

Rising Foreclosures in the United States: A Perfect Storm

By Kelly D. Edmiston and Roger Zalneraitis

Residential foreclosures in the United States have been rising very rapidly since 2006. In the second quarter of 2007, the share of outstanding mortgages in some stage of foreclosure stood at 1.4 percent, near historic highs and up from less than 1 percent a year earlier. The number of mortgages entering the foreclosure process reached an all-time high in mid-2007, suggesting that the foreclosure surge is likely to get worse before it gets better.

The foreclosure surge was created by a perfect storm of events. First, in recent years the share of subprime mortgage originations increased substantially. Subprime mortgages—that is, home loans made to borrowers with impaired credit (see glossary)—have substantially higher rates of foreclosures than prime mortgages. Second, foreclosure rates for adjustable-rate mortgages (ARMs) have increased considerably, especially for subprime ARMs. This increase is largely due to rising short-term interest rates and to payment resets for many nontraditional mortgages. Finally, high loan-to-value originations in recent years, coupled with stagnant or falling home prices, have left many people with insufficient equity to sell or refinance their homes.

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This article provides a detailed dissection of the current foreclosure surge. The first section highlights the current trends in foreclosure rates, both over time and across space. The second section describes the foreclosure process and the circumstances that typically lead lenders to foreclose. The third section details the three factors underlying the current spike and explains how these factors have interacted to create a perfect storm. The article concludes by discussing why the foreclosure situation is likely to get worse over the next two to three years and why it is likely to improve after that time period.

I. HISTORICAL AND GEOGRAPHIC PERSPECTIVE

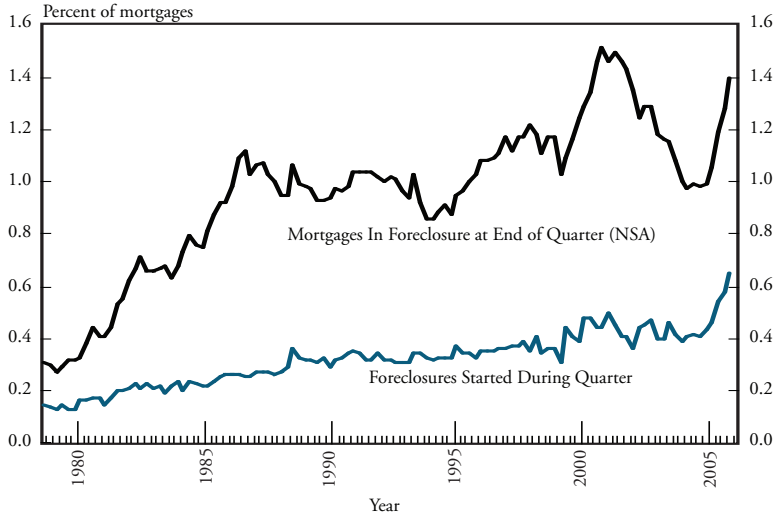
As economic conditions change, the foreclosure rate typically changes as well. Since 1979, however, foreclosure rates have rarely declined for an extended period of time (Chart 1). Foreclosure rates rose steadily until the mid-1980s. While there are many explanations for this upward trend in the 1980s, the likely causes were high interest rates, weak real estate markets, and an energy glut in some parts of the country. Foreclosure rates then leveled off until about 1995, when they began to rise again. Foreclosures spiked to a record high in 2002, largely as a result of the recession in 2001. After this spike, rates declined substantially and were settling to levels similar to those in the mid-1990s when the current surge began in early 2006.

The number of *new* foreclosures has been rising each quarter since 1979 as well. Perhaps most notable is how rapidly new foreclosures have increased since 2006. In the second quarter of 2007, 0.65 percent of all mortgages entered foreclosure. To put this Chart into perspective, before 2006 the new foreclosure rate reached 0.5 percent of all mortgages only once. Since the third quarter of 2006, the new foreclosure rate has persistently been near or above that rate—an unprecedented event over the last 38 years.

Although current U.S. foreclosure rates are high, at 1.4 percent, not all areas of the nation are affected equally. The highest foreclosure rates are found in the upper Midwest, where Michigan, Ohio, and Indiana have foreclosure rates more than 50 percent above the national average (Map 1). These three states face the same basic foreclosure problems as other states but also suffer some economic difficulties. In particular,

Chart 1

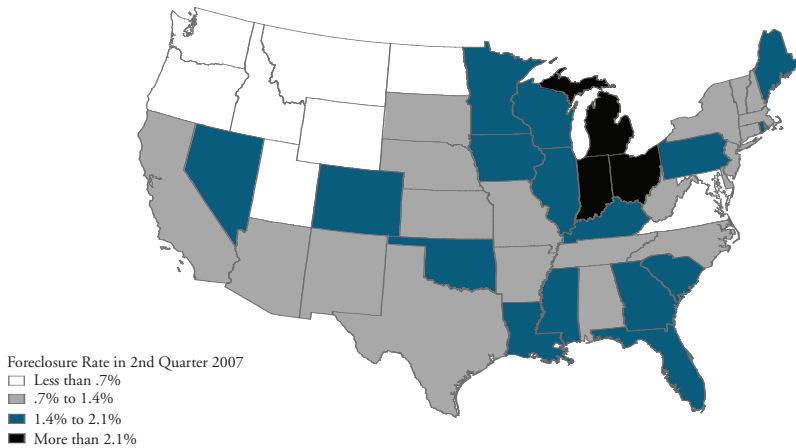
FORECLOSURE INVENTORY AND INITIATION RATES IN THE UNITED STATES, 1979 TO PRESENT



Source: Mortgage Bankers Association (MBA)

Map 1

U.S. FORECLOSURE RATES



Source: MBA, National Delinquency Survey

declines in the relatively high-paying manufacturing sector have kept unemployment rates relatively high and income growth low. In most of the United States, by contrast, the economy is quite strong and unemployment rates are historically low. Foreclosure rates also tend to exceed the national average in the Gulf states of Louisiana and Mississippi, due in large part to the aftermath of the 2005 hurricanes.

Some states are faring much better than the nation as a whole. States in the Pacific Northwest have foreclosure rates of less than half the national average. Foreclosure rates are also generally below average in the desert Southwest and the Northeast, although Nevada, Pennsylvania, and Maine are exceptions.

The states with the greatest increases in foreclosures since early 2006 are not those with the highest overall foreclosure rates. Not one of the ten states with the greatest increase in foreclosures is among the ten states with the highest foreclosure rates in mid-2007. California, for instance, has seen an almost fourfold increase in foreclosures since 2006, but has only the 29th highest rate of foreclosures in the nation. The fact that states with high foreclosure rates are not among those with the fastest growing rates of foreclosure suggests that many high-foreclosure states have longer-term problems that are unrelated to the causes of the current surge.

II. CAUSES OF MORTGAGE DEFAULT AND FORECLOSURE

Foreclosure is a two-step process. In the first step the borrower misses a scheduled payment and becomes delinquent. Lenders typically assume the initial delinquency is temporary and that the borrower intends to resume payments in the future. Once several payments are missed (typically three), the borrower is considered to have defaulted with no plans to resume payment. At this point, the lender may choose to take the second step by foreclosing.

One possibility for explaining default (and subsequent foreclosure) is a pure wealth-maximizing motive. The mortgagor in essence can at any time sell his property to the lender for the outstanding balance of the mortgage.¹ He exercises this option to sell by defaulting on payments and, through foreclosure, receives value by purging his payment

obligation on the mortgage. This transaction increases wealth if the home is worth less than the outstanding balance on the mortgage. Such defaults are often termed “ruthless defaults.” They are ruthless in the sense that the mortgagor has the ability to pay but chooses not to. Ruthless defaulters tend to “reveal themselves” by having high loan-to-value ratios and suffering local price declines prior to default (Ambrose and Capone, p. 398).

Empirical evidence finds a strong relationship between negative equity and default. In fact, as much as 90 percent of the variation in foreclosures over time can be explained by negative equity (Foster and Van Order). Default is “essentially instantaneous” when negative equity exceeds 10 percent (Quigley and Van Order, p. 112).

Although most defaults tend to be consistent with the wealth-maximizing motive, studies generally find that the option to sell is typically under exercised. In other words, there are not as many defaults as there should be if borrowers are ruthless wealth maximizers.

One explanation for this behavior is that, in making the decision to default at any point in time, the borrower must consider the value of being able to default at some later date. Thus, for a default to be optimal, the benefits of defaulting today must outweigh the benefits of defaulting on any later date.

There are additional costs beyond the loss of the option to “sell” at a future date. There are direct costs, such as legal fees, as well as significant indirect costs, such as a reduction in both creditworthiness and personal reputation that comes with foreclosure. Considering these other costs, the equity threshold for defaulting would be expected to be substantially below zero.

Another empirically recognized departure from the pure wealth-maximizing motive is that some borrowers default when they have positive equity. Default is profitable when the balance of the mortgage exceeds the value of the home less selling (transactions) costs. These selling costs can be significant. For example, real estate commissions average 5.1 percent, and many sellers pay 6 or 7 percent (*Real Trends*). The mortgagor does not have to be in a negative equity position to profitably default. All that is required is that (positive) equity not exceed the

cost of selling. This scenario is especially likely for liquidity-constrained households, who have little cash or other liquid assets with which to make up the difference upon sale.

Liquidity-constrained households who default with positive equity generally are having trouble making their payments. This difficulty usually arises from some kind of “trigger event,” such as a job loss or an unexpected expense, as might occur with a serious illness or accident. Another possibility that explains many recent defaults is a jump in the mortgage payment that arises because of higher interest rates on an ARM or a payment reset on a loan with a low initial rate (“teaser rate”). Trigger-event defaulters proceed to foreclosure only if they cannot reinstate the mortgage by mitigating the loss in income or the unforeseen expenditure. In reality, it is the intersection between trigger events and an adverse equity position that is likely to precipitate a default (Riddiough).

Once a borrower defaults, the lender eventually takes action to foreclose. The length of time borrowers are able to forestall foreclosure varies with the lender’s willingness to work with the borrower or renegotiate the loan terms. This willingness depends largely on the costs of foreclosure, which in turn depend on state laws.

Laws governing mortgage foreclosures can differ substantially across states. The primary difference across states is whether or not judicial foreclosure is required. A judicial foreclosure occurs when a mortgage deed does not have a power of sale clause, thus compelling the lender to take the borrower to court.² A court orders the foreclosure and supervises any subsequent sale and the disbursement of the proceeds. A nonjudicial foreclosure occurs outside of the court system. Twenty-one states required judicial foreclosure in 2006.³

Nonjudicial foreclosures typically are less costly to the lender than judicial foreclosures. The judicial foreclosure takes five months longer, on average, and imposes additional transactions costs (Pence). A 1985 study of foreclosure costs under judicial and nonjudicial systems found that the combination of additional monetary costs, such as legal fees, and the costs associated with delaying sale in judicial foreclosures increased costs by 260 percent, on average, relative to nonjudicial foreclosures (Bauer; Kahn and Yavas). These increased costs have been verified by a number of other empirical studies, with some findings showing the difference to be as much as 10 percent of the loan balance

(Pence). The increased costs associated with judicial foreclosures have been reflected in lower foreclosure rates in states that require judicial foreclosures (Clauretje). These costs also tend to be reflected in higher contract interest rates for mortgages that lack a power of sale clause (Meador; Kahn and Yavas).

Foreclosure costs and rates can also be affected by whether a state has statutory or equitable redemption, and whether the state allows deficiency judgments. *Statutory redemption* refers to the period of time after a foreclosure sale during which the borrower has the right to redeem the property by paying the principal balance, accrued interest, any penalties or fees, and court costs. The redemption period varies widely across the United States. Statutory redemption extends the foreclosure and liquidation process and adds to loan losses and therefore should work to reduce the rate of foreclosures (Clauretje and Herzog).

Statutory redemption differs from *equitable redemption*, which is the period of time between default and foreclosure during which the mortgagor can redeem the property by paying the sum due. Longer periods of equitable redemption work to reduce the number of foreclosures by giving the borrower more time to accrue sufficient cash flow to avoid foreclosure.

Deficiency judgments allow the lender to attempt to recover funds that remain unpaid after the foreclosure sale. The ease with which the lender can sue for these funds varies across states. The availability of deficiency judgments has the opposite effect on foreclosure rates as foreclosure relief, such as redemption (Kahn and Yavas).

While state laws affect foreclosures at the margin, they cannot reduce the total foreclosure rate when adverse conditions affect an increasing number of homeowners. As the number of defaults increase, the number of cases where foreclosure is the least costly option will increase as well.

III. THE PERFECT STORM

Some homeowners (often investors) simply walk away from their homes and mortgage obligations when faced with highly negative net equity, but generally a foreclosure is the result of an inability to make mortgage payments, coupled with insufficient equity to cure the default

by selling the home. There are always some people in these positions, and thus the foreclosure rate has a natural ebb and flow, depending largely on economic conditions and the state of the housing market.

Rapid increases in the foreclosure rate, however, are relatively rare. Usually, they result from poor economic conditions, such as recessions, which tend to drive up unemployment and reduce personal income, leaving many with the inability to make their mortgage payments. Rising real estate values can mitigate the rise, so periods of especially high foreclosures are usually also associated with stagnant, if not declining, home prices.

The dramatic spike in foreclosures since 2006 is unusual in that the economy has been quite strong in most parts of the United States. Income growth has been solid, and unemployment rates are low by historical standards. The current foreclosure surge is a result of three conditions that have come together to create a “perfect storm” in the mortgage market.

First, subprime lending increased significantly between 2004 and 2006. Since subprime loans have higher foreclosure rates than prime loans, this increase in itself would be expected to lead to an increase in foreclosures. Second, large numbers of new mortgages were nontraditional. Nontraditional loans often reset to much higher payments within a few short years. These resets have been compounded by increases in short-term interest rates, which have affected not only nontraditional mortgages but more traditional adjustable-rate products as well, especially in the subprime sector. Third, declining home prices have put many homeowners in the position of being unable to sell or refinance their homes when faced with an inability to pay higher mortgage payments. These three factors have combined to lead to a sharp increase in foreclosure rates.

Subprime lending

Subprime mortgages are home loans made to borrowers with impaired credit. Because they are more risky, they carry interest rates that are higher, sometimes much higher, than equivalent prime loans. Unsurprisingly, given their higher risk, subprime mortgages are much more likely to default than are prime mortgages (Immergluck and

Smith). In the second quarter of 2007, the latest date for which data were available at this writing, a seasonally adjusted 14.5 percent of outstanding subprime mortgages were at least 30 days past due, and 5.5 percent were in foreclosure (Mortgage Bankers Association). At the same time, only 2.6 percent of prime mortgages were 30 or more days past due, and just 0.6 percent were in foreclosure.

Another form of nonprime mortgage is the Alt-A mortgage, which is usually a loan made to a borrower who has a relatively high credit score but lacks sufficient (or any) documentation of income.⁴ In many cases, income cannot be documented, such as for the self-employed. But many Alt-A mortgages are made to people who overstate their income. By doing so, applicants can qualify for a mortgage for which they would not qualify if they were required to fully document their income. The interest rates on Alt-A mortgages are generally 25 to 50 basis points higher than those on equivalent fully documented mortgages. Default rates on Alt-A mortgages are higher than on prime mortgages, but less than those on subprime mortgages.

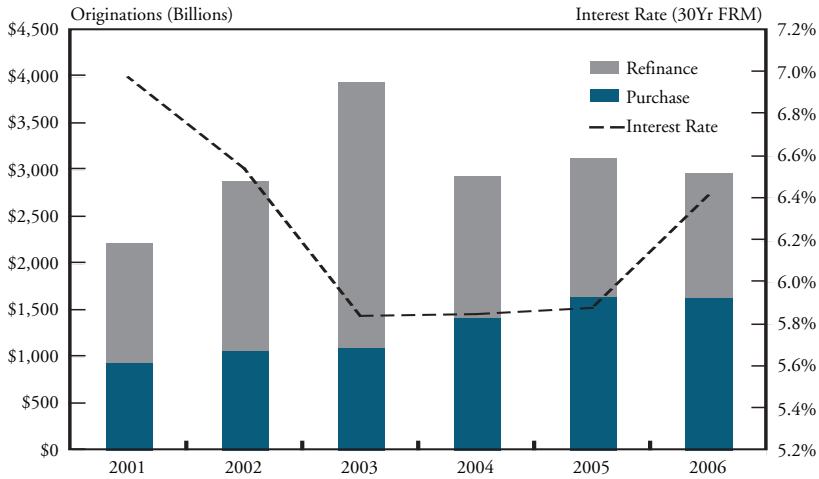
Subprime mortgage lending became possible with federal legislation in 1980, which eliminated states' interest rate ceilings on first lien home mortgages. Lenders were then able to raise interest rates high enough to compensate for the extra risk imposed by subprime borrowers. Subprime lending was not common until the 1990s, when developments in capital markets, specifically widespread securitization of subprime loans, made subprime mortgage lending less risky for originators.⁵ Securitization allowed mortgage lenders to pool the risks and efficiently allocate the pooled risks to investors most willing to bear them.

From May 2000 to June 2003, the average interest rate on a conventional, conforming 30-year fixed-rate mortgage (FRM) fell from 8.5 percent to 5.2 percent (Freddie Mac Primary Mortgage Market Survey).⁶ With this decline in the cost of funds, mortgage originations sky-rocketed, largely due to refinancing. From 2001 to 2003, total mortgage originations grew 78 percent, from \$2.2 trillion to \$3.9 trillion (*Inside Mortgage Finance*) (Chart 2). The 119 percent increase in refinances was even more dramatic.

As mortgage originations grew, so did the mortgage industry. From 2001 to 2003, jobs in the real estate credit industry increased 43 percent, from roughly 231,000 to 331,000.⁷ By 2004, many people had

Chart 2

INTEREST RATES AND MORTGAGE ORIGINATION



Source: *Inside Mortgage Finance*

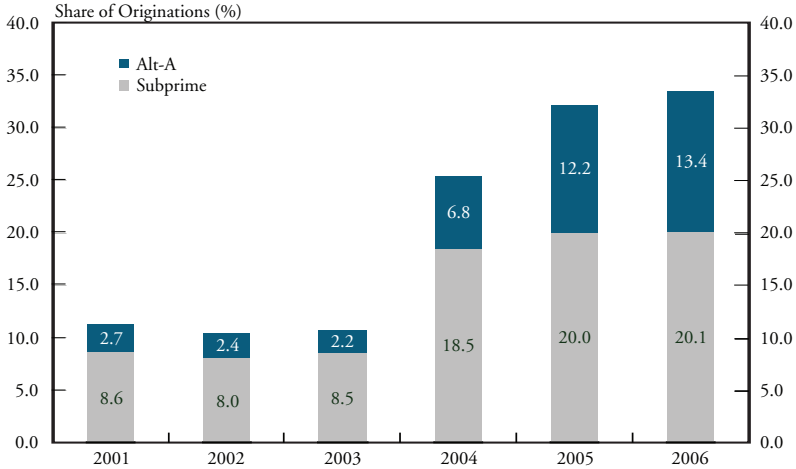
already refinanced their prime mortgages, some multiple times. As interest rates started to regain ground in that year, the demand for further refinancing diminished significantly, and the real estate credit market, saturated with brokers, started to dry up. In an effort to maintain volume and market share, many mortgage brokers moved aggressively into the relatively untapped subprime market. With real estate markets booming, they found many willing customers who formerly had little or no access to mortgage financing. Given relatively low interest rates in the recent term, there were also many investors starved for the high yields subprime mortgages could bring. Thus, a major market quickly developed.

From 2003 to 2006, subprime mortgage originations swelled from \$335 billion to \$600 billion (*Inside Mortgage Finance*). Over the same period, Alt-A originations increased almost fivefold, from \$85 billion to about \$400 billion. In 2003, less than 11 percent of originations were nonprime (subprime or Alt-A) (Chart 3). By 2006, more than one-third of all mortgage originations were nonprime, including more than 20 percent that were subprime.

Because the nonprime foreclosure rate is so much higher than the prime foreclosure rate, the overall foreclosure rate naturally increased. If the subprime share of mortgages outstanding were the same in the second quarter of 2007 as it had been in 2003, the second quarter 2007 overall foreclosure rate would be an estimated 0.98 percent rather than

Chart 3

NONPRIME SHARE OF MORTGAGE ORIGINATIONS, 2001–06



Source: *Inside Mortgage Finance*

the actual 1.40 percent, a reduction of 30 percent.⁸ Insufficient data are available to calculate the effect of Alt-A mortgages, but given their higher-than-prime foreclosure rate and the increased share of originations since 2003, a full analysis would yield an estimated fixed-share foreclosure rate of much less than 0.98 percent.

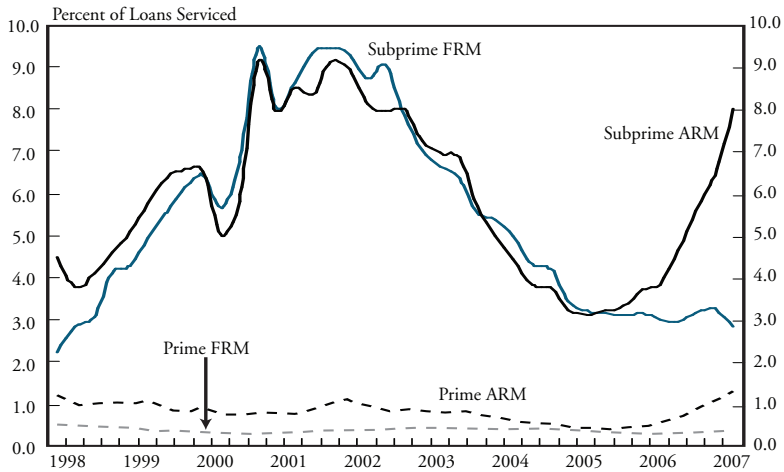
Increasing subprime ARM foreclosure rate

While the subprime share of outstanding mortgages has been increasing in recent years, the subprime foreclosure rate has also been rising rapidly, especially for loans with adjustable rates. Most dramatically, the foreclosure rate for subprime ARMs increased from 3.9 percent in the second quarter of 2006 to 8.0 percent in the second quarter of 2007 (Chart 4). The foreclosure rate for prime ARMs has increased as well, from 0.6 percent to 1.3 percent, but these loans remain a relatively small share of total foreclosures. Increases in short-term interest rates and payment resets on nontraditional mortgages are largely responsible for the increase in the foreclosure rates of ARMs.

Homeowners enjoyed a dramatic appreciation in home prices beginning in 2001 and lasting through 2005. Over that period, the average home in the United States appreciated by about 53 percent

Chart 4

FORECLOSURE RATES BY LOAN TYPE, 1998-2007



Source: *Mortgage Bankers Association*

(Office of Federal Housing Enterprise Oversight), while personal income increased by just more than 20 percent (Bureau of Economic Analysis).⁹ As a result, homeownership became relatively less affordable. In response to higher home values, many would-be homeowners found themselves priced out of the market. In an effort to price themselves back in, borrowers increasingly sought ARMs and nontraditional mortgage products for their lower initial payments.

The interest rate on an ARM at any point in time is closely linked to short-term Treasury yields, while the interest rate on a FRM is linked to long-term Treasury yields. In 2004, short-term interest rates were significantly lower than long-term interest rates, and ARMs were therefore relatively attractive. Roughly half of all mortgages originated in 2004 were ARMs, compared to only one-quarter of all originations in the previous year (*Inside Mortgage Finance*). Close to half of all mortgages originated in 2005 and 2006 also were ARMs.

Because ARMs usually have lower interest rates than FRMs, they often make sense for people who intend to stay in their homes for only short periods of time, such as five to seven years. The borrower can get an ARM with a relatively low fixed rate for this length of time, after which the rate becomes variable. As long as the loan is repaid in that

time frame, there is no risk of payment shock. If the ARM is maintained after the initial fixed-rate period, however, monthly payments in an environment of rising interest rates can increase substantially.

From June 2003 to June 2006, the one-year constant maturity Treasury yield increased from 1.0 percent to 5.2 percent. Alternative short-term interest rate indexes mirrored this increase. For a traditional 3/1 prime ARM initiated in June 2004, where the initial rate is fixed for three years and then resets annually, the average monthly payment on a \$200,000 mortgage would have increased 37 percent by mid-2007 (Table 1).¹⁰ Faced with such a large increase in monthly mortgage payments, many ARM borrowers were unable to stay current.

The rise in short-term interest rates in the last few years is only part of the cause of large payment shocks. Many nontraditional mortgage products can have substantial payment resets even when interest rates are stable. The low initial payments associated with these loans are attractive in markets with unaffordable real estate. When they later reset, however, the payment often becomes much larger than on a traditional 30-year FRM (Table 1). Various types of nontraditional mortgages are available, and all of them are characterized by significant payment resets after the initial two or three years of the loan.

In the last few years, from two-thirds to three-quarters of subprime mortgages originated were 2/28 or 3/27 hybrid ARMs.¹¹ These mortgages typically have a low teaser interest rate for the first two or three years, followed by an adjustable interest rate in the ensuing 28 or 27 years. Because the teaser rate often is well below the market interest rate, the payment reset can be substantial. For example, the payment on a subprime 3/27 hybrid ARM with an initial teaser rate of 2.5 percent in 2004 would have jumped 120 percent in 2007.¹²

Another ARM product common among subprime loans is the option ARM. For the first few years of the mortgage, the borrower has the option to pay a minimum monthly amount. Typically, this minimum payment is substantially below the amount required to cover the interest accrued on the loan, and thus the principal amount can grow significantly in a short period. The payment resets to a fully amortizing rate. The minimum payments on a subprime 3/1 option ARM made on a loan of \$200,000 in 2004 were as low as \$643.¹³ Even if short-term interest rates had remained

Table 1

HYPOTHETICAL INITIAL AND RESET MORTGAGE PAYMENTS, BY LOAN TYPE^a

Loan Type	Initial Payment	Payment at Reset	Payment Shock		Reset Payment w/o Change in Interest Rates ^f
30-Yr FRM ^b	\$1,237	\$1,237	-	-	\$1,237
3/1 Prime ARM ^c	\$1,039	\$1,420	\$380	37%	\$1,039
3/1 Prime Interest-Only ARM ^c	\$786	\$1,462	\$676	86%	\$1,093
3/27 Subprime ARM ^d	\$790	\$1,741	\$951	120%	\$1,136
3/1 Subprime Option ARM ^e	\$643	\$1,907	\$1,264	196%	\$1,309

^a\$200,000 first mortgage initiated in June, 2004.

^bFreddie Mac.

^cInterest rate is LIBOR + 2.25 percent.

^dInitial interest rate is 2.5 percent; On reset the interest rate is LIBOR + 4.50 percent.

^eMinimum payment is equivalent to a 1.0 percent interest rate; Maximum LTV is 110 percent.

^fAssumes LIBOR remained at its June, 2004 level throughout the period.

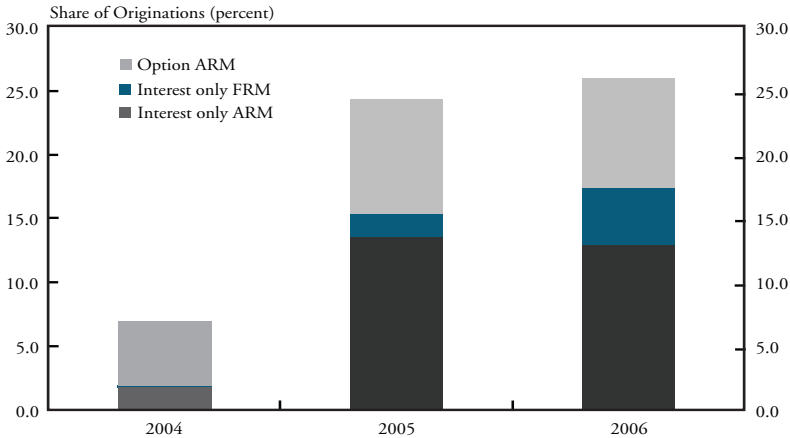
steady, payments would have more than doubled after the initial period. With the increase in short-term interest rates since 2004, however, the payments may have actually tripled.

Other common nontraditional mortgage loans allow the borrower to make interest-only payments for the first few years of the loan. Following this initial period, the principal loan amount is amortized over the remaining years of the loan. Once again, the payment reset can be fairly substantial. Payments on a three-year interest-only ARM made when interest rates were at their low point in 2004 have nearly doubled in 2007. While the increase is largely due to higher short-term interest rates over the period, the payment at reset would be \$44 higher than the reset payment on a fully amortizing 3/1 ARM, reflecting the amortization of the principal over 27 years rather than 30 years.

Given the run-up in home prices in the early part of the decade, an increasingly larger share of mortgages originated over the last few years have been nontraditional mortgages. In 2004, roughly seven percent of all mortgage originations were for interest-only or option ARMs, (Chart 5). By 2006, about 26 percent of mortgage originations were loans of this type. These data actually underestimate the saturation of nontraditional mortgages. Because of a lack of data, most 2/28 and 3/27 hybrid ARMs are not included in this Chart.¹⁴

Chart 5

NONTRADITIONAL MORTGAGE SHARES, 2004–06



Source: *Inside Mortgage Finance*

Given the large penetration of nontraditional mortgages and other adjustable-rate mortgages (many of which are subprime), along with the payment shock associated with these mortgages, the escalation in ARM foreclosure rates is not surprising. This payment shock is a strong default trigger as many borrowers who would like to maintain their home find themselves unable to make the much higher payments.

Even with tight underwriting standards, many of these loans likely would have been foreclosed upon after payment reset. In reality, underwriting standards, especially for state-regulated mortgage brokers, have been very loose until recently, greatly exacerbating the foreclosure problem.

Most subprime loans are originated by mortgage brokers, who assess the creditworthiness of borrowers and submit approved loan applications to lenders, who fund the loans. The lenders, in turn, often sell the loans through a trust to an underwriter (often Freddie Mac or Fannie Mae, but also to many private underwriters). The underwriters package the loans into securities to sell to investors. This securitization process creates a large disconnect between the broker, who originates the mortgage, and the eventual owner of the mortgage. The incentive for the mortgage broker is to originate as many loans as possible, with little consideration given to the long-term viability of any one loan. Of course, the broker must ensure that the loans meet underwriting stan-

dards, but in recent years, due largely to a great appetite for the high yields associated with risky loans, these standards became relatively weak. In the last few years, the tendency of many mortgage brokers has been to qualify borrowers at a loan's initial payment amount. Many of these borrowers would not have qualified for the loan at the fully amortized payment amount. After reset, they are faced with payments they cannot afford, and the only viable option for many is to terminate the loan through refinance, sale, or default.

High loan-to-value, property market stagnation, and net equity

If borrowers could sell their properties or refinance their mortgages when faced with problems making payments, the foreclosure problem would not be nearly as severe. Unfortunately, many borrowers have insufficient equity in their homes to cover the outstanding mortgage plus the costs of selling, such as brokers' commissions. Further, many nontraditional loans have prepayment penalties as high as 3 percent of the outstanding balance of the loan. The adverse equity position of these borrowers can be explained largely by high loan-to-value (LTV) ratios at origination, rampant equity extraction via secondary liens or cash-out refinancing, and a stabilization or decline in home prices in many areas of the country.

Over time, down payment requirements for mortgages have become smaller and smaller, spurred in part by an increased willingness on the part of Fannie Mae and Freddie Mac to accept high LTV loans (greater than 90 percent) for securitization. Many mortgage brokers and lenders in the last several years have offered products with no money down (100 percent LTV). In some cases, borrowers can roll closing costs into the loan and borrow as much as 107 percent of the home's value.

Two-tiered "piggyback mortgages," which combine first and second mortgages at origination, are also becoming popular. An example is the 80-20 mortgage, which combines an 80 percent LTV first mortgage with a 20 percent LTV second mortgage, resulting in a total LTV of 100 percent. A popular variation is the 80-10-10 mortgage, which includes an 80 percent LTV first mortgage, a 10 percent LTV second mortgage,

and 10 percent cash down. The second lien (subordinate loan) generally is a revolving home equity line of credit but may also be in the form of a closed-end (nonrevolving) second mortgage.

The share of first (primary) lien home purchase mortgages originated with LTVs above 90 percent actually has declined since 2000, from about 22 percent to about 19 percent (Federal Housing Finance Board). In some states, however, the ratio remains quite high. The average LTV on these high LTV first mortgages is about 96 percent.

These data probably significantly underestimate the number of homeowners with high LTV mortgages because they exclude refinances and second liens.¹⁵ The somewhat surprising decline in high LTV loans in this decade likely reflects increased use of two-tiered loans over high LTV first mortgages that require primary mortgage insurance.¹⁶ A 2004 study suggests that in the first half of that year, 42 percent of mortgage loan dollars to purchase homes involved second liens, compared to less than 20 percent in 2001 (SMR Research Corporation). These two-tiered loans are especially common in places with high property values.

In addition to high LTV originations, secondary liens and cash-out refinancing can quickly lead to adverse equity positions in an environment of stable or declining home prices. The Tax Reform Act of 1986 eliminated interest deductions on consumer loans. Since then, home equity has increasingly been used to finance consumer spending in order to take advantage of the deductibility of mortgage interest. Often, home equity is extracted with a secondary lien, but another option is to refinance the first mortgage for an amount greater than the outstanding balance of the loan (cash-out refinance).

In 2006, 14.4 percent of the dollar volume of mortgage originations was for secondary equity loans, compared to less than 5 percent in 2001 (*Inside Mortgage Finance*). These second liens are granted for a combined LTV of up to 125 percent in some cases.

Roughly 45 percent of all 2006 mortgage dollars were for refinances. Of the refinanced mortgages purchased by Freddie Mac in that year, 86 percent exceeded the payoff balance by at least 5 percent, indicating that the borrower extracted equity from the home. In the first half of 2007, the share of Freddie Mac-purchased refinances extracting equity was 83 percent.

With LTVs for many homeowners well over 90 percent, and in some cases as high as 125 percent, many borrowers struggling to make mortgage payments find themselves in the position of having inadequate equity in their homes to pay off their mortgage and selling costs. This situation is exacerbated when home prices are stagnant, or worse, falling.

As noted above, from 2001 to 2005 the average appreciation in home prices in the United States was 53 percent, according to the Office of Housing Enterprise Oversight's (OFHEO) Home Price Index. Since that period, home prices have stabilized across the country and, in many places, declined.

Home price appreciation rates can vary significantly depending on the index used to measure prices (Rappaport). Still, all major indexes show price appreciation declining over the last two years, if not turning negative. According to the National Association of Realtors (NAR), home prices in the United States declined 1.5 percent over the year ending second quarter 2007, after rising more than 12 percent in the 2004-05 period. Another index, S&P/Case-Shiller, shows U.S. prices declining 3.2 percent in the year ending second quarter 2007. While the OFHEO House Price Index shows continued growth of 3.2 percent, the growth rate in the index is down from more than 13 percent for the year ending second quarter 2005.

The perfect storm

The sudden and rapid rise in foreclosures has resulted from a confluence of these three conditions. Any one condition—stagnating home prices and rising LTVs, payment resets on nontraditional mortgages resulting in payment shocks, or an increase in the market share of subprime mortgages—would cause an increase in the foreclosure rate. The confluence of these three factors, however, has caught an unusually large number of homeowners in financially untenable situations with few options except to default on their mortgage.

This problem appears particularly acute in two areas. First, as seen earlier, markets where housing was very unaffordable have been severely affected. In these areas, many homebuyers resorted to ARM mortgages and nontraditional mortgages in order to purchase a home. These homebuyers may have believed that they were getting a “sure thing,”

that is, a market where home prices would continue rising indefinitely, or at least long enough for them to sell their property or refinance if need be.

In California, for instance, the OFHEO reports that home prices were increasing over 20 percent per year from 2004 to early 2006. Since 2006, home price increases have virtually ceased in the state of California: OFHEO reports a home price decrease of 1.4 percent in California in the second quarter of 2007. The expected equity accrual has evaporated, leaving many homebuyers with ARMs unable to afford their payment reset or sell their homes. As a result, foreclosures have gone up almost fourfold since the beginning of 2006.

The second area experiencing large foreclosure rates are low-and moderate-income communities. These communities are often home to many high-risk borrowers, such as individuals with low credit scores or unsteady employment. Data from several metropolitan areas in the Midwest suggest that neighborhoods with high foreclosure rates tend to be among the lowest income and lowest credit-score neighborhoods in the city (see Table A.2).

Like people in high-price regions, these homebuyers are at the margin of being able to afford a house. These homebuyers often also get nontraditional mortgages with significant prepayment penalties or balloon payments. These penalties and balloon payments likely exceed their equity and other savings, making it difficult; if not impossible; to cover the costs associated with the sale of their home. As a result, many of these homeowners may have little choice but to default when the payment becomes unsustainable.

IV. CONCLUSIONS

Foreclosure is a two-step process: First a default occurs, and then a lender chooses to take a foreclosure action. Defaults generally arise from some combination of low or negative equity and a trigger event. While state laws may make foreclosure less costly to the lender in some places than in others, eventually most mortgages in default end in foreclosure.

The U.S. foreclosure rate has increased dramatically in recent years. Some recent foreclosures likely have been “ruthless defaults,” as property values have declined in many areas. Were that a significant part of the explanation, however, the country likely would have seen an increase in foreclosure rates among all loan types. In reality, the increase in foreclosure rates has been mostly confined to ARMs, especially subprime ARMs. The available evidence suggests that in the face of rising short-term interest rates and payment resets on nontraditional mortgages, many borrowers have been unable to keep up with mortgage payments. Those with low or negative equity have been unable to sell their properties to forestall foreclosure. Exacerbating the situation in recent years has been an increase in the share of outstanding mortgages that are subprime, as subprime mortgages have substantially higher foreclosure rates than prime mortgages.

Part of the market saturation with nontraditional mortgages and increased penetration of subprime lending can be explained by relatively weak underwriting standards. With tighter standards now the norm, the source of much of the current problem has been increasingly contained. However, 2005 and 2006 were record years for subprime lending and the origination of nontraditional mortgages. These nontraditional loans, many of which are subprime, will reset over the 2007-09 period, so the worst of the foreclosure problem may yet to have arrived. Developments in money and real estate markets and the condition of the overall economy will likely shape the near-term picture. Beyond this period, because of tighter underwriting standards and fewer nontraditional originations, the foreclosure situation is likely to be substantially mitigated.

APPENDIX

FORECLOSURES IN THE TENTH FEDERAL
RESERVE DISTRICT

The foreclosure picture in the Tenth Federal Reserve District is mixed. Foreclosure rates tend to be slightly lower than the national average, in part because of a lower share of adjustable-rate mortgages. But foreclosures on ARMs that exist are higher than the national average, and some low- and moderate-income urban communities appear to be experiencing significant foreclosure distress.

Foreclosures at the state level

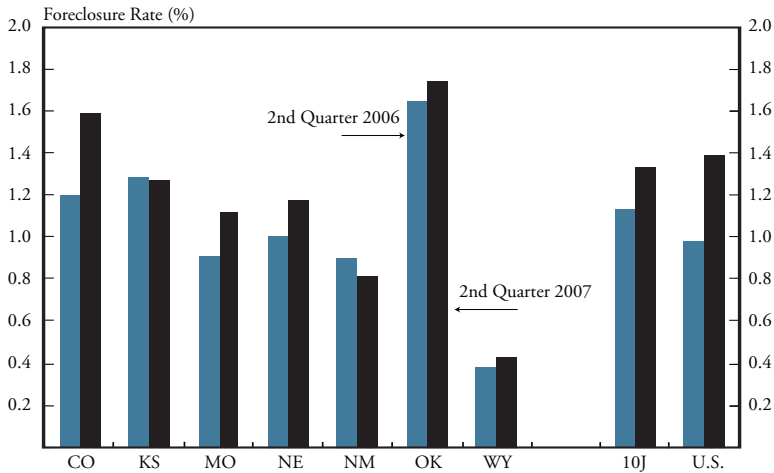
Consistent with national trends, foreclosures in the Tenth District increased substantially over the last year, rising from about 1.1 percent to 1.3 percent of all outstanding mortgages (Chart A.1). But the level has changed from being slightly above to slightly below the national figure, which was 1.0 percent in the second quarter of 2006 and 1.4 percent in the second quarter of 2007. Both Colorado (1.6 percent in the second quarter of 2007) and Oklahoma (1.7 percent) have consistently suffered higher foreclosure rates than the nation as a whole, but the remainder of the Tenth District has fared relatively well. Wyoming has one of the lowest foreclosure rates in the country, a likely result of the energy-driven economic boom in the state. Foreclosure rates have declined in New Mexico, largely because of strong real estate markets, and remain virtually unchanged in Kansas.

An important factor in the relatively modest foreclosure rates in most states of the Tenth District is that a smaller share of mortgages are ARMs or subprime than in the nation as a whole. Almost 85 percent of all prime loans in the Tenth District are FRMs, compared to 80 percent nationally. Subprime loans comprise just over 12 percent of all outstanding mortgages in the district, compared to 14 percent nationally.

One reason why there are fewer ARMs in the Tenth District than nationally is that housing prices in the district are generally affordable. Based on a comparison of median household income to median home prices, all Tenth District states other than Colorado have more affordable

Chart A.1

CHANGE IN FORECLOSURE RATES IN THE TENTH DISTRICT, YEAR ENDING 2007:Q2



Source: Mortgage Bankers Association

housing than the nation as a whole. Oklahoma, Kansas, and Nebraska are among the ten most affordable states in the country, and in each of these three states, fixed-rate mortgages account for 90 percent or more of all prime loans. In Colorado, by contrast, the share of ARMs is high. In the second quarter of 2007, almost one-quarter of prime mortgages and two-thirds of subprime mortgages in Colorado were ARMs, compared to 20 percent and 53 percent, respectively, for the nation.

Although overall foreclosure rates tend to be lower in the Tenth District than in the rest of the nation, the ARM-specific foreclosure rate is higher in the district. Specifically, the prime ARM foreclosure rate was 1.6 percent in the second quarter of 2007, compared to just 1.3 percent nationally. The subprime ARM foreclosure rate in the district was comparable to the national average (8.0 percent). Subprime ARM foreclosure rates would be higher in the district if not for exceptionally low foreclosure rates in New Mexico and Wyoming. Nebraska's ARM foreclosure rate was greater than 9 percent in the second quarter of 2007, and in Oklahoma, more than one of every ten subprime ARMs was in foreclosure.

There may be several reasons for the above-average rate of ARM foreclosures in the Tenth District. Housing is generally more affordable than in the nation as a whole, enabling more people to get fixed-rate mortgage products. Those who get ARMs may thus have a higher risk profile—and thus higher foreclosures—than the average ARM mortgage holder nationally. Another possible reason is home price appreciation. Home price appreciation rates in the metropolitan areas of the Tenth District tend to be lower than the national average. Lower home price appreciation might leave more ARM borrowers in an adverse equity position in the Tenth District than elsewhere, resulting in a higher long-term foreclosure rate than nationally.

Foreclosures at the local level

Through early 2006, home price appreciation in local real estate markets in the Tenth District has, in general, been less than the national average (Table A.1). Since the slowdown in national housing markets, however, this is no longer the case. While appreciation rates vary among the metropolitan areas of the district, the National Association of Realtors (NAR) reports that only Omaha saw a decline in home prices (4.3 percent) greater than the national average (1.5 percent). NAR reports that all other metro areas in the district saw milder declines in home prices or continued home price appreciation than in the nation as a whole, with Farmington, New Mexico, reporting the largest increase at 14.0 percent. Stronger current price appreciation likely results in fewer homeowners being caught in adverse equity positions, reducing the risk of default.

Nonetheless, the foreclosure storm is affecting some local markets in the Tenth District much more strongly than others. Specifically, according to data provided by RealtyTrac, foreclosure rates in the Tenth District are much higher in urban and rapidly growing suburban counties than in rural counties (Map A.1).¹⁷ The highest foreclosure rates in each state are in counties near (or containing) the state's largest city. With only one exception, the counties with the highest foreclosure rates in the Tenth District are around Denver, Colorado, and Kansas City,

Table A.1

HOME PRICE APPRECIATION IN THE TENTH FEDERAL RESERVE DISTRICT, 2004-07

Selected MSAs

MSA	Annual Appreciation			
	National Association of REALTORS ^a			OFHEO HPI ^b
	2004-05	2005-06	2006-07(Q2)	2006-07(Q2)
Albuquerque, NM	16.4	8.9	7.7	9.0
Boulder, CO	7.1	5.2	2.3	2.3
Colorado Springs, CO	9.8	6.0	1.4	3.3
Denver-Aurora, CO	3.3	1.0	0	.8
Farmington, NM	15.2	11.1	14.0	N/A
Kansas City, MO-KS	4.5	(.6)	(.7)	3.6
Lincoln, NE	2.1	.2	(.5)	2.7
Oklahoma City, OK	2.0	9.0	3.1	3.4
Omaha, NE-IA	3.7	1.6	(4.3)	1.4
Springfield, MO	6.1	3.1	1.3	5.9
Topeka, KS	3.5	.4	6.3	5.0
Tulsa, OK	N/A	N/A	N/A	4.4
Wichita, KS	3.9	6.4	(.7)	5.4
United States	12.2	1.3	(1.5)	3.2

^aThe National Association of REALTORS Median Sales Price of Existing Single-Family Homes; Available from <http://www.realtor.org>. For more information on house price indexes, see Jordan Rappaport, 2007, "A Guide to Aggregate House Price Measures," Federal Reserve Bank of Kansas City Economic Review, 92(2), 41 – 72.

^bOffice of Housing Enterprise Oversight (OFHEO) Housing Price Index (HPI); Available from <http://www.ofheo.gov>.

Table A.2

CHARACTERISTICS OF HIGH FORECLOSURE NEIGHBORHOODS

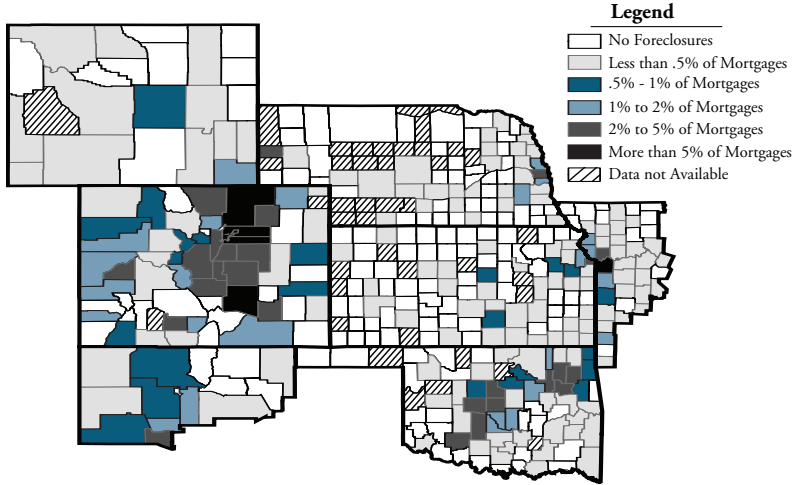
Foreclosure Rate in Census Tract	Median Income as % of MSA Median Income	Median Home Value as % of MSA Median Home Value	Subprime Mortgage Owners (%)	High Interest Mortgages 2004-06 (%)
Less than .5%	134.9	134.0	18.7	17.4
.5-1%	130.3	131.1	19.0	16.8
1-2%	117.1	112.5	22.5	20.0
2-5%	99.7	92.5	28.2	25.7
More than 5%	73.7	66.2	39.4	36.6

Sources: RealtyTrac, U.S. Census, Undisclosed national credit rating agency, and HMDA

Map A.1

TENTH DISTRICT FORECLOSURE RATES, BY COUNTY

July 1, 2006–June 30, 2007



Source: Realty Trac and U.S. Census

Missouri, the two largest cities in the district. Rapidly growing suburban counties and some resort areas in the Rocky Mountains also have high foreclosure rates.

In contrast, foreclosure rates in the Tenth District's rural counties are relatively low. Most rural counties have foreclosure rates below 0.5 percent, and few counties outside of Colorado have foreclosure rates greater than 2 percent. In many rural counties, there were no foreclosures at all identified from June 2006 to June 2007.¹⁸

A more detailed analysis of the Tenth District metro areas, using data from several sources (RealtyTrac and the U.S. Census, sample data from a national credit rating agency, and Home Mortgage Disclosure Act mortgage origination data), suggests that low- and moderate-income neighborhoods are experiencing levels of foreclosure well above districtwide and national averages (Table A.2).¹⁹ In Census tracts with foreclosure rates less than 1 percent, median household incomes and home values were more than 130 percent of the metropolitan statistical area (MSA) median household incomes and home values. Generally, neighborhoods with incomes more than 120 percent of the median MSA income are considered higher income neighborhoods. Conversely, Census tracts with foreclosure rates greater than 5 percent had median

household incomes and median home values at 74 and 66 percent, respectively, of MSA median incomes and home values. Neighborhoods between 50 percent and 80 percent of the MSA median income are usually classified as moderate-income neighborhoods (neighborhoods with incomes less than 50 percent of the MSA median income are classified as “low-income” neighborhoods).

Between these two extremes, the decrease in home values and household income as foreclosure rates increase is almost uniform. This indicates that as foreclosure rates rise, the neighborhood is likely to be poorer.

Concentrations of subprime credit scores and high interest loans are usually found in low- and moderate-income areas (Calem, Gillen, and Wachter). An analysis of December 2004 data from a national credit rating agency (Federal Reserve Board, proprietary) suggests that there are more than twice as many homeowners with subprime credit scores in neighborhoods with high foreclosure rates than in neighborhoods with low foreclosure rates. Further, neighborhoods with high foreclosure rates have more than twice as many mortgages originated with high interest rates than neighborhoods with low foreclosure rates. Consistent with the income and home value results, there is an almost uniform increase in subprime credit scores and high interest loans as foreclosure rates increase.

Overall, the Tenth District has slightly lower levels of foreclosures than the nation as a whole. However, there are some causes for concern in the district. Colorado has seen a large increase in foreclosures, and Oklahoma’s foreclosure rate has been well above the national average for some time. Adjustable-rate products are also more likely to be in foreclosure in the Tenth District than in the nation as a whole. With few exceptions, foreclosure rates in the district are highest in cities and rapidly growing suburban counties. Specifically, low- and moderate-income neighborhoods in urban areas are being hit the hardest.

GLOSSARY OF MORTGAGE TERMS

Alt-A mortgage—A mortgage with an A- credit rating. Alt-A has traditionally been used to designate low documentation/no documentation loans but could indicate a loan to someone with creditworthiness just below prime or a loan that does not meet some other specified underwriting criterion. In general, Alt-A mortgages are made to borrowers with nontraditional circumstances.

Amortization—A schedule of equal, regular payments consisting of interest and part of the principal made over a specified time period upon the expiration of which the entire debt is repaid.

ARM—An **adjustable-rate mortgage**, which is a mortgage with an interest rate and payment that changes periodically over the life of the loan depending on short-term market interest rates.

Cash-out refinancing—A refinance loan in excess of that required to pay off the existing mortgage, in which the borrower receives the difference in cash.

Conforming loan—A loan that is eligible for purchase by Fannie Mae or Freddie Mac. In 2006, the loan amounts were required to be \$417,000 or less.

Credit rating—A rating by lenders that conveys the creditworthiness of borrowers. Usually these are expressed as letter grades, such as A, A-, B, C, or D.

Fannie Mae—Federal National Mortgage Association, one of two government-sponsored entities that purchase home loans from lenders to package into securities to sell to investors. Fannie Mae guarantees these securities.

Freddie Mac—Federal Home Loan Mortgage Corporation, one of two government-sponsored entities that purchase home loans from lenders to package into securities to sell to investors. Freddie Mac was created in 1970 to provide competition in the secondary market and ensure that Fannie Mae would not have a monopoly.

FRM—A **fixed-rate mortgage**, which is a mortgage loan in which the interest rate does not change during the entire life of the loan.

Hybrid ARM—A hybrid ARM shares characteristics of an FRM and an ARM. It is a mortgage with a fixed interest rate period of two or three years that then turns into an adjustable-rate mortgage. **2/28 and 3/27 hybrid ARMs** are common among subprime mortgages. In this article, these terms are used to distinguish ARMs with initial teaser rates from ones with initial rates at market rates, which we would term **3/1 or 5/1** for ARMs with initial fixed-rate periods of three or five years.

Interest-only mortgage—A mortgage where the monthly mortgage payment consists of only the interest accrued on the loan for some specified period of time, during which the principal balance remains unchanged. After the initial interest-only period, the payment jumps to cover both interest accrued and the portion of the principal due according to an amortization of the loan over its remaining life. Most interest-only loans are ARMs.

Nonprime mortgage—A mortgage with a credit rating less than A. Generally, these are Alt-A or subprime mortgages.

Option ARM—An ARM that allows the borrower to set his own payment terms, including making a minimum payment that is insufficient to cover the interest accruing on the loan, resulting in negative amortization.

Prime mortgage—A mortgage issued to a borrower with a good credit rating, usually rated A.

Refinance loan—A mortgage loan used to pay off an existing mortgage.

Securitization—The process of pooling mortgages into securities to be sold on a secondary market.

Subprime mortgage—A mortgage issued to a borrower with impaired credit, typically reflected in a credit score below 620. These loans generally have B or C credit ratings. A subprime borrower generally pays a higher interest rate to compensate the lender for the increased risk of default. Subprime loans generally do not meet the underwriting standards of Fannie Mae and Freddie Mac, which purchase mostly A-rated mortgages.

ENDNOTES

¹More precisely, the value of the mortgage is equal to the net present value of the future stream of payments. Depending on where market interest rates stand relative to the contract rate on the mortgage, the mortgage value may differ from the outstanding balance of the mortgage.

²A power of sale clause is a clause in a deed of trust or mortgage, in which the borrower pre-authorizes the sale of property to pay off the balance on a loan in the event of their default; thus, no judicial action is required.

³A judicial foreclosure can be pursued in any state. Because of cost differences, described below, judicial foreclosures are unlikely to be pursued in cases where they are not required.

⁴Alt-A has traditionally been used to designate such low documentation/no documentation loans, but Alt-A is synonymous with A- and could indicate a loan to someone with credit worthiness just below prime or a loan that does not meet some other specified underwriting criterion. A significant share of subprime originations also lack full documentation of income.

⁵Securitization is a process where mortgage loans are packaged into securities that can be sold to investors. For a detailed description of the securitization process, see Rosen.

⁶This decline was not due to a decrease in the demand for mortgages, but rather reflects an international downward trend in long-term interest rates, spurred at least in part by aggressive action by the Federal Reserve to lower short-term rates.

⁷These are employment charts reported by the U.S. Census Bureau's Current Employment Statistics Survey, for NAICS code 522292, "Real Estate Credit," which consists of establishments "primarily engaged in lending funds with real estate as collateral."

⁸The Mortgage Bankers Association estimates that the subprime share of mortgage originations was 5.3 percent in 2003, compared to 14.0 percent in the second quarter of 2007. This estimate assumes that the subprime foreclosure rate would be unchanged by the overall composition of mortgages.

⁹The Housing Price Index of the Office of Federal Housing Enterprise Oversight is but one of several series that can be used to gauge home appreciation. For a review of this and other indexes, see Rappaport.

¹⁰Assuming a margin of 2.25 percent over the 1-year constant maturity Treasury. Margins often vary loan by loan, as can the index upon which the margin is added. The typical margin on a prime loan is between 2 percent and 3 percent.

¹¹A hybrid ARM shares characteristics of a FRM and an ARM. In that sense, the 3/1 ARM discussed above is a hybrid. The 3/27 ARM and the 3/1 ARM have a similar structure. The term 3/27 is used here to differentiate a loan with an initial three-year teaser rate, from a standard ARM with a three year fixed period, denoted here as a 3/1.

¹²Assuming a margin of 4.5 percent over the 1-year constant maturity Treasury. Margins on subprime loans typically vary between 4 percent and 6 percent.

¹³The assumption underlying the example is that the minimum payment is equivalent to the payment on a mortgage with a 1 percent interest rate. Again, here it is assumed that the interest rate at reset is equal to a margin of 4.5 percent over the 1-year constant maturity Treasury.

¹⁴Insufficient data are available to separate the hybrid ARMs from the pool of option ARMs and interest-only ARMs.

¹⁵The Federal Housing Finance Board survey does not ask for combined first and second mortgage LTVs, but it is possible that some respondents provide this value (personal communication, September 25, 2007). Junior liens generally are unobservable to senior lien-holders.

¹⁶Holden Lewis of bankrate.com suggests that two-tiered loans have taken as much as 40 percent of the market away from mortgage insurers. See "PMI industry fights back against piggyback loans," accessed September 25, 2007, at <http://www.bankrate.com/brm/news/mortgages/20050303a1.asp>.

¹⁷RealtyTrac, a national firm specializing in foreclosures, tracks foreclosure activity throughout the United States. Foreclosure activity includes not only new foreclosures but changes in foreclosure status to properties already in foreclosure. When activity numbers are aggregated, it can result in double- and sometimes triple-counting of foreclosed properties. RealtyTrac has developed an internal, proprietary model to identify unique foreclosures in their database. We received data from this model to conduct the foregoing analysis. These data were utilized to analyze new foreclosures at both the county and census tract level over a one-year period from July 1, 2006, to June 30, 2007. The number of foreclosures was normalized based on outstanding mortgages as of the 2000 Census. This normalization procedure may result in a slight overstatement of the foreclosure rate, since the number of mortgages outstanding has risen since 2000 (by 14 percent, on average). The foreclosure rate presented here is similar to the foreclosure initiation rate reported by Mortgage Bankers Association (MBA), with one important caveat. The foreclosure initiations reported by MBA are shown on a quarterly basis, whereas the data here are annual. Thus, a foreclosure rate of 2.0 percent would be the same as MBA reporting a foreclosure initiation rate of 0.5 percent for four straight quarters.

¹⁸Although the available data from RealtyTrac does not cover every rural county in the District, as shown on the map, the counties that are not covered are unlikely to be experiencing higher levels of foreclosure distress. As of September, 2007, there were only four active foreclosures within the 22 rural counties in Nebraska not covered by RealtyTrac, according to [foreclosure.net](http://www.foreclosure.net) (accessed September 14, 2007, at <http://www.foreclosure.net/>). Similarly, very few active foreclosures were found in the rural counties not covered by RealtyTrac in Colorado, Kansas, Oklahoma, and Wyoming.

¹⁹In the analysis that follows, Census Tracts are used as proxies for neighborhoods. Census Tracts are often the lowest unit of geography with reliable data and are contiguous, relatively homogenous areas within an MSA. They are therefore generally accepted as the unit of analysis for neighborhood conditions.

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