



The Subprime Mortgage Market

National and Twelfth District Developments

Introduction

In 2007, the term “subprime mortgage” became a household word. The subprime market in the U.S. had grown remarkably over the past decade, contributing to a rise in homeownership rates. However, it took the sharp increase in delinquencies and foreclosures in 2006 and 2007 for the subprime market to capture the public spotlight. Indeed, the sudden shift in fortunes in the subprime market appeared to catch borrowers and lenders off guard. In addition, the spillovers from the subprime meltdown reached deep into financial markets, causing substantial turmoil in the U.S. and abroad.

This report examines the developments in subprime financing to help understand the factors behind the sudden and substantial deterioration in the subprime market, as well as the reasons for the extensive impact on broader financial markets. The report highlights the experience in the Twelfth District, which has regions with some of the highest concentrations of subprime lending.

This report argues that much of the growth and success of the subprime market in the first part of the decade was built on the rise in house prices and the easing of underwriting standards, along with the use of innovations in financing. The reversal in housing market conditions quickly unmasked the vulnerability

of the subprime market, as softening house prices in many markets greatly reduced the ability, as well as the willingness, of some borrowers to keep mortgage payments current. In addition, the turmoil that erupted in financial markets was due to the widespread distribution of exposure to subprime debt, as well as more general doubts that arose concerning the value of complex financial arrangements used to finance subprime mortgages and other credit.

What is “subprime”?

There is no one definition of a subprime mortgage. The classification “subprime” generally is a lender-given designation for loans extended to borrowers with some sort of credit impairment, say, due to missing installment payments on debt or the lack of a credit history.¹ The industry sometimes lumps subprime loans into the general class of nonprime loans, which also includes the so-called alt-A loans. Borrowers who receive alt-A loans generally have higher credit ratings than subprime borrowers, but the loans are viewed as nonprime because of some specific feature of the loan arrangement, such as limited or no documentation about income or assets, high loan-to-value ratios, high payment-to-income ratios, the purchase of a second home, or some combination of these characteristics (see Box 1).²

¹ See Souphala Chomsisengphet and Anthony Pennington-Cross, “The Evolution of the Subprime Mortgage Market,” *Federal Reserve Bank of St. Louis Review* (January 2006), for a discussion of the development of subprime mortgage lending in the U.S. www.research.stlouisfed.org/publications/review/06/01/ChomPennCross.pdf

² Fair Issac Company (FICO) credit scores are one metric of the overall risk of borrowers. FICO scores range from 300 to 850, with subprime generally assumed to be below the 620 to 660 range. Based on First American LoanPerformance (FALP) data for September 2007, FICO scores averaged 705 for alt-A borrowers and 617 for subprime borrowers for the U.S. The figures for the Twelfth District are 709 and 635, respectively.

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Subprime mortgages can have fixed or adjustable interest rates. Interest rates on adjustable rate mortgages (ARMs) are pegged to a benchmark rate, such as the six-month Libor rate³ or the one-year Treasury bill rate. As of September 2007, for a sample of outstanding subprime loans assembled by First American LoanPerformance (FALP), the spread over various benchmark rates averaged about 4 percentage points (see Box 2).

A feature of many subprime ARMs is a lower initial rate that is fixed for a period of time before resetting to the indexed rate. For example, the popular 2/28 ARMs reset to the fully indexed interest rate after the first two years. While initial rates on many subprime ARMs are lower than the reset rate, these initial rates are notably higher than prime mortgage rates. The typical subprime ARM in the FALP data set as of September 2007 had an initial rate of 8.0 percent, well above the conventional 30-year fixed rate of about 6.2 percent over the period in which the loans were originated.

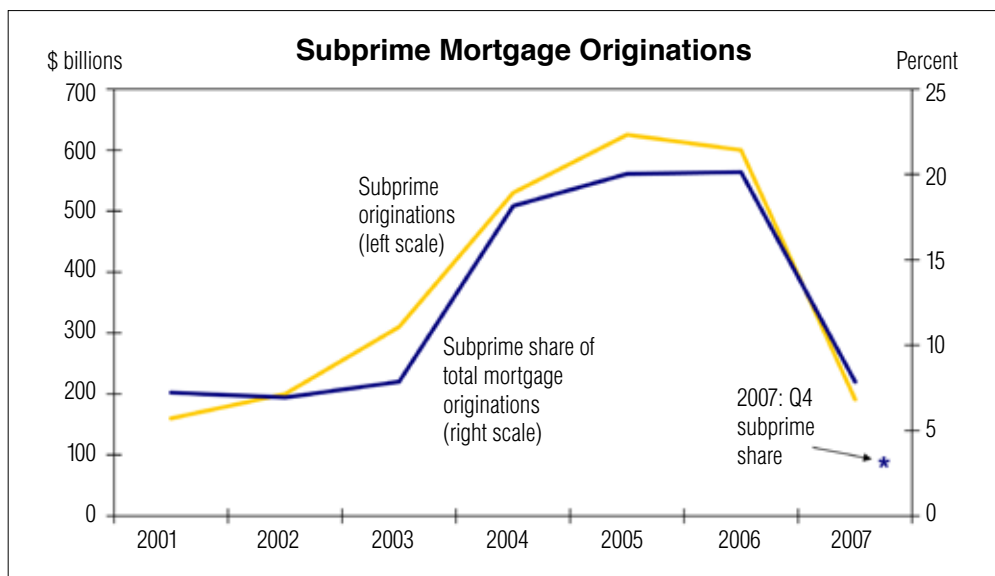
Anecdotally, many subprime loans are not intended as long-term financing for houses. Instead, subprime loans are often viewed as a first step for certain borrowers who want to buy a house but do not have a sufficiently large down payment or a good enough credit history to qualify for prime (or even alt-A) financing. Indeed, subprime ARMs are often described as bridge loans to more permanent financing. With a bridge loan, the borrower has a chance to build a repayment history, build equity in the house, and eventually move (refinance) into a lower-priced mortgage.

Historically, subprime borrowers who are not able to refinance into new loans tend to have relatively high loan default rates and often face foreclosures or are forced to find other ways to terminate their mortgage

Box 1: Alt-A versus subprime mortgages

Compared with subprime borrowers, alt-A borrowers tend to have higher credit ratings. At the same time, the alt-A classification tends to be associated with loans having more unconventional terms. These include interest only loans and option-ARMs. As of September 2007, an estimated 28 percent of all alt-A loans were interest-only, compared with 12 percent for subprime. Nearly 16 percent of all alt-A loans included a provision allowing a borrower to choose among several payment options each month, while it was extremely rare for a subprime loan to contain this feature. On balance, alt-A loans are viewed as having lower risk and, thus, carry lower interest rates than subprime loans. Based on the FALP data for September 2007, mortgage rates among the sample of alt-A borrowers averaged about 7 percent, compared with about 9 percent for subprime loans.

³ London interbank offered rate

**Figure 1**

The surge in subprime mortgage lending peaked in 2005

Source:
Inside Mortgage Finance

contracts, such as by selling their houses.⁴ Just like prime borrowers, many subprime borrowers have refinanced to tap equity in their homes.

Given the tendency for subprime borrowers to move out of their loans, at any point in time, outstanding subprime loans tend to be of relatively recent vintages. For example, as of September 2007, about 70 percent of the outstanding subprime loans had been originated in 2005, 2006, or 2007. This share for the Twelfth District is even higher, at about 80 percent.

The rise in subprime lending

The subprime market began to bloom in the late 1990s, and then picked up steam after the 2001 recession (Figure 1). At the start of the current decade, subprime originations still only accounted for about 6 percent of total residential mortgage originations. By 2006, the subprime share of total mortgage originations had risen to about 25 percent. By one estimate, in late 2007, the number of outstanding subprime mortgage loans totaled about 7¾ million, or 14 percent of the overall mortgage market.⁵

While the growth in subprime mortgage debt has been a national development, the regional importance

Box 2: Sources of data on subprime mortgages

Home Mortgage Disclosure Act

Identifies mortgage loan originations as “higher-priced” if the contract rate is greater than 3 percentage points over the yield on an appropriate Treasury security. These data are collected by the Federal Reserve and released by the Federal Financial Institutions Examination Council (FFIEC).

Mortgage Bankers Association

Reports loan performance based on a survey of its members. Loans are classified as subprime if the lender’s business is predominantly in the subprime category.

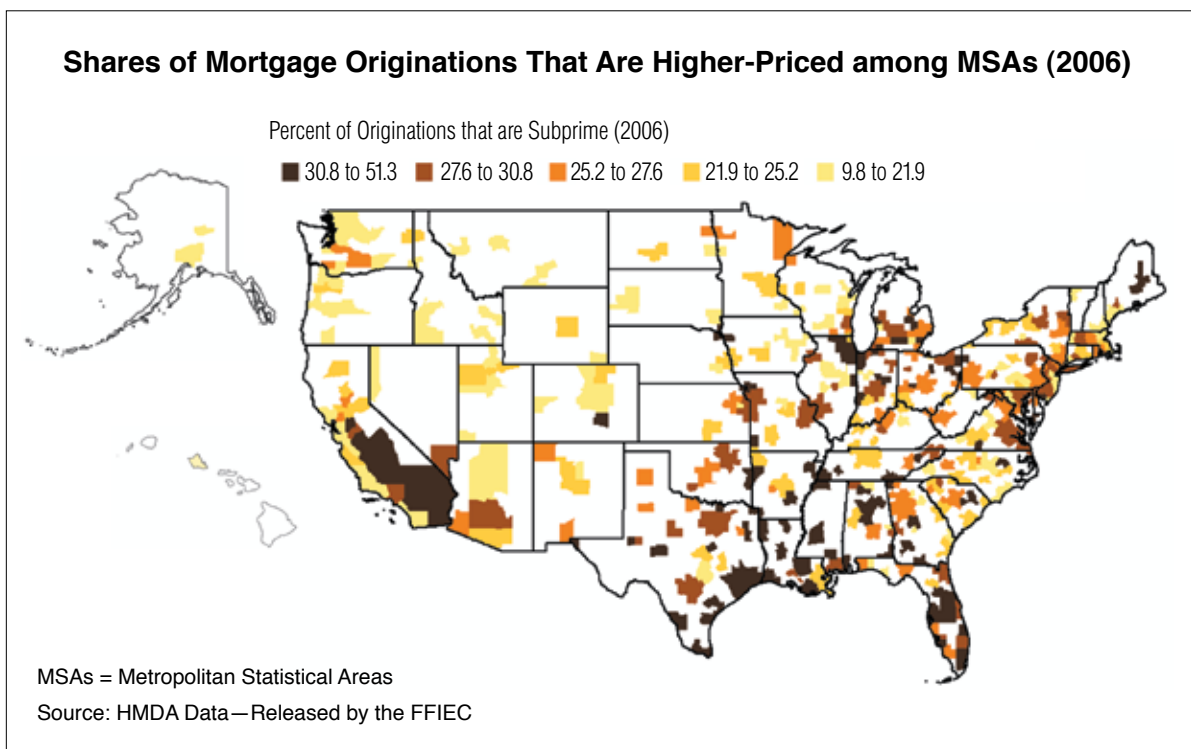
Private sector data providers (First American LoanPerformance, McDash Analytics)

Collect data from mortgage servicers on mortgage characteristics and loan performance. The subprime classification is determined by the mortgage originator.

of subprime mortgages varies considerably. Regional concentrations of subprime lending are reflected in Figure 2. These data are shares of total originations that are defined as higher-priced mortgages in the data collected by the Federal Reserve under the Home

⁴ See Chomsisengphet and Pennington-Cross, “The Evolution of the Subprime Mortgage Market” (January 2006).

⁵ See remarks by Federal Reserve Governor Randall S. Kroszner at the Consumer Bankers Association 2007 Fair Lending Conference, Washington, D.C., “The Challenges Facing Subprime Mortgage Borrowers” (November 5, 2007). www.federalreserve.gov/newsevents/speech/kroszner20071105a.htm#f2

Figure 2 *Some of the highest concentrations of subprime mortgage lending are in the Twelfth District*

Mortgage Disclosure Act (HMDA) (see Box 2). These higher-priced loans likely include virtually all subprime loans and a share of alt-A loans. The Twelfth District figures prominently in this map: some of the largest concentrations of higher-priced loans in the country are in the inland parts of California and the Las Vegas area, where the shares of mortgage loans originated in 2006 that were higher-priced ranged from about 35 percent to 40 percent, compared to the national average of around 25 percent. It is also worth noting that some of the communities with the lowest exposures to subprime lending also are in the Twelfth District, with the San Francisco and Seattle areas having below-average higher-priced loan shares of about 14 percent and 22 percent, respectively, in 2006.

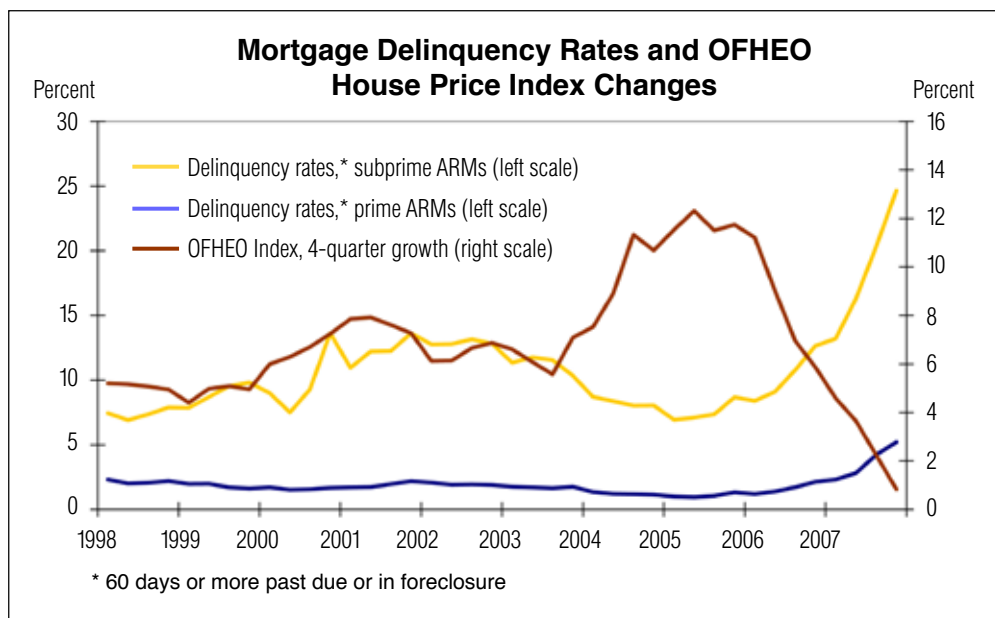
The rise in subprime lending occurred within the context of an overall boom in housing and was greatly facilitated by innovations in housing finance. The housing boom, which was underway in the second part of the 1990s and strengthened further after 2001, was marked by strong growth in housing starts and a striking increase in homeownership rates. Even more striking was the rise in house prices, with

double-digit gains in 2004 and into 2005 (red line, Figure 3). Some of the markets posting the most rapid house-price appreciation at the height of the housing boom were in the Twelfth District (Figure 4).

Seeds of the crisis

In the heady environment of seemingly relentless house-price appreciation in many markets, the growth in housing demand was accompanied by an increase in the supply of mortgage credit. Access to mortgage credit was made easier as underwriting standards on mortgage debt eased. Looser standards included a general increase in loan-to-value ratios, less stringent debt-to-income requirements, and a willingness on the part of lenders to accept limited or no documentation of borrowers' income and assets.

The expansion of subprime credit, and perhaps even the loosening of credit standards, was facilitated by developments in asset-backed markets. Traditional "portfolio" lending involves a bank originating and holding the loan. For securitized credit, such as the issuance of residential mortgage-backed securities (RMBSs), loans are purchased from firms

**Figure 3**

Mortgage delinquency rates rise with cooling house prices

Sources:
Office of Federal Housing
Enterprise Oversight
Mortgage Bankers Association

originating loans (banks, mortgage companies, and others) and then assembled into pools. These RMBSs, representing claims on the principal and interest payments made by borrowers on the loans in a pool, are then sold to investors. For years, the securitization of residential mortgages was dominated by the government-sponsored enterprises (GSEs), Fannie Mae and Freddie Mac, which primarily securitized loans extended to higher quality borrowers who met legislative limits on loan size.

For the subprime market, sea change came with the growth in so-called private-label RMBSs issued by brokerage firms, banks, and even homebuilders, rather than by the GSEs.⁶ Indeed, securitization, or the originate-to-distribute model, came to dominate subprime financing. As the volume of subprime mortgage originations grew over the past decade, the share of total subprime financing through private-label RMBSs increased even faster, with the share rising from about 46 percent in 2001 to 75 percent in 2006. These subprime RMBSs found their way into the portfolios of a wide range of investors, including a number of large and not-so-large financial institutions in the U.S. and abroad.

For many investors, exposures to subprime mortgages did not come from direct holdings of RMBSs,

but rather through other types of asset-backed securities. For example, CDOs, or collateralized debt obligations, package multiple RMBSs (and other types of debt)—essentially securitizing several already securitized bundles of long-term debt instruments. Typically, they include tranches—literally, “slices”—of mortgage-backed securities with different exposures to risk based on a prioritization of the payments from the underlying mortgage securities, and are a type of “structured credit.”

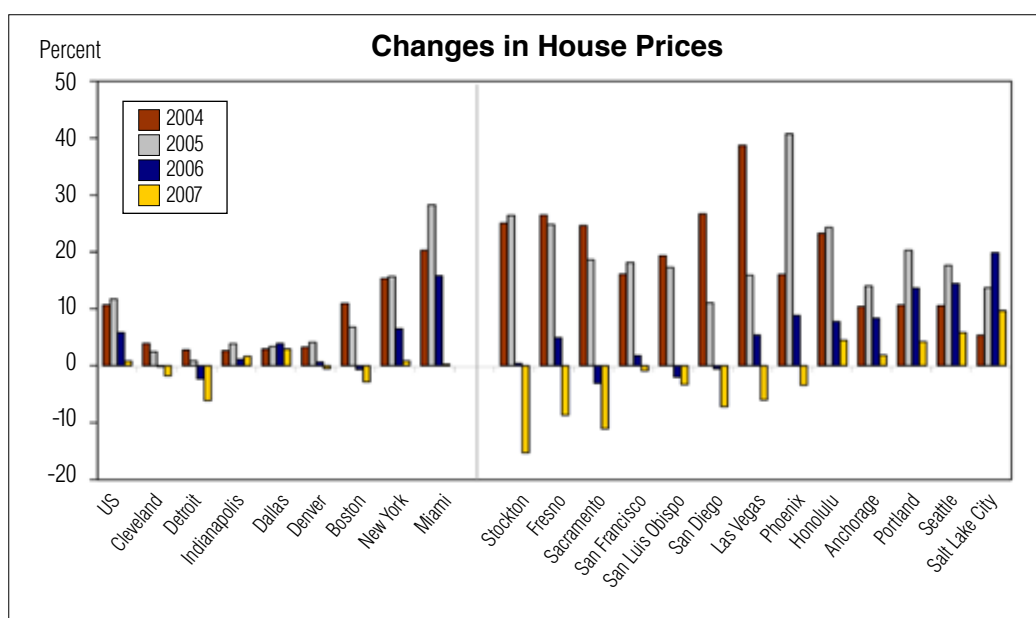
Another example is the structured investment vehicle (SIV). A SIV is an ongoing, open-ended vehicle in the sense that new assets can be added to the vehicle over time, and the liabilities can be refinanced. A SIV typically is sponsored by a large financial institution, such as a bank, but is in fact a separate legal entity. These SIVs invest in longer-term assets (including subprime-related debt) that are funded with combinations of short-term and medium-term debt.

In principle, the advantages of securitization are greater diversification and the spreading of risk, potentially broadening access to credit and lowering its cost. However, the extent and incidence of risk may not always be clear in a world of complex financial arrangements. For some large financial institutions,

⁶ In addition to subprime mortgages, alt-A and jumbo loans (mortgages that are too large to be securitized by GSEs) are securitized through private-label RMBSs. The three categories are sometimes referred to as nonconforming loans because they do not meet accepted requirements for securitization in RMBSs issued by GSEs.

Figure 4

Several Twelfth District MSAs have shown pronounced swings in house-price appreciation



Source:
Office of Federal Housing
Enterprise Oversight

for example, the link to the subprime market came not through direct investment in subprime-related assets, but through their ties to the funding of those assets; in particular, the funding of CDOs was typically backed up with full liquidity facilities provided by large financial institutions.⁷ Sponsors of SIVs also provided liquidity back-ups to help enhance the credit rating of the SIVs. Additionally, both SIVs and CDOs obtained some funding through the issuance of commercial paper. Moreover, in the originate-to-distribute model for subprime financing, commercial paper often was used to finance warehoused loans (temporary financing for subprime mortgages between the time when mortgage loans are extended to borrowers and when they are packaged for sale in the secondary market). This asset-backed commercial paper, which grew dramatically from 2003 through mid-2007, was partially financed by money market mutual funds.

Another issue is the difficulty in valuing complex structured credits. To deal with the complexity of these instruments, many market participants, including financial institutions and other sophisticated investors, relied to a great extent on credit rating agencies for assessments of the risk. A very large share of the value

of structured investments originally was in highly rated tranches (AAA or AA). These ratings led many investors to assume that the structured credits posed little risk.

Taken together, these developments created intricately entwined exposures to the subprime market within the fabric of broader financial markets. While this helped support growth in the subprime market, the lack of transparency created by the layers of complex financing made it difficult to assess the degree and incidence of risk among financial institutions and instruments. That lack of transparency was a key reason the meltdown in the subprime market eventually led to such serious turmoil in financial markets more generally (see Box 3).

The rise in mortgage delinquency rates

The originate-to-distribute model for financing subprime debt worked well through the first part of this decade. At the end of 2005, delinquency rates were elevated in Gulf Coast state markets hit hard by Hurricane Katrina and in Midwest markets that had experienced subpar economic performance. Elsewhere, despite the easing of credit standards discussed earlier, delinquency rates on subprime mortgages generally

⁷ In 2006, the creation of credit default swaps tied to pools of subprime RMBSs provided yet another avenue for spreading risk in subprime debt.

improved from 2001 through 2005 (Figure 3). In fact, delinquency rates on risky subprime mortgages were remarkably low in a number of markets, including those in the Twelfth District (Figure 5).

In retrospect, cracks in the veneer of the subprime market were evident in late 2005, with serious problems becoming more obvious in the second half of 2006 (Figure 3). Overall, the deterioration in the performance of subprime loans was sudden, and it has been substantial. The changes in delinquency rates have been most pronounced in the markets in which subprime mortgage performance had been remarkably good. This is especially evident in the

West. The Twelfth District has several of the metropolitan statistical areas (MSAs) where subprime mortgage delinquency rates have moved from some of the lowest to some of the highest rates in the country (Figure 5).⁸

Among MSAs in the U.S., the median subprime delinquency rate in the markets covered by the LoanPerformance data was 17.4 percent, with a range from about 7 to over 30 percent, as of September 2007.⁹ Subprime delinquency rate hotspots include inland areas of California and parts of Nevada, Florida, and Ohio. In the Twelfth District, the highest subprime delinquency rates were in communities

⁸ An MSA is a county-based area forming a central urban area. MSAs are defined by the Office of Management and Budget.

⁹ Source: FALP. "Delinquency" in this report is defined as being more 60 days or more past due or in foreclosure.

Box 3: Financial market turmoil

The market's assessment of risk in the subprime market began to change in response to information on the rise in subprime mortgage delinquencies in the second half of 2006 and early 2007. Nevertheless, despite the rise in delinquencies, the market appeared to retain confidence in highly rated tranches of subprime RMBSs through the first half of 2007. Moreover, the originate-to-distribute financing of subprime and other nonconforming mortgages continued to function, though at a lower level.

After June 2007, however, risk indicators for subprime RMBSs and related credit derivatives shot up. The trigger for the sudden shift in sentiment was the set of substantial rating downgrades on a number of highly rated tranches of subprime RMBSs. The downgrades raised concerns reaching far beyond the directly affected securities. The market became worried about the quality of rating agencies' evaluation of risk in other structured credits, including those associated with nonconforming mortgages, along with the risk associated with asset-backed commercial paper. With uncertainty about risk exposures to subprime-related debt and more conservative liquidity management by banks, the interbank market for term loans was disrupted and experienced sharp increases in risk premiums. Market participants also appear to have reassessed financial risk more generally, as risk spreads

increased on virtually all securities and credit, outside of the Treasury market.

The result was a near seizing up of structured financing and a severe cutback in the securitization of nonconforming mortgages. In addition, the asset-backed commercial paper market contracted sharply, forcing managers of many SIVs and CDOs to turn to back-up lines for liquidity.

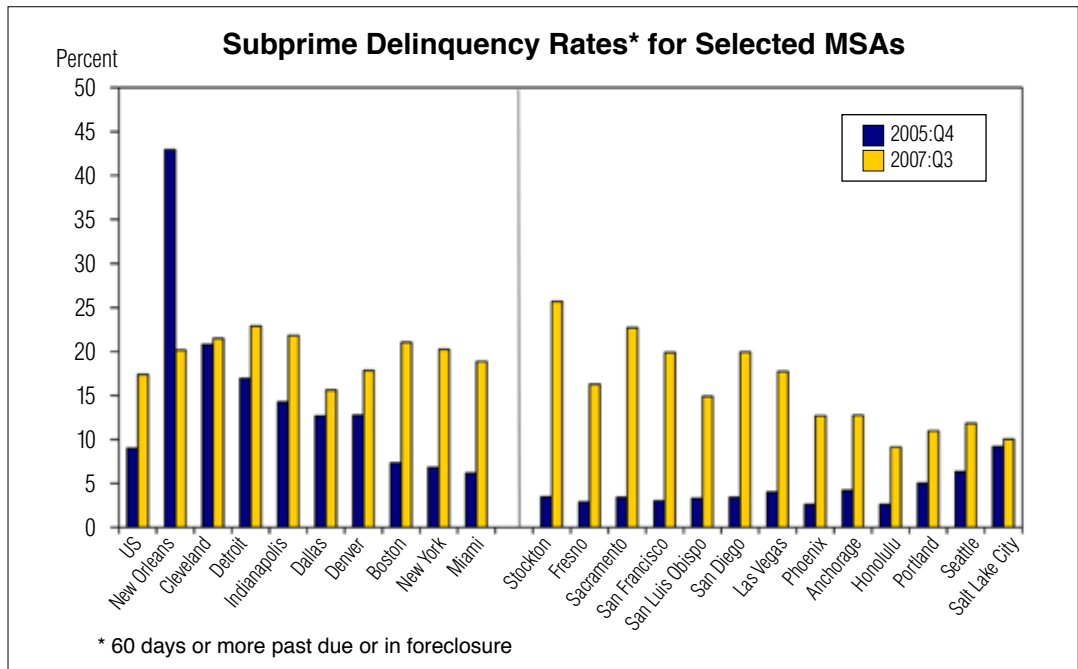
With the breakdown in funding, firms originating nonconforming mortgages were left holding loans and RMBSs that could not be sold into the market. In addition, some mortgage firms were forced to take back some loans that had defaulted soon after being securitized. The resulting funding squeeze put severe pressure on firms that were focused on residential real estate financing, several of which failed. In a matter of months, some mortgage originators, such as New Century, fell from apparent profitability into Chapter 11 bankruptcy.

Several financial institutions in the U.S. and abroad were hit with sizable losses owing to their exposures as sponsors of SIVs and underwriters of other structured credit, as well as their direct exposures to subprime-related debt. Even lesser-known financial firms, such as Northern Rock in the U.K., were crippled by exposure to U.S. subprime debt; that institution was eventually taken over by the government.

Figure 5

Subprime delinquency rates for many Twelfth District MSAs have risen sharply

Source:
First American
LoanPerformance



The hits taken by monoline financial guarantors further spread the effects of the market turmoil. These companies guarantee the timely payment of principal and interest due on various types of securities, including structured credits. Losses at these firms affected their capital positions and brought into question their future ability to guarantee a wide range of securities, including those issued by state and local governments.

Among portfolio lenders, such as commercial banks, these developments led to the rapid growth in assets relative to capital. Though the banking system overall entered this difficult period in a strong position, with concerns about further pressures on capitalization and more general deterioration in loan quality, banks took steps to tighten credit terms and restrict availability on virtually all types of credit.

In response to the market turmoil, the Federal Reserve System initiated several policy actions to forestall the effects of the financial market turmoil. These included large injections of reserves starting in early August 2007, making discount window lending more accessible, and introducing the Term Auction Facility, which gives banks another route besides the discount window to tap into the Fed’s lending function. The Federal Open Market Committee also took several actions to substantially ease the stance of monetary policy, including a 75-basis-point cut

in the federal funds rate target at an unscheduled meeting on January 22, 2008.

The actions by the Federal Reserve, along with the global “flight to safety” in which many financial market participants sought the safety of securities issued by the U.S. government, contributed to a sharp decline in interest rates on U.S. Treasury securities. However, the extent of the net stimulatory effects was less than suggested by the drop in “risk-free” Treasury rates. For private sector borrowers, the decline in risk-free rates was mitigated, and, in some cases, even offset by the tightening credit standards and lower tolerance for risk in financial markets. Prior to the turmoil, risk premiums on virtually all kinds of private sector debt were unusually low, and, as noted in this report, some credit standards were lenient, to say the least. However, amidst the market turmoil, interest rates on virtually all privately issued securities rose relative to yields on comparable maturity Treasury securities. Higher quality firms did see a net decline in the cost of credit, even with a rise in the risk premiums, though lower-grade corporate bonds with greater credit risk faced notably higher interest rates. Among households, rates on low-risk conforming mortgages decreased on balance, while other mortgage rates rose, even for some borrowers with high credit ratings.



Economic Research

Group Vice President Fred Furlong (second from left) and economists (left to right) Yelena Takhtamanova, Elizabeth Laderman, and John Krainer, from the Economic Research department, conduct in-depth research and analysis of economic, banking, and financial developments in the U.S. and Twelfth District.

in California's Central Valley, with Stockton ranking eighth among MSAs. The delinquency rate for the Stockton area, for example, jumped from about 3.5 percent at the end of 2005 to over 25 percent in late 2007. Subprime delinquency rates were high in other Central Valley communities, especially the Modesto and Merced areas. In the Las Vegas and Phoenix areas, subprime delinquency rates reached 17.7 percent and 12.7 percent, respectively, in 2007, compared with 4 percent and 3.6 percent at the end of 2005. The Twelfth District also has some of the better performing markets, including parts of California, Arizona, and the Pacific Northwest. Delinquency rates on subprime loans moved up in Hawaii and Alaska, but were below the national average (Figure 6). The delinquency rate in the Salt Lake City, Utah, area, which changed little since 2005, also was below the national average.

Within the Twelfth District, the combination of concentrations of subprime loans and poor performance of mortgage loans in some areas has led to some of the highest overall rates of mortgage foreclosure filings in the nation (Figure 7). In 2007, MSAs in California's Central Valley were among the highest in the nation in terms of foreclosure filings relative to the number of households. Also high on the list were inland areas of Southern California and Las Vegas, Nevada. With these concentrations of foreclosures, Nevada ranked highest in the nation in terms of foreclosure filings compared to the number of households in 2007, and California ranked fourth. Outside of the Twelfth District, Florida and Michigan ranked second and third, respectively. Areas in the Twelfth District with more moderate foreclosure filing rates include MSAs in the Pacific Northwest, Alaska, and Hawaii.

Drivers of delinquency rates

The most important factor by far in explaining the regional differences in subprime delinquency rates has been the change in house prices. As suggested by Figures 4 and 5, areas such as those in the Twelfth District with very rapid house-price appreciation in 2004 and 2005 had extremely low subprime delinquencies at the end of 2005. The strong link between house-price appreciation and the performance of subprime loans prior to the recent crisis is confirmed by more formal statistical analysis that controls for other factors such as economic conditions.¹⁰

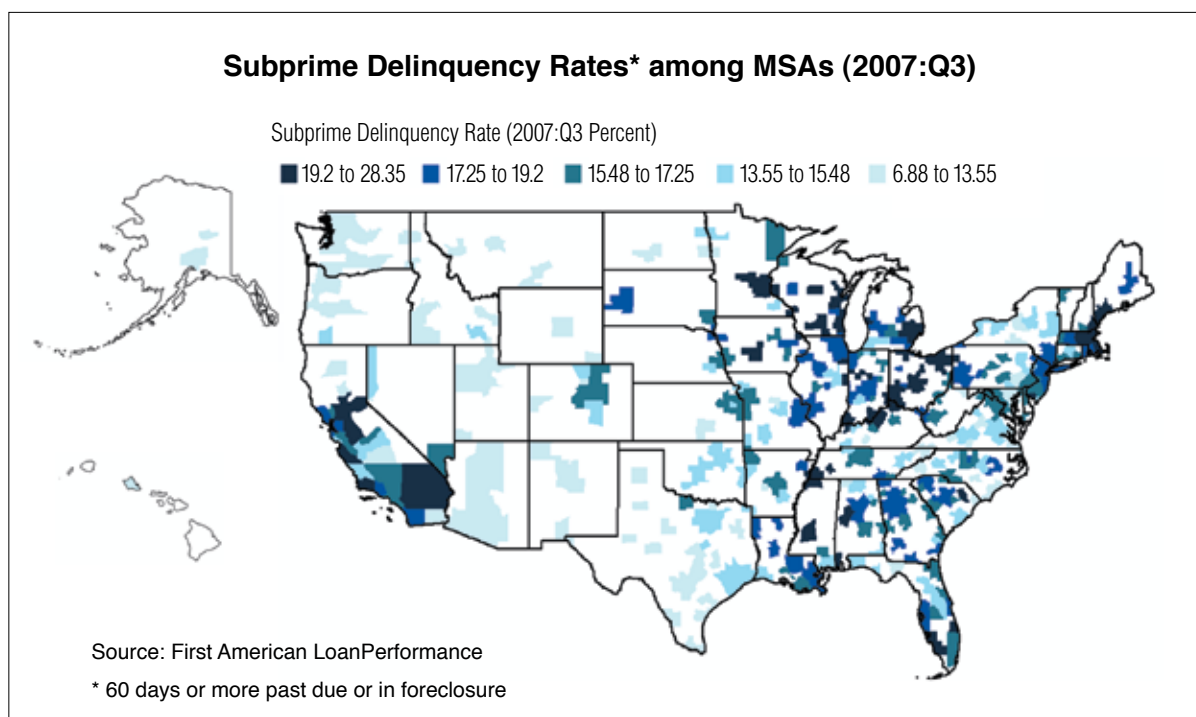
Formal analysis also shows that, since the slump in housing in mid-2005, changes in house prices have been the most reliable indicator of subprime delinquency hotspots in the U.S. and the Twelfth District.¹¹ Figure 8 provides a graphical perspective on this link between delinquency rates and house-price appreciation. The figure covers the largest MSAs, highlighting those in the Twelfth District, and shows a strong

negative relationship between the past two years of house-price appreciation and subprime delinquency rates in 2007.

As important as changes in house prices are in explaining the rise in delinquencies, they are not the only factors. Research finds that, in recent years, employment conditions and indicators of borrower risk, such as FICO scores, also help explain regional differences in mortgage delinquency rates.¹² For example, weakness in job markets helped account for the higher levels of delinquency rates for metro areas such as Cleveland and Detroit, or cities in the Gulf Coast states still recovering from Hurricane Katrina. Studies also find that measures of loan risk, such as loan-to-value ratios, are related to the probability a borrower will default on a mortgage loan.

Researchers have examined whether a sudden deterioration in underwriting standards might account for the abrupt deterioration in the performance of subprime mortgage loans in recent years. One study

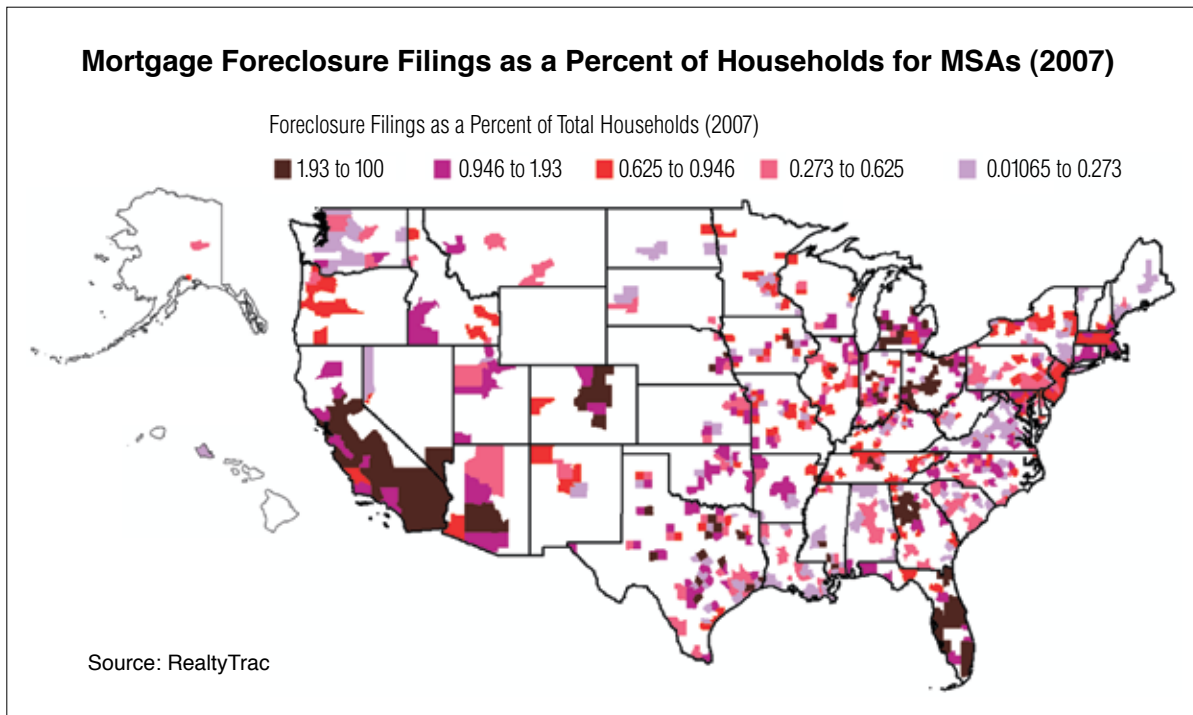
Figure 6 *Parts of the Twelfth District exhibit exceptionally high rates of subprime delinquencies*



¹⁰ See Mark Doms, Frederick Furlong, and John Krainer, "Subprime Mortgage Delinquency Rates," Federal Reserve Bank of San Francisco, Working Paper 2007-33 (2007). www.frbsf.org/publications/economics/papers/2007/wp07-33bk.pdf

¹¹ The analysis also shows that the deceleration in house prices since 2005 is highly correlated with the change in subprime delinquency rates among MSAs.

¹² See, for example, Doms, Furlong, and Krainer, "Subprime Mortgage Delinquency Rates" (2007).

Figure 7 *Foreclosure rates in the Twelfth District are highest in areas of subprime concentration*

finds that, during the explosive growth of the subprime market from 2001 to 2006, the quality of loans deteriorated relatively steadily as underwriting criteria eased.¹³ That work suggests that declining underwriting standards played a role by increasing the overall riskiness of the pool of subprime borrowers, but the effects were not evident until after house prices softened. One factor that does not appear to have had a significant direct role in triggering defaults on subprime mortgages in 2006 and 2007 are interest rate resets on subprime ARMs. As indicated earlier, originations of the vast majority of outstanding subprime loans took place since 2005, and only a fraction hit reset dates as of late 2007.

Overall, then, the key finding of most research on the issue of the performance of subprime loans in recent years is that house prices matter.¹⁴ This can be the case even though it is assumed that the common triggers for mortgage delinquencies and defaults are life events such as job loss, illness, or divorce—which

disrupt the borrower's ability to repay a mortgage. Changes in house prices can be expected to affect the sensitivity of borrowers to such life events by influencing the ability and willingness of homeowners to keep current on their mortgage payments. In a market in which house prices have been stagnant or even declining, a borrower with a recent mortgage secured with little or no down payment would not have the flexibility to tap equity in the house to weather a life event. Likewise, if a borrower was counting on house-price appreciation in order to refinance into a more affordable loan, low or no appreciation would foil these plans. This could leave the borrower with a mortgage that is unaffordable on a permanent basis. Alternatively, this hypothetical borrower might even be able to afford the loan but still be unwilling to make the payments if the borrower thought house-price appreciation would remain low or even be negative going forward. This latter scenario would view borrowers—even those borrowers for whom

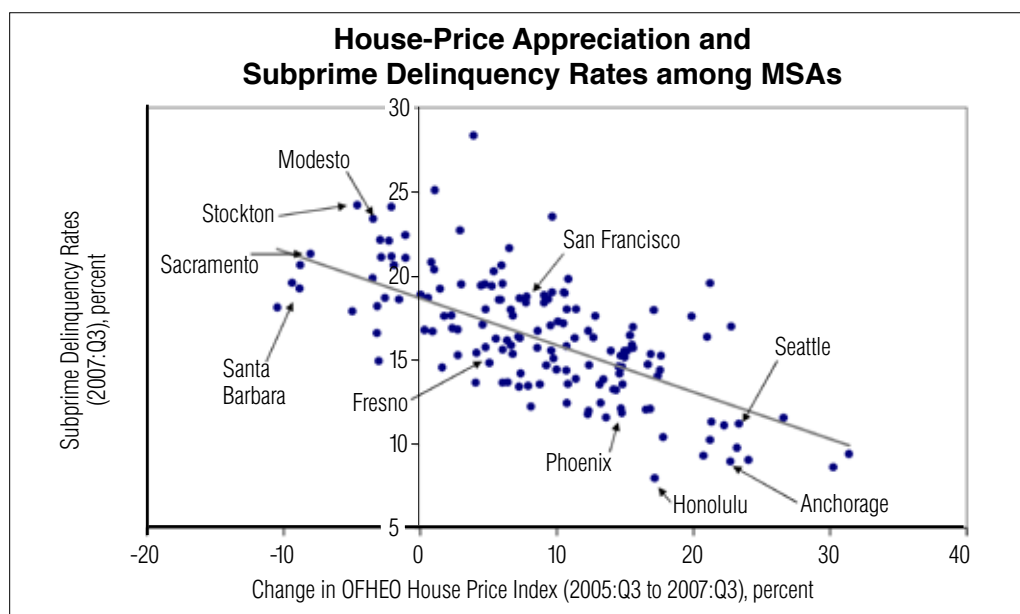
¹³ See Yuliya Demyanyk and Otto van Hemert, "Understanding the Subprime Mortgage Crisis," Federal Reserve Bank of St. Louis, manuscript (February 4, 2008). http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1020396

¹⁴ A particularly important study is: Kristopher Gerardi, Adam Hale Shapiro, and Paul S. Willen, "Subprime Outcomes: Risky Mortgages, Homeownership Experiences, and Foreclosures," Federal Reserve Bank of Boston, Working Paper 07-15 (2007). They conclude that house prices have been the main drivers of the rise in foreclosures. This paper provides an assessment of the homeownership experiences in Massachusetts from 1989 to 2007. www.bos.frb.org/economic/wp/wp2007/wp0715.htm

Figure 8

House-price appreciation is a strong predictor of subprime delinquency rates

Sources:
First American
LoanPerformance
Office of Federal Housing
Enterprise Oversight



the loan is for their primary residences—as real estate speculators, in part. If house prices are not expected to rise as before, some borrowers may conclude that they own too much house, and demand will fall.

To the extent that the subprime meltdown is tied to the overall slump in housing, other borrowers also should be affected. Indeed, many of the same conclusions just cited apply to prime and alt-A mortgage delinquencies as well. While default rates for alt-A and prime loans are lower than for subprime loans, delinquency and foreclosure rates among all categories across regions of the country are highly correlated. More formal statistical analysis confirms that differences in house-price appreciation account for most of the regional differences in delinquency and foreclosure rates, whether for prime or nonprime borrowers.

Conclusion

The meltdown in the subprime mortgage market in large part reflects the more general housing downturn and decline in the demand for housing. With the cover of rapidly rising house prices removed, the vulnerability and underlying riskiness of subprime lending has been revealed. That vulnerability is especially notable, given the way that delinquency rates have

shot up, even though a very large share of subprime borrowers have yet to face interest rate resets. Going forward, the potential effects of interest rate resets will depend, in part, on movement in the various indexes used to set mortgage rates on subprime ARMs. At the same time, to the extent that the decline in house prices continues to be the main predictor of mortgage defaults, and housing continues to slump, default rates could very well continue to rise.

As far as capital markets are concerned, the meltdown in the subprime market is likely to have longer-term effects on the financing of mortgages and other credit. The problems in the subprime market not only affect securitization of subprime mortgages, but also securitization of jumbo loans and alt-A mortgages.¹⁵ For securitization of nonconforming loans to rebound, the implementation of the originate-to-distribute model will have to be changed. Investors also will need to develop better tools for evaluating and pricing the risk of structured credits. Even with such changes, the cost of credit is likely to be higher going forward, and credit financing will perhaps be characterized by a different balance between securitization and traditional portfolio-based lending than observed at the height of the subprime boom.

¹⁵ The economic stimulus package passed by Congress in February 2008 raises the limit on the maximum size of conforming loans for six months (July through December 2008), which would be expected to boost temporarily the securitization of more jumbo mortgage loans.