

The housing bubble and the financial crisis

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The central element in the current financial crisis is the housing bubble. The irrational exuberance surrounding this bubble created an environment that was ripe for the cowboy financing that got Wall Street and the country into so much trouble. Of course the cowboy financing fed into the bubble, allowing it to grow to proportions that would not have been possible with a well-regulated financial system.

This essay first describes the circumstances under which the bubble began to grow. It then discusses how financial innovations and the lack of a proper regulator structure allowed the bubble to grow to ever more dangerous levels and eventually to crash in a way that has placed unprecedented strain on the country's financial system. The third part outlines key principles for reform of the financial system.

The origins of the housing bubble

The housing bubble in the United States grew up alongside the stock bubble in the mid-90s. The logic of the growth of the bubble is very simple. People who had increased their wealth substantially with the extraordinary run-up of stock prices were spending based on this increased wealth. This led to the consumption boom of the late 90s, with the savings rate out of disposable income falling from close to 5.0 percent in the middle of the decade to just over 2 percent by 2000.

The stock wealth induced consumption boom also led people to buy bigger and/or better homes, since they sought to spend some of their new stock wealth on housing. This increase in demand had the effect of triggering a housing bubble because in the short-run the supply of housing is relatively fixed. Therefore an increase in demand leads first to an increase in price. As prices began to rise in the most affected areas, prices increases got incorporated into expectations. The expectation that prices would continue to rise led homebuyers to pay far more for homes than they would have otherwise, making the expectations self-fulfilling.

Government data show that inflation adjusted house prices nationwide were on average essentially unchanged from 1953 to 1995.¹ Robert Shiller constructed a data series going back to 1895, which showed that real house prices had been essentially unchanged for 100 years prior to 1995.² By 2002, house prices had risen by nearly 30 percent after adjusting for inflation. Given the long history of stable house prices shown in the government data, and the even longer history in the data series constructed by Shiller, it should have been evident that house prices were being driven by a speculative bubble rather than the fundamentals of the housing market.

¹ Baker, D. 2002. "The Run-Up in House Prices: Is It Real or Is it Another Bubble." Washington, D.C.: Center for Economic and Policy Research [<http://www.cepr.net/index.php/publications/reports/the-run-up-in-home-prices-is-it-real-or-is-it-another-bubble/>].

² Shiller, R. 2006. *Irrational Exuberance* (2nd edition). Princeton, NJ: Princeton University Press.

The fact that rents had risen by less than 10 percent in real terms should have provided more evidence to support the view that the country was experiencing a housing bubble. If there were fundamental factors driving the run-up in house sale prices they should be having a comparable effect on rents. However, the increase in rents was far more modest and was trailing off already by 2002.

The second phase of the housing bubble

The run-up in prices in both the ownership and rental markets was having a substantial supply-side effect, as housing starts rose substantially from the mid-90s through the late 90s. By 2002, housing starts were almost 25 percent above the average rate over the three years immediately preceding the start of the bubble (1993-95). The increase in building showed up first as an over-supply of rental housing, with the vacancy rate rising to near record levels above 9.0 percent in 2002, compared to a rate of 7.5 percent in the mid-90s.³

If the course of the bubble in the United States had followed the same pattern as in Japan, the housing bubble would have collapsed along with the collapse of the stock bubble in the years 2000-2002. Instead, the collapse of the stock bubble helped to feed the housing bubble. The loss of faith in the stock market caused millions of people to turn to investments in housing as a safe alternative to the stock market.

In addition, the economy was very slow in recovering from the 2001 recession. It continued to shed jobs right through 2002 and into the summer of 2003. The weakness of the recovery led the Federal Reserve Board to continue to cut interest rates, eventually pushing the federal funds rate to 1.0 percent in the summer of 2003, a 50-year low. Mortgage interest rates followed the federal funds rate down. The average interest rate on 30-year fixed rate mortgages fell to 5.25 percent in the summer of 2003, also a 50-year low.

To further fuel the housing market, Federal Reserve Board Chairman Alan Greenspan suggested that homebuyers were wasting money by buying fixed rate mortgages instead of adjustable rate mortgages (ARMs). While this may have seemed like peculiar advice at a time when fixed rate mortgages were near 50-year lows, even at the low rates of 2003, homebuyers could still afford larger mortgages with the adjustable rates available at the time.

These extraordinarily low interest rates accelerated the run-up in house prices. From the fourth quarter of 2002 to the fourth quarter of 2006, real house prices rose by an additional 31.6 percent, an annual rate of 7.1 percent. This fueled even more construction, with housing starts eventually peaking at 2,070,000 in 2005, more than 50 percent above the rate in the pre-bubble years. The run-up in house prices also had the predictable effect on savings and consumption. Consumption boomed over this period with the savings rate falling to less than 1.0 percent in the years 2005-07.

Of course the bubble did begin in burst in 2007, as the building boom led to so much over-supply that prices could no longer be supported. The record vacancy rates switched from the rental side to ownership units in 2006. By the fourth quarter of 2006, the vacancy

³ These data are taken from the Census Bureau's quarterly releases on residential vacancies and homeownership. The release for the fourth quarter of 2007 is available at <http://www.census.gov/hhes/www/housing/hvs/qtr407/q407press.pdf>.

rate on ownership units was almost 50 percent above its prior peak. By the middle of 2007, prices nationwide had peaked and began to head downward. This process accelerated through the fall of 2007 and into 2008.

Just as the bubble created dynamics that tended to be self-perpetuating, the dynamics of the crash are also self-perpetuating, albeit in the opposite direction. As prices decline, more homeowners face foreclosure. This increase is in part voluntary and in part involuntary. It can be involuntary, since there are cases where people who would like to keep their homes, who would borrow against equity if they could not meet their monthly mortgage payments. When falling house prices destroy equity, they eliminate this option.

The voluntary foreclosures take place when people realize that they owe more than the value of their home, and decide that paying off their mortgage is in effect a bad deal. In cases where a home is valued far lower than the amount of the outstanding mortgage, homeowners may be able to effectively pocket hundreds of thousands of dollars by simply walking away from their mortgage.

Regardless of the cause, both sources of foreclosure effectively increase the supply of housing on the market. In the first quarter of 2008, foreclosures were running at a 2.8 million annual rate (RealtyTrac), which was nearly 60 percent of the rate of sales of existing homes in the quarter. In many of the hardest hit areas, the number of foreclosures actually exceeded existing home sales. In effect, by forcing more foreclosures, lower prices were leading to an increase in the supply of housing.

A similar dynamic took hold on the demand side. During the run-up of the bubble, lending standards grew ever more lax. As default rates began to soar in 2006 and 2007, banks began to tighten their standards and to require larger down payments. The most severe tightening took place in the markets with the most rapidly falling prices. With lenders in these markets requiring down payments of 20 percent or even 25 percent, many potential homebuyers were excluded from the market. These thresholds not only excluded first-time buyers, but even many existing homeowners would have difficulty making large down payments, since plunging house prices had destroyed much of their equity.

By the end of 2007, real house prices had fallen by more than 15 percent from peak.⁴ House prices in many of the most over-valued markets, primarily along the two coasts, had fallen by more than 20 percent. Furthermore, the rate of price decline was accelerating, with prices in these cities falling at more than a 30 percent in annual rate at the beginning of 2008.⁵ The rate of price decline in the Shiller indexes imply that real house prices will be down by more than 30 percent from their 2007 peaks by the end of 2008. This would mean a loss of more than \$7 trillion in housing bubble wealth (approximately \$100,000 per homeowner). The lost wealth is almost equal to 50 percent of GDP. There is no way that an economy can see a loss of wealth of this magnitude without experiencing very serious financial stress.

⁴ This is based on the Case-Shiller U.S. National Home Price Index, available at [<http://www2.standardandpoors.com/portal/site/sp/en/us/page.article/0,0,0,0,1148433018483.html>].

⁵ This statement is based on a comparison of data from January, 2008 with data from October, 2007 in the Case-Shiller 20 City Indexes, available at [<http://www2.standardandpoors.com/portal/site/sp/en/us/page.article/0,0,0,0,1145923002722.html>].

The excesses of the housing bubble

As the house prices grew further out of line with fundamentals, the financial industry adopted more sophisticated financial innovations to support its growth. A key part of the story was the growth of non-standard mortgages. Until the boom began to take off in the mid-90s, the vast majority of mortgages had always been fixed rate mortgages. However, adjustable rate mortgages became a growing share of mortgages issued during the boom, peaking at close to 35 percent in 2004-06. Not only did these mortgages not provide the security of fixed rate mortgages, they were often issued with below market “teaser rates” that would reset to higher levels after two-years, even if interest rates did not rise.

These “2-28” mortgages were especially common in the subprime segment of the mortgage market. Subprime mortgages were loans issued to people with poor credit histories. Homebuyers who got subprime mortgages were typically people with intermittent employment records or who had defaulted on some loans in the past.⁶ The interest rates on subprime loans were typically two to four percentage points higher than the interest rate available at the time on prime loans given to people with solid credit histories.

The subprime market exploded during this period, rising from less than 9 percent of the market in 2002 to 25 percent of the market by 2005. In addition to this explosion in subprime loans, there was also a boom in the intermediate “Alt-A” mortgage category. These were loans given to homebuyers who either had a mixed credit record (better than subprime, but not quite prime) or who provided incomplete documentation of income and assets.

The Alt-A loans were in many cases of more questionable quality than the subprime loans. Many (perhaps most) of these loans were for the purchase of investment properties.⁷ Furthermore, the Alt-A loans were more likely to be issued with incomplete documentation, earning some the status of “liar loans.” The Alt-A loans were even more likely to have very high loan to value ratios, with many buyers borrowing the full value of the purchase price, or in some cases even a few percentage points more than the purchase price. Also, many of the Alt-A mortgages issued in the years from 2005-2007 were interest only loans or option-ARMs, which required borrowers to just meet interest payments on their mortgages, at least until a reset date, which was most typically five years after the date of issuance.

The subprime and Alt-A categories together comprised more than 40 percent of the loans issued at the peak of the bubble. The explosion of loans in these higher risk categories should have been sufficient to signal regulators, as well as investors, that there was a serious problem in the housing market. Just to take the case of the subprime market; it is absurd to think that the number of credit worthy people in the subprime category had more than doubled from 2002 to 2004, even as the labor market remained weak and wages lagged behind inflation. The increase in subprime lending over these years, by itself, was an unmistakable warning sign of the problems in the housing market. Unfortunately, instead of taking this

⁶ There were also many people with solid credit records who were improperly issued subprime mortgages during this period. There is a long history of discrimination in bank lending, with African Americans and Hispanics being charged higher interest rates or being denied access to credit altogether.

⁷ There is no easy way of knowing what percentage of the Alt-A loans were used for investment properties because it was common for buyers to claim that they intended to live in the home even if this was not the case. Interest rates are generally lower for owner-occupied homes.

warning, political leaders and most experts on housing celebrated the record rates of homeownership.

Wrong incentives everywhere

The surge in high-risk loans was made possible by the fact that there were misplaced incentives on all sides in the sale and financing of housing. The first area where misplaced incentives were evident is in the appraisal process. Appraisers typically operate as independent contractors. They get hired by the bank or mortgage issuer for an individual appraisal. In prior years, the banks would have valued an honest appraisal, since they wanted to be sure that the collateral in the house would cover the value of the loan.

However, during the housing bubble, in which mortgage issuers earned their money on issuing the mortgage, not holding it, mortgage issuers wanted to make sure that the appraisal would be high enough to justify the mortgage. This meant that they wanted high appraisals. This bias quickly got passed through to appraisers, since they realized that if they came in with appraisals that were too low to allow mortgages to be issued, they would not be hired again by the bank. This meant that appraisers had a strong incentive to adopt a high-side bias in their appraisals.⁸

An even more important set of misplaced incentives existed in the securitization process in the secondary market. This process was central since it was the existence of the secondary market that gave mortgage issuers incentive to approve mortgages where they knew that the borrower would be unable to meet the terms of the mortgage. The issuers generally faced little risk once the mortgage was sold into the secondary market, so their incentive was to issue as many mortgages as possible. They just had to ensure that the mortgages, on paper, were of sufficient quality to be sold in the secondary market. Since the issuers know very well the rules for qualifying mortgages for resale, they could and did make sure that their loans met these criteria.

The next step was the banks that bought and bundled the loans into mortgage backed securities (MBS). These banks also made their money on the fees associated with this process, not on holding the MBS themselves. This meant that the securitizers also had incentive to try to maximize volume with little regard for the actual quality of the loans that they were bundling or the underlying quality of the MBS that they were issuing.

Of course the ability of the banks to sell their MBS, which contained many loans of questionable quality, depended on their being able to secure good credit rating for their bonds. Here also perverse incentives played an important role. The bond rating agencies are paid by the banks who request the rating. In order to avoid losing customers to their competition, the credit rating agencies had a strong incentive to issue high ratings to the banks' securities.

This process was facilitated by the proliferation of new and more complex financial instruments. For example, the banks began to issue "collateralized debt obligations (CDOs)," which typically included mixes of mortgage backed securities along with other assets. The

⁸ There is a very simple method for avoiding such perverse incentives. If the appraiser is picked by an independent board, as is common with non-residential real estate, then it eliminates the incentive to produce a biased appraisal.

CDOs would typically offer layered financing, with bonds of higher quality having first claim to payments.

Since these were new instruments, the credit rating agencies had little history on which to base their analysis. In the first years for which such instruments existed, default rates were very low, since rising house prices meant that the vast majority of mortgages would be paid. Remarkably, they do not seem to have allowed for the possibility that house prices could in decline when making their assessments of risk. As a result, the credit rating agencies often gave high investment ratings to CDOs that were largely filled with assets that were in turn backed up by high-risk mortgages.

In yet another twist, Citigroup and other major banks also created “structured investment vehicles (SIVs)” which were ostensibly independent companies, whose only assets were CDOs. The banks would then sell off shares in and/or bonds against these SIVs, keeping their liabilities off their balance sheets. This was yet another layer in a complex web of finance that concealed the risk that was building in the financial structure.

There was one other noteworthy twist to the wave of speculative finance that laid the basis for the current crisis. This period saw an enormous proliferation of credit default swaps (CDSs). CDSs are effectively insurance against bond defaults that were issued by the major banks. They provided security to lenders against the risk of default on assets of questionable quality. The spread of CDSs allowed many smaller firms or state and local governments to sell their bonds more easily, since their credit would be backed by the banks issuing CDSs on their bonds. CDSs were also issued against mortgage backed securities and various derivative instruments, which facilitated the sale of MBSs of questionable quality.

While CDSs just came into existence in the late 90s, their use exploded during the peak years of the housing bubble. The Bank of International Settlements estimated the total notional value of CDSs at more than \$45 trillion in June of 2007.⁹ Furthermore, since their issuance was largely unregulated, banks leveraged themselves very heavily in issuing CDSs that had notional values that could be more than a hundred times their capital.

Underlying the logic of this whole set of developments was an incentive structure that placed an enormous premium on short-term profits, often at the expense of longer-term profits or even longer-term corporate survival. Executives in the financial sector are paid in large part in bonuses that are based on hitting profit targets or stock options, the value of which was hugely responsive to short-term profits. In both cases, there is an enormous incentive to show short-term profits. The same dynamic applies with hedge funds, where managers typically receive 20 percent of the gains. If the cost of the gains for a hedge fund in the current year are losses in future years, this poses little problem, since the managers do not share in the losses.

This structure of compensation gave managers little incentive to plan for the long-term health of their own companies and encouraged all forms of risky behavior. The biggest incomes flowed from generating large fees, even if there would be losses from the assets being sold. This was certainly the case with the issuance of highly questionable subprime and Alt-A mortgages and also with the selling of CDSs. In both cases, the underlying assets were

⁹ Bank of International Settlements, “Triennial and semi-annual surveys on positions in global over-the-counter derivatives markets as of the end of June, 2007.” Table A available at http://www.bis.org/publ/otc_hy0711.pdf?noframes=1.

often very risky and could lead to large losses, but the fees from issuing and bundling mortgages and from selling CDSs led to large short-term profits.

It's worth noting that many of the figures at the worst financial actors have made themselves enormously wealthy, even as they wrecked their companies. For example Angelo Mozila, the CEO of Countrywide Financial, one the nation's largest originators of subprime mortgages, earned several hundred million dollar in compensation over the last decade. His company is being taken over by Bank of America at a price that is a small fraction of its levels at the peak of the bubble.

Similarly, James E. Cayne, the boss who led Bear Stearns to bankruptcy, also pocketed hundreds of millions of dollars for his work. The same is undoubtedly true for many hedge fund managers who got 20 percent of large gains during the good years, but who are now watching their clients lose much of their investment during the down market.

The incentive structure, coupled with a weak regulatory system, gives executives enormous incentive to use financial engineering to gain quick profits regardless of long-term costs. In 1996, the financial sector accounted for less than 16 percent of corporate profits. By 2006, the sector accounted for more than 30 percent. Needless to say, much of what financial corporations booked as profits in 2006 was illusory. Their "profits" were fees on transactions that would eventually lead to large losses for their companies. But, these profits provided the basis for large rewards for the big actors in the sector.

The end of the bubble and the meltdown

The bubble began to unravel after house prices peaked and began to turn down in the middle of 2006. This led to rapid rises in default rates, especially in the subprime market. While the worst abuses in the mortgage market were in the subprime segment, the main reason that defaults were initially concentrated so heavily in this sector is that subprime homeowners were the most vulnerable segment of the population. They did not have retirement accounts that they could draw down or family from whom they could borrow, when they found that they could no longer meet their mortgage payments. As a result, when they no longer had equity in their home against which to borrow, many subprime homeowners had little choice but to default on their mortgage.

It is worth noting that many of the subprime loans that began going bad in 2006 and 2007 were not purchase mortgages but rather mortgages used to refinance homes. Subprime lenders aggressively, and often deceptively, marketed mortgages for refinancing to low and moderate income homeowners as a way of getting access to extra money to meet bills or pay for big purchases like a care or home remodeling. As a result of these new subprime loans, families who had been secure suddenly faced the loss of their home.

The spread of defaults in the subprime market led to a sharp reduction in the valuation of MBS that contained substantial quantities of subprime mortgages, as well as the various derivative instruments that were based in whole or in part on MBS with substantial subprime components. The fact that so many instruments and institutions were exposed to serious risk from the subprime market led to the series of credit squeezes that hit financial markets beginning in the winter of 2007. Investors could have little confidence in the security

of a wide-range of assets and institutions, since it was not generally possible to know the extent that they were exposed to bad mortgage debt.

This financial meltdown also has important feedback effects on the housing market. On the supply side, the flood of foreclosures ensures that a large supply of housing will be placed for sale, since banks are generally anxious to sell properties on which they have foreclosed. In many of the most affected markets the number of foreclosures was running at levels that were close to the number of sales in the fall of 2007 and winter of 2008.

On the demand side the growing stress in financial markets has helped to dampen demand, since banks are far more reluctant to make loans than had been the case two years ago. With banks recognizing that they had been overly lax, and that prices are now falling, they are now demanding much larger down payments (20 percent in some of the most rapidly deflating markets) and insisting of much fuller documentation of income and asset information. There are millions of people who had been eligible to receive loans in 2006 who would not be able to take out a loan under the current standards. As a result, the number of potential buyers has contracted substantially over the last two years.

The continued flow of houses for sale, coupled with the sharp cutback in demand, is leading to rapid declines in house prices in many markets. In the first quarter of 2008, house prices were falling at more than a 20 percent annual rate in the Case-Shiller 20 City Index. House prices were falling at more than a 30 percent annual rate in the most rapidly deflating markets like Las Vegas, Los Angeles, and Phoenix. There is little likelihood that prices will stop dropping in these markets in the near future, although at this rate of price decline, most of the bubble induced run-up should be eliminated by the end of the year.

While a quick end to the housing bubble would be desirable in many respects, it will almost certainly lead to more financial turbulence. Banks around the world have already written down losses of more than \$200 billion in connection with the collapse of the housing market, the total figure for write-downs is likely to be closer to \$1 trillion. The additional write-downs hitting the market will almost certainly cause more banks to become insolvent and will impose serious stress on Fannie Mae and Freddie Mac, the two government sponsored corporations that are the backbone of the secondary mortgage market. The weakness of the housing market and the financial institutions with heavy exposure to the sector will worsen the recession, which will in turn aggravate the problems in the financial sector.

The lack of regulation

While it is easy to tell this story with hindsight, most of the worst abuses in the issuing, securitization, and subsequent repackaging of MBS were evident at the time to anyone who cared to look. The explosion of the subprime market by itself should have been an alarm bell calling attention to the problems in the mortgage market. The subprime share of the mortgage market went from less than 9 percent in 2003 to more than 20 percent in 2005. This sort of jump, at a time when the economy was experiencing weak job growth and stagnant wages, should have provided sufficient concern to alert regulators to the fact that something was seriously wrong.

There were many other items that should have raised concern by the Fed and other regulators. The pressure on appraisers to issue over-valued appraisals was widely known at

the time. Similarly, the fact that the banks paid for the rating of their bonds by credit agencies also should have prompted more concern from regulators. This situation was a recipe for abuse. In the same vein, it is truly remarkable that the banks were allowed – in a post Enron era – to carry debt off balance sheet with SIVs.

There was a wide range of regulatory agencies at both the state and federal level that could have intervened to counteract some subset of these abuses. It doesn't speak well for these agencies that their efforts were at best limited and halting. However the Fed deserves the bulk of the blame for the abuses in the credit markets allowing for the housing bubble to grow unchecked.

The Fed had ample tools to place a stop on the worst abuses in the mortgage and credit market. Fed regulations on abusive mortgage practices would have had an enormous impact even on institutions that were not directly under its control. If the Fed had imposed sound issuance practices (similar, albeit strong to the ones it proposed in December), there would have been pressure for other regulators to apply similar regulations to institutions under their jurisdiction. More importantly, the Fed could have set a standard that alerted actors in the secondary market to the abusive practices of many lenders. This would have caused the most irresponsible lenders to have difficulty reselling their loans in the secondary market.

However, the Fed's biggest mistake was its failure to directly target the housing bubble itself. The bubble created the climate in which financial abuses could persist for years without being detected. As long as house prices continued to rise, none of the financial engineering of the bubble period posed any problems. It was only when prices began to fall that the over-leveraged credit of this period became problematic.

Through the run-up of both the stock bubble and the housing bubble, the Fed took the view that financial bubbles are natural events, like the weather, which cannot be prevented. In fact, financial bubbles can be contained and there is nothing more important that the Fed or any central banks can do then to ensure that they do not grow to such dangerous proportions. The U.S. and world economy is paying an enormous price for Greenspan's failure to do his job.

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