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January 2008



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ACKNOWLEDGMENTS

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A Short History of the Subprime Mortgage Market Meltdown

The residential mortgage market in the United States has worked extremely well over the past two centuries, enabling millions of people to achieve the dream of homeownership. Indeed, the homeownership rate reached a record high of 69.2 percent in 2004 before declining to 68.2 percent at the end of the third quarter in 2007 (see figure 1). To be sure, there have been periods of disruption in these markets. The most recent episode occurred in the summer of 2007 and is widely referred to as the subprime mortgage market meltdown. A major concern is the prospect that 2 million or more households with subprime loans will lose their homes to foreclosure in 2008 and 2009. Many of these individuals took out hybrid mortgage loans, which featured low introductory interest rates for two or three years but a higher rate thereafter. The recent decline in home prices, the rise in foreclosures, and the tightening of credit standards by lenders are slowing economic growth, creating the possibility of a recession.

In response to this troubling situation, the Bush administration pushed for a voluntary freeze on interest rates for a select group of roughly 600,000 borrowers with subprime hybrid mortgages in an effort to prevent foreclosures. To head off similar problems in the future, some members of Congress are considering legislation that would effectively require lenders to extend mortgage loans only to individuals who can afford them. Furthermore, under some proposals, lenders and even investors in securities backed by mortgage loans could be held liable for any breach of laws and regulations that occurs when individuals purchase homes, even though other parties are primarily responsible for screening customers brought to them. The Federal Reserve is also proposing new guidelines for mortgage lenders to better assure that only creditworthy borrowers obtain loans. Lenders are also reacting by discontinuing certain types of mortgage products and being more diligent in scrutinizing borrowers.

Before legislation and regulations are enacted to address and respond to the current problems in the subprime mortgage market, it is important to understand some of the changes that have taken place in U.S. mortgage markets over the past three decades and how they have contributed to the current situation. Prior to 1980, the vast majority of all residential home mortgage loans were made by savings and loans. These institutions originated, serviced, and held these loans in their portfolios. But as early as 1970, the combining of these three functions by a single institution began to change as residential home mortgage loans were increasingly securitized. Subsequently, the Government National Mortgage Association (GNMA, or Ginnie Mae), the Federal National Mortgage Association (FNMA, or Fannie Mae), and the Federal Home Loan Mortgage Corporation (FHLMC, or Freddie Mac) became the primary securitizers of home mortgages. Indeed, these three entities securitized only 1 percent of all outstanding mortgages in 1965, but their share rose to a high of 48 percent in 2001 (see figure 2). The securitization process contributed to the unbundling of the home mortgage process insofar as savings and loans no longer had to hold these mortgages in their portfolios. At the same time, investors in the securities backed by home mortgages provided an additional source of funding beyond the deposits of savings and loans. The origination and servicing of mortgages also became separate functions not entirely performed by savings and loans. There were only 7,000 U.S. mortgage brokers in 1987, but that figure had increased to 53,000 by 2006. Their share of mortgage originations increased from 20 percent in 1987 to 68 percent in 2003 before declining to 58 percent in 2006 (see figures 3 and 4). The unbundling of the home mortgage process into these three separate functions (funding, origi-



nation, and servicing) meant there were also three separate sources of revenue to be earned. Unlike the savings and loans, investors who ultimately purchased securities based upon pools of home mortgage loans became further removed from the homes serving as collateral, and therefore relied heavily on rating agencies for accurately assessing the credit quality of these securities.

The collapse of the savings and loan industry in the early 1980s led to further changes in mortgage markets.¹ When the Federal Reserve changed its operating policy to combat inflationary pressures, short-term interest rates rose rapidly, and the yield curve inverted (i.e., short-term rates exceeded longer-term rates).² At the time savings and loans were heavily involved in the mortgage market, holding about half of all home mortgage loans in portfolio. The vast majority of these mortgages were traditional fixed-rate, thirty-year mortgages. The inverted yield curve meant nearly all savings and loans were insolvent if their mortgage portfolios had been marked to market because the interest rates on their outstanding home mortgage loans were lower than the rates on Treasury securities of comparable maturity. Indeed, the nearly 4,000 savings and loans were estimated to be insolvent by roughly \$150 billion³ (or \$382 billion in 2007 dollars). The reason for this dire situation was that these institutions were largely prohibited from offering adjustable-rate mortgages or hedging their interest-rate risk. Congress responded to the crisis by broadening the powers of savings and loans so they could operate more like commercial banks, which largely avoided the same plight; savings and loans were also allowed to offer adjustable-rate mortgages. The latter change enabled savings and loans to shift some of the interest-rate risk to borrowers. Whereas adjustable-rate mortgages accounted for less than 5 percent of originations in 1980, that share was up to 64 percent in 2006.⁴ The broader powers of savings and loans also meant a blurring of distinctions among different types of depository institutions. The share of home mortgages accounted for by savings institutions dropped from 50 percent in 1980 to only 8 percent in 2006, while the share of mortgages held by commercial banks rose from 16 percent to 20 percent over the same period. As already noted above, the majority of loans were pooled and securitized rather than held in portfolio by institutions, which provides for greater diversification of risk and facilitates asset/liability management by financial institutions.

The financial innovations of securitization and adjustable-rate mortgages contributed to the development of the U.S. mortgage markets by providing more diverse sources of funding for residential home mortgages and a wider choice of mortgage products for consumers. Increased use of adjustable-rate mortgages also allowed the sharing of interest risk by both lenders and borrowers. Those individuals choosing adjustable-rate mortgages typically receive an initial interest rate that is lower than what they could obtain with a fixed-rate mortgage, but then face the prospect of higher rates if market interest rates rise. At the same time, the development and wide use of credit scores for individual borrowers and credit ratings for individual issuances of mortgage-backed securities provided more information for both lenders and borrowers to better assess and price risk.

¹ James R. Barth, Susanne Trimboth, and Glenn Yago, eds., *The Savings and Loan Crisis: Lessons from a Regulatory Failure* (Norwell, MA: Kluwer Academic Publishers, 2004).

² James R. Barth, Tong Li, Triphon Phumiwasana, and Glenn Yago, "Inverted Yield Curves and Financial Institutions: Is the United States Headed for a Repeat of the 1980s Crisis?" *Banks and Banking Systems*, Vol. 2, Issue 3, 2007.

³ James R. Barth, *The Great Savings and Loan Debacle* (Washington, D.C.: American Enterprise Institute, 1991).

⁴ Office of Thrift Supervision, *2006 Fact Book: A Statistical Profile of the Thrift Industry*, June 2007.



Beginning in the second half of the 1990s, subprime mortgage loans (loans issued to higher-risk borrowers) grew rapidly in importance. Indeed, the subprime share of total originations was less than 5 percent in 1994, increased to 13 percent in 2000, and then further grew to more than 20 percent in both 2005 and 2006. Furthermore, the share of subprime originations packaged into mortgage-backed securities (MBS) more than doubled over the same period, from 31.6 percent to 80.5 percent (see table 1). Security issuance, moreover, was no longer overwhelmingly dominated by Ginnie Mae, Freddie Mac, and Fannie Mae. Home mortgage loans securitized by non-agency entities grew rapidly from \$386 billion in 2000 to \$2.2 trillion in the third quarter of 2007. The growth of subprime lending and non-agency securitization was largely stimulated by relatively low interest rates and increased reliance on credit scoring and risk-based pricing. The ten-year Treasury note rate fell from 6 percent in 2000 to 4 percent in 2003 and stayed relatively flat for the subsequent two years before rising to 4.8 percent in 2006, and remaining relatively flat thereafter. Many lenders and investors were seeking higher yields and the subprime mortgage market promised them. Lending institutions and investors in securities found the subprime-market segment attractive but apparently underestimated the riskiness of subprime loans. At the same time, many borrowers undoubtedly found subprime loans attractive given the substantial increases in home prices that were taking place in many parts of the country. Indeed, home prices jumped nationally at an average annual rate of nearly 9 percent from 2000 to 2006, after only rising an average of slightly less than 3 percent per year in the 1990s (see figure 5). Stated another way, a home worth \$150,000 in 2000 was worth \$251,565 in 2006. This environment undoubtedly fueled substantial optimism on the part of lenders, borrowers, and investors. Mortgage brokers also found subprime loans attractive because they could earn fees while passing along any credit risk.

In the summer of 2007, substantial problems began to emerge in the subprime loan market when several subprime mortgage lenders filed for bankruptcy and other financial firms suffered heavy losses on subprime securities. Furthermore, the rate of foreclosures on subprime loans increased from 2000 to 2006. Some estimates indicate a near doubling of the foreclosure rate over this period, and for loans made in 2006 the foreclosure rate of 5.5 percent after just six months from origination actually exceeded the corresponding foreclosure rates for all previous years (see figure 6). Most of the foreclosures on subprime loans occur in the first few years after the loans have been made (see tables 2 and 3). Indeed, based on LoanPerformance data, the national foreclosure rate on subprime mortgage loans originated in 2006 was slightly higher than 10 percent from January 2006 through September 2007, and nearly 20 percent for loans made in California. As of November 2007, there was one foreclosure for every 617 households, according to RealtyTrac. More generally, some estimates of the total cost of the subprime mortgage meltdown range from \$150 billion to \$500 billion (by comparison, the savings and loan crisis cost \$408 billion in 2007 dollars, of which 82 percent was borne by taxpayers). This troublesome situation has led to many condemnations of subprime mortgage loans (particularly hybrid loans) and securitization.

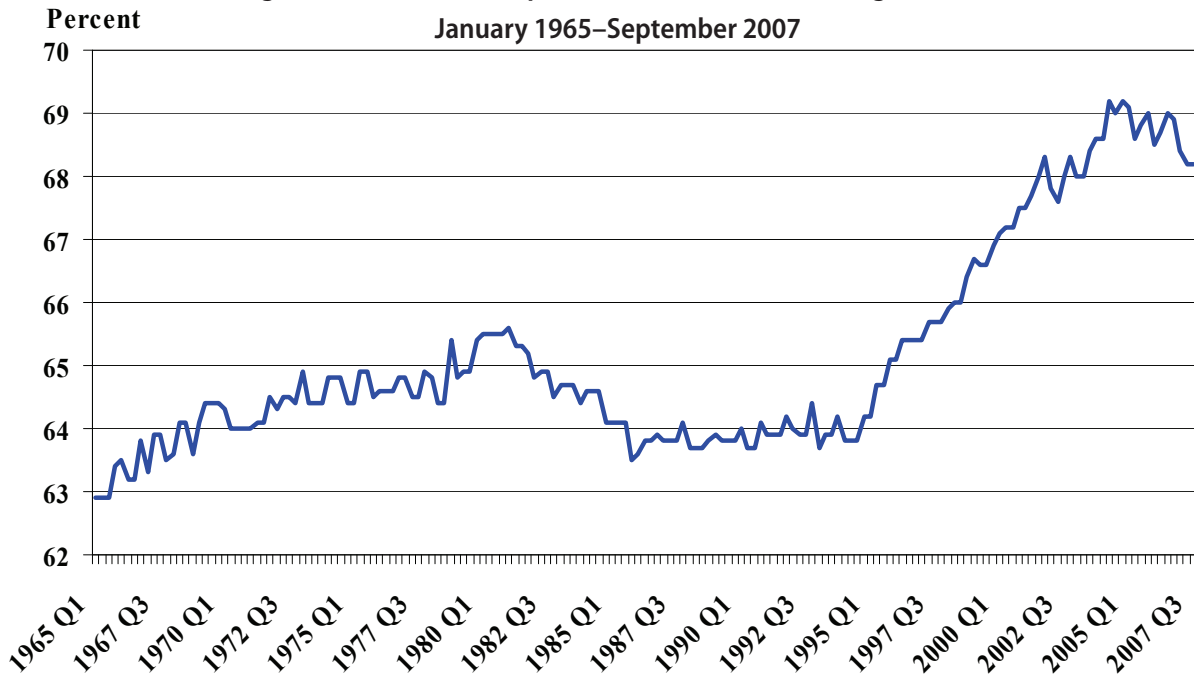
Before overreacting to or overstating the current problems in the subprime loan market, it is important to realize that the growth in this market reflected a combination of factors, including the extension of credit to less creditworthy individuals, increasing first-time homeownership. Subprime loans also let some borrowers improve their creditworthiness and then qualify as prime borrowers. The distinction between prime and subprime borrowers is also not as clear-cut as it might appear. For example, individuals can be considered either prime or subprime borrowers with FICO scores below 620, and the same is true for those with scores



above 620. Indeed, the distinction is artificial insofar as risk-based pricing is used. Furthermore, most of the same types of mortgage products offered to subprime borrowers are also offered to prime borrowers. And the securitization of these products used by all borrowers is important in both enhancing the liquidity of home mortgage loans and increasing the supply of funds for such loans.

Most importantly, the factors that cause individuals to enter foreclosure are generally not based on the type of product they receive, but rather the financial circumstances they find themselves in after they obtain mortgage loans. These factors include unemployment, divorce, health problems, and especially declines in housing prices that leave homes worth less than their outstanding mortgage balances. By recognizing the key role these factors play, it becomes clear that additional legislation and regulations cannot and should not try to prevent subprime lending (or innovation in the mortgage markets more generally), because that will simply shut off credit to less creditworthy individuals who want to become home owners. Instead, actions should focus on better educating consumers on complex loan products and simplifying the documents necessary for informed decision-making. After all, consumers must be allowed to choose mortgage products, even if some expose borrowers to interest-rate risk. Also, both domestic and foreign investors in securities backed by subprime loans—particularly in the more exotic types—must more fully appreciate the fact that the marketplace is sometimes quite harsh in punishing those who seek out ever-higher returns without properly taking into account and being able to accurately assess the correspondingly greater risk. Lastly, in view of the fundamental determinants of foreclosures, more thought should be given to what foreclosure rate is acceptable on subprime mortgage loans in the absence of fraud on the part of either the lender or borrower. Surely it would be unreasonable to enact legislation or implement regulations based on the premise that the socially desirable foreclosure rate is zero. If that were the case, hardly anyone would qualify for a home mortgage loan.

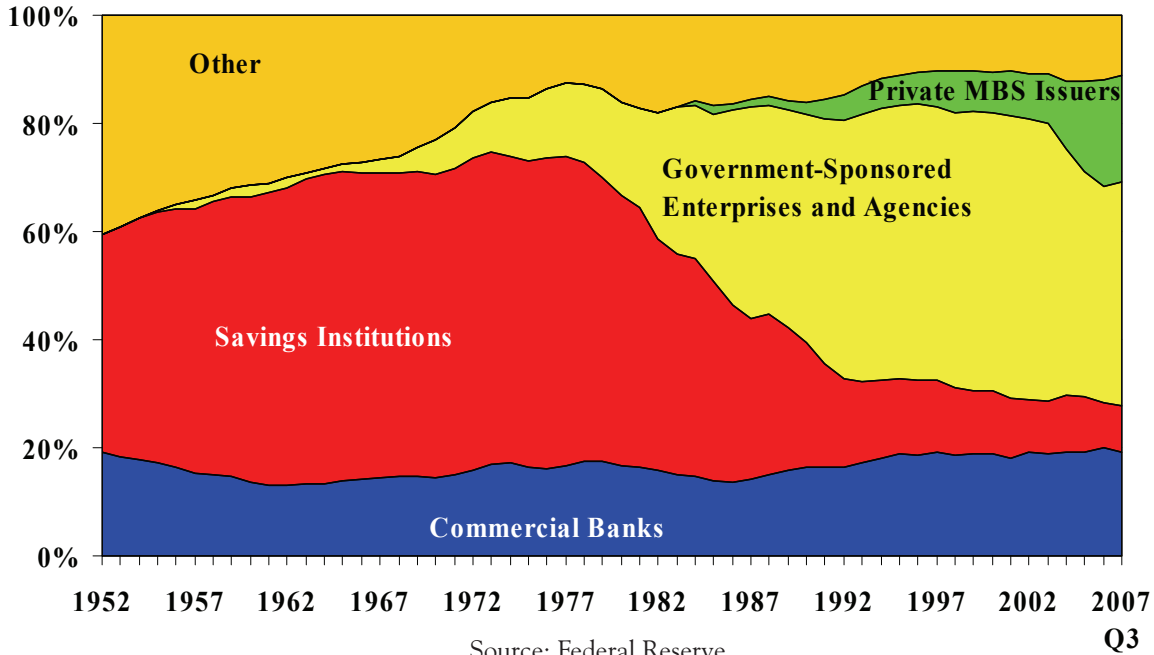
Figure 1: Homeownership Rate Reaches an All-Time High in 2004



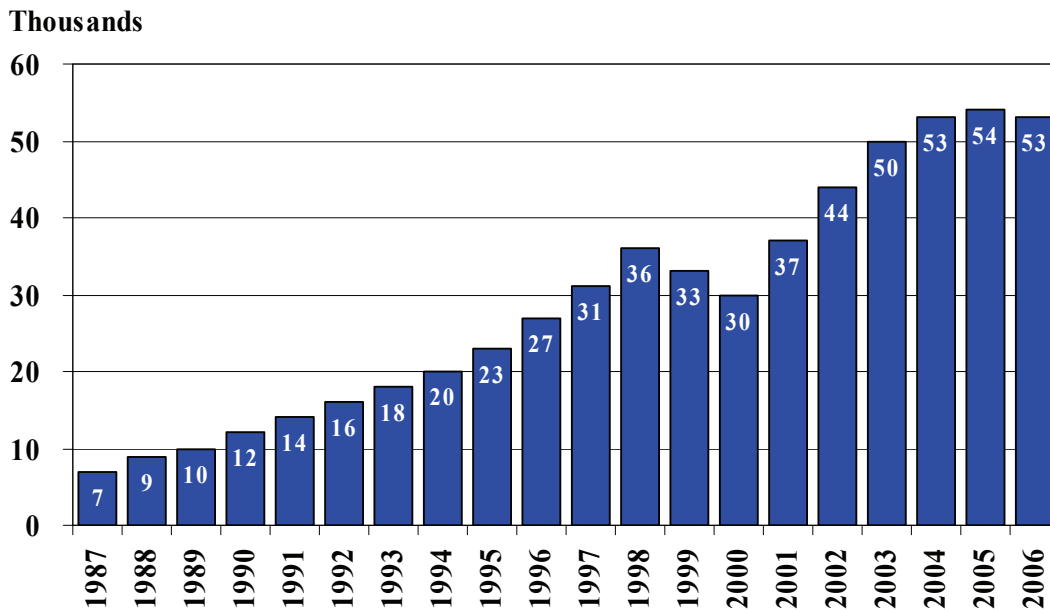
Source: U.S. Census Bureau



**Figure 2: Securitization Has Replaced Financial Institutions in Funding Home Mortgages
January 1952–September 2007**

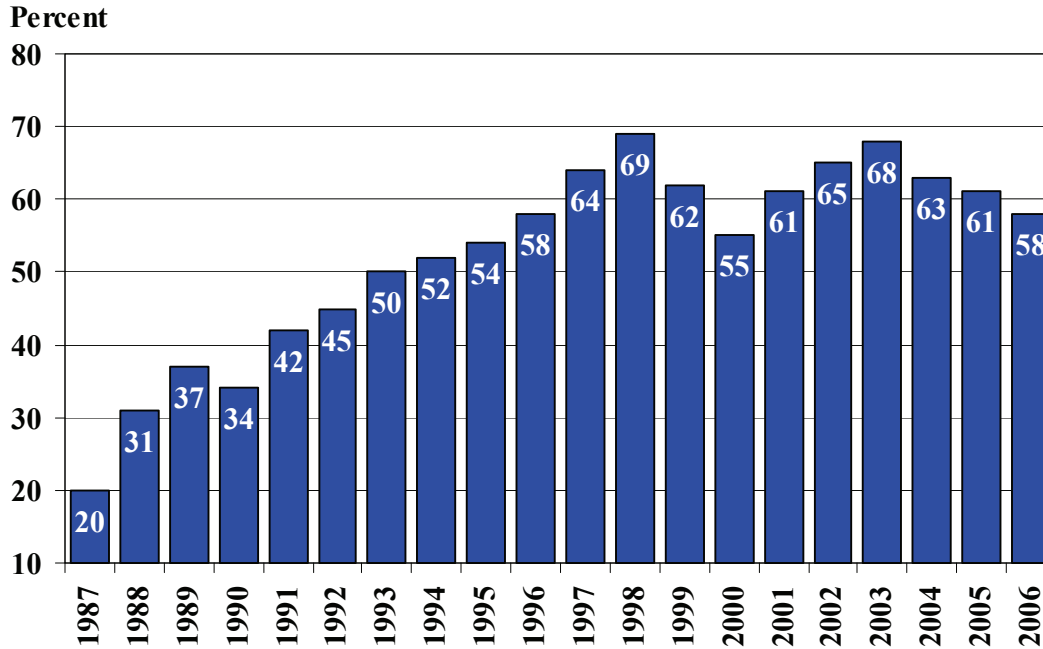


**Figure 3: Mortgage Brokerages Become Major Players in Originating Home Mortgages
1987–2006**





**Figure 4: Mortgage Brokers Account for a Majority of Recent Mortgage Originations
1987–2006**



Source: Wholesale Access

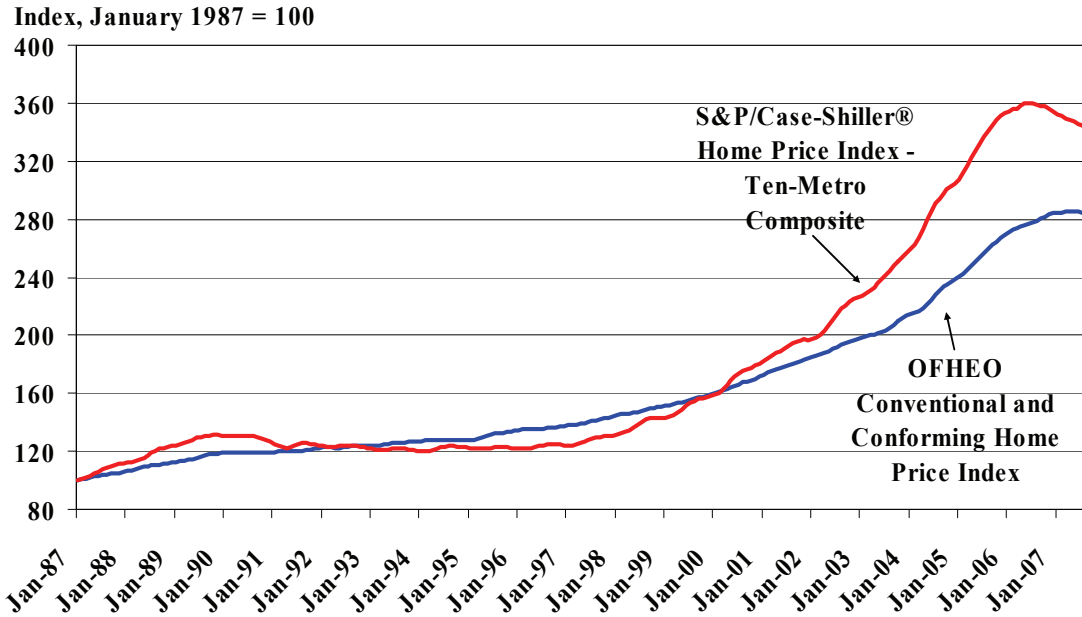
**Table 1: Growing Importance of Subprime and Securitization of Home Mortgage Originations
1994–2006**

| Year | Total Originations (US\$ Billions) | Prime Market Share of Total (Percent) | Subprime Market Share of Total (Percent) | Subprime MBS Market Share of Total (Percent) | Share of Subprime MBS of Subprime Originations (Percent) |
|------|------------------------------------|---------------------------------------|--|--|--|
| 1994 | 773 | 94.0 | 4.5 | 1.4 | 31.6 |
| 1995 | 639 | 86.9 | 10.2 | 2.9 | 28.4 |
| 1996 | 785 | 83.2 | 12.3 | 4.5 | 36.4 |
| 1997 | 859 | 78.3 | 14.5 | 7.3 | 50.0 |
| 1998 | 1,450 | 84.0 | 10.3 | 5.7 | 55.1 |
| 1999 | 1,310 | 83.2 | 12.2 | 4.6 | 37.9 |
| 2000 | 1,048 | 81.5 | 13.2 | 5.3 | 40.5 |
| 2001 | 2,215 | 87.9 | 7.8 | 4.3 | 55.2 |
| 2002 | 2,885 | 88.4 | 7.4 | 4.2 | 57.1 |
| 2003 | 3,945 | 86.5 | 8.4 | 5.1 | 61.0 |
| 2004 | 2,920 | 68.1 | 18.2 | 13.7 | 75.7 |
| 2005 | 3,120 | 62.4 | 21.3 | 16.3 | 76.3 |
| 2006 | 2,980 | 63.7 | 20.1 | 16.2 | 80.5 |

Source: The 2007 Mortgage Market Statistical Annual, Inside Mortgage Finance

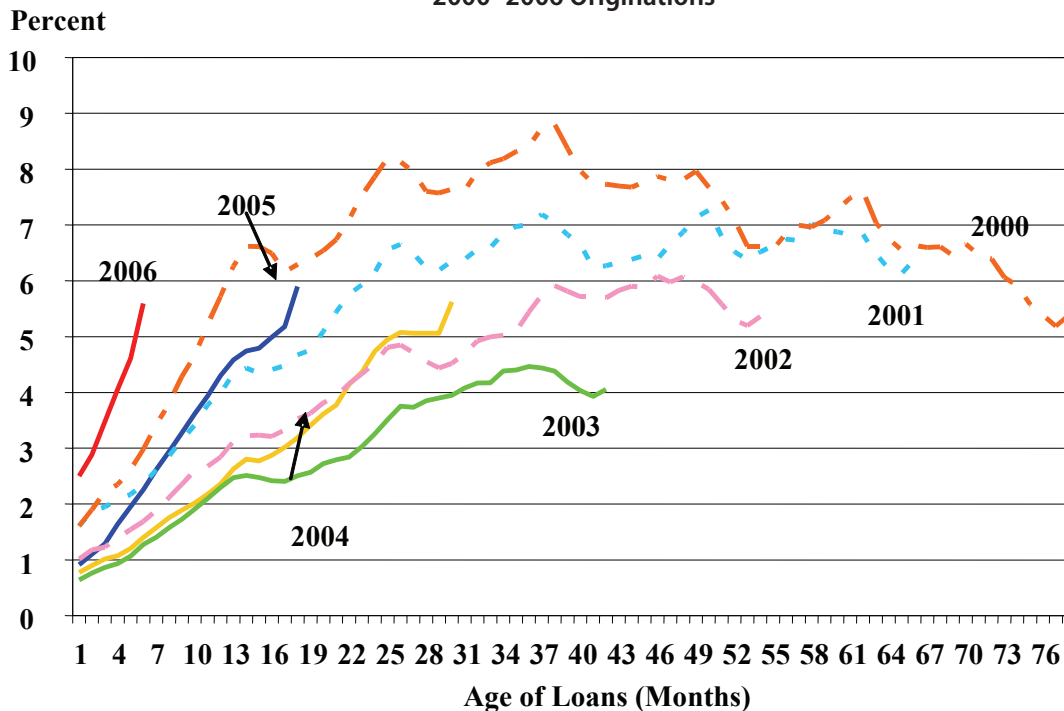


Figure 5: Home Prices Peak in 2006 and Subsequently Decline
 January 1987–September 2007



Sources: S&P/Case-Shiller and OFHEO

Figure 6: Foreclosure Rates on Recent Subprime Mortgage Originations Rise Sharply
 2000–2006 Originations



Source: LoanPerformance



Table 2: National Subprime Foreclosure Rates by Origination Year*

| Foreclosure Rates in Origination Year and Subsequent Years | Origination Year | | | | | | | | Year to July 2007 |
|---|------------------|---------|---------|---------|-----------|-----------|-----------|-----------|-------------------|
| | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | |
| Origination Year | 1.30 | 1.50 | 1.85 | 1.07 | 0.82 | 0.86 | 0.97 | 2.56 | 3.01 |
| 1st year | 6.33 | 6.86 | 7.17 | 5.51 | 4.14 | 3.93 | 6.38 | 7.69 | |
| 2nd year | 5.46 | 6.01 | 5.81 | 4.55 | 3.11 | 3.66 | 4.66 | | |
| 3rd year | 4.85 | 3.35 | 4.23 | 2.37 | 2.23 | 1.85 | | | |
| 4th year | 2.29 | 2.49 | 1.88 | 1.56 | 0.83 | | | | |
| 5th year | 2.05 | 1.19 | 1.17 | 0.59 | | | | | |
| 6th year | 0.79 | 0.71 | 0.48 | | | | | | |
| 7th year | 0.56 | 0.30 | | | | | | | |
| 8th year | 0.24 | | | | | | | | |
| Total Number of Foreclosures From Origination through September 2007 | 188,026 | 165,801 | 140,195 | 124,781 | 127,100 | 176,729 | 231,360 | 140,278 | 13,272 |
| Total Number of Originations | 787,420 | 739,749 | 620,945 | 797,625 | 1,143,037 | 1,716,141 | 1,925,780 | 1,368,706 | 440,934 |
| Foreclosure Rate through September 2007 | 23.88 | 22.41 | 22.58 | 15.64 | 11.12 | 10.30 | 12.01 | 10.25 | 3.01 |

*Foreclosure rates are based on the number of loans starting foreclosure.

Source: LoanPerformance

Table 3: California Subprime Foreclosure Rates by Origination Year*

| Foreclosure Rates in Origination Year and Subsequent Years | Origination Year | | | | | | | | Year to July 2007 |
|---|------------------|--------|--------|---------|---------|---------|---------|---------|-------------------|
| | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | |
| Origination year | 0.88 | 0.76 | 1.01 | 0.70 | 0.48 | 0.50 | 0.76 | 5.20 | 4.88 |
| 1st year | 4.03 | 3.72 | 4.29 | 3.18 | 2.08 | 2.04 | 5.97 | 14.10 | |
| 2nd year | 3.01 | 2.99 | 2.74 | 1.68 | 0.79 | 1.46 | 5.51 | | |
| 3rd year | 2.66 | 1.26 | 1.17 | 0.36 | 0.34 | 0.85 | | | |
| 4th year | 0.93 | 0.49 | 0.22 | 0.16 | 0.12 | | | | |
| 5th year | 0.46 | 0.11 | 0.12 | 0.06 | | | | | |
| 6th year | 0.12 | 0.07 | 0.04 | | | | | | |
| 7th year | 0.06 | 0.02 | | | | | | | |
| 8th year | 0.03 | | | | | | | | |
| Total Number of Foreclosures From Origination through September 2007 | 9,160 | 8,389 | 9,528 | 9,137 | 8,944 | 16,161 | 39,198 | 31,295 | 2,973 |
| Total Number of Originations | 75,224 | 88,915 | 99,412 | 148,796 | 235,065 | 333,327 | 320,200 | 162,134 | 60,871 |
| Foreclosure Rate through September 2007 | 12.18 | 9.43 | 9.58 | 6.14 | 3.80 | 4.85 | 12.24 | 19.30 | 4.88 |

*Foreclosure rates are based on the number of loans starting foreclosure.

Source: LoanPerformance



About the Authors

James R. Barth is a Senior Fellow at the Milken Institute and Lowder Eminent Scholar in Finance at Auburn University. Tong Li is a Senior Research Analyst, Triphon Phumiwasana is a Research Economist, and Glenn Yago is Director of Capital Studie, at the Milken Institute.