigate the foreclosure crisis engulfing the U.S. One example is the Hope Now Alliance, an ongoing collaborative effort between the US Government and private industry to help certain subprime borrowers.^[244] In February 2008, the Alliance reported that during the second half of 2007, it had helped 545,000 subprime borrowers with shaky credit, or 7.7% of 7.1 million subprime loans outstanding as of September 2007. A spokesperson for the Alliance acknowledged that much more must be done.^[245]

During late 2008, major banks and both Fannie Mae and Freddie Mac established moratoriums (delays) on foreclosures, to give homeowners time to work towards refinancing.^{[246][247][248]}

Critics have argued that the case-by-case loan modification method is ineffective, with too few homeowners assisted relative to the number of foreclosures and with nearly 40% of those assisted homeowners again becoming delinquent within 8 months.^{[249][250][251]} In December 2008, the U.S. FDIC reported that more than half of mortgages modified during the first half of 2008 were delinquent again, in many cases because payments were not reduced or mortgage debt was not forgiven. This is further evidence that case-by-case loan modification is not effective as a policy tool.^[252]

In February 2009, economists Nouriel Roubini and Mark Zandi recommended an "across the board" (systemic) reduction of mortgage principal balances by as much as 20–30%. Lowering the mortgage balance would help lower monthly payments and also address an estimated 20 million homeowners that may have a financial incentive to enter voluntary foreclosure because they are "underwater" (i.e., the mortgage balance is larger than the home value).^{[253][254]}

A study by the Federal Reserve Bank of Boston indicated that banks were reluctant to modify loans. Only 3% of seriously delinquent homeowners had their mortgage payments reduced during 2008. In addition, investors who hold MBS and have a say in mortgage modifications have not been a significant impediment; the study found no

difference in the rate of assistance whether the loans were controlled by the bank or by investors. Commenting on the study, economists Dean Baker and Paul Willen both advocated providing funds directly to homeowners instead of banks.^[255]

The *L.A. Times* reported the results of a study that found homeowners with high credit scores at the time of entering the mortgage are 50% more likely to "strategically default" – abruptly and intentionally pull the plug and abandon the mortgage – compared with lower-scoring borrowers. Such strategic defaults were heavily concentrated in markets with the highest price declines. An estimated 588,000 strategic defaults occurred nationwide during 2008, more than double the total in 2007. They represented 18% of all serious delinquencies that extended for more than 60 days in the fourth quarter of 2008.^[256]

Homeowners Affordability and Stability Plan

On 18 February 2009, U.S. President Barack Obama announced a \$73 billion program to help up to nine million homeowners avoid foreclosure, which was supplemented by \$200 billion in additional funding for Fannie Mae and Freddie Mac to purchase and more easily refinance mortgages. The plan is funded mostly from the EESA's \$700 billion financial bailout fund. It uses cost sharing and incentives to encourage lenders to reduce homeowner's monthly payments to 31 percent of their monthly income. Under the program, a lender would be responsible for reducing monthly payments to no more than 38 percent of a borrower's income, with government sharing the cost to further cut the rate to 31 percent. The plan also involves forgiving a portion of the borrower's mortgage balance. Companies that service mortgages will get incentives to modify loans and to help the homeowner stay current.^{[257][258][259]}

Regulatory proposals and long-term solutions

Further information: Subprime mortgage crisis solutions debate and Regulatory responses to the subprime crisis

President Barack Obama and key advisers introduced a series of regulatory proposals in June 2009. The proposals address consumer protection, executive pay, bank financial cushions or capital requirements, expanded regulation of the shadow banking system and derivatives, and enhanced authority for the Federal Reserve to safely wind-down systemically important institutions, among others.^{[260][261][262]} The Dodd–Frank Wall Street Reform and Consumer Protection Act was signed into law in July 2010 to address some of the causes of the crisis.

U.S. Treasury Secretary Timothy Geithner testified before Congress on October 29, 2009. His testimony included five elements he stated as critical to effective reform:

1. Expand the Federal Deposit Insurance Corporation bank resolution mechanism to include non-bank financial institutions;
2. Ensure that a firm is allowed to fail in an orderly way and not be "rescued";
3. Ensure taxpayers are not on the hook for any losses, by applying losses to the firm's investors and creating a monetary pool funded by the largest financial institutions;
4. Apply appropriate checks and balances to the FDIC and Federal Reserve in this resolution process;
5. Require stronger capital and liquidity positions for financial firms and related regulatory authority.^[263]

Law investigations, judicial and other responses

Significant law enforcement action and litigation is resulting from the crisis. The U.S. Federal Bureau of Investigation was looking into the possibility of fraud by mortgage financing companies Fannie Mae and Freddie Mac, Lehman Brothers, and insurer American International Group, among others.^[264] New York Attorney General Andrew Cuomo is suing Long Island based Amerimod, one of the nation's largest loan modification corporations for fraud, and has issued 14 subpoenas to other similar companies.^[265] The FBI also assigned more agents to mortgage-related crimes and its caseload has dramatically increased.^{[266][267]} The FBI began a probe of Countrywide Financial in March 2008 for possible fraudulent lending practices and securities fraud.^[268]

Over 300 civil lawsuits were filed in federal courts during 2007 related to the subprime crisis. The number of filings in state courts was not quantified but is also believed to be significant.^[269]

Implications

Estimates of impact have continued to climb. During April 2008, International Monetary Fund (IMF) estimated that global losses for financial institutions would approach \$1 trillion.^[270] One year later, the IMF estimated cumulative losses of banks and other financial institutions globally would exceed \$4 trillion.^[271]

Francis Fukuyama has argued that the crisis represents the end of Reaganism in the financial sector, which was characterized by lighter regulation, pared-back government, and lower taxes. Significant financial sector regulatory changes are expected as a result of the crisis.^[272]

Fareed Zakaria believes that the crisis may force Americans and their government to live within their means. Further, some of the best minds may be redeployed from financial engineering to more valuable business activities, or to science and technology.^[273]

Roger Altman wrote that "the crash of 2008 has inflicted profound damage on [the U.S.] financial system, its economy, and its standing in the world; the crisis is an important geopolitical setback...the crisis has coincided with historical forces that were already shifting the world's focus away from the United States. Over the medium term, the United States will have to operate from a smaller global platform – while others, especially China, will have a chance to rise faster."^[203]

GE CEO Jeffrey Immelt has argued that U.S. trade deficits and budget deficits are unsustainable. America must regain its competitiveness through innovative products, training of production workers, and business leadership. He advocates specific national goals related to energy security or independence, specific technologies, expansion of the manufacturing job base, and net exporter status.^[274] "The world has been reset. Now we must lead an aggressive American renewal to win in the future." Of critical importance, he said, is the need to focus on technology and manufacturing. "Many bought into the idea that America could go from a technology-based, export-oriented powerhouse to a services-led, consumption-based economy – and somehow still expect to prosper," Jeff said. "That idea was flat wrong."^[275]

Economist Paul Krugman wrote in 2009: "The prosperity of a few years ago, such as it was – profits were terrific, wages not so much – depended on a huge bubble in housing, which replaced an earlier huge bubble in stocks. And since the housing bubble isn't coming back, the spending that sustained the economy in the pre-crisis years isn't coming back either."^[276] Niall Ferguson stated that excluding the effect of home equity extraction, the U.S. economy grew at a 1% rate during the Bush years.^[277] Microsoft CEO Steve Ballmer has argued that this is an economic reset at a lower level, rather than a recession, meaning that no quick recovery to pre-recession levels can be expected.^[278]

The U.S. Federal government's efforts to support the global financial system have resulted in significant new financial commitments, totaling \$7 trillion by November, 2008. These commitments can be characterized as investments, loans, and loan guarantees, rather than direct expenditures. In many cases, the government purchased financial assets such as commercial paper, mortgage-backed securities, or other types of asset-backed paper, to enhance liquidity in frozen markets.^[279] As the crisis has progressed, the Fed has expanded the collateral against which it is willing to lend to include higher-risk assets.^[280]

The Economist wrote in May 2009: "Having spent a fortune bailing out their banks, Western governments will have to pay a price in terms of higher taxes to meet the interest on that debt. In the case of countries (like Britain and America) that have trade as well as budget deficits, those higher taxes will be needed to meet the claims of foreign



VOA Special English Economics Report from Oct 2010 describing how millions of foreclosed homes were seized by banks.

creditors. Given the political implications of such austerity, the temptation will be to default by stealth, by letting their currencies depreciate. Investors are increasingly alive to this danger...^[281]

The crisis has cast doubt on the legacy of Alan Greenspan, the Chairman of the Federal Reserve System from 1986 to January 2006. Senator Chris Dodd claimed that Greenspan created the "perfect storm".^[282] When asked to comment on the crisis, Greenspan spoke as follows:^[150]

The current credit crisis will come to an end when the overhang of inventories of newly built homes is largely liquidated, and home price deflation comes to an end. That will stabilize the now-uncertain value of the home equity that acts as a buffer for all home mortgages, but most importantly for those held as collateral for residential mortgage-backed securities. Very large losses will, no doubt, be taken as a consequence of the crisis. But after a period of protracted adjustment, the U.S. economy, and the world economy more generally, will be able to get back to business.

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