



From the Subprime to the Exotic: Excessive Mortgage Market Risk and Foreclosures

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From the Subprime to the Exotic

Problem: The recent rapid growth of high-risk mortgage lending raised the financial risk profile facing not only the American homeowner but entire neighborhoods. From the perspective of planners, the problem of increased and geographically concentrated foreclosures is the most critical outcome that has resulted from high-risk mortgage markets.

Purpose: This article analyzes recent trends in mortgage finance in order to recommend what local planners can do to reduce the negative consequences of high-risk home lending for their own communities.

Methods: I plot public and private data, much of it readily available for little or no cost, to discover where in the nation recent mortgage foreclosures are concentrated, and describe how similar analysis could be used prospectively and at a local scale to anticipate future problems.

Results and conclusions: Numbers of subprime, exotic, and zero-down-payment mortgages have all been growing. Where they are spatially concentrated they are linked to rising and geographically concentrated home mortgage foreclosures. I find evidence that subprime lenders achieve greater market penetration in metropolitan areas with less educated residents, and that higher-risk lending is more prevalent where housing prices are high and increasing. I also find that when local housing markets are hot, even high levels of subprime lending are associated with only slightly higher foreclosure filing rates, but foreclosure rates rise quickly when hot markets cool.

Takeaway for practice: Although foreclosures are less likely to be a severe problem in very strong real estate markets, when prices in previously hot markets stagnate or decline, foreclosures can quickly follow. This is a serious concern given recent trends in mortgage financing that have extended credit to more economically vulnerable populations and generally weakening housing markets in many metropolitan areas. These foreclosures tend also to be spatially concentrated within metropolitan areas, particularly stressing housing markets in neighborhoods where the higher-risk products are more prevalent. I recommend that planners: (1) track local

Excessive Mortgage Market Risk and Foreclosures

Dan Immergluck

The history of housing finance in the United States is filled with examples of how changes in mortgage markets and government loan programs have had major impacts on neighborhoods and urban form (Jackson, 1985; Rusk, 1999). Yet planners and policymakers have historically paid little attention to housing finance. This article examines how changes in mortgage markets since the middle 1990s led to a dramatic widening of the risk spectrum of mortgage products and to problems of increased and geographically concentrated foreclosures.

Though nationally diversified bond and securities markets tolerated high levels of aggregate risk until late 2006, and the problem of excessive risk in U.S. mortgage markets became front-page news only in 2007, by that time many communities around the country had already been dealing with the problems of increasing and concentrated foreclosures for several years. National awareness increased when housing markets in California, Florida, and the Northeast that had been experiencing high rates of appreciation began slowing in 2006, and local foreclosure rates in these places increased dramatically, pushing up national levels of foreclosures. This devalued the securities backed by deteriorating subprime and alternative mortgages. Moreover, as adjustable rate loans with initially low, teaser¹ interest rates began resetting to higher levels, many

lending and foreclosure patterns; (2) promote healthier mortgage markets in vulnerable areas; (3) fund targeted foreclosure prevention and counseling; (4) develop refinancing/restructuring programs; (5) redesign programs to promote sustainable homeownership; (6) get foreclosed properties reoccupied quickly; (7) recognize the effect of foreclosure surges on rental housing markets; and (8) be proactive in policy debates on lending regulation and foreclosure processes.

Keywords: mortgage lending, subprime mortgages, zero-down-payment, foreclosure, housing

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markets that had already reached high levels of foreclosures experienced even greater problems.

This article begins by examining how changes in mortgage markets since the middle 1990s led to huge growth in high-risk loan products. I consider the recent rapid growth of three types of home-purchase mortgage products:

1. *Subprime mortgages* are home loans with relatively high interest rates (and often higher up-front fees) that are generally intended for borrowers whose credit histories are insufficient to qualify for prime mortgages. The higher rates are designed to at least compensate for the higher risks involved in these loans. Research shows that a nontrivial portion of subprime borrowers (estimates range from 10% to almost 40%) could have qualified for lower-priced prime loans (Gruenstein-Bocian, Ernst, & Li, 2006).
2. *Exotic mortgages* include interest-only loans, payment-option loans, negative amortization loans, piggy-back mortgages, and Alt-A loans.² While some subprime loans include one or more exotic mortgage features, many exotic loans are made at prime or near-prime interest rates to borrowers with good credit.
3. *Zero-down-payment mortgages* are home purchase loans that do not require borrowers to put up any money for equity in the home. This category also includes down-payment-assistance programs, in which third parties or developers provide the down payment as a grant to the homebuyer. A zero-down-payment mortgage may be priced as prime or subprime, and may contain exotic features.

I examine patterns in where these products were sold, and conclude that, particularly where such lending is spatially concentrated, it is linked to rising and geographically concentrated home mortgage foreclosures, with serious negative impacts on neighborhoods and urban areas. This should be of particular concern to planners, as concentrated foreclosures create substantial negative impacts: abandoned property, crime, public safety costs, and reduced property values (Apgar & Duda, 2005; Immergluck & Smith, 2006). I conclude with what local planners can do to reduce the negative effects of these national trends on their own communities.

Growth in High-Risk Home Purchase Loans

Since the early 1990s, subprime mortgages have grown dramatically. The industry publication *Inside Mortgage Finance* calculates that subprime lending grew from approximately \$35 billion in 1994 to \$665 billion in 2005 (Schloemer, Li, Ernst, & Keest, 2006). I focus only on home purchase loans in this article. While much of this growth was in the refinance sector in the earlier years, subprime loans were a substantial share of the home purchase loan market by the late 1990s, and by 2004 they constituted more than one in eight home purchase loans. Moreover, while the subprime share of refinance loans has ebbed and flowed with interest rate fluctuations, the subprime share of purchase loans grew steadily through 2006. Figure 1 shows changes in the composition of the home purchase loan market, including that the government share of purchase loans (mostly those insured by the Federal Housing Administration [FHA]) has declined substantially. Subprime lenders have managed to take market share from the FHA program. Though FHA foreclosure rates are high relative to prime loans, subprime foreclosure rates generally run even higher.

Metropolitan Factors Related to High Levels of Subprime Lending

The importance of subprime lending to the home purchase market has varied considerably among metropolitan areas. While subprime loans for home purchases have been increasing in most markets since the middle 1990s, Figure 2, which tracks the growth in subprime purchase lending from 1997 to 2003 in 103 U.S. metropolitan areas with populations of at least 500,000 in 2000, shows that it grew considerably more in some places than others. Many California metropolitan areas, for example, experienced very large increases.

To better understand why the increases were greater in some metropolitan areas, and thereby suggest which factors might be most closely related to a region's mortgage risk profile, I used a regression model to estimate the shares of home purchase loans that were subprime in these metropolitan areas in 2003. I controlled for their shares of home purchase loans that were subprime in 1997, and for the other demographic and housing stock characteristics likely to affect their subprime shares. These include: the size of the median purchase loan, the proportion of buyers who were Black, the proportion of buyers who were Hispanic, the proportion of residents who had at least a college degree (hereafter called educational attainment), the proportion of housing units over 50 years old, the ratio of the FHA loan

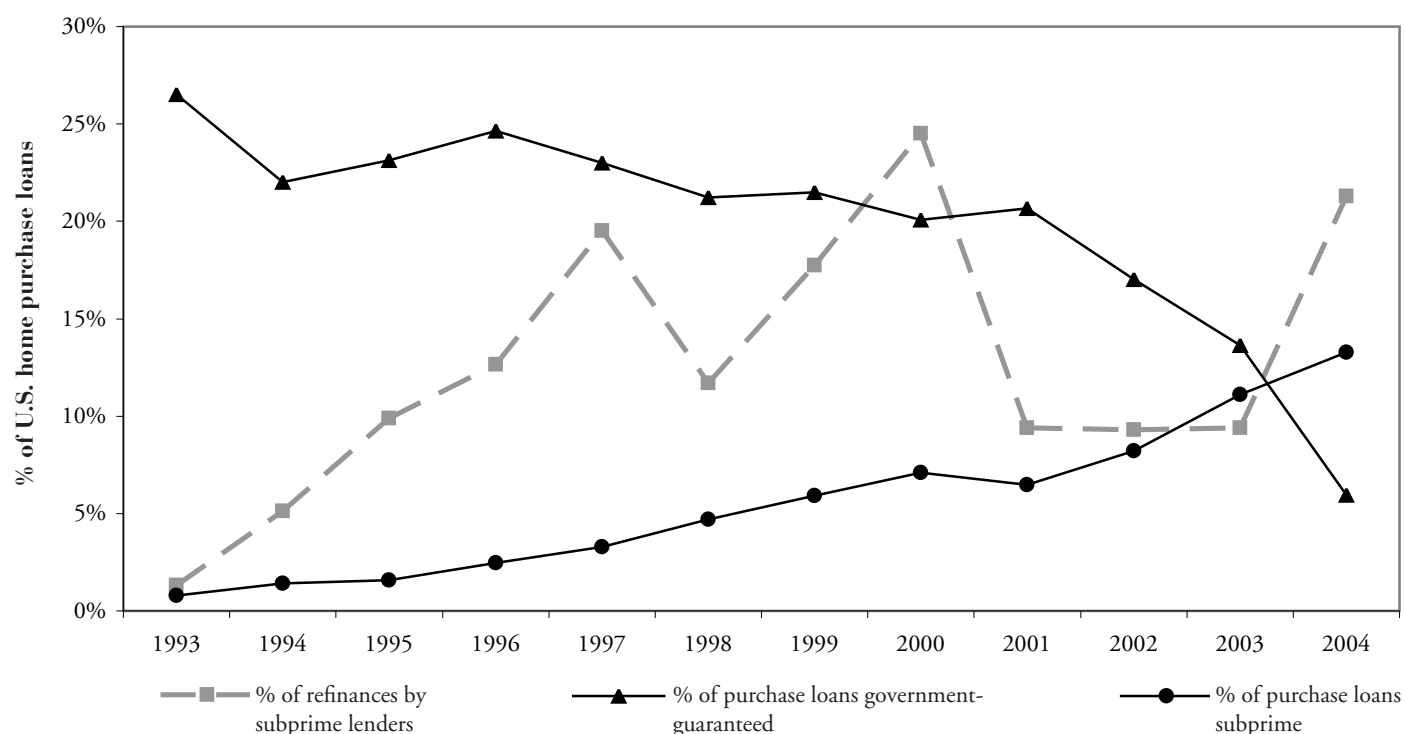


Figure 1. Percentage of U.S. home purchase loans that are government-guaranteed and subprime and percentage of U.S. home refinances by subprime lenders, 1993–2003.

Source: HMDA data compiled by Scheessele (1999) for 1993 to 1996, and by author using Federal Financial Institutions Examination Council (2007) data for 1997–2004.

limit to the median loan amount, the ratio of median borrower income to median loan size, and the unemployment rate.³ I also included 1997 to 2003 changes in median loan size, the racial and ethnic composition of buyers, and the unemployment rate as explanatory variables. These variables generally reflect the factors that are expected to impact loan risk or the demand or supply of subprime versus prime loans. For example, race has been shown to be a significant factor in whether borrowers are expected to receive a subprime as opposed to a prime loan (Gruenstein-Bocian et al., 2006). Several of these variables are likely to be somewhat endogenous, so I used a two-stage least-squares model.⁴

Table 1 provides the results of the second stage of my model. The signs of most coefficients are generally as I expected, with positive coefficients on Black and Hispanic buyer shares, older housing units, unemployment rate, change in unemployment, ratio of loan size to FHA limit, change in median loan size, and 1997 subprime share. However, with the exception of the 1997 subprime share and change in median loan size, these variables are not significant at conventional levels.⁵ The most striking findings from Table 1 are those regarding educational

attainment and the income-to-loan-size ratio. Higher educational attainment is negatively related to the growth of subprime share in a statistically significant way. A one-standard-deviation increase in educational attainment (increasing metropolitan area residents with at least a college education by at least 6%, compared to a mean of approximately 26%) is associated with a decrease of approximately 1.9 percentage points in subprime share (with a mean of 11.1% and standard deviation of 5.8%). This is consistent with a finding by Hershaff, Wachter, and Russo (2005). It suggests that subprime lenders achieve greater penetration in markets with weaker educational attainment, and that some growth in subprime lending may result from successfully marketing these loan products to less sophisticated borrowers.

The relationship between the ratio of median income to loan size and the 2003 subprime share is negative and somewhat nonlinear. Thus, higher shares of subprime purchase loans are associated with smaller income-to-loan ratios, and higher leverage rates overall. In relatively less affordable metropolitan areas, like many in California, subprime shares are especially sensitive to income-to-loan

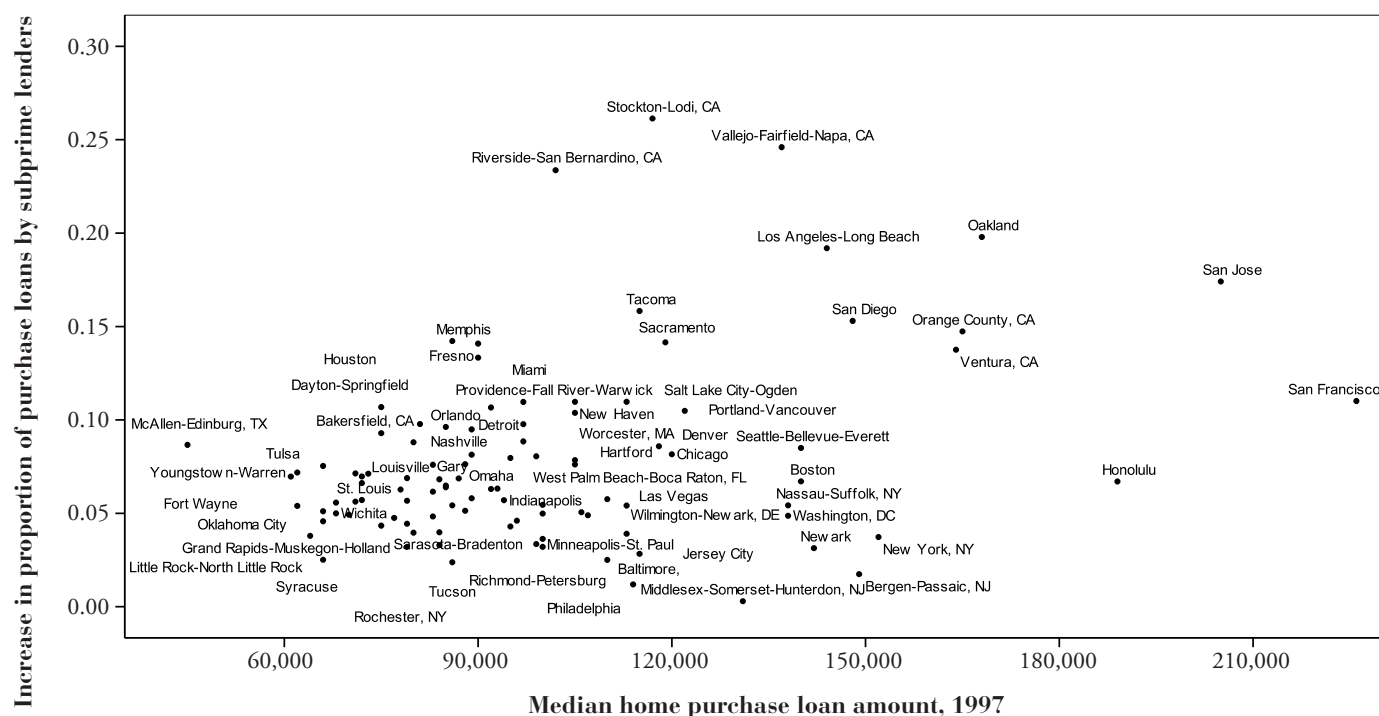


Figure 2. Increase in the subprime share of home purchase loans 1997–2003 versus median 1997 loan amounts, for 103 large U.S. metropolitan areas.

Source: Author's calculations using HMDA data from Federal Financial Institutions Examination Council (2007).

ratios. This may be partly due to the growth of nonconforming jumbo or exotic mortgages (discussed in the next section) in higher-cost markets (LoanPerformance, 2006). Subprime lenders offer these risky mortgages because, as with their other products, they aim for higher profits to compensate for higher risks, and they have superior access to higher risk capital.

The growth in median loan size from 1997 to 2003 is statistically and positively related to subprime share in 2003. I expected this for two reasons. First, home values grew faster than income during this time. Thus people sought larger loans to buy homes, and demand for large mortgages increased. Many subprime lenders underwrite loans at higher debt-to-income ratios than prime lenders. Second, as home values and loan sizes grew, many exceeded limits set by FHA and the two Government-Sponsored Enterprises (GSEs), Fannie Mae and Freddie Mac.⁶ Because subprime lenders were not constrained by these limits, and because they had greater access to higher risk capital, they were in a strong position to serve these markets.

Increasing Exotic Mortgages and High Housing Prices

The growth of nontraditional or “exotic” mortgage products, which are marketed to both prime and subprime borrowers, gained considerable momentum after 2001. Before this, many of these products and loan features either did not exist or were marketed quite selectively to wealthy homebuyers and real estate investors. The proliferation of these products has been attributed to a number of factors, including deregulation, the vertical disintegration of the mortgage industry (including the increase in third-party mortgage brokers and increased nonagency securitization⁷ as a primary source of capital), the globalization of capital sources, and the specialization of lenders and investors (Fishbein & Woodall, 2006). Many of these same forces had previously spurred the growth of the subprime market (Wyly, Atia, & Hammel, 2004).

The available indicators show strong growth in exotic mortgages, especially from 2001 to 2005. LoanPerformance, Inc. tracks loans sold to third parties other than the GSEs Fannie Mae and Freddie Mac. While this leaves out a sizeable segment of the overall mortgage market, it likely includes a large portion of the growth in exotic loans.

Table 1. Results of model predicting share of 2003 home purchase loans made by subprime lenders in U.S. metropolitan areas with populations over 500,000 in 2000.

| | Mean | Std. dev. | B | Std. error | Beta | Signif. |
|---|--------|-----------|-------------------------|------------------------|--------|---------|
| Constant | | | 1.107 | 0.270 | | 0.000 |
| Proportion of purchase loans made by subprime lenders, 1997 | 0.111 | 0.058 | 0.594 | 0.353 | 0.198 | 0.096 |
| Median home purchase loan size, 1997 | 0.033 | 0.019 | -8.320×10^{-7} | 5.449×10^{-7} | -0.457 | 0.130 |
| Proportion buyers who were Black, 1997 | 0.060 | 0.046 | 0.164 | 0.253 | 0.132 | 0.518 |
| Proportion buyers who were Hispanic, 1997 | 0.068 | 0.113 | 0.086 | 0.057 | 0.168 | 0.135 |
| Proportion residents with college degree or more, 2000 | 0.262 | 0.060 | -0.315 | 0.134 | -0.327 | 0.021 |
| Proportion of housing units built before 1950, 2000 | 0.207 | 0.127 | 0.042 | 0.046 | 0.093 | 0.356 |
| Ratio of median loan size to FHA limit, 1997 | 0.381 | 0.067 | 0.057 | 0.120 | 0.067 | 0.635 |
| Ratio of median buyer income to median loan size, 1997 | 0.536 | 0.078 | -3.186 | 0.844 | -4.291 | 0.000 |
| Ratio of median buyer income to median loan size, 1997, squared | 0.293 | 0.086 | 2.463 | 0.693 | 3.671 | 0.001 |
| 1997 unemployment rate | 0.051 | 0.023 | 0.178 | 0.520 | 0.071 | 0.732 |
| Change in unemployment rate, 1997–2003 | 0.015 | 0.018 | 0.458 | 0.445 | 0.140 | 0.307 |
| Instrumented variables | | | | | | |
| Ratio of median purchase loan size, 1997–2003 | 0.448 | 0.187 | 0.121 | 0.060 | 0.392 | 0.047 |
| Change in proportion of buyers who were Black, 1997–2003 | -0.005 | 0.015 | 0.809 | 1.701 | 0.212 | 0.636 |
| Change in proportion of buyers who were Hispanic, 1997–2003 | 0.018 | 0.023 | 1.281 | 0.896 | 0.515 | 0.156 |

N = 103

R² = .672**Notes:**

Instrumental variables include: (1) Percent change in Office of Federal Housing Enterprise Oversight home price index, 1997–2003 (for Ratio of median purchase loan size, 1997–2003); (2) Change in proportion of residents who were non-Hispanic Black, 1990–2000 (for Change in proportion of buyers who were Black, 1997–2003); and (3) Change in proportion of residents who were Hispanic, 1990–2000 (for Change in proportion of buyers who were Hispanic, 1997–2003).

These data show that among tracked loans, those that were interest-only rose from under 5% in 2001 to approximately 35% in 2005 (LoanPerformance, 2006). Negative amortization loans rose from less than 1% in 2003 to more than 7% by 2005. In California, this figure topped 17% in 2005. LoanPerformance also listed 12 metropolitan areas in California and 10 in other states where interest-only loans accounted for more than 50% of the loans that they track.

Many, if not most, exotic mortgages involve adjustable interest rates, especially those made between 2003 and 2005, when exotic mortgages became popular. Initially low interest rates, which later rose substantially, made these adjustable rate mortgages (ARMs) appear more affordable than they have since turned out to be, contributing to their popularity. One estimate is that in the first half of 2005, 9 out of 10 interest-only loans were adjustable rate mortgages (Fishbein & Woodall, 2006). Much of the increase

in ARM activity in recent years has been attributed to exotic products.

The Federal Housing Finance Board's Monthly Interest Rate Survey (MIRS) of major lenders (Federal Housing Finance Board, 2006) tracks the prevalence of ARMs (both traditional and exotic) among home purchase loans. Figure 3 indicates the shares of home purchase loans that were ARMs from 1990 to 2004. Because large loans that exceed GSE purchasing limits (called *jumbo* mortgages) are more likely to be ARMs, the figure distinguishes between jumbo and non-jumbo loans. Figure 3 shows that the share of mortgages that are ARMs fluctuates widely. Traditionally, as rates for fixed-rate loans fall, the short-term savings that ARMs can provide decline, and fixed-rate loans increase. This was the case from 1990 to 1992. As rates rose from 1998 to 2000, ARMs increased as expected. However, the expected pattern was disrupted thereafter, suggesting that the greater number of ARMs was driven by something

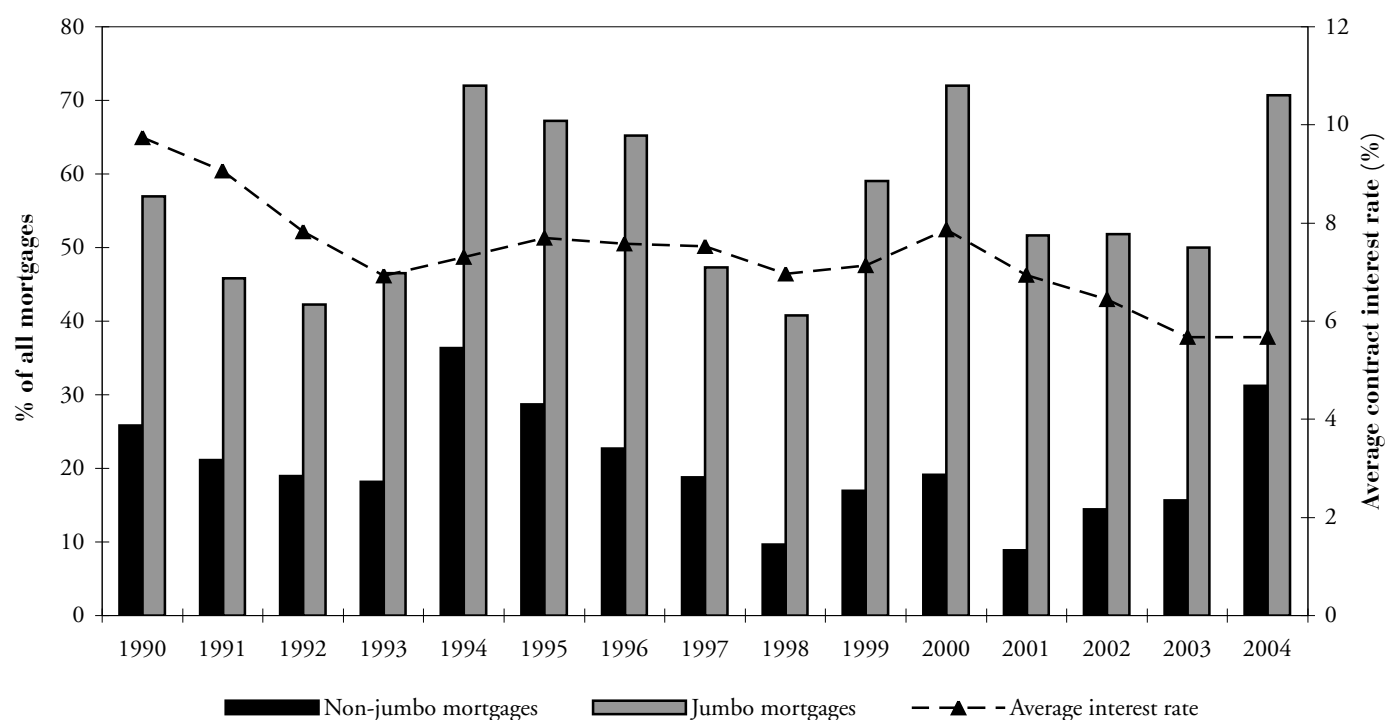


Figure 3. Percentage of conventional jumbo and non-jumbo mortgages with adjustable rates, 1990–2004.

Source: Federal Housing Finance Board (2006).

other than prevailing fixed interest rates. From 2001 to 2003 interest rates generally fell and ARMs held steady for jumbo loans and increased for non-jumbo mortgages. Then, although rates remained relatively flat, ARMs increased dramatically in 2004, making up 71% of jumbo loans and 31% of non-jumbo loans according to the MIRS data. Even so, these data likely understate ARM growth in later years, especially in the subprime market and for loans with teaser introductory rates.⁸

The Federal Housing Finance Board provides historical MIRS data on ARM share for some of the largest metropolitan areas. Figure 4 plots the proportion of conventional home purchase loans that were ARMs in 2004 against average home prices in 2004 for 31 large metropolitan areas. It indicates that higher home prices in a metropolitan area tend to coincide with a higher share of ARMs.

Some say rising property values drive increases in exotic mortgages. However, such products also enable buyers to afford higher cost homes, fueling demand and potentially causing higher home prices. Many lenders have promoted such products as means for buyers to afford larger homes,⁹ taking on the added risk in part because they and/or the investors in their mortgage-backed securities

were confident that properties would appreciate sufficiently to cover any losses. Moreover, in higher-priced markets, the profits made off the larger loans were expected to be large enough to compensate for anticipated future losses.

Growing Numbers of Zero-Down-Payment Loans

During much of the 20th century, the standard down-payment requirement for a home purchase loan was 20%. Until the 1990s, down payments below 20% typically required either private mortgage insurance or the use of a government-insured or government-guaranteed loan. Some buyers receive seller-funded down-payment assistance. Public and nonprofit entities sponsor zero-down-payment loan programs to subsidize homeownership. The Veterans Administration introduced a zero-down-payment loan program as early as 1944 (Government Accountability Office, 2005a). The FHA followed with a program permitting down payments of 5% in 1948 and then 3% in 1957. In the 1970s, the GSEs began purchasing loans on which the homeowner had put as little as 5% down. In 1994, Fannie Mae introduced a 3% down product, and Freddie Mac followed with a similar product in 1998. In 2000, both GSEs began offering

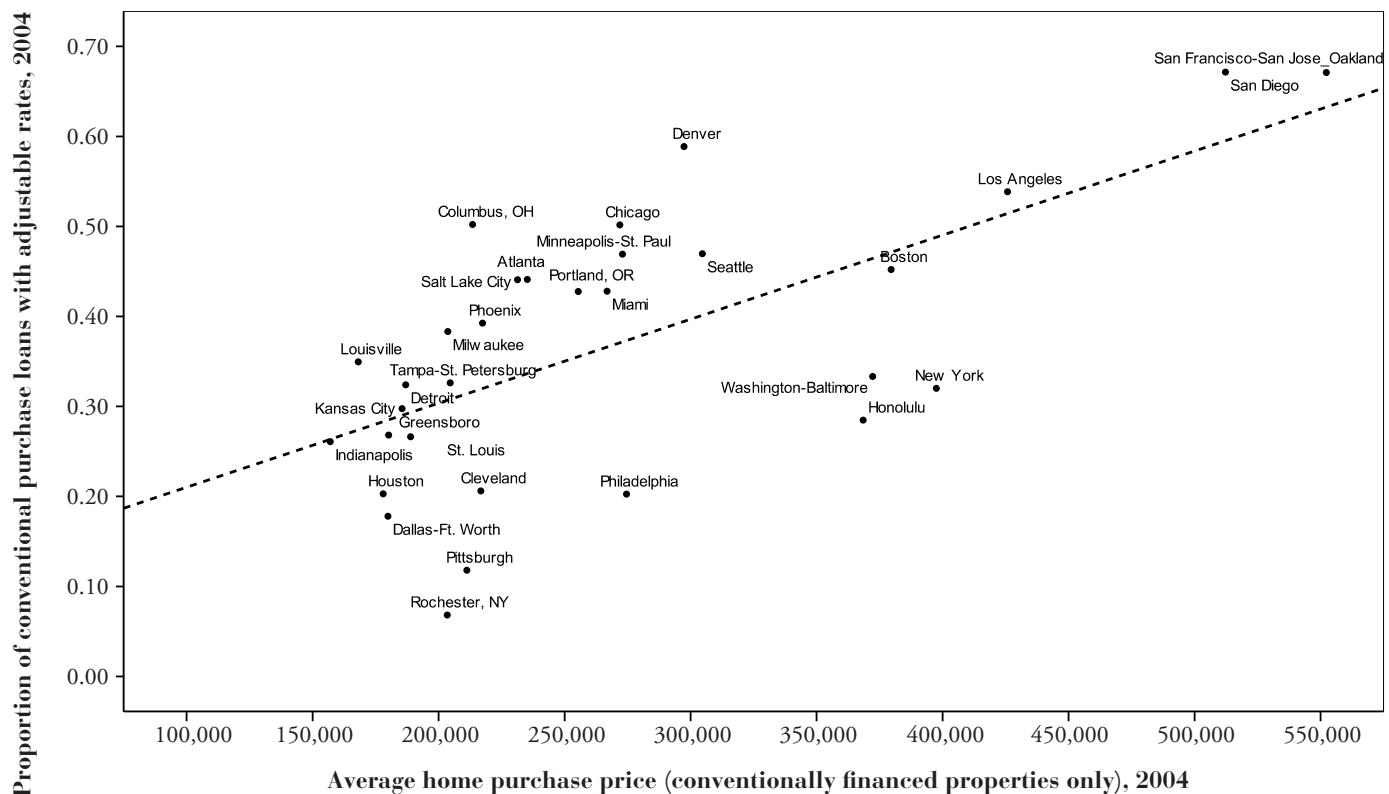


Figure 4. Proportion of conventional mortgages with adjustable rates versus average home purchase price, for 31 large U.S. metropolitan areas, 2004.

Source: Federal Housing Finance Board (2006).

products that required no down payment. While both GSEs continue to offer products requiring down payments of less than 5%, and they have become more popular, the FHA remains a smaller, but still significant, provider of such loans. Almost 90% of FHA loans had loan-to-value ratios (LTVs) above 95% in 2000, while the figures for Fannie Mae and Freddie Mac were 4.4% and 6.1%, respectively (Government Accountability Office, 2005a).¹⁰

According to my calculations using microdata from the 1999 American Housing Survey (AHS), only 5% of owner-occupiers purchasing single-family homes in MSAs (metropolitan statistical areas) in 1998 and 1999 indicated “no down payment” when asked what their main source of the down payment was for their house, but the 2005 AHS data show this figure had reached 13.3% for 2004 and 2005 (U.S. Census Bureau, 1999, 2005). Given that many zero-down-payment programs are aimed at lower-income borrowers, these products are likely to be more concentrated than this in modest-income neighborhoods.

From 2000 to 2005, the proportion of FHA-insured loans that had LTVs greater than 95% and involved down-

payment assistance grew from 35% to nearly 50% (Government Accountability Office, 2006). From 2000 to 2004, the proportion of FHA loans involving down-payment assistance from a nonprofit organization grew from 6% to 30%. Many lenders permit down-payment assistance from third parties, especially for first-time homebuyers. Both the FHA and the GSEs stipulate that such assistance cannot come from anyone with an interest in the sale of the property. However, the FHA traditionally has allowed nonprofits to receive contributions from the seller of the property (often a developer) and then to turn around and provide down-payment assistance to the buyer.¹¹

Trends in Mortgage Products and Foreclosures

Although the expanding availability of subprime, exotic, and zero-down-payment loans has undoubtedly brought benefits to some individual homebuyers, for others it has brought severe financial hardship in the form of

foreclosure. I will not analyze the benefits and costs to individuals here. Instead, I focus on the social costs of these trends as higher and often geographically concentrated foreclosure rates harm neighborhoods and cities. Subprime lending has been the biggest contributor to foreclosures thus far, though exotic mortgages and zero-down-payment mortgages have played roles as well.

Subprime Mortgages and Foreclosures

A substantial body of research points to widespread problems in the subprime market. There is evidence that minority households are more likely to receive subprime mortgages even after controlling for credit quality, and that abusive lending practices have been concentrated in the subprime sector (Gruenstein-Bocian et al., 2006; Nichols, Pennington-Cross & Yezer, 2005; U.S. Department of the Treasury & U.S. Department of Housing & Urban Development [HUD] 2000). However, my main concern is that subprime mortgages have been associated with large, spatially concentrated increases in foreclosures (Apgar & Duda, 2004; Immergluck & Smith, 2005). For the first three quarters of 2006, over 60% of loans entering foreclosure in the United States were subprime, up from approximately 30% in 2003, even though less than 13% of outstanding mortgages were subprime (Nassar, 2007).

A number of recent studies have measured foreclosure rates among subprime loans compared to prime loans (Goldstein, McCullough, Parker, & Urevick-Ackelsberg, 2005; Immergluck & Smith, 2005; Quercia, Stegman, & Davis, 2005; Schloemer et al., 2006). Generally these studies have found that subprime loans of all types foreclose at rates between 10 and 20 times the rate of prime loans, depending on how foreclosures and subprime loans are defined and measured. Although research on the foreclosure rates of subprime home purchase loans specifically has been limited, Schloemer et al. (2006) found that subprime home purchase loans made in 2003 were more than twice as likely to go into foreclosure as subprime refinance loans made that same year. Thus, while subprime purchase and refinance loans are both quite risky, subprime purchase loans are generally even riskier than subprime refinancing loans.

The foreclosure rate of subprime loans has also been worsening. Recent data show that subprime mortgages made in 2006, at the peak of the subprime boom, were likely to go into default and foreclosure substantially sooner than loans made in earlier years (Standard and Poors, 2007). Industry research suggests that overall subprime mortgage default rates doubled between 2004 and 2006, and that loans originated in 2006 were of substantially higher risk than loans originated in earlier years (AEW Research, 2007).

The relationship between subprime purchase lending and foreclosure rates depends on the strength of the local housing market. Because homeowners having difficulty paying their loans in hot housing markets can more easily sell or refinance into more affordable mortgages, I expect foreclosure rates to be lower in such markets, and the available data support this. RealtyTrac, Inc. compiles data on foreclosures¹² for 100 large metropolitan areas, the data for 81 of which are comparable to those for the 103 metropolitan areas I analyzed previously. To estimate a foreclosure filing rate in each of these 81 metropolitan areas, I divided first quarter 2006 foreclosure filings from the RealtyTrac report by the number of home purchase and refinance loans originated in the metro area in 2003 as measured by Home Mortgage Disclosure Act (HMDA) data. Figure 5 plots my estimated metropolitan foreclosure filing rates against the shares of home purchase loans made by subprime lenders in the same metropolitan areas in 2003. As predicted, it indicates that when local housing markets are hot, even high levels of subprime lending are associated with only slightly higher foreclosure filing rates. In markets where appreciation is lower, high levels of subprime lending are associated with substantially higher foreclosure rates. The metropolitan areas within the dotted oval suggest a line with only a small positive slope, indicating that in this group of places with hot housing markets and high housing values, even very high subprime loan shares did not produce high foreclosure rates in early 2006. For metropolitan areas in the dashed oval, whose housing markets were cooler, and for which Figure 5 shows lower median property values, the slope implied is steeper, indicating that for these places, a high subprime lender share is associated with high foreclosure rates.

As of 2003, metropolitan areas with high levels of housing appreciation, including many in California, the Northeast, the Atlantic coast, and Florida, had not suffered the spike in foreclosures that many other places had. While these data are not robust enough for a full multivariate analysis, they are consistent with recent research that found regional home value trends to be an important determinant of foreclosure in the subprime market (Danis & Pennington-Cross, 2005; Schloemer et al., 2006).

Although foreclosures are rarely a severe problem in hot real estate markets, as prices in these areas stagnate or decline, foreclosures can quickly follow. The accelerating problem of subprime foreclosures in 2007 has demonstrated how very strong housing markets in several large regional housing markets propped up the loan performance of nationally diversified subprime lenders and of the securities backed by their loans. When large parts of the country experienced strong housing price appreciation, subprime

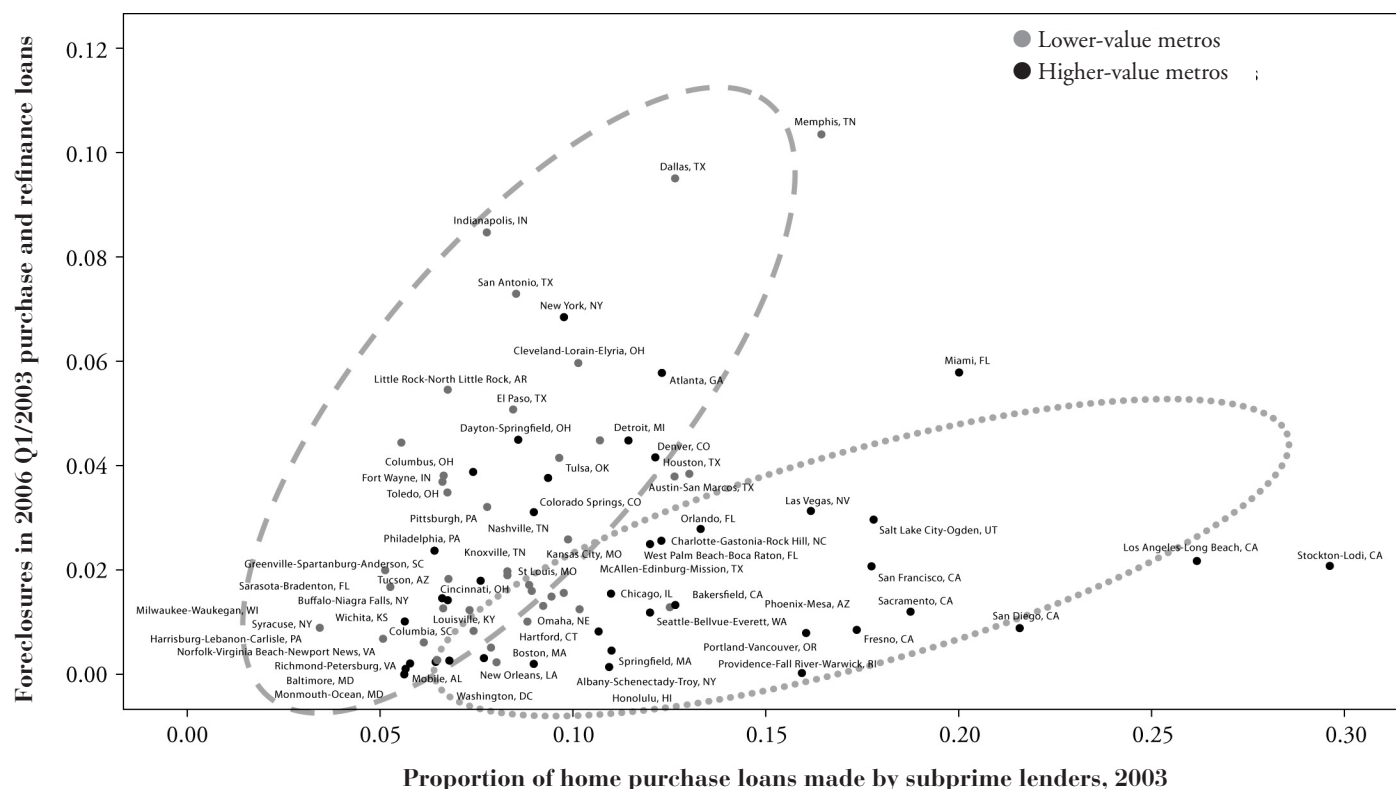


Figure 5. Foreclosure filing rates versus subprime lender shares of home purchase loans for 81 large U.S. metropolitan areas.

Sources: Foreclosure filing rate calculated by the author using data from RealtyTrac, Inc. (2006) and HMDA data from Federal Financial Institutions Examination Council (2007). Share of home purchase loans that were subprime calculated by the author using HMDA data from Federal Financial Institutions Examination Council (2007).

borrowers in these markets were able to sell their homes or refinance into new loans if they had trouble meeting their loan payments when their adjustable rates increased. Loan performance in many weaker markets was already fairly poor, but aggregate national losses were not too far from what investors had generally expected. However, when values stalled and foreclosures increased in large markets that had been experiencing very strong price growth, such as Florida, California, and the Northeast, loss rates began to exceed what securitization models had accounted for, and they did so quite rapidly.

RealtyTrac (2006) data indicate that foreclosures in the first half of 2007 were much higher than they had been in the second half of 2006 in most large metropolitan areas. Foreclosure filings increased in 79 of the 100 metropolitan areas tracked by RealtyTrac over this period, with increases of at least 20 percentage points in 65 of them. After excluding metropolitan areas with fewer than 1,000 foreclosures in the second half of 2006, Table 2 lists the 20 metropolitan areas for which filings increased by the great-

est and smallest percentages between the last half of 2006 and the first half of 2007, a period of rapid deterioration in the subprime mortgage market. Of the 20 metropolitan areas with the largest increases in foreclosures, eight are in California and 5 are in the Northeast. Also on the list are Washington DC, Phoenix, and Las Vegas. These are housing markets in which home prices had been appreciating rapidly until approximately 2006. The metropolitan areas whose foreclosures declined or rose only slightly had smaller subprime shares and in general had been experiencing relatively modest levels of appreciation in recent years.

Spatially concentrated subprime loans can result in poor outcomes for neighborhoods and local governments. A number of studies have shown a disproportionate share of metropolitan foreclosures and increases in foreclosures in recent years to be in lower-income and minority neighborhoods (for a review, see Apgar & Duda, 2004). A study of foreclosures in Atlanta found predominantly minority census tracts had foreclosure rates (as measured by foreclosures per mortgaged unit) approximately 12 times those of

Table 2. Metropolitan areas with highest and lowest levels of growth in foreclosure filings^a between the second half of 2006 and the first half of 2007.

| Metropolitan areas with the highest rates of foreclosure growth | % change, second half 2006 to first half 2007 | Metropolitan areas with the lowest rates of foreclosure growth | % change, second half 2006 to first half 2007 |
|---|---|--|---|
| New Haven–Milford, CT | 275 | Baton Rouge, LA | -78 |
| Washington, DC–Arlington–Alexandria, VA–MD | 225 | Buffalo–Cheektowaga–Tonawanda, NY | -36 |
| Hartford, CT | 168 | Little Rock–North Little Rock, AR | -24 |
| Sacramento, CA | 162 | Oklahoma City, OK | -22 |
| Stockton, CA | 116 | Pittsburgh, PA | -21 |
| Charlotte–Gastonia, NC | 109 | Louisville, KY | -20 |
| Raleigh–Cary, NC | 108 | Camden, NJ | -17 |
| Ventura, CA | 103 | San Antonio, TX | -15 |
| Sarasota–Bradenton–Venice, FL | 100 | Salt Lake City, UT | -14 |
| Cambridge–Newton–Framingham, MA | 93 | Houston–Baytown–Sugarland, TX | -14 |
| Bakersfield, CA | 85 | Austin–Round Rock, TX | -12 |
| Riverside–San Bernardino, CA | 80 | Dallas, TX | -9 |
| Orange County, CA | 73 | Omaha, NE–Council Bluffs, IA | -9 |
| Las Vegas–Paradise, NV | 72 | Tulsa, OK | -8 |
| Worcester, MA | 71 | El Paso, TX | -8 |
| Cincinnati, OH | 68 | Indianapolis, IN | -3 |
| Essex, MA | 67 | Philadelphia, PA | 1 |
| Phoenix–Mesa, AZ | 66 | Newark, NJ | 1 |
| Fresno, CA | 66 | Fort Worth–Arlington, TX | 7 |
| Los Angeles–Long Beach, CA | 65 | Milwaukee–Waukesha–West Allis, WI | 7 |

Note:

a. Based on 79 of the 100 metropolitan areas ranked by RealtyTrac. Excludes 21 metro areas with fewer than 1,000 filings in the last 6 months of 2006.

Source: RealtyTrac, Inc. (2006).

predominantly White tracts (Apgar & Duda, 2005). These tracts also had the highest concentrations of subprime mortgages. Figure 6 shows that in Cook County, Illinois, foreclosures increased much more in the city and close-in older suburbs than in more distant suburbs. Immergluck and Smith (2005) calculated that conventional foreclosures increased by 215% from 1995 to 2002 in predominantly White census tracts in the five-county Chicago area, while they increased by 544% in predominantly minority tracts.¹³ They also found shares of subprime home purchase and refinance loans to be strong predictors of neighborhood foreclosure rates after controlling for a variety of economic, racial, and housing stock variables.

Exotic Mortgages and Foreclosures

Because many exotic mortgage products involve some version of adjustable interest rates or changing amortization schedules, as well as introductory teaser rates, the risks that borrowers face due to changing mortgage payments can be quite substantial. Although their study looked only

at subprime loans, Schloemer et al. (2006) found that, other things equal, loans with adjustable rates are more than twice as likely to default as fixed-rate loans. Cagan (2007) projected that 32% of ARMs with teaser rates and 7% of market-rate ARMs will default due to interest rate resets.¹⁴

Industry analysts have estimated that as much as \$1 trillion in ARMs were subject to resetting interest rates in 2007, up from less than \$400 billion in 2006 and \$100 billion in 2005 (Frantantoni, 2005). While many of the resets in 2006 and 2007 affected subprime loans, many exotic mortgages have longer initial interest rate periods, meaning that those originated in 2003 through 2005 will reset in 2008 and beyond.

As is the case with subprime loans, one of the key risks for areas with many exotic mortgages is the cooling of hot housing markets. Where exotic mortgages are concentrated in markets likely to lose value, there is a risk of accelerating foreclosures once homeowners can no longer sell or refinance easily. Cagan (2007) found that for ARMs originated in 2006, 23.9% of properties had negative equity (the

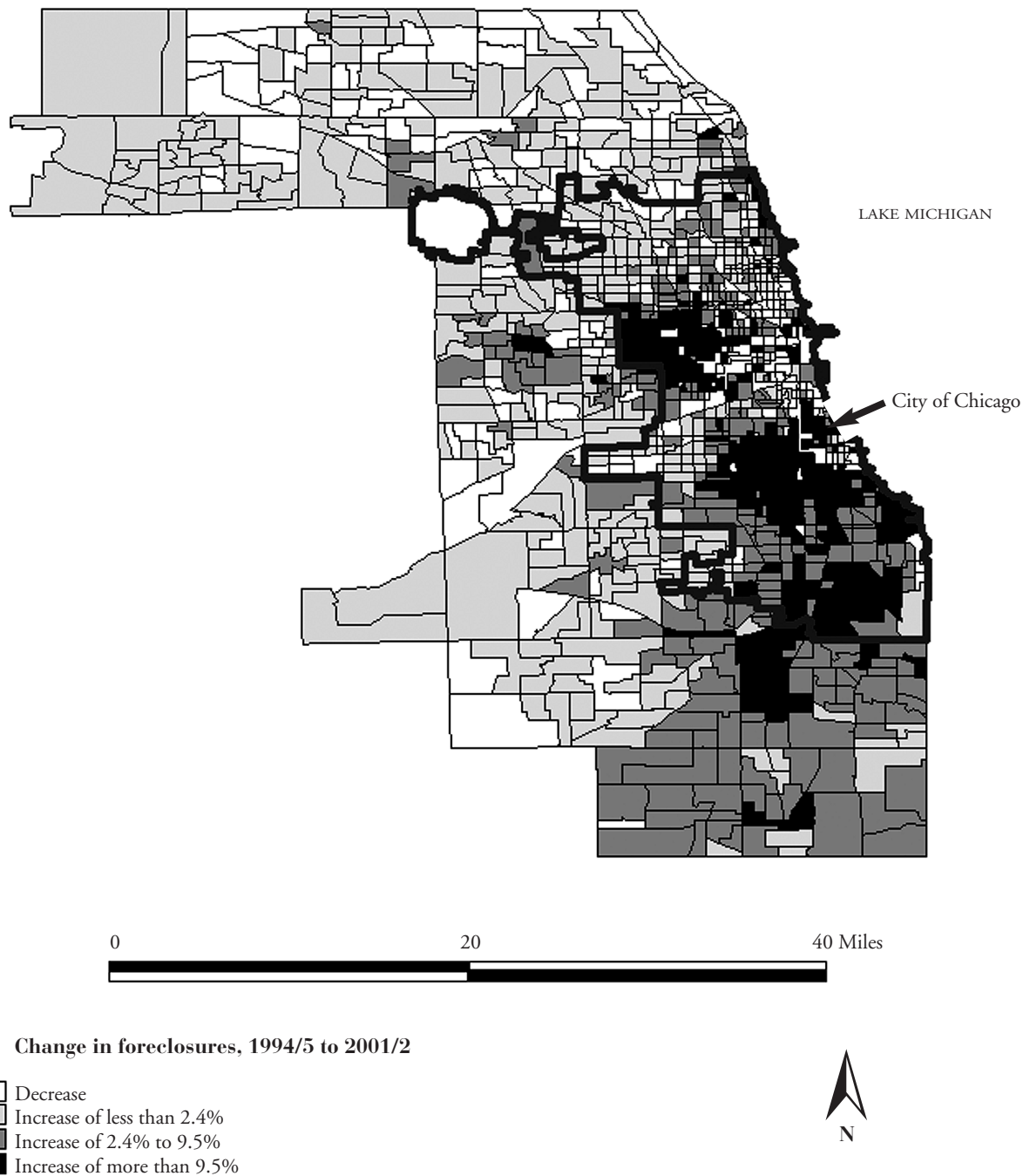


Figure 6. Change in the proportion of housing units with a mortgage that entered the foreclosure process 1994–1995 to 2001–2005.

Source: Data from Midwest Foreclosures (2003).

home's value was less than the mortgage amount), up from only 7.6% in 2004, and compared to only 10.3% of fixed-rate borrowers. Moreover, if prices were to fall by 10%, 48.9% of the adjustable-rate mortgages originated in 2006 would have negative equity. Therefore I expect metropolitan areas at high risk of declining housing prices that also have

high ARM shares to be at great risk of large increases in foreclosures.

The private mortgage insurer PMI, Inc. has developed a market risk index which is intended to predict the probability a property's value will decline in the next two years (PMI, Inc., 2006). Figure 7 combines the 2006 PMI

market risk index with MIRS data on the share of ARMs for the same 31 metros shown in Figure 4 (Federal Housing Finance Board, 2006). The resulting plot shows two clusters of metropolitan areas, one with market risk below 20% and the other with market risk above 30%. Most of the higher-risk metropolitan areas have relatively high ARM shares. Even for the lower-risk cluster, a higher share of ARMs appears to be related to market risk.

Foreclosures have risen more than 20% from the second half of 2006 to the first half of 2007 in all of the higher-risk metropolitan areas in Figure 7, and several have increased by much more (RealtyTrac, 2007). As interest rates continue to reset, more borrowers are likely to find themselves struggling to meet their mortgage obligations. Moreover, both higher interest rates and higher levels of foreclosures will put downward pressure on housing values, making refinancing loans or selling properties less advantageous for individuals experiencing such difficulties.

One type of alternative mortgage is the stated-income loan, in which lenders require little to no documentation to verify borrowers' incomes. This segment of the home purchase loan market grew rapidly from 2000 to 2006, accounting for approximately 18% of all mortgage originations by 2006 (Bajaj, 2007). There is some evidence many people obtaining such loans claimed incomes that were substantially higher than they actually received. The Mortgage Asset Research Institute, a firm that tracks mortgage fraud, reported that in a sample of 100 stated income loans for which it obtained borrowers' IRS forms, 90% had exaggerated their incomes by 5% or more, and almost 60% had exaggerated their incomes by more than 50% (Sharick, Omba, Larson, & Croft, 2006).

Zero-Down-Payment Mortgages and Foreclosures

The growth of zero-down-payment mortgages has also had implications for foreclosures. Evidence suggests that without a homebuyer counseling component, very-low-down-payment lending may lead to higher default and foreclosure rates, imposing significant costs on households and communities. The literature on mortgage defaults has generally found that very high LTVs increase default rates substantially (Deng, Quigley, & Van Order, 1995; Government Accountability Office, 2005a.) However, the bulk of studies addressing loan performance do not distinguish borrowers who received any pre- or postpurchase counseling. Hirad and Zorn (2002) found that individual and classroom prepurchase counseling significantly reduces delinquencies for high-LTV loans.

Seller-funded down-payment programs are of particular concern, because the Government Accountability Office

(2005b) has found that they make substantially higher claims on FHA insurance (i.e., have higher probabilities of foreclosure) than otherwise comparable FHA loans. Unlike the FHA, the GSEs have not allowed seller-funded down payments, believing that they contribute to overpriced properties and higher foreclosure rates.

Despite the problems associated with zero-down-payment loans and seller-funded down-payment programs, the FHA and some members of Congress are proposing to increase FHA insurance coverage to allow for zero down payments. This has been spurred in large part by the declining FHA market share shown in Figure 1. Moreover, as subprime foreclosures worsened in early 2007, supporters of what has been called "FHA reform" advocated enabling more zero-down-payment activity in FHA products to address the problems in the subprime market, though critics argued the proposed changes would repeat past mistakes (Donahue, 2007).

Implications for Local Planning and Policy

The recent changes in mortgage markets I have described here have had four consequences. They have: 1) increased the overall level of risk in the mortgage market; 2) shifted more risk from lenders to borrowers by increasing the use of adjustable rate and other alternative loan structures; 3) increased the vulnerability of metropolitan housing markets to plateaus in home price appreciation, so that when a rapidly appreciating regional housing market begins to appreciate more slowly foreclosure rates increase substantially; and 4) resulted in spatially concentrated patterns of foreclosures, particularly stressing housing markets in neighborhoods where the higher-risk products are more prevalent. Moreover, because foreclosures both increase available housing stock and remove households from the homeownership market at least temporarily, higher numbers of foreclosures and stalling or declining home values can become mutually reinforcing trends.

One important goal of planning and public policy is sustainable homeownership. Foreclosures are not only bad for the individual who loses his or her home, but entail considerable negative externalities, especially when spatially concentrated. In weaker housing submarkets (e.g., neighborhoods or groups of neighborhoods) within a metropolitan area, and where borrowers have fewer resources and limited networks, foreclosure is both more likely to occur and more likely to impose significant costs on the surrounding neighborhood and urban area. For example, Immergluck and Smith (2006) found that each foreclosure

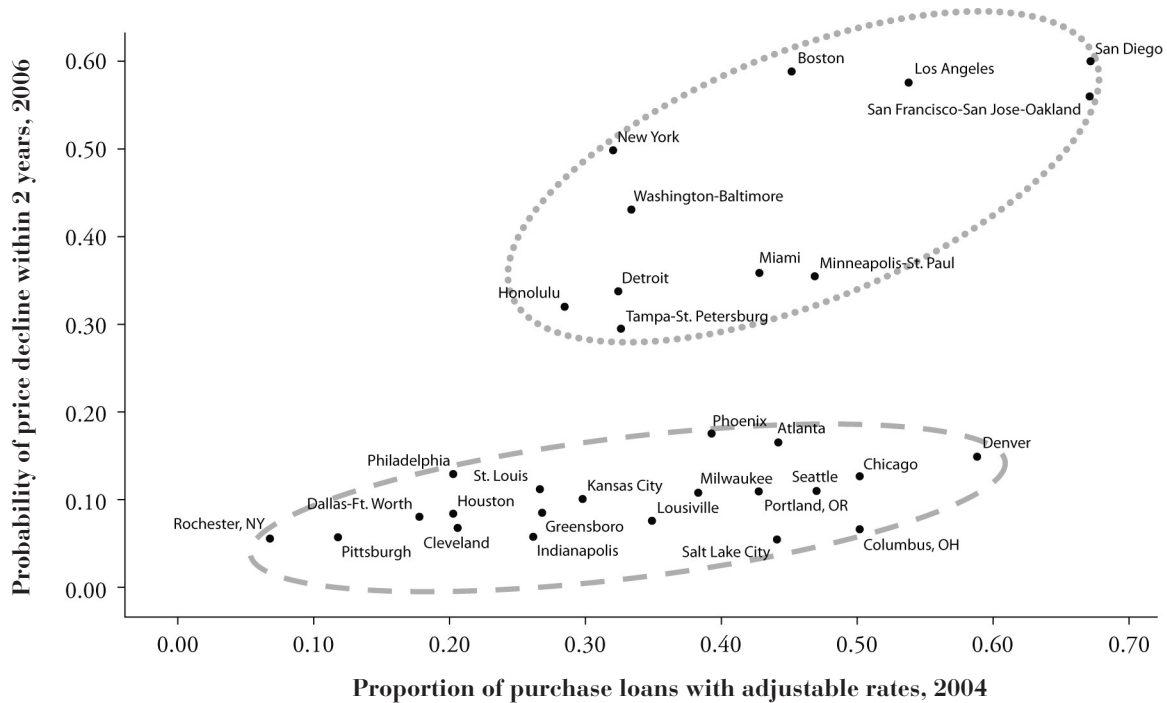


Figure 7. Adjustable rate mortgage presence and overvaluation risk, large metro markets.

Sources: PMI, Inc. (2006) and Federal Housing Finance Board (2006).

within one eighth of a mile of a single-family home in a low- and moderate-income neighborhood reduced the home's value by more than 1.4%, an effect more than 40% greater than in middle- and upper-income tracts.

Although local action can be overwhelmed by the impacts of unwise federal or state policy, I recommend seven things that planners can do in their own localities to address the problems higher-risk mortgage lending can bring.

Track Local Lending and Foreclosure Patterns

Planners should routinely map local lending patterns using readily available HMDA data. For example, planners can map the share of home purchase or refinance loans made in each census tract that are made by all HUD-identified subprime lenders or, alternatively, map all loans that have high interest rates as defined by HMDA. Planners can also map the loans of the lenders who local legal aid offices and housing groups consider to exhibit poor underwriting or to engage in predatory practices. Planners should also track foreclosure filings to identify where hot spots may be emerging. In some areas, reliable data on

foreclosures can be obtained from private data vendors, while in others, regional planning agencies may want to collect raw foreclosure data and make it available to community groups and researchers in an affordable digitized format.¹⁵

States can require that the identity of any mortgage broker and the lender be recorded for each loan originated, so that originating brokers and lenders can be linked directly to foreclosures. If such data were made readily available to the public on state mortgage regulator websites it would make it possible to identify originators associated with large numbers of foreclosures in particular neighborhoods or cities.

Some communities have developed "neighborhood early warning systems" that alert planners, community groups and officials to signs of increased housing problems, including foreclosures, code violations, and tax delinquencies, so they can take action before problems grow too large. The Providence Urban Land Reform Initiative, a joint effort of the Providence Plan (2006) and the Providence Department of Planning, is an excellent example of such an effort.

Promote Healthier Mortgage Markets in Vulnerable Areas

Planners should proactively encourage responsible lenders to market their products more aggressively to areas that have been dominated by subprime lenders, and to monitor their own loan officers and the independent mortgage brokers with whom they work for abusive or questionable lending practices. While it may be unwise for some subprime borrowers to refinance, research suggests that many are creditworthy and can be served with better structured, more responsible, and less expensive products (An & Bostic, 2006; White, 2004). The federal Community Reinvestment Act (CRA) encourages banks to meet the credit needs of their communities, and can be a tool for promoting sound and fair lending, though unfortunately local governments have made little use of it. For example, planners may comment formally to federal regulators under the CRA on how responsive banks and thrifts are to the credit needs of a particular community. Planners also may advocate screening banks' and thrifts' local lending practices before allowing them to receive local government deposits.

Fund Targeted Foreclosure Prevention and Counseling

Education is an important predictor of access to prime mortgages and therefore of lower foreclosure rates. However, given limited resources and the complexity of mortgage transactions, increasing the financial acumen of borrowers is no simple feat. Planners should devote resources to helping homeowners avoid predatory or overly risky loans through targeted counseling initiatives aimed at borrowers or likely borrowers. For examples of local foreclosure prevention programs, see Higgins (2005). A key ingredient in most successful foreclosure prevention programs is access to low-cost or free legal assistance. Lenders are likely to be more responsive to borrowers who are represented by qualified legal counsel, and skilled attorneys will be able to identify any abusive features of the loan, providing the borrower with much more negotiating power.

Develop Refinancing/Restructuring Programs

In localities with neighborhoods that have very high foreclosure rates, state and local agencies should work to develop programs to restructure loans for large numbers of distressed borrowers. Such programs should aim to reduce mortgage payments and to maintain these reduced payments over the (potentially extended) term of the loan. Two basic strategies can be employed in tandem. First, local and state planners and officials can work with major servicers and mortgagees in their localities to negotiate

processes through which borrowers can more easily obtain affordable loan modifications, including term extensions, rate reductions, and temporary forbearance packages. Individual borrowers can be intimidated by large, sometimes complex, loan servicing operations. They may have difficulty reaching the right individuals, and may generally lack the skill to negotiate with personnel at the servicing firm. Illinois, New York, Massachusetts, and Ohio have formed task forces or initiated discussions involving local housing groups and representatives of the lending and investment industries on how to improve distressed borrowers' chances of obtaining restructured loans to avoid foreclosure (Krauss, 2007).

Second, states or localities can use mortgage revenue bonds, federal housing funds, or community development funds to refinance and restructure unaffordable existing mortgage loans. As of this writing, Congress is considering various means of intervening, including relaxing restrictions on Federal Housing Administration loan programs as well as on Fannie Mae and Freddie Mac, to allow them to play a larger role in restructuring or refinancing existing debt (Solomon, 2007; U.S. Senate Joint Economic Committee, 2007).¹⁶ With or without federal action, however, state or local government may need to step in. Any federal action is likely to provide assistance for only a modest portion of borrowers facing foreclosure. Sayeed (2007) reviewed some examples of existing state and local programs that provide financing to assist families facing potential foreclosure, but most were not designed for the levels of foreclosures many communities now face, and new resources and program designs may be needed.

Since the national spike in foreclosures in late 2006 and early 2007, several states, including Maryland, Massachusetts, New Jersey, New York, and Pennsylvania, have initiated programs to provide refinance or bridge loans of some sort to distressed borrowers (Krauss, 2007). However, these programs are not large enough to help more than a few of the borrowers needing assistance. For example, Massachusetts' program is funded at \$250 million, and estimated sufficient to assist approximately 1,000 homeowners. Moreover, if the funding sources and state administrations have low tolerances for risk, the proportion of distressed borrowers able to qualify for such programs may be quite modest.

Redesign Programs to Promote Sustainable Homeownership

Most metropolitan areas have homeownership financing programs supported by federal, state, and local government (Galster & Santiago, 2007). Reactions by some segments of the credit markets to recent develop-

ments may reduce liquidity so much that even applicants with only slightly impaired credit histories will be unable to obtain affordable and soundly structured home loans. In such an event, it will be especially important for the public sector to maintain a role in homeownership financing programs for low- and moderate-income residents. However, planners should work to ensure that such programs are well designed and managed, and aim to promote sustainable homeownership, not homeownership that ends in foreclosure. Planners should advocate screening the private-sector partners in such programs for predatory or abusive lending practices, and requiring that they both demonstrate low default rates in their existing lending and provide counseling, smart servicing technologies, and foreclosure prevention.

Get Foreclosed Properties Reoccupied Quickly

Some of the costs of foreclosure to the community occur because foreclosed homes end up vacant or abandoned (Immergluck and Smith, 2006; Spencer, 1993). Planners should work to quickly return homes in or near foreclosure to occupancy. One particular challenge, especially in lower-income neighborhoods, is to prevent “walkaways,” in which lenders do not take possession of a property in default because they fear that the property’s liabilities and risks exceed its value. Neighborhood Housing Services of Chicago, Inc. (2005) has worked with the real-estate-owned (REO) divisions of major lenders to give the lenders alternatives to abandoning properties on which they have foreclosed.

Recognize the Effect of Foreclosure Surges on Rental Housing Markets

As substantial numbers of homeowners exit the owner-occupied segment of the local housing market at least temporarily through the foreclosure process, this will put demand-side pressures on rental housing in a region. Thus, planners should prepare for the rising demand for rental housing in markets suffering from large increases in foreclosures. Moreover, because foreclosure has a serious negative impact on an individual’s credit history, it can also put affected households at a substantial disadvantage in the rental market, as many landlords screen out prospective tenants with weak credit histories. Thus, the selection of housing stock and neighborhoods for foreclosed families may be significantly limited.

Be Proactive in Policy Debates on Lending Regulation and Foreclosure Processes

Too often planners and local policymakers pay attention only to certain types of issues being debated at state and

federal levels. Although eminent domain and transportation funding are important, housing finance has proven time and again to have major impacts on communities. Planners should pay close attention to the regulation of the mortgage market.¹⁷ Otherwise, this critical influence on communities is left completely in the hands of lenders, investors, and brokers, none of whom necessarily focus on the long-term impacts of their decisions on neighborhoods and cities.

Certainly, many changes in home finance are affected by market forces. However, housing finance systems vary widely across the industrialized world, due to differing government policies (Green & Wachter, 2005). In many ways, the U.S. has built a successful home finance system. It has served much of suburban America quite well over the last 70 years. But major changes have occurred in the last 10 to 15 years that have radically increased mortgage risk and shifted much of the downside risk to particular homeowners, neighborhoods, and cities.

The recent contraction in high-risk lending is likely to be temporary. The subprime market went through a less severe decline after the Asian financial crisis of 1998, only to roar back to become larger than ever. Unless we change federal and state lending policies to reduce the effects of future wide swings in liquidity on lending standards and eventually on foreclosures, mortgage markets are likely to exhibit booms and busts like the most recent cycle. Such a volatile system of housing finance creates many challenges for local communities and planners, including, in the most recent cycle, local foreclosure crises in hundreds of neighborhoods across the country. Planners should learn how the new housing finance affects their communities, and develop analytical, planning, and policy strategies and tools to anticipate the next challenge and respond more effectively to the next mortgage market crisis.

Notes

1. Teaser rates are initial interest rates that typically run for between 1 and 5 years and are significantly below the prevailing market interest rates for similarly structured loans.

2. In mortgages with interest-only loans, the borrower makes only interest payments (no principal) for some initial number of years. Payment-option loans are those for which the borrower has the option of paying principal and interest, interest only, or some minimum payment that can be less than the interest accrued. For negative amortization loans the regular payments do not equal the accrued interest on the loan, and so the balance owed increases over time. Piggyback loans are second mortgages that allow the borrower to reduce his or her downpayment while avoiding private mortgage insurance. The second mortgage typically carries a higher interest rate. Alt-A loans are low- or no-documentation loans, in which the borrower pays a premium in exchange for not having to provide the usual documents verifying his or her income. For a more detailed description of exotic mortgages, see Fishbein and Woodall (2006).

3. I added the square of the income-to-loan-size ratio after diagnostic plots indicated a nonlinear effect.
4. The change in the proportion of buyers who were Black, the change in the proportion of buyers who were Hispanic, and the change in median loan size, may result from as well as cause changes in the share of a metropolitan area's home purchase loans that are subprime, making these variables potentially endogenous. First, an increased presence of subprime lenders in a region may be expected to increase the number of Black or Hispanic homebuyers, due to their providing more access to credit for Black and Hispanic households than prime lenders. Second, more subprime lending may actually increase the prices of homes by providing borrowers with greater spending power (through higher debt-to-income ratios), which in turn can result in a bidding up of housing values. To remedy this, I used a two-stage least-squares technique, first regressing these three endogenous variables on the other independent variables together with three additional instrumental variables I expected to affect the three endogenous variables but not to be significantly affected by the dependent variable. For instrumental variables, I used the 1997 to 2003 change in the metropolitan area's home price index as measured by the Office of Federal Housing Enterprise and Oversight; the change in the proportion of the population that was African American from 1990 to 2000; and the change in the proportion of the population that was Hispanic from 1990 to 2000. In the second stage, I substituted the predicted values of the endogenous variables arising from the first-stage regressions, and estimated the main model.
5. Though the median loan size and proportion Hispanic variables are not significant at the .10 level, their *t*-statistics are not far outside this range given the limited size of my sample.
6. Fannie Mae and Freddie Mac are government-sponsored private businesses, with significant government benefits (e.g., exemption from local taxation, access to low-interest government debt, and an implicit too-big-to-fail expectation in credit markets). They purchase predominantly prime mortgages from lenders, pool them, and issue mortgage-backed securities to provide liquidity to mortgage markets.
7. Nonagency securitization is the process in which mortgages are pooled to create collateral for mortgage-backed securities issued by investment firms other than Fannie Mae or Freddie Mac.
8. The MIRS data omit some significant segments of the mortgage market, including refinance loans, very large loans, loans made by specialized subprime lenders, and in latter years, loans with interest rates below 2.75%, including many ARMs with teaser rates (Congressional Budget Office, 2001). This last omission is particularly relevant in recent years with the advent of exotic mortgages and given the relatively low interest rate environment.
9. Even some public agencies have promoted exotic products as a means of enabling buyers to purchase larger homes. For example, Rhode Island Housing, a public lender, promoted its "Buy More" program as enabling the borrower to qualify "to buy a bigger house, a house in better condition or a house in a more convenient location." The product is an interest-only loan (Rhode Island Housing, 2006).
10. The maximum LTV ratio on FHA loans varies, but is technically capped at just under 98%. However, some costs and the FHA up-front insurance premium are excluded from this calculation, so that the LTV can effectively exceed 100% on some loans (Berkovec, Canner, Gabriel, & Hannon, 1994.)
11. In 2006, however, the Internal Revenue Service ruled that organizations providing seller-funded assistance do not qualify as tax-exempt charities. The Sacramento-based Nehemiah Corporation of America, the largest of such organizations, is appealing the ruling (Wasserman, 2006).

12. RealtyTrac, Inc. (2006) claims to offer "the largest national database of preforeclosure, foreclosure, for sale by owner, and new home construction properties, with more than 550,000 properties across the country." It also claims to be rated the fourth largest real estate Web site by Nielsen NetRatings. RealtyTrac includes properties in all three phases of foreclosure: preforeclosures, foreclosures, and real-estate-owned (REO) properties that have been bought back by a bank. The combined report, therefore, overstates the number of properties entering a particular phase of the foreclosure process. However, it appears to be the best source of data for a large number of MSAs, and I expect the data to be comparable across MSAs.

13. This excludes mortgages insured or guaranteed by government agencies such as the FHA or VA.

14. Neither of these studies looked exclusively at home purchase loans.

15. Making real estate data generally available does raise privacy concerns. However, I generally advocate that regional planning bodies collect and disseminate only what is already part of the public record, providing it to the public at little or no cost. In most areas data firms already provide such a service, but charge high prices, meaning mortgage brokers and property investors are effectively the only parties able to afford access to these data.

16. Note that some of the recent reforms, particularly those proposed for the Federal Housing Administration, were designed long before the subprime mortgage crisis and are intended mainly to reverse the decline in the FHA's share of the mortgage market.

17. Mortgage lending and foreclosure policy at the state and federal level is a complex topic beyond the scope of this article. For recommendations aimed at improving access to sound and responsible credit and at reducing high and spatially concentrated foreclosures, see Immergluck (2004) and Schloemer et al. (2006).

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