

**From TODD J. ZYWICKI, *BANKRUPTCY LAW AND POLICY IN THE TWENTY-FIRST CENTURY* (Forthcoming 2009, Yale University Press)**

## **CHAPTER 4**

### **HOUSING AND BANKRUPTCY**

Beginning in 2007 and continuing into 2008, the residential real estate market was roiled by tumult unprecedented in recent American history. Widespread foreclosures and a collapse in home prices in many areas of the country spawned a global financial crisis that continues as this book is being written. Although home prices have fallen precipitously in many areas of the country and foreclosures have risen to all-time highs, the end of the crisis still may not be in sight. The United States government has engineered a series of unprecedented market interventions designed to stabilize the housing market and the financial markets dependent on mortgage-backed securities. Many of the issues implicated by these financial crises are beyond the scope of this book. Instead, this chapter will focus on the underlying questions related to consumer behavior and its implications for consumer bankruptcy and consumer credit.

Consumer borrowing secured by residential real estate grew substantially over the past several years. This trend has resulted from several factors, including: low interest rates on home mortgages and home equity lines; the tax deductibility of interest payments on mortgages and home equity loans; and market innovations that have increased the flexibility of refinancing and home equity loans, enabling consumers to use their equity in their homes for other purposes. All of these factors tend to increase the value of housing by increasing the willingness of purchasers to pay higher prices for the houses. Lower interest rates, for instance, encourage buyers to pay a higher price for the house by

reducing the monthly payment associated with a given principle sum borrowed. Higher tax rates increase the economic value of housing by increasing the effective value of the mortgage tax deduction. In a period where effective tax rates are high, buyers will be encouraged to spend more on houses relative to the other elements of their wealth portfolio. Moreover, for many years (until recently) the cost of renting relative to homeownership rose dramatically over the past decade, which also tends to encourage homeownership.<sup>1</sup> Standard economics thus provides a compelling explanation for the increase in household mortgage obligations—low interest rates, high effective tax rates, and the increased capital value of residential real estate. Moreover, increased mortgage liabilities have been offset by an increase in home values, thereby increasing household assets by the same amount as the liability incurred.

This chapter looks at the impact of these developments in the housing market on household financial condition. Two key discussions are raised as they relate to the larger themes of this book. First, although there has been a dramatic rise and collapse of the residential real estate market in recent years, it is doubtful that developments in the housing market can explain the rise in bankruptcy filings in the 1980s and 1990s. Second, this chapter looks at the factors that drove consumer demand during the “bubble” market that popped in 2006 with such widespread effects.

### ***Housing and Bankruptcy***

In recent times there has been unprecedented turmoil in the housing market which has spawned rapidly-rising bankruptcy filing rates. This link between housing and rising

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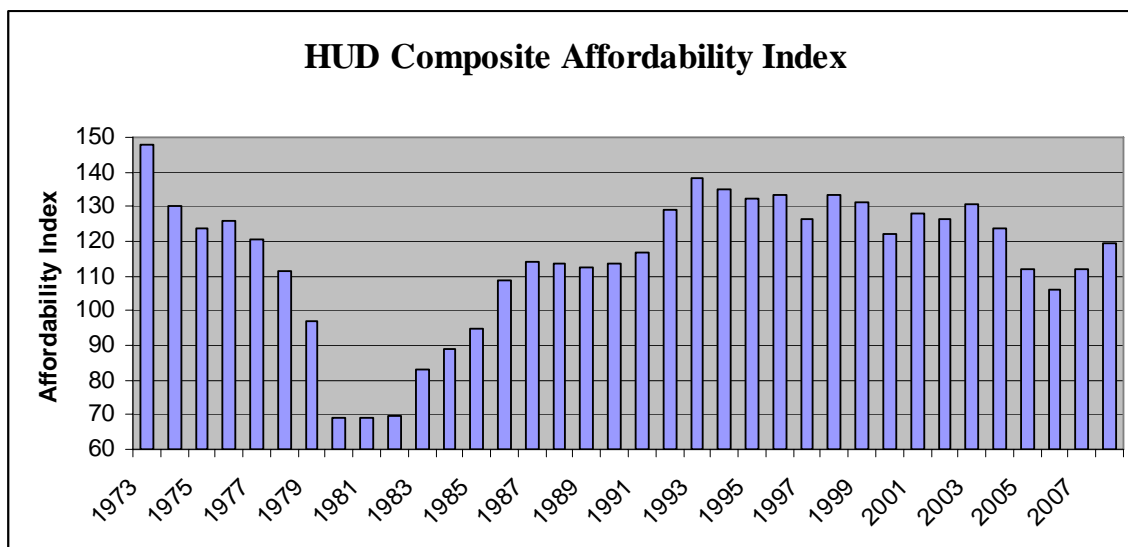
<sup>1</sup> See Dynan et al., *supra* note **Error! Bookmark not defined.**, at 424–25. This is discussed in greater detail below.

bankruptcy filings, however, is relatively recent. For the period of the great bankruptcy boom from 1980 to 2000, housing-induced financial distress does not appear to have been a major contributing factor to rising bankruptcy filing rates. Steady declines in mortgage interest rates combined with rising home values made residential real estate one of the areas of household financial strength during this period, up until the collapse of recent times.

The sudden boom and bust in the housing market in recent years should not obscure that this has been an anomalous period and that for most of the past thirty years home prices have largely moved in tandem with changes in income and inflation. Figure 4-1 presents the “Housing Affordability Index,” as reported by the Department of Housing and Urban Development, which measures the ratio of median family income to the income necessary to qualify for a mortgage to purchase the median-priced house at prevailing interest rates. Thus, an index value of over 100 indicates that the typical (median) family has more than sufficient income to purchase the median-priced home.

There is a dramatic drop in the Affordability Index in the 1980s, especially in the early 1980s when interest rates on mortgages exceeded 15 percent for two years and remained in double-digits for almost a decade. But except for that aberration, there is little evidence that housing became unaffordable during this time. Even with the run-up in home prices in recent years, the Affordability Index never fell below 100, primarily because interest rates were at record lows, which spurred the run-up in home prices.

**Figure 4-1**

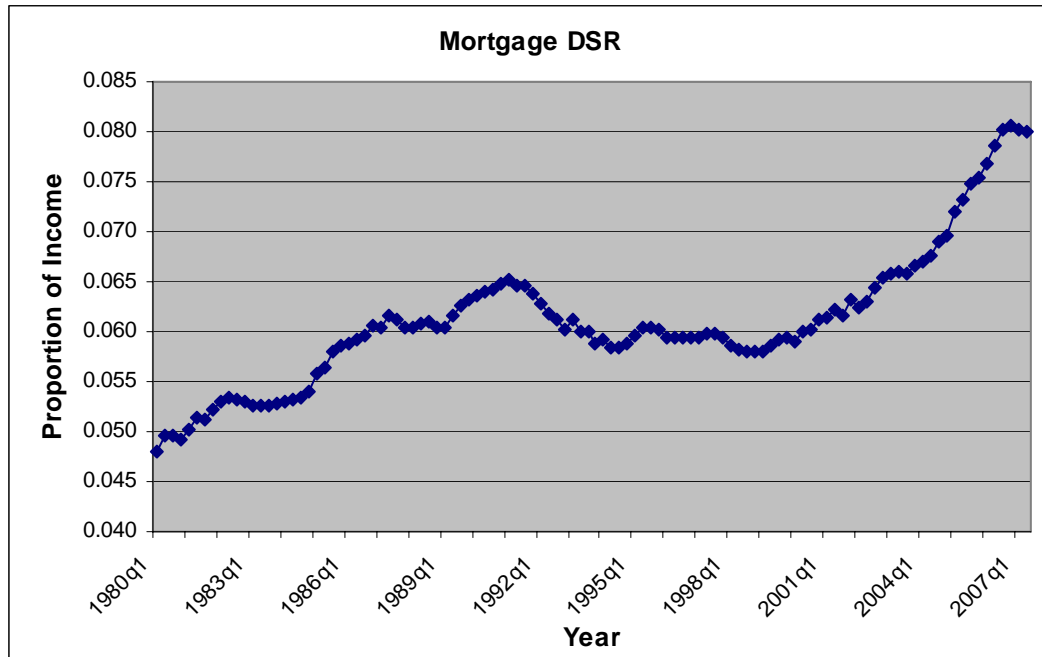


Real housing prices (adjusted for inflation) also show a high degree of stability over most of this time period—again leaving aside the anomalous experience of recent times.<sup>2</sup>

Data from the Federal Reserve on the mortgage debt service ratio also fails to find any major or consistent upward trend between 1970 and 2000 that would support the “bidding war” hypothesis. Like the debt service ratio presented above, the mortgage debt service ratio is the percentage of monthly income dedicated to mortgage debt service. Over the past twenty years, the mortgage debt service ratio hovered around 6 percent of monthly disposable income rising from the mid-1980s to 2000, then falling before rising above 6% again in 2000, as Figure 4-2 shows:

**Figure 4-2**

<sup>2</sup> Stan J. Liebowitz, *Anatomy of a Train Wreck: Causes of the Mortgage Meltdown* (Oct. 3, 2008), INDEPENDENT POLICY REPORT (Oct. 3, 2008).



There is a slight increase (from 5 percent to about 6 percent of household income) in the Mortgage DSR during the 1980s, which then levels off and stabilizes at around 6 percent of income in the 1990s. Beginning in 2000, the mortgage debt service ratio begins its dramatic upward climb associated with the subprime mortgage boom and accompanying real estate bubble, and it isn't until 2004 that that the mortgage DSR begins to break out its historical range. As can be plainly observed, during the 1990s when bankruptcy filing rates rose rapidly, the mortgage DSR was largely stable or declining and in fact was below the ratio of the 1980s, even though bankruptcy filings were much higher during that time.

Indeed, the slight rise in the mortgage debt-service ratio during this period may be a statistical anomaly. First, it is measured as a percentage of *disposable* household income—e.g., *post-tax* income. Thus, if the tax burden was rising during this period (as

Warren and Tyagi suggest) as well as the growing expenditures on capital gains taxes<sup>3</sup>, then the debt-service ratio might be measured as rising as well. Second, this measurement bias may have been exacerbated by the upward surge in the stock market during this time, which left many homeowners feeling wealthier, and which they may have converted some of their rising stocks into larger mortgages (again, as noted in Chapter 2, the growth in the mortgage payment would be counted in the debt service ratio but the realized or unrealized capital gains would not). Finally, as will be illustrated in more detail below, the homeownership rate was edging up during this period, thus some more financially marginal homeowners may have been entering the market during this period.

### ***The Housing “Bidding War”***

Although there appears to be little evidence that housing affordability can explain the rising bankruptcy filings of the 1980s and 1990s, Elizabeth Warren and Amelia Tyagi have argued in their book *The Two-Income Trap* that rising consumer bankruptcies during that time can be explained in part by rising household financial distress caused by a runaway “bidding war” for housing. In their view, this bidding war was caused by families competing to buy homes in more expensive neighborhoods in order to get their children into preferred school districts.<sup>4</sup> This bidding war for housing has, in turn, driven mothers from the home into the workplace, in order to earn sufficient income to pay the mortgage on high-priced homes. In turn, this increased female workforce participation has given rise to a whole new host of expenses, such as additional cars and child care expenses. In the end, Warren and Tyagi argue, the family is no more financially stable or

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<sup>3</sup> See discussion in Chapter 2.

<sup>4</sup> See WARREN & TYAGI, *supra* note **Error! Bookmark not defined.**, at 22–32.

well-off, because now both incomes are needed to pay for the house, as well as the expenses associated with maintaining a two-income family. Warren and Tyagi have dubbed this phenomenon the “two-income trap,” which, at its core, is said to be driven by the rapid appreciation in housing prices.<sup>5</sup>

The evidence that they present, however, fails to support this hypothesis. Most of the support for the housing “bidding war” hypothesis in *The Two-Income Trap* is anecdotal.<sup>6</sup> The only numerical data offered to support the thesis is an example of the balance sheet of an average household in the 1970s compared with an average household in the 2000s.<sup>7</sup> On closer inspection, however, the authors’ data does not support the “bidding war” hypothesis. In the standard one-wage earner household of the 1970s, the median income was \$38,700. Major expenses were \$1030 a year for health insurance, \$5310 for mortgage payments (14% of family income), and \$5410 for automobile loan payments and expenses. The effective tax rate was 24%, equaling \$9288 from the household salary, leaving \$17,834 in discretionary income. The overall family budget for an average American family in the 1970s is described below in Figure 4-3:

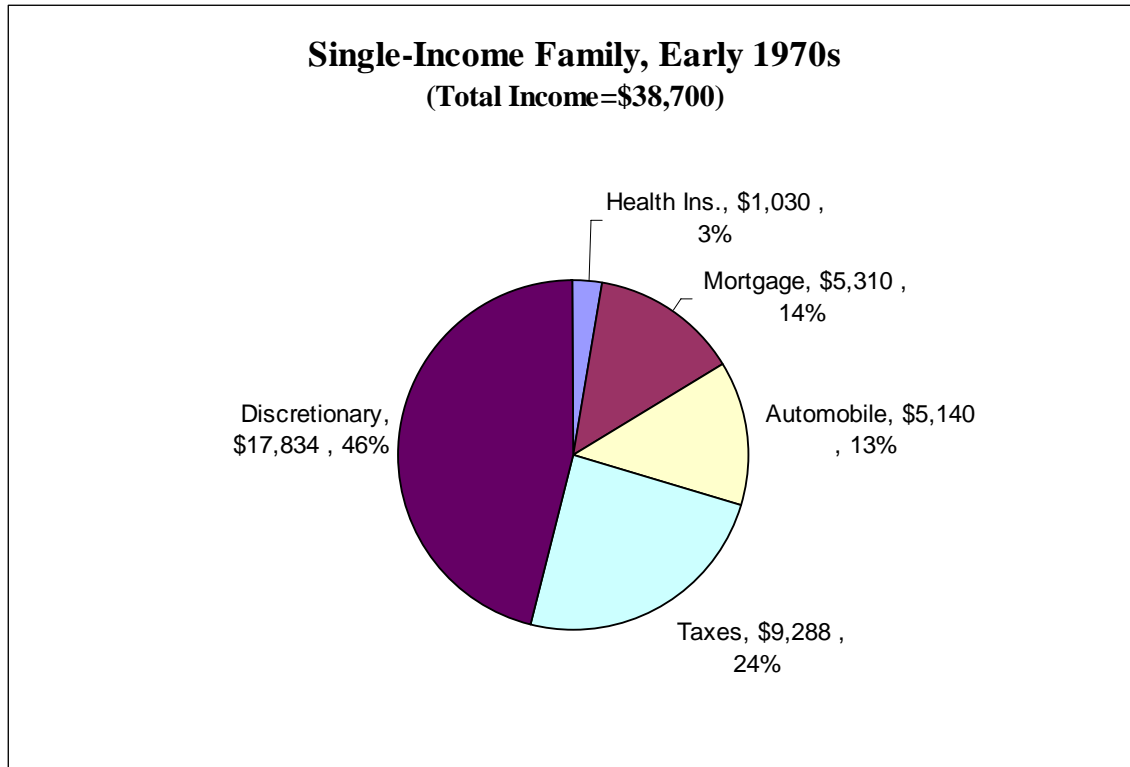
**Figure 4-3**

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<sup>5</sup> *Id.*

<sup>6</sup> *See id.* at 25.

<sup>7</sup> *Id.* at 50–51. The data in this discussion is drawn from *id.*

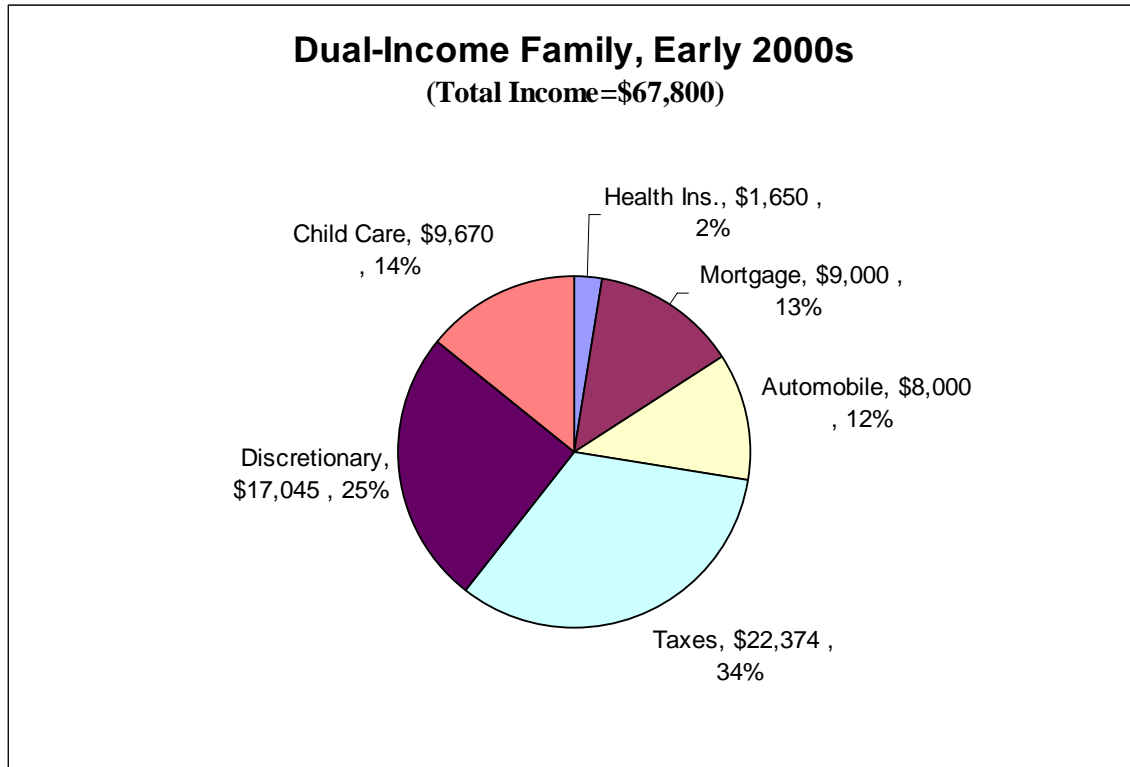


Source: Warren & Tyagi, *The Two-Income Trap*.

For the typical family of the 2000s with both spouses working, total family income is \$67,800. Mortgage payments are \$9000, an increase of \$3690, but a slight reduction to only 13% of income. The expense of two cars rises to \$8000, or an increase of \$2860. Day care is now needed because both parents are working, adding a total of \$9670 for two children. Health insurance has increased to \$1650, an increase of \$620. Because of the progressiveness of the tax code, the higher family joint incomes have increased taxes to 33%, or a total of \$22,374, an increase of \$13,086. Discretionary income has, in fact, fallen in the second period. But this appears to be primarily the result of a much higher tax burden and additional new child care expenses. As seen below in Figure 4-4, the supposed “bidding war” for housing, by contrast, has increased the family housing expense by only \$3690:

**Figure 4-4**





Source: Warren & Tyagi, *The Two-Income Trap*.

As Figure 4-4 indicates, mortgage, automobile, and health insurance expenses have all rose modestly in absolute terms from the 1970s to the early 2000s, but all fell *fallen* as a percentage of the family budget.<sup>8</sup> This is because household income has risen faster than those expenses during this period—income increases by 75 percent between the two periods, whereas expenditures on mortgage, automobiles, and health insurance all increase by less than 75 percent. By contrast, the amount paid on all taxes (federal, state,

<sup>8</sup> The importance of these factors is difficult to determine in *The Two Income Trap* because of the confusing manner in which it is presented. Warren and Tyagi present all of the data except for taxes in terms of the changes in the actual expenses of the family. But for taxes they present it in terms of the differences in the average tax rates paid but do not break out the actual dollar values for taxes. This makes it difficult to recognize the dramatic increase in the amount of family income going to taxes. Todd J. Zywicki, *Evaluating the Two-Income Trap Hypothesis*, Volokh Conspiracy (Aug. 6, 2007), <http://volokh.com/posts/1185883980.shtml>. Subsequently, Professor Warren presented the central argument of *The Two Income Trap* in a modified form in congressional testimony, presenting the data in an even more confusing manner by presenting the change in the tax burden not in terms of the different average rates, but rather the percentage change in the average tax rates between the two periods. See Todd J. Zywicki, *An Even More Confusing Presentation of the Two-Income Trap and Taxes*, Volokh Conspiracy (Aug. 20, 2007), <http://volokh.com/posts/1187542660.shtml>. Professor Warren's testimony is available at Elizabeth Warren, "The New Economics of the Middle Class: Why Making Ends Meet Has Gotten Harder," Testimony Before Senate Finance Committee (May 10, 2007), <http://www.senate.gov/~finance/hearings/testimony/2007test/051007testew.pdf>.

and local) increased 140 percent between the two periods—from about \$9000 to about \$22,000. This \$13,000 increase in taxes is substantially more than their mortgage, automobile expenses, and health insurance costs *combined*, and over three times the increase in housing expenses alone (the supposed driver of the two-income trap).<sup>9</sup> According to Warren and Tyagi’s own data, it is obviously taxes, not the expenses such as home prices or other consumer expenses, that are responsible for reducing discretionary income during this period. It is not until the artificial run-up in home prices in the early 2000s that housing expenses noticeably change.

Warren and Tyagi also make no effort to control for other factors that might endogenously increase home mortgage obligations. Most notably, the popularity of home equity loans (which hardly existed in the 1970s) grew dramatically between the 1970s and 1990s. Some of the growth of home equity loans was consolidation of high-interest consumer debt (such as student loans, car loans, and credit card debt), but much of the growth of home equity loans supported new consumption of consumer goods and home improvements, which increased the size and luxury of homes.<sup>10</sup> Warren and Tyagi make no effort to disentangle this plainly discretionary growth in home debt from the sort of exogenous home price appreciation about which they are concerned.

Nor is it clear from the example in the *Two-Income Trap* whether the price of housing is exogenous or endogenous to family income in the model. Warren and Tyagi implicitly assume that the price of housing is the independent variable that encourages women to enter the workforce so that the family can afford a more expensive house. But

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<sup>9</sup> This analysis also fails to consider the peculiarity that in Warren and Tyagi’s housing bidding-war scenario the typical family supposedly incurs \$9670 in new child care expenses and \$2,860 in increased automobile expenses) in order to pay \$3690 in new housing expenses.

<sup>10</sup> Greenspan and Kennedy.

it is at least equally plausible, if not more so, that the decision to work increases the income available to the household, which then enables and encourages the family to buy a more expensive house. Nor do they provide any evidence that the driving force for a more expensive house is the quality of the school district in which it is located—certainly the dramatic increase in home prices and the mortgage debt-service ratio between 2000-2007 cannot be explained by material changes in the quality of particular American school districts—as opposed to home size, age, yard size, or proximity to a downtown area and length of commute, or proximity to other amenities. For instance, the average size of an American home grew dramatically between the 1970s and 2000s and, holding everything constant, larger homes are more expensive than smaller homes. The median square footage of new single-family houses in America rose from 1525 to 2277 square feet between 1973 and 2007, and the average square feet increased from 1660 to 2521.<sup>11</sup> Until 1987, the Census Bureau did not even record the number of new houses with three or more baths; today 28 percent of new houses have three or more baths (the number of new homes with 1-1/2 baths or less fell from 40 percent to 5 percent between 1973 and 2007).<sup>12</sup> The number of homes with four bedrooms or more rose from 23 percent to 38 percent—even as the average size of American families declined.<sup>13</sup> The number of houses with three car (or more) garages was 19 percent in 2007 and the number of new houses with two car garages rose from 39 to 63 percent between 1971 and 2007.<sup>14</sup> Clearly, Americans are building larger and more expensive homes for reasons completely

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<sup>11</sup> <http://www.census.gov/const/C25Ann/c25ann2007.pdf> (“Median and Average Square Feet of Floor Area in New One-Family Houses Completed by Location”).

<sup>12</sup> <http://www.census.gov/const/C25Ann/c25ann2007.pdf> (“Number of Bathrooms in New One-Family Houses Completed”).

<sup>13</sup> <http://www.census.gov/const/C25Ann/c25ann2007.pdf> (“Number of Bedrooms in New One-Family Houses Completed”). According to the Census Bureau, between 1970 and 2000 the average family size in America declined from 3.58 to 3.14 persons per family.

<sup>14</sup> <http://www.census.gov/const/C25Ann/c25ann2007.pdf> (“Type of Parking Facility of New One-Family Houses Completed”).

unrelated to the quality of their childrens' schools. Moreover, recent research has concluded that a major factor driving the increase in housing prices in certain areas of the country are *supply* restrictions, such as restrictive zoning and land-use laws that artificially limit housing supply, rather than demand factors (such as Warren and Tyagi's hypothesis of increased demand for houses in high-quality school districts).<sup>15</sup>

In short, not only have Warren and Tyagi failed to demonstrate that there was a household "bidding war" but they have also failed to demonstrate that to the extent that home prices rose that this was due to exogenous forces or increased demand caused by the desire to gain access to quality schools, as opposed to conscious choices to build bigger and more expensive houses, to live closer to work or other amenities, or artificial supply restrictions on new construction.

The effect on vehicle purchases likely is similar. As noted in Chapter 3, for instance, in the 2000 period consumers took advantage of dramatic promotions by car dealers to buy bigger and more expensive vehicles than they had in the past, particularly expensive sports utility vehicles, which is what slowed the substitution of revolving consumer credit for installment credit.<sup>16</sup> Although the decision to buy a second car might be considered exogenous in Warren and Tyagi's model, the decision to buy a more expensive car cannot. Thus, this portion of the household budget also may be exaggerated by consumer choices rather than an asserted "involuntary" increase in the household's expenses by the need to purchase a second car.

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<sup>15</sup> Edward Glaeser & Joseph Gyourko, *Zoning's Steep Price*, REGULATION 24 (Fall 2002); Edward Glaeser & Joseph Gyourko, *Why is Manhattan So Expensive? Regulation and the Rise in House Prices*, 48 JOURNAL OF LAW & ECON. 331 (2005); Edward L. Glaeser, Joseph Gyourko, Raven E. Saks, *Why Have Housing Prices Gone Up?* 2 AM. ECON. REV. 329-333 (2005).

<sup>16</sup> See Ana M. Aizcorbe, et al., *Recent Changes in U.S. Family Finances: Evidence from the 1998 and 2001 Survey of Consumer Finances*, 89 FED. RES. BULL. 1, 17 (2003).

In short, Warren and Tyagi have likely reversed the direction of causation. For a variety of reasons, more women decided to enter the workforce between 1970 and 2000, leading to an increase in household income. While this necessitated some new household expenditures (such as day care or a second car), the likely effect of this increased income was to spur consumers to buy larger, more expensive houses and cars than they could afford in the past as well as dramatically heightened tax burdens.

Other work by Professor Warren herself also seems to contradict the housing bidding war thesis of *The Two-Income Trap*. In one co-authored article with a somewhat more sophisticated statistical analysis, Professor Warren and her co-authors, Bahchieva and Wachter, note that from 1980 to 2001 the percentage of household income dedicated to mortgage payment actually fell.<sup>17</sup>

Bahchieva, et. al., also find evidence that consumers respond to incentives in deciding how to act with respect to housing debt. In particular, they find that in states with larger homestead exemptions that permit borrowers to protect more equity in their homes upon filing bankruptcy, borrowers who do file bankruptcy have lower LTV ratios than those in states with stricter homestead exemptions. This suggests that where homeowners can retain the benefit of accumulated equity they are more willing to leave their equity in their homes. By contrast, where they are unable to keep most of their retained equity, they have an incentive to reduce equity accumulation, such as by stripping equity out of the home by home equity loans or refinancing (and converting it to consumption or other exempt assets), or by simply skipping payments and diverting the savings to consumption, other exempt assets, or other uses. In fact, in states with stricter

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<sup>17</sup> Raise Bahchieva, Susan M. Wachter, & Elizabeth Warren, *Mortgage Debt, Bankruptcy, and the Sustainability of Homeownership*, in CREDIT MARKETS FOR THE POOR 73, 76 Table 4.2 (Patrick Bolton and Howard Rosenthal eds., 2005).

exemptions, LTV is higher but consumer debt is lower, suggesting a substitution by consumers among mortgage and consumer debt.<sup>18</sup> As the authors note, these findings suggest that current laws “encourage some homeowners to load up on mortgage debt as they get into financial trouble.”<sup>19</sup>

### ***The Rise and Fall of the Mortgage Market***

In contrast to this relative stability in the overall housing and residential mortgage market between 1980 and 2000, the period beginning around 2001 saw an unprecedented rise and implosion of the residential mortgage market that spawned a global economic calamity. Although this gave rise to major woes in the American real estate market and overall economy, it plainly cannot explain the rise in consumer bankruptcies between 1980 and 2000, which is the central focus of this book. It does, however, have major implications for appraising the effects of BAPCPA and for thinking about consumer lending markets generally, thus it is worth some degree of discussion.

The mortgage market collapse can be studied from many different perspectives. Many commentators have focused on the impact of mortgage lending crisis on the financial side of the issue, such as the collapse of leading investment banks and governmental efforts to stabilize the financial economy. The discussion here, by contrast, will focus on the consumer side of the market, examining the real estate and mortgage market to determine what it can tell us about consumer behavior more generally.

### ***Homeownership and Economic Welfare***

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<sup>18</sup> Bahchieva, et al., *supra* note, at 102. It is not clear why Professor Warren recognizes a substitution effect between mortgage debt and consumer debt but does not acknowledge any substitution effect between different types of consumer credit.

<sup>19</sup> Bahchieva, et al., *supra* note, at 107.

Expansion of home ownership has long been a focus of government policy. Although now criticized in retrospect, at the time the growth in homeownership was seen as a triumph of these policies. Homeownership can be a transformative life experience, both economically and psychologically. Homeownership historically has been an important source of wealth for American households and the primary method of wealth accumulation for low and moderate-income people.<sup>20</sup> The positive impact of homeownership can be profound. According to the 2004 Survey of Consumer Finances, a family that owns a home on average has \$624,900 in average wealth (median of \$184,400) and the average renter family has \$54,100 (\$4,000 median). The impact of homeownership on increasing the wealth of lower-income families is especially important, as low-income families generally do not own financial assets. In 2001, for example, the average low-income homeowner (annual income is less than \$20,000) had nearly \$73,000 in net wealth, compared with a similar renter with only \$900 of net wealth.<sup>21</sup> Seventy-seven percent of the wealth of families with incomes under \$20,000 was in their homes and 54% of the wealth of minority families is in their homes. According to the 2001 Survey of Consumer Finances, white households are approximately two-and-a-half times wealthier than black households; black home-owning households are approximately *thirty-six times wealthier* than black households that rent their homes.<sup>22</sup> In fact, homeownership has been such a potent vehicle for wealth

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<sup>20</sup> THOMAS P. BOEHM & ALAN SCHLOTTMANN, DEP'T OF HOUS. & URBAN DEV., WEALTH ACCUMULATION AND HOMEOWNERSHIP: EVIDENCE FOR LOW-INCOME HOUSEHOLDS 11–14 (2004), *available at* <http://www.huduser.org/Publications/pdf/WealthAccumulationAndHomeownership.pdf>.

<sup>21</sup> Zhu Xiao Di, *Housing Wealth and Household Net Wealth in the United States: A New Profile Based on the Recently Released 2001 SCF Data* 10 (Harvard U., Joint Ctr. for Hous. Studies Working Paper No. W03-8, 2003).

<sup>22</sup> *Id.* at 11. A caveat should be noted that all of the data quoted in this paragraph is independent of one another. For instance, wealth accumulation by income does not account for age, thus a family with an income of under \$20,000 may include some retired families who have paid off their mortgages, thus they may have low income at the time of the survey but earned higher income for many years before retiring. Similarly, homeownership is also endogenous to wealth—high-wealth households are more likely to be able to afford

accumulation that the polarization of wealth between homeowners and renters has risen dramatically, even as the wealth polarization among different income classes has decreased.<sup>23</sup> Low-income and even middle-class homeowners rely on homeownership for the majority of their net worth—almost 80% of the wealth of low-income households is in residential real estate.<sup>24</sup> The richest quintile by income is the only income group that holds stock wealth in equal value to their home equity. The bottom four quintiles typically have home equity equal to at least twice the value of their stocks.<sup>25</sup>

In addition to improving the asset side of the household balance sheet, homeownership also may be valuable to the liabilities side of the balance sheet. The Federal Reserve’s financial obligations ratio calculates the percentage of household income dedicated to monthly payment obligations, including monthly rental payments on homes, apartments, and automobiles, real estate tax obligations, and the debt service burden, which includes monthly payments on mortgages, car payments, student loans, and credit cards.<sup>26</sup> The household financial obligations ratio (“FOR”) is substantially higher for those households that rent compared to those that own their homes.<sup>27</sup> Data indicates that homeowners also save more than do non-homeowners.<sup>28</sup> Although some of this difference surely is attributable to the fact that homeowners generally have higher

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to purchase a home, which in turn causally increases wealth. Despite this caveat, the data is nonetheless suggestive of the positive impact that homeownership has on families.

<sup>23</sup> See Conchita D’Ambrosio & Edward N. Wolff, *Is Wealth Becoming More Polarized in the United States?* 14–16 (Jerome Levy Economics Inst. of Bard College Working Paper No. 330, 2001), available at <http://ssrn.com/abstract=276900>. Wealth inequality appears to have increased over time, but wealth “polarization” is different from “inequality” in that polarization studies the clustering of homogeneous groups, such as homeowners, within a heterogeneous population. See *id.* at 2. Thus, it is a more useful tool for examining the effect on wealth of particular subsets, such as homeowners.

<sup>24</sup> *Id.*, *supra* note 89.

<sup>25</sup> *Id.*

<sup>26</sup> See FED. RES. BOARD, HOUSEHOLD DEBT SERVICE AND FINANCIAL OBLIGATIONS RATIOS (June 10, 2008), available at <http://www.federalreserve.gov/Releases/housedebt/>.

<sup>27</sup> The Federal Reserve defines these measures as follows: “The household debt service ratio (DSR) is an estimate of the ratio of debt payments to disposable personal income. Debt payments consist of the estimated required payments on outstanding mortgage and consumer debt. The financial obligations ratio (FOR) adds automobile lease payments, rental payments on tenant-occupied property, homeowners’ insurance, and property tax payments to the debt service ratio.”

<sup>28</sup> ED GRAMLICH, SUBPRIME MORTGAGES: AMERICA’S LATEST BOOM AND BUST 75–77 (2007).



incomes than renters, renters also are more likely to revolve credit card debt and to hold student loan debt, both of which generally carry higher interest rates than mortgage debt.

In addition to these direct benefits, homeownership is correlated with a number of apparent indirect benefits. For instance, homeownership is correlated with a substantial increase in one's propensity to vote, dramatic improvements in children's life outcomes, improvements in labor market outcomes; homeownership also creates incentives to improve property, generally increases life satisfaction, and is correlated with a reduction in crime rates.<sup>29</sup> There are costs to homeownership as well, notably increased sprawl and a less mobile labor force.<sup>30</sup> Nonetheless, policy-makers have long (and somewhat reasonably) believed that the benefits of widespread homeownership outweigh the costs, and, therefore, expanding homeownership rates historically has been a linchpin of American financial and social policy.<sup>31</sup>

Recent commentators, however, have questioned the believed causal link between homeownership and these other benefits, arguing instead that there is a selection mechanism at work, i.e., that people with certain attributes tend to self-select into homeownership, or that other factors (such as reduced mobility caused by homeownership) explain the relationship between homeownership and observed positive outcomes.<sup>32</sup>

### ***The Growth in Homeownership***

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<sup>29</sup> See *id.* at 58–60; CHRISTOPHER E. HERBERT & ERIC S. BELSKY, DEP'T OF HOUS. & URBAN DEV., THE HOMEOWNERSHIP EXPERIENCE OF LOW-INCOME AND MINORITY FAMILIES: A REVIEW AND SYNTHESIS OF THE LITERATURE (Feb. 2006); Robert D. Dietz & Donald R. Haurin, *The Social and Private Micro-Level Consequences of Homeownership*, 54 J. URB. ECON. 401 (2003).

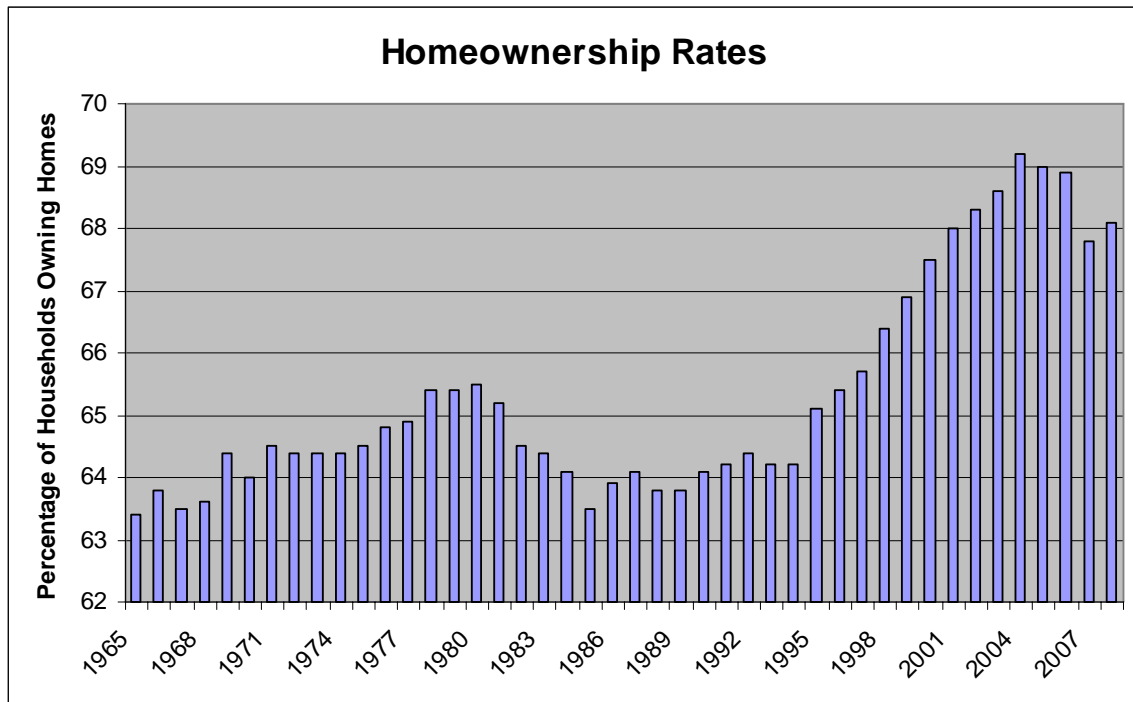
<sup>30</sup> Fernando Ferreira, Joseph Gyourko, & Joseph Tracy, *Housing Busts and Household Mobility* (Nat'l Bureau of Econ. Research Working Paper No. 13410, 2008), available at <http://www.nber.org/papers/w14310>; Dietz & Haurin, *supra* note 97, at 404.

<sup>31</sup> See Melissa B. Jacoby, *Homeownership Risk Beyond a Subprime Crisis: The Role of Delinquency Management*, 76 FORDHAM L. REV. 2261 (2008).

<sup>32</sup> See discussion in Kristopher S. Gerardi & Paul S. Willen, *Subprime Mortgages, Foreclosures, and Urban Neighborhoods*, FED. RES. BANK OF BOSTON No. 08-6 (Dec. 22, 2008).

Homeownership grew rapidly beginning in the mid-1990s and continued to rise until it reached its peak in 2004 and has slipped back since then. Growth in homeownership rates was greatest among minority and young homeowners.<sup>33</sup>

**Figure 4-5**



*Source:*

The growth in the homeownership rate during this period is generally attributed to the corresponding growth in the subprime lending market during this period. Although subprime lending markets eventually crashed into a financial debacle it should not be overlooked that the growth of the subprime lending market will have resulted in an overall increase in homeownership rates, even when foreclosures are taken into

<sup>33</sup> Jonas D.M. Fisher & Saad Quayyum, *The Great Turn-of-the-century Housing Boom*, 3Q/2006 FEDERAL RESERVE BANK OF CHICAGO ECONOMIC PERSPECTIVES 29, 33 (2006).

account.<sup>34</sup> Moreover, the availability of subprime lending put many homeowners on the track to stable homeownership. Although a borrower may start off as a riskier borrower, by making payments regularly for six months the borrower can increase her credit score substantially, permitting refinance into a lower interest-rate loan.<sup>35</sup> According to one study, nearly one-third of borrowers with initial FICO scores between 550 and 599 improved their credit scores by at least 20 points over a three month period, thereby qualifying many of them for a lower interest rate.<sup>36</sup> One estimate is that 40 percent of homeowners transitioned from a subprime lender to a prime lender during their homeownership experience.<sup>37</sup> Another estimate is that about 30 percent of borrowers who originally had a subprime loan later refinanced into a prime loan.<sup>38</sup> Subprime borrowers who were able to refinance also often refinanced into more attractive loans, moving from adjustable-rate to hybrids and from hybrids to fixed rate contracts.<sup>39</sup>

### ***The Housing Crisis***

Beginning in late-2006 and continuing into 2007 and 2008 the United States residential real estate market collapsed into widespread turmoil. Foreclosures rose steeply resulting in chaos in the banking industry as well as complex securities backed by these mortgages collapsed in value. One website tracking the subprime bust estimated that 293 mortgage lenders have “imploded” between late 2006 and October 2008—i.e.,

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<sup>34</sup> **Cite** Barth(?)

<sup>35</sup> **cite**

<sup>36</sup> Amy Crews-Cutts & Robert van Order, *On the Economics of Subprime Lending*, 30 J. REAL ESTATE FINANCE AND ECONOMICS 167-96 (2005). **Check subprime article for more cite**

<sup>37</sup> Courchane, Surette, & Zorn **get cite**

<sup>38</sup> Robert E. Hall & Susan E. Woodward, *The Financial Crisis and the Recession: What is Happening and What the Government Should Do* 27 (working paper, Nov. 29, 2008).

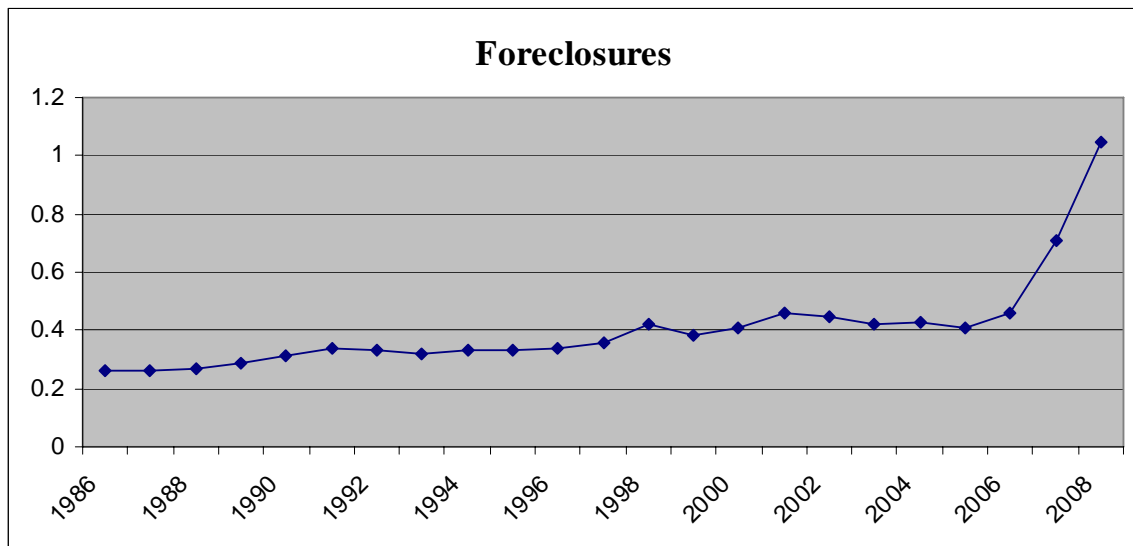
<sup>39</sup> Elliehausen, Hwang, & Park, *Hybrid Interest Rate Choice*, *supra* note, at 11.

gone bankrupt, halted major lending operations, or been sold at a “fire sale” price.<sup>40</sup> To understand the underlying causes of the banking crisis one must first understanding the underlying causes of the mortgage and foreclosure crises.

Conventional wisdom holds that the foreclosure crisis originated in the subprime market before later spreading to the prime market. As time has gone on, however, what originally was thought to be an issue of subprime loans is in reality much broader. A full explanation of the crisis must account for all data, including the spread to the prime market.

The American economy has suffered an unprecedented rise in foreclosures. Figure 4-6 illustrates foreclosure start rates by yearly average over the past several decades.

**Figure 4-6**



<sup>40</sup> The Mortgage Lender Implode-O-Meter Homepage, <http://ml-implode.com/> (last visited September 27, 2008).

As can be seen, there are times in the past where foreclosures have fluctuated more or less within a narrow band. But the record number of foreclosures in the past two years is unprecedented in recent history.

Foreclosures result from three basic factors: adverse “trigger” events, mortgage payment shock, and negative home equity. Each of these three factors has dovetailed to contribute to the extraordinary foreclosure rates that developed. Moreover, the foreclosure problem is not uniform throughout the country, but rather is the aggregation of several foreclosure “hot spots” across the country, illustrating the presence of these various factors.

*Adverse Trigger Events.* Foreclosure can be caused by adverse life “trigger” events, such as job loss, divorce, illness, or some other factor that causes an unexpected dramatic drop in household income or increase in expenses. Although many of these factors are chronic and universal aspects of the human condition, others can cause foreclosure spikes in particular places at particular times. Macroeconomic trends play a substantial role in increased mortgage default and delinquency. As can be seen in Figure 4-6, foreclosures historically have risen during economic downturns, such as 1991 and in the wake of the bursting of the dot.com bubble and 9/11 terrorist attacks in 2001. Delinquencies and foreclosures began to rise in Michigan, Ohio, and Indiana,<sup>41</sup> before the rest of the country as a result of troubles in the American automotive industry and resultant layoffs and plant closures.<sup>42</sup> Major natural disasters may also trigger

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<sup>41</sup> *Where Subprime Delinquencies are Getting Worse*, WALL ST. J. ONLINE, Mar. 29, 2007, at Map 2, <http://online.wsj.com/public/resources/documents/info-subprimemap07-sort2.html> (click “Map 2” header) (data provided by First American Loan Performance).

<sup>42</sup> Mayer, Pence, & Sherlund, *The Rise in Mortgage Defaults*, at 20.

geographical surges in foreclosure, as resulted in the areas of Louisiana and Mississippi affected by hurricane Katrina in 2005 following the expiration of a temporary moratorium period.<sup>43</sup> Problems in local labor markets also exert downward pressures on local home prices, making refinancing more difficult and reducing incentives to retain a home in the face of financial pressures. For most of this period in the United States beginning in the late-1980s until 2004, the change in the unemployment rate was the best predictor of mortgage arrears.<sup>44</sup> Thus, the adverse trigger events theory of foreclosures explains some element of regional and temporal variations in foreclosures over time.

On the other hand, adverse trigger events plainly cannot explain the record levels of foreclosures beginning in 2007. Indeed, during the time that foreclosures skyrocketed, the economy remained relatively robust, with low unemployment and modest but positive economic growth. Indeed, whereas the adverse trigger events theory posits that rising foreclosures result from recession and a slowing economy, during the recent foreclosure crisis that basic causal relationship has been reversed—the dramatic rise in foreclosures has *caused* the subsequent financial crisis, recession, and rising unemployment.

In the early stages of the housing boom, loans that were delinquent over a long period of time typically terminated in prepayment rather than eventual default.<sup>45</sup> Low documentation subprime loans showed a greater probability of delinquency and intensity of delinquency, but a slightly lower probability of default and prepayment.<sup>46</sup> By contrast, “trigger events,” such as unemployment, did not tend to predict the likelihood of

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<sup>43</sup> Mayer, Pence, & Sherlund, *supra* note, at 20.

<sup>44</sup> Ellis, *The Housing Meltdown*, at 12

<sup>45</sup> Danis & Pennington-Cross, *supra* note, at 13.

<sup>46</sup> Danis & Pennington-Cross, *supra* note, at 12.

delinquent loans turning into defaults for subprime borrowers.<sup>47</sup> For that, one has to look at other theories.

*Mortgage Payment Shock.* Foreclosure can also result from an unexpected increase in a household's monthly payment obligations.<sup>48</sup> In fact, an examination of the evidence reveals that this was the primary cause of the original onset of the housing crisis, more than any other factor, such as poor underwriting. In the period following the back-to-back economic shocks of the bursting of the dot.com bubble and the September 11, 2001 terrorist attacks, the Federal Reserve drove down short-term interest rates to an all-time low. This aggressive interest-rate policy eventually spawned an increase in housing prices. In turn, in some areas of the country, rising home prices created an updraft, drawing speculative investors into the housing market, creating a true speculative bubble in those markets that subsequently crashed with dramatic effect.

Interest rates have generally fallen over the past twenty-five years following the exceedingly high mortgage interest rates of the early-1980s, as shown in Figure 4-7.

#### **Figure 4-7**

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<sup>47</sup> *Id.*

<sup>48</sup> This model sometimes is referred to as the "ability to pay" model, which "views home ownership as a consumption good, and borrowers default when they can no longer make the payments." William P. Alexander, Scott D. Grimshaw, Grant R. McQueen, & Barrett A. Slade, *Some Loans Are More Equal than Others: Third-Party Originations and Defaults in the Subprime Mortgage Industry*, 30 REAL ESTATE ECON. 667, 667 (2002).

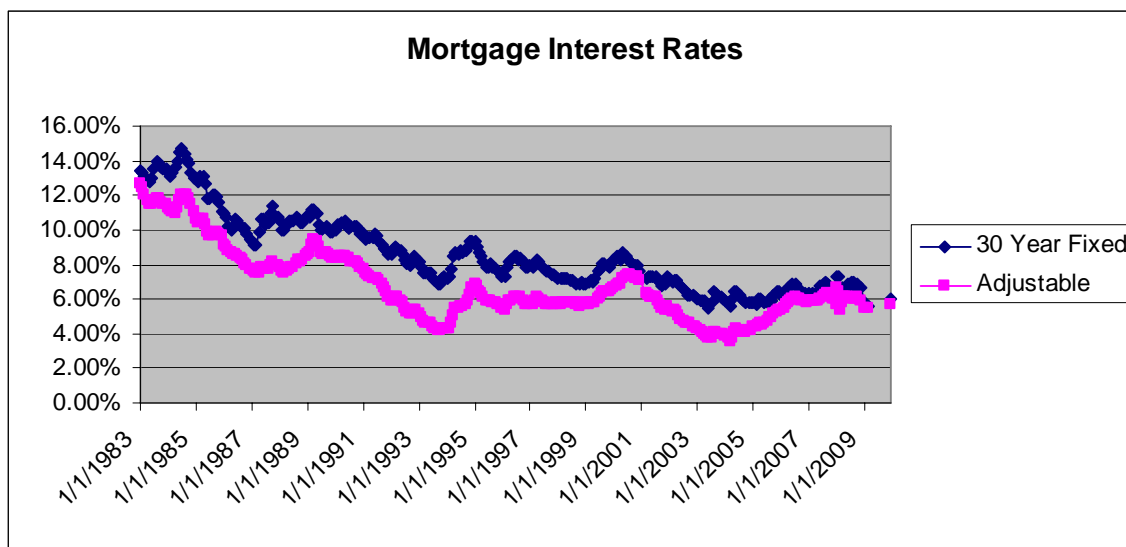


Figure 4-7 shows the decline in interest rates over time since the high levels of the 1980s. The causes of this general downward trend in interest rates in the United States is not well-understood, but falling interest rates were a feature of all western economies over the past two decades.<sup>49</sup> The sources of this general downward trend in interest rates throughout the world is difficult to explain, but may reflect an inflow of new capital from countries such as China and India into western (and especially U.S.) capital investments. This positive capital flow into the United States may have reflected a need to repatriate American dollars accumulated in these countries as a result of trade imbalances in goods and services between the United States and these rapidly-developing economies, or an effort to stockpile dollar-denominated reserves to mitigate the concern over “hot money” outflows that created crises in developing economies in the 1990s.<sup>50</sup> In turn, this outflow of American dollars into these economies may have dampened the domestic money supply in the United States, thereby dampening any inflationary expectations. The

<sup>49</sup> Luci Ellis, *The Housing Meltdown: Why Did it Happen in the United States*.

<sup>50</sup> See Remarks by Governor Ben S. Bernanke, *The Global Saving Glut and the U.S. Current Account Deficit*, at the Sandridge Lecture, Virginia Association of Economics, Richmond, VA (March 10, 2005), available in <http://www.federalreserve.gov/boarddocs/speeches/2005/200503102/>; Chairman Ben S. Bernanke, *Global Imbalances: Recent Developments and Prospects*, Bundesbank Lecture, Berlin, Germany (Sept. 11, 2007), available in <http://www.federalreserve.gov/newsevents/speech/bernanke20070911a.htm>.



pattern of falling interest rates and rising real estate prices was observed throughout the entire world, most prominently in the United States and western Europe, but throughout many areas of South America and Asia as well.<sup>51</sup>

Whatever the cause of this downward trend in interest rates over the past two decades, interest rates were low during the period of the house price boom. But low short-term interest rates standing alone cannot account for the subsequent housing bubble. As Alan Greenspan has noted, and as Figure 4-7 illustrates, interest rates on 30 year fixed rate mortgages remained relatively steady during the entire period of the housing boom.<sup>52</sup> Furthermore, he argues, changes in short-term interest rates should not lead to changes in the price of long-term durable investments like homes.

Greenspan's argument, however, misses the larger point: the Fed's interest rate policies changed consumer behavior. By changing the relative price between the interest rate on 30-year fixed rate mortgages (which remained constant) and adjustable-rate mortgages (which dipped to all-time lows and even into a negative interest rate in light of actual inflation), the Fed encouraged borrowers to shift from fixed, to adjustable-rate mortgages. These low ARM interest rates allowed many borrowers—both prime and subprime borrowers—to “stretch” to qualify for much larger mortgages than would otherwise be the case. Beginning in 2004 the Federal Reserve began raising interest rates, causing a dramatic rise in the ARM rate, until by 2006 the interest rate on ARM and FRM mortgages had essentially converged.

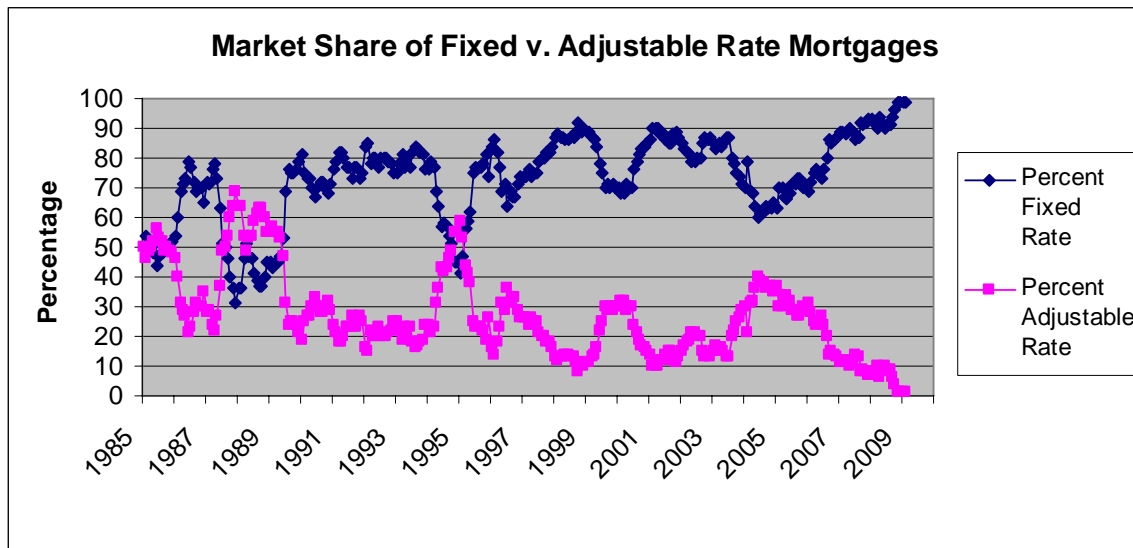
The reduction in ARM interest rates led to a general growth in ARMs during this period, as shown in Figure 4-8.

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<sup>51</sup> See Christopher Mayer & R. Glenn Hubbard, *House Prices, Interest Rates, and the Mortgage Market Meltdown* (working paper Columbia Business School).

<sup>52</sup> Alan Greenspan in WSJ cite

**Figure 4-8**

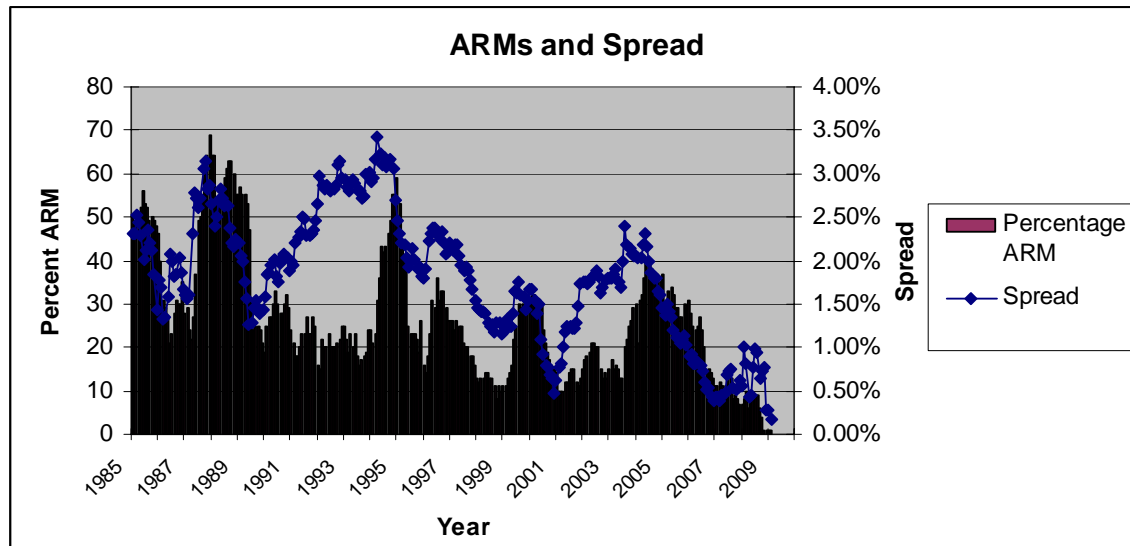


*Source:*

In 2004, at the peak of the housing boom, about 40 percent of new mortgages were ARMs, compared to less than 10 percent in the late 1990s. As can be seen, the ratio of ARMS to FRMs rose during the period of low ARM interest rates. But this high market share for ARMs is not unprecedented. ARMs are not uncommon in recent American history and, in fact, were much more common in the past than in recent years, even though subprime lending is a recent invention. In 1984 ARMs comprised 61 percent of the mortgage market and in 1988 the figure was 58 percent.

The ratio of ARMs to FRMs in the market, therefore, varies widely over time. What drives this variation? The popularity of ARMs appears to be driven by one overriding factor—the spread between fixed and adjustable rates, i.e., as the spread between fixed and adjustable rates widens, consumers shift to adjustable rates. Consider Figure 4-9:

**Figure 4-9**



As can be seen, over time there is a relationship between the spread between interest rates on ARM and FRM mortgages and the percentage of new mortgages that are ARMs.<sup>53</sup> Sometimes the adjustment in consumer behavior lags behind the spread, but eventually consumers respond to relative prices. As interest rates converged almost to equivalence with FRMs during 2007-2008, for instance, the market share for ARMs virtually disappeared, dipping to less than ten percent of the market.

Looking back at Figure 4-7, however, there is one major difference between the 2001-2007 period and previous periods where ARMs comprised a large percentage of the market—in those earlier times, the interest rate on ARMs was a leading indicator of a lagging downward trend on FRM interest rates. By contrast, in the 2001-2004 period ARMs had artificially low interest rates and eventually *rose* to the level of FRMs. This artificial lowering of short-term interest rates set the stage for the subsequent payment shock problems caused by interest rate resets.

<sup>53</sup> More systematic empirical studies have confirmed the importance of the interest-rate spread in explaining consumer choice between adjustable and fixed rate mortgages. Other factors include the overall level of interest rates (higher overall interest rates increase the choice of adjustable rate mortgages because of their lower initial cost) and the household's expected mobility. Some researchers have also found regional variations in the use of ARMs, with residents of western states being more likely to use ARMs. See Jan K. Brueckner & James R. Follain, *The Rise and Fall of the ARM: An Econometric Analysis of Mortgage Choice*, 70 REVIEW OF ECONOMICS AND STATISTICS 93-102 (Jan. 1988).

Fixed-rate mortgages provide homeowners with insurance against fluctuations in interest rates. And as Figure 4-9 illustrates this insurance usually is far from free: borrowers pay about 100 basis points or more on average to induce the lender to bear this risk.<sup>54</sup> The risk of an ARM is that one's mortgage interest rate will rise if interest rates rise. But the equally obvious benefit of an ARM is that one's interest rate will fall if interest rates decline. In periods of declining interest rates ARMs allow homeowners to decrease their interest rates without the expense and trouble of refinancing. As then-Federal Reserve Chair Alan Greenspan observed in 2004 (prior to recent increases in interest rates):

One way homeowners attempt to manage their payment risk is to use fixed-rate mortgages, which typically allow homeowners to prepay their debt when interest rates fall but do not involve an increase in payments when interest rates rise. Homeowners pay a lot of money for the right to refinance and for the insurance against increasing mortgage payments. Calculations by market analysts of the "option adjusted spread" on mortgages suggest that the cost of these benefits conferred by fixed-rate mortgages can range from 0.5 percent to 1.2 percent, raising homeowners' annual after-tax mortgage payments by several thousand dollars. Indeed, recent research within the Federal Reserve suggests that many homeowners might have saved tens of thousands of dollars had they held adjustable-rate mortgages rather than fixed-rate mortgages during the past decade, though this would not have been the case, of course, had interest rates trended sharply upward.<sup>55</sup>

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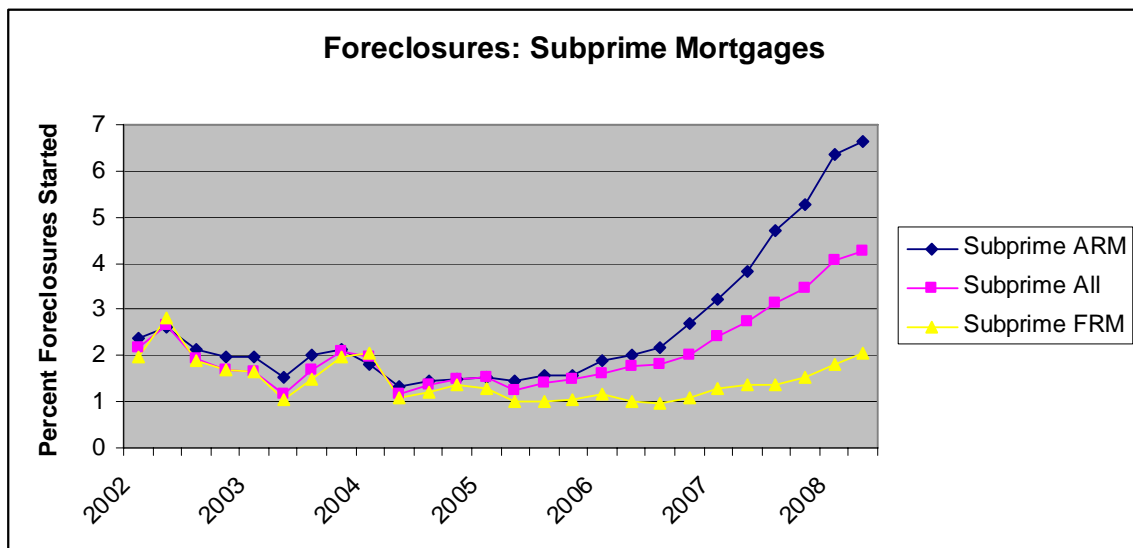
<sup>54</sup> More precisely, ARMs expose households to an income risk that a change in their interest rate will change their monthly mortgage payment. FRMs expose households to a wealth risk that if interest rates fall the value of the current mortgage falls as well, locking the homeowner into a less-attractive option that they can only escape through refinancing and paying any new costs associated with that process. See John Y. Campbell & Joal F. Cocco, *Household Risk Management and Optimal Mortgage Choice*, 118 Q. J. ECON. 1449-1494 (Nov. 2003); see also Gregory Elliehausen, Min Hwang, & Jeehoon Park, *Hybrid Interest Rate Choice in the Subprime Mortgage Market: An Analysis of Borrower Decisions* (working paper, George Washington University, May 2008). Subprime FRM borrowers also paid higher interest rates than subprime ARM borrowers. Although the difference was statistically significant, it was relatively small in magnitude of about 14-20 basis points. Foote, et al., *Just the Facts*, *supra* note, at 301. Elliehausen, Hwang, and Park found that from 2000-2004 the interest savings on a hybrid subprime mortgage was between 25 and 58 basis points, but that the difference disappeared after 2004. Elliehausen, Hwang, & Park, *Hybrid Interest Rate Choice*, *supra* note, at 6. On the other hand, hybrid mortgages offered substantially up-front points and costs, suggesting that hybrid borrowers were trading off a higher interest rate for lower up-front costs. *Id.*

<sup>55</sup> Greenspan, *supra* note **Error! Bookmark not defined.**; see also Daniel J. McDonald & Daniel L. Thornton, *A Primer on the Mortgage Market and Mortgage Finance*, FED. RES. BANK OF ST. LOUIS REV. 31, 34 & tbl.1 (2008), available at <http://research.stlouisfed.org/publications/review/08/01/McDonald.pdf> ("The differences [between FRMs and ARMs] vary from year to year, but range from about 50 to about 100 basis points. Because ARMs have lower initial interest rate, they are particularly good for individuals who plan either to sell their house or pay off the loan after a short period of time.").

For a fixed-rate borrower to benefit from falling interest rates she had to incur the substantial cost and inconvenience of refinancing the mortgage, as well as the uncertainty about whether interest rates would go still lower. Because ARMs offer lower interest rates, they may also be especially attractive to homeowners who plan to move within a few years and thus have little need to pay a premium to buy “insurance” to hedge against long-term fluctuations in interest rates.

Interest rate resets connected to adjustable-rate mortgages explains much of the initial rise in foreclosure rates. Moreover, it helps to explain why the problem spread so rapidly to prime mortgages. First, consider the trends on foreclosures on subprime mortgages. Figure 4-10 shows the trends for foreclosures starts for subprime mortgages since 2002.

**Figure 4-10**

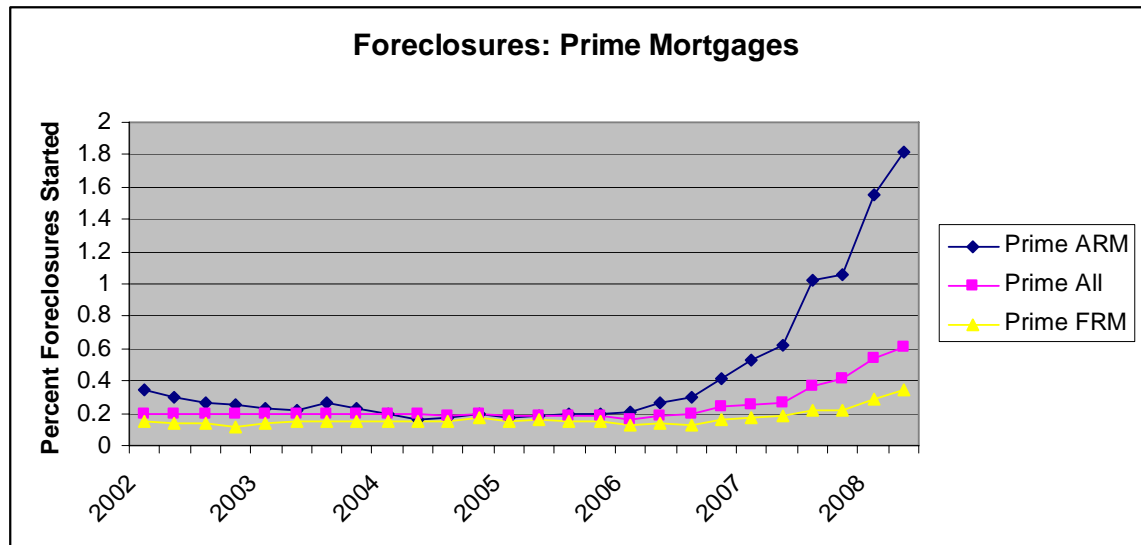


As can be readily seen, from 2002 into 2006 the foreclosure rate on subprime ARMs was comparable to the foreclosure rate on subprime FRMs. Beginning in 2006, however, the trends diverge, leading to a dramatic rise in subprime ARMs. In fact, although the

foreclosure rate on subprime FRMs has risen it has remained comparable to similar periods in the past. This distinction in default rates in part reflects differential sorting by lenders among subprime borrowers: subprime ARM borrowers tend to be riskier borrowers on average and thus have somewhat lower FICO credit scores and higher combined LTV ratios than subprime FRM borrowers.<sup>56</sup> The difference, however, is not huge, and it is difficult to imagine that it is the characteristics of the borrowers alone rather than the adjustable rate characteristic of the loans that account for the dramatically different performance of subprime ARMs versus subprime FRMs.

But this difference in performance is not limited to subprime loans. Prime loans show a similar pattern of foreclosures (although at much lower base rates), as seen in Figure 4-11:

**Figure 4-11**



As with subprime loans, prime loans also show a dramatic divergence in performance between fixed and adjustable rate mortgages beginning in 2006. Although the

<sup>56</sup> Mayer, Pence, & Sherlund, *The Rise in Mortgage Defaults* at 8; Shane M. Sherlund, *The Past, Present, and Future of Subprime Mortgages*, Finance and Economics Discussion Series, Divisions of Research & Statistics and Monetary Affairs, Federal Reserve Board, 2008-63.

foreclosure rate on fixed FRMs is at its highest point during this period, the increase is modest compared to the dramatic rise in foreclosures on ARMs.

In short, the “payment shock” theory caused by changes in short-term interest rates provides an important part of the explanation for the initial onset of the foreclosure crisis, cutting across the subprime and prime markets. The artificial lowering of interest rates from 2001-2004 pushed down short-term interest rates, allowing borrowers to qualify for larger mortgages than they otherwise could. But this was a phenomenon that was not limited to the subprime market. As during prior times when the spread between short and long-term interest rates expanded, home purchasers gravitated toward adjustable-rate mortgages—both prime and subprime borrowers. As a result, when interest rates began to increase in the 2005-2006 period this may have made payment obligations unaffordable for many homeowners.<sup>57</sup>

The relationship between ARMs and foreclosures appears to have been a manifestation of the unique circumstances of the past several years rather than an inherent problem of ARMs. The percentage of ARMs in the market have been much higher at times in the past yet they did not previously result in the surge of foreclosures that have resulted in the most recent environment. In fact, adjustable-rate mortgages are the norm in most of Europe and the rest of the world without the catastrophic events that have transpired in the United States in recent years.<sup>58</sup> One implication of the American

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<sup>57</sup> This leaves aside the phenomenon of “teaser” or below-market introductory rates. Where teaser rates were present, the impact of payment shock was heightened when the interest rate reset. For instance, among subprime loans with initial below-market “teaser” rates, one study predicts that 32% of loans with initial teaser rates eventually will default as a result of interest rate reset, but only 7% of market-rate adjustable loans will default due to reset. CHRISTOPHER L. CAGAN, MORTGAGE PAYMENT RESET: THE ISSUE AND THE IMPACT 44 (2007).

<sup>58</sup> Richard K. Green & Susan M. Wachter, *The American Mortgage in Historical and International Context*, 19 J. ECON. PERSP., Fall 2005, at 93, 107–08 (2005). Most other countries also have shorter mortgage maturity payments combined with a final balloon payment in contrast to the 30-year fixed-rate self-amortizing mortgage that is standard in the United States. Only Denmark offers standard mortgages that resemble the American practice of long-term fixed-rate mortgages with an unlimited right to prepay.

norm of long-term fixed-rate mortgages with an unlimited prepayment right is that it places the full risk of interest-rate fluctuations along with the accompanying pre-payment risk on banks, but as the experience of the savings & loan crisis of the 1990s demonstrated (and the most recent crisis to some extent as well), placing the risk of interest rate fluctuations on banks in the end places the risk of large differences between short-term and long-term interest rates on the taxpayers through insurance for resulting bank failures and, at least in the most recent episode, taxpayers guarantees of Fannie Mae and Freddie Mac.<sup>59</sup> The primary difference, it appears, was that in the United States in the past where the yield-spread between ARMs and FRMs became larger, this reflected a general downward trend in interest rates, with ARMs falling ahead of FRMs and FRMs eventually declining as well. In the most recent iteration, however, the interest-rate on ARMs was pushed artificially and unsustainably low, thus the eventual interest rate reset resulted in the interest rate on ARMs *rising* back to the level of FRMs, rather than FRMs falling to the level of ARMs (as was generally the case in the past). It is difficult to argue that ARMs *per se* are therefore unreasonably risky; it is only when ARMs are combined with a monetary policy that pushed short-term interest rates to unsustainably low rates (as was the case from 2001-04 in the United States) that ARMs became a problem.<sup>60</sup>

*Negative Home Equity.* The adverse trigger events and payment shock theories rest on the assumption that most foreclosures are fundamentally involuntary, in the sense

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<sup>59</sup> See Susan Woodward and Robert Hall, *What to Do about Fannie Mae and Freddie Mac*, post to Financial Crisis and Recession Blog, <http://woodwardhall.wordpress.com/2009/01/28/what-to-do-about-fannie-mae-and-freddie-mac/> (Jan 28., 2009). As Woodward and Hall observe, “The 30-year, fixed-rate, prepayable mortgage is unique and is not obviously viable without special federal support.” In particular, Fannie Mae and Freddie Mac traditionally have bought primarily 30-year fixed-rate mortgages thus providing a subsidy to the production of this type of mortgage.

<sup>60</sup> For a more detailed analysis of the Federal Reserve’s monetary policy during this period and how it fed the housing price boom, see JOHN B. TAYLOR, *GETTING OFF TRACK: HOW GOVERNMENT ACTIONS AND INTERVENTIONS CAUSED, PROLONGED, AND WORSENERED THE FINANCIAL CRISIS* (2009).



that the homeowner would like to retain ownership of the home but is unable to do so either because of a serious financial shock or because of interest-rate reset. These two theories can be thought of as “distress” theories of foreclosure, as foreclosure evidences household financial distress. But economists offer a third model of foreclosure—treating the option to default and allow foreclosure as a sort of “put option” that a homeowner can exercise at her discretion.

Disentangling the distress and option hypotheses is difficult, because housing prices are inversely correlated with interest rates—as interest rates rise, housing prices will tend to fall.<sup>61</sup> Similarly, areas with stagnant economies and high unemployment will often exhibit declining home sales and prices, thereby pushing more homeowners into negative equity and contribute to default.<sup>62</sup> Scholars have also found that foreclosures on subprime ARMs are more sensitive to drops in home prices than subprime FRMs, holding interest rates constant.<sup>63</sup> This may be perhaps because those who took subprime ARMs were more likely to be short-term speculators and so more likely to walk away from a losing investment. Nonetheless it is a useful analytical enterprise to distinguish the two models.

The decision to maintain homeownership or default and allow foreclosure can be modeled as a financial option. In the option model, the decision to permit foreclosure is driven primarily by a change in the underlying value of the asset. When the option is “in the money” (i.e., the home is worth more than the amount owed) the homeowner can treat the house as a “call” option—if the homeowner is unable or unwilling to make her

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<sup>61</sup> Mayer & Hubbard

<sup>62</sup> Mayer, Pence, & Sherlund, at 20.

<sup>63</sup> Christopher L. Foote, Kristopher Gerardi, Lorenz Goette, & Paul S. Willen, *Just the Facts: An Initial Analysis of Subprime's Role in the Housing Crisis*, 17 J. HOUSING ECON. 291, 300 (2008).

monthly payments (perhaps because she is moving) then she can either sell the home or refinance it and pay off the underlying mortgage.<sup>64</sup> Thus, the option to allow foreclosure is of low value to the homeowner in a rising market because the homeowner can instead sell or refinance the house and pocket the equity. For instance, during the 2001 recession, unemployment rates rose in New England, leading to an increase in mortgage delinquencies and arrears. But although delinquencies rose, foreclosures did not—primarily because despite the economic downturn housing prices continued rising throughout the region.<sup>65</sup> Thus, those who suffered job loss and so were unable to meet their payments were able to refinance or sell their homes. But where the house has negative equity (often referred to as “under water” or “upside down”), then the consumer has a put option—either she can continue to pay the mortgage and retain ownership or exercise the “option” to default and allow the lender to foreclose. If the value of exercising the option increases or the cost of exercising it declines, homeowners will have stronger incentives to exercise that option. Under the option theory of foreclosure, therefore, the decision to default is viewed as a voluntary and rational response to the incentives created by the change in value of the asset which increases the value of foreclosure over continuing to pay the loan—the borrower *could* continue to service the loan but chooses not to.

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<sup>64</sup> Conceiving of a home as a financial option may seem implausible to some readers, who may hold a high subjective attachment to their own homes and so are not tempted to think of their home in purely financial terms. And the existence of this subjective attachment is, of course, high. But while many readers might accurately insist that they would not walk away from their homes if it falls in value, there is some price at which this becomes a viable option for most people. More relevantly, there is some price at which most homeowners would admit that they would be willing to exercise their call option. If a purchaser walked up and offered \$1 million above the existing market price of a home, few of us would turn down this offer. That most would admit to a willingness to exercise a call option on their homes at the right price should suggest that most of us would be willing to exercise a put option as well.

<sup>65</sup> CL Foote, K Gerardi, L Goette, and PS Willen, *Subprime Facts: What (We Think) We Know about the Subprime Crisis and What We Don't*, FED. RES. BANK OF BOSTON PUBLIC POLICY DISCUSSION PAPER No. 08-2 (2008).

Empirical studies generally have supported the option theory of foreclosure.<sup>66</sup> For instance, even though mortgage interest rates generally changed uniformly across the country, the foreclosure rate was lower for residential real estate where price appreciation has been higher.<sup>67</sup> Also notable is that the areas that today have the highest default rates (California, Florida, Arizona, and Nevada) experienced price drops much more severe than the national average, but during the early stages of the boom these same areas experienced more rapid than average appreciation and lower than average default rates.<sup>68</sup> This suggests that in deciding whether to default, the primary consideration by homeowners is the amount of equity that they have accrued in their property (which might be lost in the event of a foreclosure) rather than “payment shock” resulting from an unexpected rise in interest rates, although some areas with high price appreciation also had a high share of ARMs. Similarly, those who have drawn against accumulated home equity through home equity loans or junior liens exhibit a greater propensity to default than those who have retained their equity.<sup>69</sup>

Modeling foreclosure as a financial option helps to isolate the various contributors to the crisis. Economic theory predicts that the holder of an option will be more likely to exercise it if: (1) the value of exercising the option increases or (2) the cost of exercising

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<sup>66</sup> See Yongheng Deng, John M. Quigley, & Robert van Order, *Mortgage Terminations, Heterogeneity and the Exercise of Mortgage Options*, 68(2) *ECONOMETRICA* 275-307 (March 2000); Kerry D. Vandell, *How Ruthless Is Mortgage Default? A Review and Synthesis of the Evidence*, 6 *J. HOUSING RES.* 245 (1995); James B. Kau & Donald C. Keenan, *An Overview of the Option-Theoretic Pricing of Mortgages*, 6 *J. HOUSING RES.* 217 (1995); Patrick H. Hendershott & Robert Van Order, *Pricing Mortgages: An Interpretation of the Models and Results*, 1 *J. FIN. SERVICES RES.* 19 (1987).

<sup>67</sup> Mark Doms, Frederick Furlong & John Krainer, *House Prices and Subprime Mortgaged Delinquencies* 1–2 (FRBSF ECON. LETTER NO. 2007-14, 2007); Brent W. Ambrose, Charles A. Capone, Jr. & Yongheng Deng, *Optimal Put Exercise: An Empirical Examination of Conditions for Mortgage Foreclosure*, 23 *J. REAL EST. FIN. & ECON.* 213, 218 (2001) (higher default rates where home price appreciation slower); Kristopher Gerardi, Adam Hale Shapiro & Paul S. Willen, *Subprime Outcomes: Risky Mortgages, Homeownership Experiences, and Foreclosures* 2–3 (Fed. Res. Bank of Boston, Working Paper No. 07-15, 2008), available at <http://www.bos.frb.org/economic/wp/wp2007/wp0715.pdf> (concluding that dramatic rise in Massachusetts foreclosures in 2006-07 resulted from decline in house prices beginning in summer 2005); Ellen Schloemer, Wei Li, Keith Ernst & Kathleen Keest, *Losing Ground: Foreclosures in the Subprime Market and Their Cost to Homeowners*, CRL RES. REPORTS, (Ctr. for Responsible Lending, Durham, N.C.), Dec. 2006, at 1, 13.

<sup>68</sup> Mayer, Pence, & Sherlund

<sup>69</sup> See Michael LaCour-Little, *Equity Dilution: An Alternative Perspective on Mortgage Default*, 32 *REAL ESTATE ECON.* 359, 369 (2004).

the option decreases. Both factors are present in the context of explaining the foreclosure crisis. First, the dramatic drop in home prices led to an increased value on exercising the option. Second, various legal and social factors led to a reduction in the cost of exercising the option. As a result, homeowners became dramatically more willing to exercise the option.

### **A. The Benefit of Exercising the Option Increased**

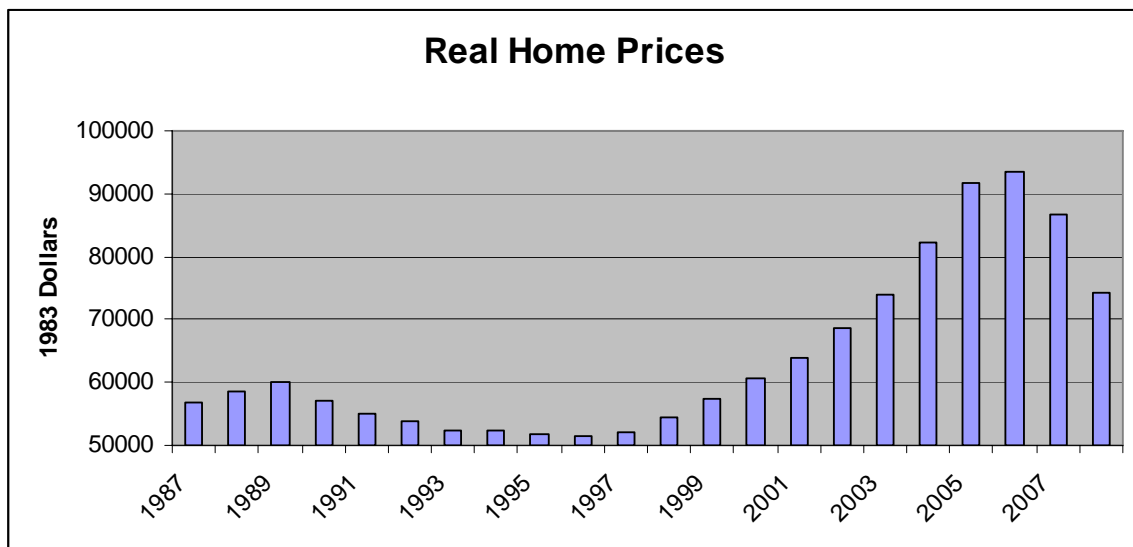
#### ***1. The House Price Collapse***

First, both borrowers and lenders underestimated both the risk and severity of a widespread collapse in home prices. But this raises a question—did the causal relationship in the early stage of the boom run from house prices to expansive lending practices or from expansive lending to higher house prices? This is actually quite a complex question and available data suggests that both elements are present. In general, however, it appears that in the earlier stages of the boom, house price appreciation was caused primarily by underlying economic factors, especially low interest rates, rather than reckless lending. In turn, this strong house price appreciation led to an extraordinarily strong performance record for all mortgages made during this time, including non-traditional subprime mortgages. This increase in home prices created a sort of updraft in some markets that pulled in speculators who bid prices still higher. In those markets where the boom and bust were most severe, a counterintuitive result emerges: the initial rise in home prices (triggered by record-low interest rates) caused an increase in subprime and risk lending as both speculators and ordinary home owners rushed into the rising market. It is likely this second factor—the degree of “irrational

exuberance” present in any given market—that may explain why some markets boomed and busted so much more than others.

Falling real estate prices helps to explain the rising foreclosure rate. There is a very close relationship between the timing of the nationwide drop in housing prices and the rise in the foreclosure rate:

**Figure 4-12**

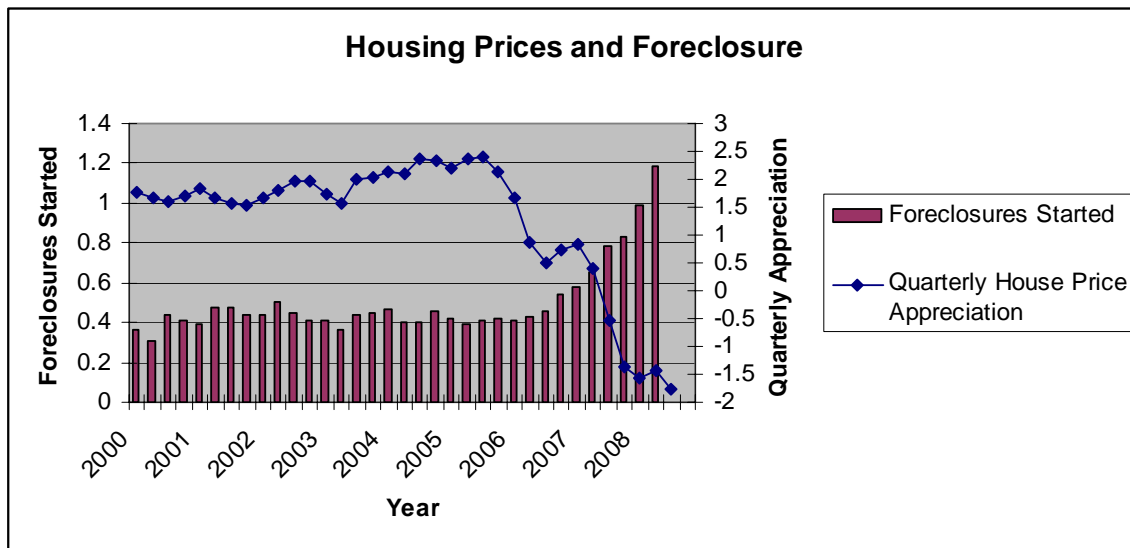


*Source: Stan Liebowitz based on Case-Schiller Home Prices*

After nearly a decade of stagnation, beginning in the late 1990s housing prices went through a rapid run-up, leveling off in 2006 and then falling dramatically in 2007-2008. As noted in Figures 4-10 and 4-11 above, foreclosures in *both* the prime and subprime markets began rising in mid-2006 before exploding in 2007-2008. Indeed, Figure 4-11 showing trends in real estate prices over the past few years is virtually a mirror image of the trends in foreclosures during that same period.

The inverse relationship between home price appreciation and foreclosures is striking—foreclosure rates show a close inverse relationship to changes in house prices as shown in Figure 4-13:

**Figure 4-13**



*Source: OFHEO Home Price Index (Sales) and Mortgage Bankers Association*

Leading economists have also concluded that the largest factor driving the recent upward trends in the foreclosure rate has been changes in housing prices, rather than interest rates or trigger events.<sup>70</sup> The relationship between changes in house prices and the propensity to default was especially pronounced among subprime borrowers.<sup>71</sup> But although default rates among prime borrowers originally were less responsive to changes in home prices than for subprime borrowers, by 2006-2007 the sensitivity of prime borrowers was similar to that for subprime borrowers.<sup>72</sup>

<sup>70</sup> KRISTOPHER GERARDI, ANDREAS LEHNERT, SHANE SHERLUND, & PAUL WILLEN, MAKING SENSE OF THE SUBPRIME CRISIS, BROOKINGS PAPERS ON ECONOMIC ACTIVITY (Douglas W. Elmendorf, N. Gregory Mankiw, and Lawrence Summers eds., Fall 2008);

<sup>71</sup> Gene Amromin & Anna L. Paulson, *Comparing Patterns of Default Among Prime and Subprime Mortgages*, 2Q/2009 FED. RES. BANK OF CHICAGO ECONOMIC PERSPECTIVES 18, 27 (2009).

<sup>72</sup> Amromin & Paulson at 20

**Footnote, gerardi, goette, willin, reducing foreclosures: drop in home prices swamps unaffordability, unemployment matters too**

Although there was a nationwide rise and decline in housing prices, only a handful of areas experienced a massive boom-and-bust that resulted in widespread foreclosures and triggered financial catastrophe.<sup>73</sup> Researchers have found that during the first stage of the housing boom through the 1990s until about 2004 rising housing prices in many markets can be largely explained by underlying economic fundamentals, such as income growth, interest rates, land-use controls, and low unemployment.<sup>74</sup> During the second quarter of 2008 at the height of the foreclosure crisis in 2008, for example, 42 of 50 states were below the mean national foreclosure rate, indicating the extent to which the perception of the problem is skewed by a handful of outlier states.<sup>75</sup> Four states—Arizona, California, Florida, and Nevada—accounted for 42% of the foreclosures started in the first quarter of 2008 quarter even though they were only 25% of all the mortgages outstanding.<sup>76</sup> By first quarter of 2009, those four states accounted for 46 percent of the foreclosure starts in the country.<sup>77</sup> Foreclosure starts on Prime ARM mortgages were three times higher in Florida than in the rest of the country and two-and-a-half times higher in California than the national average. As of first quarter 2009, 10.6% of the mortgages in Florida were somewhere in the process of foreclosure.

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<sup>73</sup> SOWELL, HOUSING BOOM AND BUST, *supra* note, at 61.

<sup>74</sup> Major Coleman IV, Michael LaCour-Little, & Kerry D. Vandell, *Subprime Lending and the Housing Bubble: Tail Wags Dog?*, 17 JOURNAL OF HOUSING ECONOMICS 272-290, 285 (2008); Charles Himmelberg, Christopher Mayer & Todd Sinai, *Assessing High House Prices: Bubbles, Fundamentals and Misperceptions*, 19(4) J. ECON. PERSPECTIVES 67-92 (Fall 2005); Margaret Hwang Smith & Gary Smith, *Bubble, Bubble, Where's the Housing Bubble?*, BROOKINGS PANEL ON ECONOMIC ACTIVITY (2006).

<sup>75</sup> The states above the national average were Nevada, Florida, California, Arizona, Michigan, Rhode Island, Indiana, and Ohio. Mortgage Bankers Association Press Release, *Delinquencies and Foreclosures Increase in Latest MBA National Delinquency Survey* (Sept. 5, 2008).

<sup>76</sup> Mortgage Bankers Association Press Release, *Delinquencies and Foreclosures Increase in Latest MBA National Delinquency Survey* (June 5, 2008). California accounted for 13% of outstanding mortgages and 21% of foreclosure starts. Florida accounted for 8% of loans and 15% of foreclosure starts.

<sup>77</sup> Mortgage Bankers Association Press Release, *Delinquencies and Foreclosures Continue to Climb in Latest MBA National Delinquency Survey* (May 28, 2009).

Overall, whereas the foreclosure start rate was 2.45 percent in the four foreclosure hotspots, the national rate for the rest of the country combined was 1.01 percent. Even in the economically hard-hit areas of the midwestern United States the foreclosure start rate was only 1.5% in Michigan and Illinois and 1.3% in Indiana and Ohio.<sup>78</sup> Clearly the foreclosure crisis was a more localized phenomenon than generally recognized.

What accounts for this variance in the market responses? There are effectively three different types of housing markets and differences among these markets help to explain the different performance patterns of mortgages from these two different eras.<sup>79</sup> Fundamentally these housing markets are differentiated by underlying supply and demand dynamics.

The first type of housing market is those markets with traditionally cyclical markets that experience high volatility, but on a somewhat cyclical basis, such as New York, Washington, DC, and Boston. Because of geography (such as being an island or neighboring an ocean) or strict regulatory land-use controls that limit construction of new homes, these markets have a highly inelastic supply of housing.<sup>80</sup> Thus, whenever a demand shock occurs, such as a change in mortgage interest rates or a change in the tax code that encourages home ownership, prices tend fluctuate widely in these markets. Prices rose early in these markets in response to the Federal Reserve's monetary decisions, consistent with underlying supply and demand characteristics in these supply-constrained markets. House prices subsequent dropped dramatically as well. But these markets have been high-volatility markets for some time so that even though prices fell,

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<sup>78</sup> Mortgage Bankers Association Press Release, *Delinquencies and Foreclosures Continue to Climb in Latest MBA National Delinquency Survey* (May 28, 2009).

<sup>79</sup> See Christopher Mayer and R. Glenn Hubbard, *House Prices, Interest Rates and the Mortgage Market Meltdown* (working paper, Columbia Business School).

<sup>80</sup> Glaeser, et al. (AER); THOMAS SOWELL, *THE HOUSING BOOM AND BUST* 13 (2009) (noting contribution of land-use controls to increasing price of housing)



foreclosures remained relatively modest, reflecting the homeowners' assumption that prices eventually would recover in the future.<sup>81</sup> Thus the rise and fall of prices in these markets was not merely an irrational bubble but an exaggerated response to real supply and demand dynamics in these idiosyncratic markets.

A second type of housing market was that underwent a steady appreciation in home prices over the past decade, with prices driven largely by underlying supply and demand dynamics.<sup>82</sup> Steady markets that have relatively modest regulations and restraints on expansion of housing supply to meet demand growth, and thus have a relatively elastic housing supply. These markets, therefore, tend to respond to increases in demand by a relatively rapid increase in supply. Thus, although these markets did experience some price appreciation, they did not experience the same sort of house price bubble as many other markets—nor are they experiencing the subsequent house price collapse and, although foreclosures have risen, they have not been a crisis. These markets include cities such as Charlotte, Chicago, and most notably, Dallas and Houston. These cities certainly experienced some price drops and hardship, but not catastrophe.

But during the housing boom a third type of market materialized: cities with modest restrictions on building new supply but which nonetheless saw a dramatic boom and bust in home prices like supply-constrained cities. These markets can be characterized as “late-boom” or bubble markets and include cities such as Las Vegas, Miami, Phoenix, and Tampa.<sup>83</sup> These markets began the housing boom resembling the

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<sup>81</sup> Foote, et al., note that home prices fell in Massachusetts in the early 1990s, but default rates remained low, suggesting that homeowners assumed that prices would recover eventually, which they did. Christopher L. Foote, Kristopher Gerardi, & Paul S. Willen, *Negative Equity and Foreclosure: Theory and Evidence*, 64 JOURNAL OF URBAN ECONOMICS 234-245, 241 (2008).

<sup>82</sup> Mayer & Hubbard, *supra*.

<sup>83</sup> Presumably this list would also include areas like the exurbs of Northern Virginia and California that saw rapid construction of new bedroom communities outside the traditional metropolitan areas and which experienced a very rapid boom and bust price cycle culminating in widespread foreclosures. In particular, many of these markets sprung up outside traditional cyclical markets, thereby adding a late-boom element to a traditional cyclical market (and perhaps exacerbating the price swings in both). Data sets typically do

second type of cities—demand growth manifested itself in rapid increase in supply, rather than a rapid increase in prices. But toward the end of the boom, these markets also saw a dramatic run-up in prices. Unlike the traditionally volatile markets, the price appreciation in these markets occurred toward the end of the boom, rather than the beginning, even though this was the period when interest rates were rising rather than falling and new supply was regularly coming on-line. Moreover, this rapid price appreciation appears to lack plausible grounding in underlying economic logic—prices were rising, even as both housing supply and interest rates were rising as well.<sup>84</sup>

The result of this combination of rapid supply expansion and price appreciation has been catastrophic—artificially high prices have collapsed, as prices have come to reflect the underlying supply and demand dynamics of the massive expansion of new housing that was constructed during the boom. Prices have collapsed toward their equilibrium level and given the huge expansion of housing supply in those markets in recent years there is little expectation of a major price recovery in the near future.

Why did bubbles occur in this third type of city?

The most likely explanation seems to be that these were the cities that saw truly rampant speculation. The most plausible explanation is that the initial wave of rising home prices created, in some markets, a sort of updraft that drew investors and speculators into the market seeking to flip homes for a quick profit. The percentage of mortgages for non-owner-occupied houses rose in the last part of the housing boom, but especially in those cities that saw the greatest boom and bust cycles.<sup>85</sup> In Massachusetts,

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not distinguish these markets from the cities they surround.

<sup>84</sup> See Edward L. Glaeser, Joseph Gyourko, & Albert Saiz, *Housing Supply and Housing Bubbles*, 64 J. OF URBAN ECONOMICS 198-217, 210 (2008).

<sup>85</sup> SOWELL, HOUSING BOOM AND BUST, *supra* note, at 64 (noting *Las Vegas Sun* article that found that 74% of single-family homes in foreclosure during a six-month period in 2007 were non-owner-occupied).

in 2005 over 32% of new subprime mortgages were for multi-family homes, almost twice the rate of subprime loans in Massachusetts during that time.<sup>86</sup> Borrowers who purchase a multi-family homes or condominiums are more likely to default on their mortgage than those who purchase single-family homes.<sup>87</sup>

One contributor is seems obvious, but is nonetheless important—residents of these areas did not realize that they were living in the midst of a bubble. Why might they believe that? One possible explanation is that many of these cities are Sun Belt cities characterized by a large number of retirees and tourists. My personal conversations with those in the housing industry (and related fields) in cities such as Las Vegas and Miami reveals that they thought that the rapid price appreciation could be rationalized by economic fundamentals. In particular, builders believed that growing supply and rising prices could be explained by the imminent onset of wealthy Baby Boomers buying second homes in anticipation of retirement or investors buying homes to rent to tourists. Wheaton and Nechayev similarly argue that the explosion of prices above economic fundamentals in certain markets resulted from an unusual growth in second homes and investment properties during this period.<sup>88</sup> Nationwide, the percentage of non-owner occupied investment and second homes doubled between 1999-2005 from about 8% to 16%.<sup>89</sup> In California, the ratio of non-owner occupied home purchases rose from under 10% to over 20% in many cities. In Sun Belt cities such as Miami, Tampa, Phoenix, and Orlando, the rate of investment and second homes almost tripled, from about 10% to 30%. In Fort Myers the rate rose from just over 20% to over 45% and in Las Vegas,

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<sup>86</sup> Foote et al., *Just the Facts*, *supra* note, at 296.

<sup>87</sup> Christopher L. Foote, Kristopher Gerardi, & Paul S. Willen, *Negative Equity and Foreclosure: Theory and Evidence*, 64 JOURNAL OF URBAN ECONOMICS 234-245, 237 (2008).

<sup>88</sup> William C. Wheaton & Gleb Nechayev, *The 1998-2005 Housing "Bubble" and the Current "Correction": What's Different This Time?* 30(1) J. REAL ESTATE RESEARCH 1, 15 (2008).

<sup>89</sup> Wheaton & Nechayev, *supra* note, at 16 & Exhibit 12.

home of perhaps the greatest real estate crash in the country, the share of investment and second homes rose from under 10% to almost 40%.<sup>90</sup> Even in Atlantic City, the ratio of new loans that were investment and second home loans rose from under 30% to over 45%. Moreover, many of these markets were among the fastest growing areas of the country in terms of the economy and population during this same period, which further boosted demand for housing. Immigration and new household formation in the late 1990s as the Baby Boomers' children formed households also pushed up the demand for housing in growing areas of the country.<sup>91</sup> Thus, these markets have experienced dramatic drops in home prices with little expectation of price recovery in the near future. Foreclosures skyrocketed in these markets as home prices plunged. Areas where speculators were most prominent saw both more rapid price increases and price crashes than areas with fewer investors.<sup>92</sup>

Recognizing the regional nature of house appreciation dynamics provides the final clue to understanding the basic dynamics of the mortgage crisis—the rapid house price appreciation in the “bubble” cities closely matches the timing of the second stage of the housing boom. In fact, some commentators have suggested that rather than the spread of subprime lending fueling the house-price boom in many markets, the house-price boom fueled a rise in subprime lending as buyers rushed in to gain a piece of the action.<sup>93</sup> Coleman, et al., find, for example, that while the intensity of subprime lending in any market is related to *past* returns on housing, the intensity of subprime lending did not

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<sup>90</sup> Wheaton & Nechayev, *supra* note, at 16 Exhibit 12.

<sup>91</sup> Jesse M. Abraham, Andrey Pavlov, & Susan Wachter, *Explaining the United States' Uniquely Bad Housing Market*, University of Pennsylvania Law School Institute for Law and Economics (Sept. 2008), available in <http://ssrn.com/abstract=1320197>.

<sup>92</sup> Coleman, et al., *Subprime Lending and the Housing Bubble*, at 282-83.

<sup>93</sup> Mayer & Pence, for instance, find that areas with high house price appreciation saw a rise in the following year in subprime mortgage originations. Mayer & Pence, *Subprime Originations*.

contribute to the run-up in home prices.<sup>94</sup> They also find that subprime lending was most intense in areas with the most rapid home-price appreciation and among the most expensive homes.<sup>95</sup> They also find that loans for non-owner occupied houses were more common in areas that also had higher levels of subprime lending, suggesting that subprime lending was being used to fuel investment purchases.<sup>96</sup> This counter-intuitive hypothesis about the direction of causation (high home appreciation caused a growth in subprime lending) if home purchases were being fueled by investment or speculative motives as homeowners sought to get into a rapidly-rising market to either “flip” the home in the short-run or to take advantage of long-term appreciation. This motivation would be consistent with the high penetration of adjustable-rate mortgages in the subprime market, which would generally be preferred by less risk-averse borrowers and speculators with a short-term time horizon.<sup>97</sup>

Finally, the possible presence of substantial speculation in these markets is consistent with some of the observed peculiarities of the relationship between the subprime and housing booms—much of the overheated activity in the real estate market in these cities was in properties such as new condominiums and new suburban homes (funded by purchase-money loans). This pattern might be explained by the fact that these properties are much more standardized products than existing homes (in terms of style,

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<sup>94</sup> Major Coleman IV, Michael LaCour-Little, & Kerry D. Vandell, *Subprime Lending and the Housing Bubble: Tail Wags Dog?*, 17 JOURNAL OF HOUSING ECONOMICS 272-290, 284 (2008).

<sup>95</sup> Coleman, et al., *Subprime Lending and the Housing Bubble*, at 287.

<sup>96</sup> Coleman, et al., *Subprime Lending and the Housing Bubble*, *supra* note, at 287.

<sup>97</sup> Liebowitz *cite* . Less risk-averse households also tend to select ARMs instead of FRMs as they place less value on the insurance of a stable expected long-term payment schedule. See Brahim Coulibaly & Geng Li, *Choice of Mortgage Contracts: Evidence from the Survey of Consumer Finances*, FINANCE AND ECONOMICS DISCUSSION SERIES 2007-50 (Board of Governors of the Federal Reserve System, Divisions of Research & Statistics and Monetary Affairs, 2007). Other purchasers, such as recent college graduates, also prefer ARMs, presumably because the lower initial payments enable them to qualify for larger mortgages based on their expected higher long-term income rather than their lower current income. See Amy Crews Cutts, Richard K. Green, and Buchi Ramagopal, *Mortgage Contracts and Household Risk Management*, Paper Presented at the AREUEA Annual Meeting, Boston, MA (Jan. 2006), available in [http://www.gwu.edu/~business/research/workingpapers/Cutts\\_Green\\_and\\_Ramagopal\\_12-31-05%20.pdf](http://www.gwu.edu/~business/research/workingpapers/Cutts_Green_and_Ramagopal_12-31-05%20.pdf) .

quality, and neighborhood quality). Thus they are more amenable to rapid flipping and resell than are existing homes, explaining why speculators may have gravitated toward investment in these properties.

More fundamentally, this analysis may resolve what might otherwise be anomalous, such as the facts that average FICO scores for subprime borrowers in the later stages of the subprime boom were similar to those in the earlier stages,<sup>98</sup> or perhaps even *higher*,<sup>99</sup> although other underwriting factors such as combined LTV and debt-to-income ratio worsened. Moreover, the percentage of subprime mortgages that were purchase-money mortgages actually rose as well consistent with the hypothesis that subprime lending fueled new home building in middle-class exurbs and growing cities rather than more lending in low-income neighborhoods.<sup>100</sup> Empirical studies conclude that it was, in fact, purchase-money loans—both prime and subprime—rather than refinance loans that had the highest default rates.<sup>101</sup> By 2005, subprime loans were seen to be highly prevalent in areas with large amounts of new construction, such as metropolitan areas in states such as Nevada, Arizona, California, and Texas, and even within metro areas, exurbs often have the highest subprime concentrations.<sup>102</sup> Thus, whereas changes in interest rates and other policies fueled the initial increase in home prices in the first phase of the boom, the easy availability of credit fueled the construction of *new* housing in the second phase of the boom. This created a dramatic oversupply of housing that eventually crashed the market in these areas. This may explain why many of the hotbeds of

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<sup>98</sup> Mayer, Pence, & Sherlund, *The Rise in Mortgage Defaults* at 17.

<sup>99</sup> GERARDI, ET AL., MAKING SENSE at 8; Foote, et al., *Just the Facts*, at 292; Elliehausen, Hwang, & Park, *Hybrid Interest Rate Choice*, at 6 (finding that FICO scores and income rose for FRM, ARM, and hybrid subprime loans from 1998 to 2006). Others have argued that FICO scores on subprime borrowers declined and that this partially explains rising default rates. Bajari, et al., *Empirical Model of Subprime Mortgage Default*.

<sup>100</sup> Mayer, Pence, Sherlund, *The Rise in Mortgage Defaults*, at 7; GERARDI, ET AL., MAKING SENSE at 8.

<sup>101</sup> Amromin & Paulson, *supra* note, at 27.

<sup>102</sup> Chris Mayer & Karen Pence, *Subprime Mortgages: What, Where, and to Whom?* (working paper).

foreclosure activity are in the middle-class exurbs of established cities, especially in new home settlements, rather than in the inner-cities where subprime lending originally commenced. As one analyst observed in 2002:

No wonder that the housing price boom was initially characterised as being regional in nature. With hindsight, a better characterisation might have been of strong demand for housing nationally, stimulated by easier credit, that manifested itself where supply could accommodate it the most. By concentrating the increases in both demand and supply geographically, the US institutional and geographical structures seem to have maximised the potential for build-up of excess supply in at least some regions. Now that the boost to demand from easier credit has been withdrawn and homes a long distance from employment centres have become less attractive as gasoline prices rise, it seems hard to imagine that this supply overhang will be worked off quickly, without a substantial fall in prices in these regions.<sup>103</sup>

Thus, the housing boom and bust has been characterized as a national crisis, in fact, it was highly regional in nature. Understanding the regional nature of the crisis helps to identify the factors that prompted the boom and the bust in certain markets.

## 2. *Change in the Characteristics of Homeowners*

The new homeowners created during the housing boom, however, are substantially different than in prior generations. More of those who bought homes did so with some degree of speculative intent and these new borrowers have exhibited a greater willingness to walk away from their homes when confronted with incentives to do so.<sup>104</sup> Since 2000 the percentage of subprime loans that are for *non-owner-occupied* home loans—to fund the purchase of rental or vacation homes, for example—has doubled from about 8% of all subprime loans to over 16%.<sup>105</sup> Similarly, a survey by the National

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<sup>103</sup> Ellis, *The Housing Meltdown*, at 17.

<sup>104</sup> Amromin & Paulson, *supra* note.

<sup>105</sup> It is not clear, however, if all of these recent HMDA loans were actually subprime loans. Because of peculiarities in the yield

Association of Realtors found that 28% of home buyers in 2005 purchased homes as investments, as did 22% in 2006.<sup>106</sup> This suggests that an increasing number of subprime loans in recent years may have been issued to investors and speculators, not to families. Because these properties were bought for the purpose of speculation, their owners might be especially likely to exercise the default option in response to declining residential real estate prices.<sup>107</sup> Investors also may be more likely to self-select for teaser-rate loans if they plan to flip the home before the rate readjusts or to permit foreclosure. Thus, it is possible that a substantial percentage of the subprime loans that actually result in foreclosure may reflect strategic decision-making by speculative homeowners to allow foreclosure rather than evidence of widespread hardship and distress by many families. On the other hand, there appears to be a minimal difference in the amount of equity retained in owner-occupied versus non-owner-occupied housing, suggesting that owners of non-owner-occupied housing are not behaving in a dramatically more risky fashion than owner-occupants, at least in this respect.<sup>108</sup>

Still other subprime borrowers may be occupying their properties, where the borrower invested for the mixed purposes of speculation and enjoying residential amenities, such as young, single individuals who bought a property with a subprime loan as an alternative to renting. We can imagine the motivations for purchasing a home as lying on a continuum. At one extreme is pure speculation, where the homeowner

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curve for short-term versus long-term interest rates, recent years of HMDA data have seen an unusually large increase in the number of loans that fall under the HMDA definition. See Robert B. Avery, Kenneth P. Brevoort & Glenn B. Canner, *The 2006 HMDA Data*, 93 FED. RESERVE BULLETIN A73, A81–A85 (2007), available at <http://www.federalreserve.gov/pubs/bulletin/2007/pdf/hmda06final.pdf>. Nonetheless, because we are comparing a change in the percentage of non-owner-occupied houses, this concern should not systematically bias the percentage of HMDA loans that are for non-owner-occupied properties.

<sup>106</sup> Press Release, Nat'l Ass'n of Realtors, Vacation-Home Sales Rise to Record, Investment Sales Plummet in 2006 (April 30, 2007) [http://www.realtor.org/press\\_room/news\\_releases/2007/phsi\\_apr07\\_vacation\\_home\\_sales\\_rise](http://www.realtor.org/press_room/news_releases/2007/phsi_apr07_vacation_home_sales_rise).

<sup>107</sup> See Anders, *supra* note 129.

<sup>108</sup> See CAGAN, *supra* note 9, at 5, 32.



purchases a non-owner occupied property for the purpose of flipping it for a profit. At the other extreme is a family that purchases a home to live in for the long term and to raise a family and live in a particular neighborhood. Particular individual motivations will be arrayed along this continuum, with mixed motives. Thus, even for owner-occupied homes, some people may have purchased for primarily investment motives and will thus be more willing to sell or walk away from the property given the right incentives. This may especially be the case for many close alternatives to apartment renting, such as condominiums.<sup>109</sup> Anecdotal reports suggest that although there has been a general price decline or leveling off in real estate prices, price declines have been largest among those properties most likely to be held for rental or speculative purposes, such as condominiums.<sup>110</sup> This may also be consistent with the observed pattern of more rapid growth in homeownership among the younger buyers, who may be the cohort most likely to purchase homes for more speculative purposes.

HMDA data indicates that since 2000 the percentage of subprime loans that are for *non-owner-occupied* home loans—i.e., to fund the purchase of rental or vacation homes—has doubled from about 8% of all subprime loans to over 16%.<sup>111</sup> Similarly, a survey by the National Association of Realtors found that 28% of home buyers in 2005

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<sup>109</sup> See Gerardi, Shapiro, & Willen, *supra* note 118, at 28 (noting that owners of condominiums and multi-family houses have substantially higher default probabilities than owners of single-family houses, holding other risk factors constant); Christopher L. Foote, Kristopher Gerardi, & Paul S. Willen, *Negative Equity and Foreclosure: Theory and Evidence*, 64 JOURNAL OF URBAN ECONOMICS 234-245, 237 (2008) (finding that borrowers who purchase a condominium or multi-family property are more likely to default than borrowers who purchase a single-family home).

<sup>110</sup> See Les Christie, *Condo Prices Reveal Housing Trends*, CNN MONEY.COM, Jan. 18, 2007, [http://money.cnn.com/2007/01/18/real\\_estate/condo\\_prices\\_reveal\\_trends/index.htm](http://money.cnn.com/2007/01/18/real_estate/condo_prices_reveal_trends/index.htm).

<sup>111</sup> It is not clear, however, if all of these recent HMDA loans were actually subprime loans. Because of peculiarities in the yield curve for short-term versus long-term interest rates, recent years of HMDA data have seen an unusually large increase in the number of loans that fall under the HMDA definition. See Robert B. Avery, Kenneth P. Brevoort & Glenn B. Canner, *The 2006 HMDA Data*, 93 FED. RESERVE BULLETIN A73, A81–A85 (2007). Nonetheless, because we are comparing a change in the percentage of non-owner-occupied houses, this concern should not systematically bias the percentage of HMDA loans that are for non-owner-occupied properties.

purchased homes as investments, as did 22% in 2006.<sup>112</sup> This suggests that an increasing number of subprime loans in recent years may have been issued to investors and speculators, not to families. Because these properties were bought for the purpose of speculation, their owners might be especially likely to exercise the default option in response to declining residential real estate prices.<sup>113</sup> Investors also may be more likely to self-select for teaser-rate loans if they plan to flip the home in a short time before the rate readjusts or to permit foreclosure. Thus, it is possible that a substantial percentage of the subprime loans that actually result in foreclosure may reflect strategic decision-making by speculative homeowners to allow foreclosure rather than evidence of widespread hardship and distress by many families. On the other hand, there appears to be a minimal difference in the amount of equity retained in owner-occupied versus non-owner-occupied housing, suggesting that owners of non-owner-occupied housing are not behaving in a dramatically more risky fashion than owner-occupants at least in this respect.<sup>114</sup>

Still other subprime borrowers may be owner-occupied properties where the borrower invested for a mixed purpose of speculation and residential amenities, such as young, single individuals who bought a property with a subprime loan as an alternative to renting, and who might be expected to be attracted to the default option. This may be the case especially for many close alternatives to apartment renting, such as condominiums.<sup>115</sup> Anecdotal reports suggest that although there has been a general price decline or leveling off in real estate prices, price declines have been largest among those

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<sup>112</sup> Press Release, Nat'l Ass'n of Realtors, Vacation-Home Sales Rise to Record, Investment Sales Plummet in 2006 (April 30, 2007) [http://www.realtor.org/press\\_room/news\\_releases/2007/phsi\\_apr07\\_vacation\\_home\\_sales\\_rise](http://www.realtor.org/press_room/news_releases/2007/phsi_apr07_vacation_home_sales_rise).

<sup>113</sup> See Anders, *supra* note **Error! Bookmark not defined.**.

<sup>114</sup> See CAGAN, *supra* note **Error! Bookmark not defined.**, at 5, 32.

<sup>115</sup> See Gerardi, Shapiro, & Willen, *supra* note 67, at 28 (noting that owners of condominiums and multi-family houses have substantially higher default probabilities than owners of single-family houses, holding other risk factors constant).

properties most likely to be held for rental or speculative purposes, such as condominiums.<sup>116</sup> If so, then this suggests that the aggregate data on foreclosures may be painting an inaccurate picture of the subprime crisis by lumping together loans entered into for speculative purposes with those made to family homeowners. It is not obvious that widespread foreclosure on speculative investments raises the same policy concerns as for family homes.

The motives for home purchase lie along a continuum, from those who purchase for the consumption amenities of homeownership and long term stability to those who buy as a pure speculative investment with an intention to rapidly flip the home for a hoped-for wealth gain. Most homeowners lie somewhere in between, with a combination of consumption and wealth-building incentives. To the extent that a particular homeowner is motivated by speculation, she will be more likely to cut her losses and walk away if the house falls in value. Empirical evidence indicates that those who bought homes during the housing boom were less-deeply committed to their homes than previous owners, essentially being artificial owners with a highly-speculative investment motive. It is possible that the severity of default and foreclosure in the subprime market has been driven disproportionately by borrowers who lie along the speculative range of the continuum and thus voluntarily self-selected into foreclosure.

## **B. The Cost of Exercising the Option Fell**

### ***1. Deterioration of Underwriting Standards and Equity Stripping***

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<sup>116</sup> See Les Christie, *Condo Prices Reveal Housing Trends*, CNN MONEY, Jan. 18, 2007, available at [http://money.cnn.com/2007/01/18/real\\_estate/condo\\_prices\\_reveal\\_trends/index.htm](http://money.cnn.com/2007/01/18/real_estate/condo_prices_reveal_trends/index.htm).

A third factor was a deterioration of underwriting standards. Much has been made of many of the unusual loan products that emerged during the real estate boom: low-document, negative amortization, no-downpayment, etc. But it is easy to overstate the prevalence of these loans in the market and their contribution to the mortgage crisis. First, despite their widespread attention, highly exotic loans were uncommon for most of the housing boom. Between 1998 and 2006, for instance, mortgages with negative amortization comprised less than 0.05% of all loans and those with balloon payments were only 2.1% (and of those with balloon payments, over 90% were fixed-rate mortgages).<sup>117</sup>

Second, in the early stages of the housing boom, both nontraditional borrowers and nontraditional loans performed well. Before looking in some detail about the causes of the housing boom and bust, it is important to consider an often-overlooked element of the crisis; namely, that there are really two phases of the housing boom and mortgage crisis, one lasting from about 2001-2004 and a second running from about 2005-2007. Performance of loans originated during the two phases of the housing boom show dramatically different performance records—whereas loan performance during the later phase (2005-2007) has been disastrous, loan performance during the earlier phase was largely non-problematic, even those loans that contained particular terms that have subsequently drawn criticism, such as hybrid mortgages, low-documentation loans, and low-downpayment loans.<sup>118</sup> Indeed, as will be developed more below, it is likely that the disastrous collapse of the housing and mortgage markets came about precisely *because* of the strong performance of non-traditional loans in the first phase of the credit expansion.

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<sup>117</sup> Gregory Eliehausen, Min Hwang, & Jeehon Park, *Hybrid Interest Rate Choice in the Subprime Mortgage Market: An Analysis of Borrower Decisions*, George Washington University (May 2008).

<sup>118</sup> See Charles W. Calomiris, *The Subprime Turmoil: What's Old, What's New, and What's Next* 22 (Oct. 2, 2008).

The strong performance of this first generation of loans provided the foundation for the more aggressive loans that became more common in the second phase of the boom. But for the encouraging performance of first-generation subprime loans, lenders probably would not have continued to expand the market in the second phase. And but for the rapid home appreciation in the first phase of the boom, many homeowners would not have been so aggressive in buying new homes in the second phase of the boom.

The first phase of the subprime and mortgage boom ran from about 2001 to 2004. During this period house appreciation around the country was extremely strong, more so in some areas of the country than others. This home appreciation and the wealth it generated for homeowners was especially important because of the loss of household wealth that accompanied the bursting of the dot.com bubble in 2000 and the short recession in the wake of that event as well as the terrorist attacks of 2001.

Empirical data provides a picture of the differences between these two periods of the housing boom. A few important differences between the two phases of the housing boom emerge when examining the data. The most important factor, of course, is that house prices were rising in many parts of the country in the early stages of the mortgage boom. In an appreciating market, a high-risk loan is unlikely to terminate in foreclosure because the borrower can either sell the house for a profit or refinance. Thus, extending credit to riskier borrowers or originating loans with more risky terms generally are not a problem when housing prices are rising. Second, the structure of the loans in the later phase of the housing boom were substantially different from the first phase. In particular, in the first phase many subprime borrowers were at least as risky as borrowers in the second phase; moreover, many of the loans issued in the first phase included many of the

features that were later criticized, such as low-documentation, low-downpayment, or interest-only loans.<sup>119</sup> The difference in the second phase, however, was that loans increasingly *combined* these various features, a practice known as “risk-layering.” Of particular concern was the increasing use of no-downpayment loans, often combined with interest-only or negative amortization features. As suggested above, the rise of no-downpayment mortgages were particularly important when home values turned down, giving borrowers an unusually strong incentive to walk away from homes that were “underwater” with negative equity. A second feature that distinguishes the late boom from the early boom is the increased presence of risk-layering in the later phases of the boom. Risk-layering is the practice of combining more than one risky term together in a given mortgage.

Consider, for instance, much-maligned “low documentation” loans, sometimes referred to as “liar’s loans.” Low-documentation loans forego many of the formalities associated with a typical loan, such as an appraisal, detailed income and assets review, and a detailed loan application, in favor of a much simpler process based on a credit score and simplified review process. Although low-documentation loans seem inherently risky, they are not. They were invented in the context of home refinances to simplify the refinance process for a borrower with a good credit score, an established track record of successfully making mortgage payments, a regular job, accumulated home equity, and a house and a neighborhood that has had home-price appreciation that makes it clear that the borrower continues to have substantial equity in the home. Under such circumstances a full and detailed loan application process creates unnecessary cost and inconvenience

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<sup>119</sup> Sowell notes that between 2002 and 2005, interest-only mortgages grew from less than 10% of new mortgages to over 31%. In the San Francisco Bay Area, interest-only mortgages grew from 11% of all new mortgages in 2002 to 66% in 2005. SOWELL, HOUSING BOOM AND BUST, *supra* note, at 20.

for the borrower and the lender and provides little additional information beyond what is already known about the borrower and the property. A problem may arise, however, when the low-documentation loan developed in this context of a loan refinance to a very low-risk borrower with a very low-risk property is extended to riskier purchase-money borrowers with riskier property. Even then, low-documentation loans may be sound if the borrower has sufficient equity in the property at the outset, such as an especially low LTV ratio. In fact, during the first phase of the housing boom, low-documentation subprime loans performed just as well as full-documentation loans.<sup>120</sup> Among subprime loans, low-documentation loans rose from 20 percent to a peak of 38 percent. For Alt-A mortgages the percentage that did not have full documentation rose from 60 percent to 80 percent between 2000 and 2007.<sup>121</sup>

In the early phase of the boom, where a loan had one unusual and risk-increasing term, such as low-documentation, it also tended to have offsetting features that reduced the risk, such as a lower LTV ratio than normal. Thus, the enhanced risk was offset by other provisions in the loan that reduced that risk. The fact that apparently risky terms were generally confined to appropriate contexts or were offset by alternative risk-reducing features of the loan, along with the strong appreciation in house prices during this period, may account for the surprisingly strong performance of loans with these terms in the early stage of the boom.

In the later stages of the boom, however, this restraint and risk-hedging was weakened. Rather than offsetting riskier terms with other adjustments, lenders

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<sup>120</sup> GERARDI, ET AL., MAKING SENSE at 11.

<sup>121</sup> Statement of William B. Shear, United States Government Accountability Office, Testimony Before the Joint Economic Committee, U.S. Congress, *Home Mortgages: Recent Performance of Nonprime Loans Highlights the Potential for Additional Foreclosures* 2 (July 28, 2009), available in <http://www.gao.gov/new.items/d09922t.pdf>.

increasingly engaged in risk-layering of loan terms, combining multiple high-risk terms. Although it is possible that they were just foolishly reckless in producing risky loans with little regard for the consequences, there are two possible alternative explanations. First, as noted, some scholars have found that FICO scores for subprime borrowers actually increased in the second half of the boom. Lending to a marginally more creditworthy group of borrowers might have provided undue confidence to lenders about the safety of loans with novel terms. Second, lenders might simply have erred in their extrapolation from the early sound performance of loans with these terms present in isolation to the expected performance of loans in combination. As one important paper concluded, the loans that were originated in the latter stages of the boom were not *ex ante* unreasonable: “Loans made in 2005-2006 were not that different from loans made earlier, which in turn had performed well, despite carrying a variety of serious risk factors.”<sup>122</sup>

The difference between earlier and later loans, however, was that later loans combined multiple risk-enhancing terms that essentially had an explosive or geometric impact in increasing the risk of the mortgage, rather than merely additive. Thus, for example, because low-documentation and low-downpayment mortgages in isolation were found to have performed with modest and predictable risk associated with them, it might have been thought that combining the two elements would only increase risk a marginal amount. Instead, it appears that combining two such terms dramatically increased the risk of the resulting product—a risk that became explosive when combined with plunging

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<sup>122</sup> KRISTOPHER GERARDI, ANDREAS LEHNERT, SHANE SHERLUND, & PAUL WILLEN, MAKING SENSE OF THE SUBPRIME CRISIS, *Brookings Papers on Economic Activity* (Douglas W. Elmendorf, N. Gregory Mankiw, & Lawrence H. Summers, eds., Fall 2008).



home prices. High-LTV loans combined with low-documentation proved to be especially prone to later default.<sup>123</sup>

The primary change in underwriting was a substantial increase in the LTV for borrowers in the later stages of the boom.<sup>124</sup> The median combined LTV (CLTV) for subprime purchase loans rose from 90 percent in 2003 to 100 percent in 2005, “implying that in the final years of the mortgage boom more than half of the borrowers with subprime mortgages put no money down when purchasing their homes.”<sup>125</sup> Piggyback loans also became more common during this time, as the share of subprime originations with piggybacks rose from 7 percent in 2003 to 28 percent in 2007 and in the Alt-A market the share rose from 12 to 42 percent.<sup>126</sup> In dollar amounts, piggyback lending rose from 20% of home-purchase mortgage loan dollars in 2001 to 42% in 2004.<sup>127</sup> The growth in piggyback loans was especially prominent in many areas of California, where piggyback loans were over half of the total loan dollars issued in 2004.<sup>128</sup> On the other hand, many of these piggyback loans were “silent second” that were not disclosed to the originator of the first mortgage and so could adjust for the increased risk.<sup>129</sup> When home prices fall, low-equity loans quickly turned into negative equity, providing borrowers with a strong incentive to default. Interest-only, negative amortization, and cash-out refinance loans, which were rare in the subprime market although quite common in the

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<sup>123</sup> GERARDI, ET AL., MAKING SENSE at 5.

<sup>124</sup> GERARDI, ET AL., MAKING SENSE at 1; Foote, et al., *Just the Facts*, *supra* note, at 294 (noting increase in average purchase LTV from 79% in 1990 to 84% in 2007 and increase in median LTV from 80% to 90%).

<sup>125</sup> Mayer, Pence, and Sherlund, *the Rise in Mortgage Defaults*, at 6. The CLTV includes home equity loans added on to the initial purchase LTV.

<sup>126</sup> Mayer, Pence, & Sherlund, *The Rise in Mortgage Defaults*; *see also* GERARDI, ET AL., MAKING SENSE, at 10 (noting dramatic rise in number of mortgages with second liens).

<sup>127</sup> Charles A. Calhoun, *The Hidden Risks of Piggyback Lending*, ECONOMIC & REAL ESTATE TRENDS 4 (Summer 2005) (PMI Mortgage Insurance Co.), available at [http://www.pmi-us.com/media/pdf/products\\_services/eret/pmi\\_eret05v3s.pdf](http://www.pmi-us.com/media/pdf/products_services/eret/pmi_eret05v3s.pdf)

<sup>128</sup> Calhoun, *supra* note, at 5.

<sup>129</sup> Between 1999 and 2006 the percentage of subprime loans with silent seconds rose from 1 percent to over 25 percent and for Alt-A loans the rates rose from 1 percent to nearly 40 percent of securitized Alt-A mortgages.

Alt-A mortgage market, similarly increase the risk of negative equity.<sup>130</sup> Average LTVs at purchase among homeowners who default are on average 8-12 percentage points higher than the average LTV. From 2005-2007, for example, the mean LTV for all purchasers was 83-84%, but for those who later defaulted the mean LTV for those who defaulted was between 94-96% and the median LTV for defaulters was 100%.<sup>131</sup>

Other evidence suggests that the main contributor to the foreclosure crisis was negative equity rather than riskier-borrowers. For instance, subprime refinance borrowers had on average lower FICO scores than purchase-money borrowers (19-35 points lower) but also lower LTV ratios—and that the default rate for subprime refinance loans was lower than for purchase-money.<sup>132</sup> For example, the average LTV for subprime borrowers with the lowest credit scores rose only marginally between 1999 and 2005, from about 80% LTV to about 85%.<sup>133</sup> Average LTV for subprime borrowers with higher credit scores, by contrast, soared from about 80% to near 95%.

Another practice that increased the incentives for strategic default was the growth of lending products that reduced certain homeowners' equity investments in their loans (especially in the subprime market), such as low or no-downpayment loans, as well as certain lending products like interest only mortgages that meant that consumers accumulated no equity through their monthly payments.<sup>134</sup> Gerardi, et al., find that the most dramatic change in the subprime lending market over the course of the housing boom was the dramatic growth in the number of high LTV loans in the latter stages of the

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<sup>130</sup> Chris Mayer, Karen Pence, and Shane M. Sherlund, *The Rise in Mortgage Defaults* (working paper). Mayer, et al., find that 40 percent of Alt-A mortgages had interest-only features, compared to 10 percent of subprime; 30 percent of Alt-A mortgages permitted negative amortization, subprime loans did not have these features.

<sup>131</sup> Foote, et al., *Just the Facts*, *supra* note, at 294.

<sup>132</sup> Mayer, Pence, and Sherlund, *The Rise in Mortgage Defaults*, at 6. **double-check this cite**

<sup>133</sup> Foote, et al., *Just the Facts*, *supra* note, at 302.

<sup>134</sup> This latter factor may be of minimal importance, however, as 30 year conventional fixed mortgages provide for the payment of a much greater ratio of interest to principal at the beginning of the loan repayment term, thus equity accumulation is minimal for many years.

boom. While housing prices were rising these loans performed exceedingly well, as borrowers could either sell or refinance if they were unable or unwilling to make payments. When housing prices turned down, however, high-LTV loans quickly went underwater, leaving homeowners with strong incentives to permit foreclosure. Moreover, Gerardi, et al., find that in the early stages of the boom, low-documentation loans performed as well as full-documentation loans. Similarly, in early stages of the boom, borrowers with lower credit scores typically were required to have more equity in their homes; over time this requirement for higher-risk borrowers was eroded.

The positive experience with unconventional products in the early stage of the boom, however, encouraged lenders to increasingly *combine* various unconventional terms, a practice known as risk-layering. As housing prices started to decline, the combination of more than one unconventional term have proven particularly problematic and likely to trigger foreclosure, with the interaction between different risk-layering terms giving rise to a geometric increase in the propensity to default rather than being merely additive.

One technique that led to this result was the growing popularity of “piggyback loans.” Many first-time homebuyers have relatively limited assets and thus are unable to scrape together a substantial down payment for a mortgage, qualifying them only for a mortgage with a high LTV ratio (if they qualify at all). As a result, for loans with high LTV ratios, borrowers traditionally had to purchase private mortgage insurance (PMI), to compensate the lender for the increased risk of default on the loan.<sup>135</sup> With a piggyback loan, the borrower simultaneously takes out a first mortgage and a junior-lien

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<sup>135</sup> Avery, Brevoort & Canner, *supra* note 135, at A84 *available at* <http://www.federalreserve.gov/pubs/bulletin/2007/pdf/hmda06final.pdf>.

(piggyback) loan. The piggyback loan finances the portion of the purchase price that is not being financed by the first mortgage.<sup>136</sup> Piggyback loans often were taken out so that the first-lien mortgage can meet the conforming loan size limits.<sup>137</sup> Although housing prices rose dramatically in recent years, the dividing line set by Fannie Mae between conforming and jumbo mortgages remained constant at \$417,000, suggesting that a growing number of borrowers were taking out piggyback loans simply to avoid paying the jumbo penalty. This meant that an increasing number of loans would have been forced into the jumbo classification, requiring the payment of an interest rate premium, even if they were really not much riskier than conforming loans. In addition, until recently payments on PMI could not be itemized for federal income tax purposes, whereas the interest paid on piggyback loans could be. Virtually nonexistent in 2000, by 2006 about 22% of mortgage loans for owner-occupied houses also had piggyback second-lien mortgages attached.<sup>138</sup> The number and dollar volume of piggyback loans rose dramatically between 2001 and 2004.<sup>139</sup> By contrast, the number of home purchases backed by PMI declined about 6% from 2005 to 2006 alone.<sup>140</sup> On the other hand, the average loan-to-value ratio for all mortgages was lower than at certain times in the past as was overall percentage of loans that were high-LTV loans, although it is not clear whether this is the case for subprime loans as well.<sup>141</sup> Moreover, anecdotal reports suggest that in the past many consumers borrowed at least some of their downpayment

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<sup>136</sup> *Id.*

<sup>137</sup> *Id.* at A85.

<sup>138</sup> Avery, Brevoort & Canner, *supra* note 111, at A85; *see also* Murphy, *supra* note **Error! Bookmark not defined.**, at 5. The apparent absence of piggyback loans before 2000, however, may overstate the distinction. Although the purchase-money lender did not traditionally provide a piggyback home equity loan, for many decades consumers who could not come up with a full 20% downpayment might borrow the needed amount from a consumer finance company (presumably on an unsecured basis). *See* PAUL MUOLO & MATHEW PADILLA, CHAIN OF BLAME: HOW WALL STREET CAUSED THE MORTGAGE AND CREDIT CRISIS 37 (2008).

<sup>139</sup> Joseph R. Mason & Joshua Rosner, *How Resilient Are Mortgage Backed Securities to Collateralized Debt Obligation Market Disruptions?* 8 (Hudson Institute, 2007). *available at* [http://www.hudson.org/files/publications/Mason\\_RosnerFeb15Event.pdf](http://www.hudson.org/files/publications/Mason_RosnerFeb15Event.pdf).

<sup>140</sup> Avery, Brevoort & Canner, *supra* note 176, at A85.

<sup>141</sup> *See* Fed. Hous. Fin. Bd., Historical Summary Tables at tbl.9, <http://www.fhfb.gov/default.aspx?page=53>.

from family members or friends. Thus, although bank-issued piggyback loans were new, the concept of borrowing money to meet the 20% downpayment presumably was not.

As noted above, a primary factor driving foreclosure is the presence or absence of equity in the property. Thus, loans with little or no down payments (such as those with high LTV or mortgages combined with piggyback loans) offer an unusually powerful incentive to default if property values fall.<sup>142</sup> Lower downpayments are correlated with higher rates of default<sup>143</sup> and lower LTV ratios are reflected in lower risk premiums in interest rates.<sup>144</sup> One study found that conventional mortgages with loan-to-value ratios at origination of 91–95% were twice as likely to default as loans with LTVs of 81-90% and five times more likely to default than those with LTVs of 71-80%.<sup>145</sup> In some instances this relationship may reflect the fact that those who are unable to scrape together a substantial downpayment are riskier borrowers and so are more likely to default. This would be expected if consumers treat default and foreclosure as an option—if the borrower makes a 20% downpayment, then the owner will be reluctant to default unless the value of the property depreciates by more than 20%. If, however, the borrower puts down little or nothing then there is little disincentive against default and foreclosure. Moreover, piggyback home-equity loans generally are adjustable-rate mortgages with no fixed-rate period, thus they will be especially responsive to changes in underlying interest rates and thus may disproportionately lead to eventual default. “[F]irst-lien mortgages connected with piggyback loans are 43 percent more likely to go

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<sup>142</sup> In fact, LaCour-Little, et al., conclude that negative equity for homes in foreclosure are more often the result of post-purchase cash-out refinancing or home equity loans are more responsible for the presence of negative equity than housing price declines. See LaCour-Little, Rosenblatt & Yao, *supra* note **Error! Bookmark not defined.**, at 20.

<sup>143</sup> See *id.*

<sup>144</sup> See Elliehausen, Staten, & Steinbuks, *supra* note **Error! Bookmark not defined.**, at 43-44.

<sup>145</sup> Robert B. Avery, Raphael W. Bostic, Paul S. Calem, & Glenn B. Canner, *Credit Risk, Credit Scoring, and the Performance of Home Mortgages*, 82 FED. RES. BULL. 621, 624 (1996).

into default than stand-alone first mortgages of comparable size” and the default rate is even higher for piggyback loans extended to riskier borrowers.<sup>146</sup>

Financing the reduces the amount of equity retained in the home, whether by cash-out refinancing, home equity loans, or interest-only mortgages, tends to increase the propensity for default. When home prices turn down, a reduced equity cushion means that homeowners fall into negative equity more frequently and more quickly than they would if they built or retained a larger equity cushion. Thus, having an interest-only loan, a second mortgage, or a higher LTV at the time of origination was correlated with a higher propensity to default at the height of the foreclosure crisis.<sup>147</sup>

A related factor in the general reduction in homeowner equity cushion was the growing use of cash-out refinancing in recent years, especially in the later stages of the housing boom. The United States is almost unique in the world in adopting a general practice of permitting an almost unlimited right of mortgage prepayment and thus the ability to refinance at almost any time.<sup>148</sup> Most commercial loans and subprime mortgages, by contrast, prohibit or penalize prepayment for certain periods of time at the outset of the mortgage. Borrowers pay a premium for the unlimited right to prepay of approximately 20 to 50 basis points (.2 to .5 percentage points) with subprime borrowers generally paying a higher premium than prime borrowers because of the increased and idiosyncratic risk of subprime borrower prepayment.<sup>149</sup>

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<sup>146</sup> Rosner & Mason, *supra* note 169, at 8.

<sup>147</sup> Andra C. Ghent & Marianna Kulyak, *Recourse and Residential Mortgage Default: Theory and Evidence from US States* 18 (working paper, June 3, 2009).

<sup>148</sup> Green & Wachter, at 100-01.

<sup>149</sup> See Todd J. Zywicki, *The Law and Economics of Subprime Lending*, \_\_ U. COLO. L. REV. \_\_, 18-20 (summarizing studies); Gregory Elliehausen, Michael E. Staten & Jevgenijs Steinbuks, *The Effect of Prepayment Penalties on the Pricing of Subprime Mortgages*, 60 J. ECON. & BUS. 33, 34 (2008) (reviewing studies).

In general, prepayment risk for specific borrowers is difficult to anticipate and there appears to be no reliable model for anticipating it.<sup>150</sup> Prepayment risk arises because when prepayment occurs the lender must reinvest the capital at the prevailing market rates and returns, so the lender bears the risk that the new investment will provide a lower interest return than the existing investment. Prepayment typically will occur when market interest rates fall, so the alternative investment usually will be at a much lower rate than the initial loan. In a study of 4.2 million FHA loans, for instance, Calomiris and Mason estimated that prepayment losses resulting from the reduction in interest rates following a prepayment amount to about \$576 million whereas losses due to default are only about \$12 million.<sup>151</sup>

Prepayment risk in the subprime market is difficult to anticipate because it is based on the borrower's private information. Prepayment on home mortgages can result from two different reasons, which are also distinct to the prime and subprime markets. In the prime market prepayment risk arises from changes in market interest rates. When market interest rates fall, some prime borrowers can be predicted to refinance their existing mortgages; thus, this risk is a general, predictable market risk. Although changes in market interest rates are relevant for subprime borrowers as well, prepayment risk in the subprime market is often more idiosyncratic and borrower-specific than in the prime market. Unlike prepayment in the prime market which can be actuarially predicted, prepayment in the subprime market depends on the borrower's private information about the likelihood that he will improve his credit score and refinance into another loan. This

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<sup>150</sup> Joseph R. Mason & Joshua Rosner, Where Did the Risk Go? How Misapplied Bond Ratings Cause Mortgage Backed Securities and Collateralized Debt Obligations Market Disruptions 54 (May 2007), [http://www.hudson.org/files/publications/Hudson\\_Mortgage\\_Paper5\\_3\\_07.pdf](http://www.hudson.org/files/publications/Hudson_Mortgage_Paper5_3_07.pdf).

<sup>151</sup> Charles Calomiris & Joseph Mason, *Endogenous and Exogenous Mortgage Prepayments in an Optimal Stopping Framework* (Working Paper 2007), cited in Mason & Rosner, *supra* note 61, at 54.

problem of private information makes it impossible to distinguish between those who are prepayment risks versus those who are not, thereby creating an adverse selection problem. Absent a prepayment penalty clause, therefore, lenders would *ex ante* have to charge a risk premium for all borrowers, thereby generating market inefficiencies.<sup>152</sup> On average, mortgages with prepayment penalties had interest rates that were 51 to 68 basis points lower than mortgages without prepayment penalties, and borrowers with lower FICO scores had larger rate reductions.<sup>153</sup> The purpose of a prepayment penalty clause may be to overcome this adverse selection problem by allowing borrowers to credibly signal a commitment not to prepay the loan prematurely, which enables them to obtain a lower interest rate. Other mechanisms for guarding against prepayment risk, such as requiring payment of points or upfront fees at the time of closing, can result in rationing of credit to higher-risk borrowers.<sup>154</sup>

Because credit score is a major component of the determination that lenders make of a borrower's interest rate—and the primary component for subprime loans—an increase in credit score can qualify a borrower for a much lower interest rate, and lower monthly payments, or even qualify a borrower for a prime-rated loan. Borrowers who make their monthly payments for even a short time on a higher-priced loan can raise their credit score appreciably, thereby providing an opportunity to prepay and refinance to a less expensive mortgage. A study by Fair, Isaac and Co. found that more than 30% of individuals with FICO scores below 600 improved their scores by at least 20 points

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<sup>152</sup> Chris Mayer, Tomasz Piskorski & Alexei Tchistyi, *The Inefficiency of Refinancing: Why Prepayment Penalties Are Good for Risky Borrowers* (Apr. 28, 2008) (working paper, available at <http://www1.gsb.columbia.edu/mygsb/faculty/research/pubfiles/3065/Inefficiency%20of%20Refinancing.pdf>).

<sup>153</sup> FICO scores are the standardized risk-assessment score available from Fair Isaac. Borrowers with a credit score above 620 are considered prime and those below are considered subprime. FICO score also is taken into consideration in grading subprime borrowers into various grades of subprime in the same way. It is not clear why there is such a bright-line break at 620, but falling on one side or the other of that line is highly significant.

<sup>154</sup> See Gregor Elliehausen, *Economic Effects of Prepayment Penalties* at 3 (Sept. 2008) (working paper, on file with author) (citing multiple studies).



within three months.<sup>155</sup> Courchane, Surette, and Zorn found in their review of public real estate records that 40% of borrowers whose mortgage was previously from a subprime mortgage lender had a prime mortgage at the time of the study, suggesting that subprime mortgages are a gateway for many borrowers who subsequently refinance into prime mortgages.<sup>156</sup> Prepayment by improved credit risks also means that those who remain in the preexisting pool of borrowers will be higher-risk borrowers thereby exerting an upward pressure on interest rates.

In fact, subprime loans that contain prepayment penalty clauses are less likely to default than those without such clauses, perhaps because of the lower interest rate on loans with prepayment penalties or perhaps because the acceptance of a prepayment penalty provides a valuable and accurate signal of the borrower's intentions.<sup>157</sup> This standard practice provides borrowers with the opportunity to refinance to take advantage of drops in interest rates but also to withdraw equity when desired.

From 2003 to 2006 the percentage of refinances that involved cash-out rose doubled from under 40 percent to over 80 percent<sup>158</sup> and among subprime refinanced loans in the 2006-2007 period around 90 percent involved some cash out<sup>159</sup>. The result of this cash-out activity was similar to that of piggyback home-equity loans, namely to strip out borrower's equity cushions, thereby making it more likely that a subsequent decline in the value of the home would bring the mortgage into negative equity and create

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<sup>155</sup> See Cutts & Van Order, *supra* note 20, at 174.

<sup>156</sup> Marsha J. Courchane, Brian J. Surette & Peter M. Zorn, *Subprime Borrowers: Mortgage Transitions and Outcomes*, 29 J. REAL EST. FIN. & ECON. 365 (2004).

<sup>157</sup> Christopher Mayer, Tomasz Piskorski, and Alexei Tchisti, *The Inefficiency of Refinancing: Why Prepayment Penalties are Good for Risky Borrowers*, Working Paper (Apr. 28, 2008); Sherlund also finds that the presence of prepayment penalties does not raise the propensity for default. Sherlund, *The Past, Present, and Future*.

<sup>158</sup> Ellis, *The Housing Meltdown*, at 22 and Fig. 9; JOINT CENTER FOR HOUSING STUDIES OF HARVARD UNIVERSITY, THE STATE OF THE NATION'S HOUSING 37, Appendix Table A-4 (2008), available in <http://www.jchs.harvard.edu/publications/markets/son2008/son2008.pdf>.

<sup>159</sup> C J Mayer & Karen Pence, *Subprime Mortgages: What, Where, and To Whom*, NBER Working Paper no. 14083.

incentives that promote default and foreclosure. Homes that were refinanced more frequently were substantially more likely to end up in foreclosure than loans of the same vintage that were not refinanced as often, which may reflect a greater degree of equity-stripping in those that were refinanced more often.<sup>160</sup> In fact, even though there was a documented rise in LTV ratios between 2003-2007, even that may underestimate the true increase in the LTV ratio if appraisals for refinance purposes were inflated (either intentionally or unintentionally), as appraisals are a less-accurate measure of value than actual sales.<sup>161</sup>

With respect to subprime borrowers, however, purchase-money loans exhibited a higher propensity to default than refinance loans.<sup>162</sup> Notably, subprime refinancers have lower FICO scores than subprime purchase-money borrowers, but purchase-money borrowers on average have higher LTV ratios. Purchase mortgages also have a higher number of non-owner occupied investors and are more likely to offer negative amortization loans than refinancers. These factors suggest again that a primary factor in default is the presence or absence of equity in the property and whether the borrower was purchasing for an investment purpose rather than the risk characteristics of the borrower or the loan itself.<sup>163</sup>

## ***2. Reducing the Costs of Foreclosure: State Laws***

Certain factors also reduce the cost of exercising the foreclosure option. For instance, several states have antideficiency laws (also known as “nonrecourse” laws

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<sup>160</sup> Foote, et al., *Just the Facts*, *supra* note, at 305.

<sup>161</sup> Ellis, *The Housing Meltdown*, at 22; Chris Mayer, Karen Pence, and Shane M. Sherlund, *The Rise in Mortgage Defaults* at 6.

<sup>162</sup> Mayer, Pence, & Sherlund, *The Rise in Mortgage Defaults*, at 8-9; GERARDI ET AL., MAKING SENSE at 12.

<sup>163</sup> Mayer, Pence, Sherlund, *The Rise in Mortgage Defaults*, at 8-9.

because the lender has no recourse against the borrower personally) that limit creditors' remedies to foreclosure without the right to sue the borrower personally for the deficiency.<sup>164</sup> Empirical evidence indicates that default and foreclosure rates are higher where antideficiency laws are present. In a study of the neighboring provinces of Alberta and British Columbia in Canada, Lawrence Jones found that "in a period of sizable house-price declines, the prohibition of deficiency judgments can increase the incidence of default by two or three times over a period of several years."<sup>165</sup> Similarly-situated borrowers with negative home equity (that is, where they owe more than the value of the house) "will be observed defaulting in antideficiency jurisdictions but not where deficiencies are truly collectible."<sup>166</sup> In fact, in Alberta (which had an antideficiency law) 74% of those who deliberately defaulted had negative equity; in British Columbia (which permitted deficiency suits) only one homeowner defaulted with negative book equity.<sup>167</sup> Other researchers have also found that prohibitions on deficiency judgments tend to produce higher delinquency<sup>168</sup> and default rates.<sup>169</sup> Limits on collection of deficiency judgments in FHA and VA loans may also explain the higher default rates on those loans compared to private market loans.<sup>170</sup>

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<sup>164</sup> See Michael T. Madison, Jeffry R. Dwyer, & Steven W. Bender, 2 THE LAW OF REAL ESTATE FINANCING §12:69 (Dec. 2007), available in Westlaw REFINLAW § 12:69. It is difficult to estimate exactly how many states have antideficiency laws as foreclosure rules vary a great deal from state to state, but an approximation may be about 15-20 states including many larger states. See United States Foreclosure Law, <http://www.foreclosurelaw.com> (last visited Sep. 17, 2008) (providing a full list of state laws). In addition, even in states where lenders may seek a deficiency, borrowers may be judgment-proof because of a general lack of other assets, as those with assets presumably would be more likely to provide a downpayment in the first place and would not be as likely to be in a negative equity position in their house.

<sup>165</sup> Lawrence D. Jones, *Deficiency Judgments and the Exercise of the Default Option in Home Mortgage Loans*, 36 J. L. & ECON. 115, 135 (1993).

<sup>166</sup> *Id.*

<sup>167</sup> *Id.* at 128–29. Jones states that the one defaulter in British Columbia reportedly left the country. *Id.* at 129.

<sup>168</sup> Brent W. Ambrose & Richard J. Buttimer, Jr., *Embedded Options in the Mortgage Contract*, 21 J. REAL ESTATE FIN. AND ECON. 95, 105 (2000).

<sup>169</sup> Ambrose, Capone & Deng, *supra* note 67, at 220.

<sup>170</sup> Brett W. Ambrose, Richard J. Buttimer, Jr., & Charles A. Capone, *Pricing Mortgage Default and Foreclosure Delay*, 29 J. MONEY, CREDIT & BANKING 314, 322 (1997).

As economic theory would predict, the incentive effect of antideficiency laws rises as the wealth and income of the borrower rises. Many borrowers have limited wealth and personal income, especially subprime borrowers who are defined by their limited wealth and income. As a result, even where a deficiency judgment is permitted by law, in practice many borrowers will be largely judgment-proof, reducing the incentive for lenders to pursue deficiency judgments. In many cases, lenders do not actually pursue a deficiency judgment or may waive an action for deficiency.<sup>171</sup> Borrowers with higher assets and income, by contrast, are more worth pursuing for a deficiency judgment. Consistent with the predictions of economic theory, the incentive effect for antideficiency laws in promoting default is greater for more expensive homes than for less-expensive homes.<sup>172</sup> Ghent and Kudlyak find, for instance, that the presence of an antideficiency law in a state increases the propensity of default on mortgage by an average of 20%, but that the effect is concentrated among more expensive homes. For homes with an appraised value of \$300,000-\$500,000, the presence of an antideficiency law increases the propensity of default by 60 percent, and for homes appraised at \$500,000 to \$1 million, antideficiency laws double the default rate over other states. Moreover, they find that the power to seek recourse deters defaults, but only for loans held privately. For loans held by Government Sponsored Entities (such as Ginnie Mae, Fannie Mae, or Freddie Mac), access to deficiency does not deter default, which the

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<sup>171</sup> See Debra Pogrud Stark, *Foreclosing on the American Dream: An Evaluation of State and Federal Foreclosure Laws*, 51 OKLA. L. REV. 229, 244 (1998) (finding that lenders brought a deficiency action within one year after a foreclosure sale in only six to seven percent of foreclosure sale cases); Steven Wechsler, *Through the Looking Glass: Foreclosure by Sale as De Facto Strict Foreclosure—An Empirical Study of Mortgage Foreclosure and Subsequent Resale*, 70 CORNELL L. REV. 850, 871 (1984-85) (finding that even though deficiency amounts existed in eighty percent of foreclosure sales, often in large amounts, lenders “made virtually no attempt to obtain deficiency judgments”). There is also evidence that subprime lenders tend to foreclose much more slowly. See Dennis R. Capozza & Thomas A. Thomson, *Subprime Transitions: Lingering or Malingering in Default?*, 33 J. REAL ESTATE FIN. ECON. 241, 257 (2006).

<sup>172</sup> Andra C. Ghent and Marianna Kudlyak, *Recourse and Residential Mortgage Default: Theory and Evidence from US States* (working paper, June 3, 2009). The authors use the value of the home as a proxy for the borrower’s wealth and income.

authors attribute to a general reluctance of GSE's to seek deficiency judgments as compared to private lenders.<sup>173</sup>

Longer and more difficult foreclosure processes may also lead to higher default by making it more difficult for lenders to enforce their rights.<sup>174</sup>

Because the presence of antideficiency laws increases the risk of lending, these laws also are associated with higher interest rates and other costs, such as higher required downpayments, especially among those marginal borrowers who would be expected to be the most likely to default.<sup>175</sup> This increase in interest rates and other costs may also increase financial distress and thereby contribute to higher foreclosures at the margin. Moreover, if it is the case (as it appears to be) that the propensity for default and foreclosure is a function in part of state laws regarding the collection of deficiency judgments and judicial foreclosure actions, and that lenders have already priced that risk *ex ante* in the loan, this raises questions about the propriety as a matter of equity and efficiency of governmental “bail outs” for distressed borrowers and lenders. Put differently, if California’s high foreclosure rate is in large part a function of California’s extremely borrower-friendly laws—and lenders were already compensated for that risk through higher up-front costs and interest rates—one can question whether taxpayers and homeowners from the rest of the country should be taxed (directly or indirectly through

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<sup>173</sup> Andra C. Ghent and Marianna Kudlyak, *Recourse and Residential Mortgage Default: Theory and Evidence from US States* (working paper, June 3, 2009). The authors use the value of the home as a proxy for the borrower’s wealth and income.

<sup>174</sup> Ghent & Kudlyak, *supra* note, at 20.

<sup>175</sup> Ambrose, Buttimer, and Capone note that the higher risk of FHA and VA loans associated with limits on deficiency judgments contributed to a substantial increase in the insurance premiums charged by those lenders. *Id.* See also Pence, *supra* note **Error! Bookmark not defined.**, at 177 (finding that average loan size is smaller in states with defaulter-friendly foreclosure laws); Jones, *supra* note 165 (higher downpayments; Mark Meador, *The Effects of Mortgage Laws on Home Mortgage Rates*, 34 J. ECON. & BUS. 143, 146 (1982) (estimating 13.87 basis point increase in interest rates as a result of antideficiency laws); Brent W. Ambrose & Anthony B. Sanders, *Legal Restrictions in Personal Loan Markets*, 30 J. REAL ESTATE FIN. & ECON. 133, 147–48 (2005) (higher interest rate spreads in states that prohibit deficiency judgments and require judicial foreclosure procedures); U.S. DEPT. OF HOUSING AND URBAN DEVELOPMENT, A STUDY OF CLOSING COSTS FOR FHS MORTGAGES at p. 50 (May 2008) (finding that presence of antideficiency laws raises costs of loan). *But see* Michael H. Schill, *An Economic Analysis of Mortgagor Protection Laws*, 77 VA. L. REV. 489, 512 (1991) (finding mixed results for impact of antideficiency laws on foreclosure rates depending on specification of regression).

higher interest rates and tighter credit) to essentially bribe California homeowners not to walk away from their mortgages.

Antideficiency laws also appear to affect homeowners' incentives to maintain their property—homeowners in states that have antideficiency laws may be less willing to invest in maintenance and improving their homes.<sup>176</sup> Again, this is consistent with economic theory—borrowers in those states appear to implicitly recognize that investments made on upkeep and improvement increase the value of the house and thus the value that the lender would gain on foreclosure, whereas money saved or invested (or spent) on other investments are protected by the antideficiency law. Moreover, although there are costs to “walking”—particularly the negative effect on one’s credit report—in light of the widespread nature of defaults and foreclosures future lenders may discount the impact of this adverse event in comparison to prior eras.<sup>177</sup> In addition, the pure number of mortgage walkers may underestimate the number of truly voluntary foreclosures because during the period that a home is in foreclosure the owner ceases making mortgage payments, thus essentially living rent-free during the foreclosure period. Thus, even if the owner is willing to permit foreclosure she may nonetheless not simply surrender the property immediately, but instead take advantage of the opportunities presented by foreclosure. In fact, the combination of lengthy foreclosure processes and rent-free occupancy even gave rise to the practice of “equity skimming” by

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<sup>176</sup> John Harding, Thomas J. Micelli, & C.F. Sirmans, *Deficiency Judgments and Borrower Maintenance: Theory and Evidence*, 9 J. HOUSING ECON. 267, 271 (2000); see also John Harding, Thomas J. Micelli, & C.F. Sirmans, *Do Owners Take Better Care of Their Housing Than Renters?*, 28 REAL ESTATE ECON. 663, 669–70 (2000).

<sup>177</sup> Harding, Micelli & Sirmans, *Owners Take Better Care*, *supra* note 132.

those who “buy properties from defaulting borrowers and then rent out the property while manipulating the legal system to extend the process as much as possible.”<sup>178</sup>

The pattern that thus emerges is a somewhat surprising one—the seeds of the mortgage crisis were not grounded in inherently risky lending to unusually risky borrowers although poor underwriting did certainly exacerbate the problem.<sup>179</sup> Lenders made a large number of exceedingly foolish loans, it is clear. But what made those loans foolish was the incentives that they created for borrowers to walk away and allow foreclosure when home prices fell. Lenders simultaneously underestimated the likelihood of an extended and dramatic home price collapse and the responsiveness of borrowers to incentives to default when their home prices fell.<sup>180</sup> This overoptimism by lenders was mirrored by overoptimism on the part of many buyers that home prices would increase without interruption thereby turning ordinary homeowners into *de facto* real estate speculators. As a result, the newly-minted homeowners of the late-boom period proved to be much less attached to their homes than previous generations of owners.

Both of these factors—the extent of the price fall and the responsiveness of new homeowners to price falls—proved to be higher than expected. Some commentators have pointed to an influx of owner-investors who were more responsive to incentives promoting default than previous homeowners and thus more “ruthless” in exercising their default option as incentives changed, thus the propensity of borrowers to default given a certain risk profile rose.<sup>181</sup> One study estimates that 25% of the defaults on prime

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<sup>178</sup> Pence, *supra* note **Error! Bookmark not defined.**, [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=410768](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=410768) at p. 5.

<sup>179</sup> As Gerardi et al., put it, “These results are consistent with the view that a factor other than underwriting changes was primarily responsible for the increase in mortgage defaults.” GERARDI, ET AL., MAKING SENSE at 13.

<sup>180</sup> Hubbard & Mayer (?)

<sup>181</sup> Boston study on multi-family houses; Leibowitz; GERARDI ET AL., MAKING SENSE at 13.

mortgages in 2006-2007 can be explained by an increased willingness of borrowers to default as opposed to changes in underwriting standards or loan terms.<sup>182</sup> Others have argued that in general homeowners responded to incentives to default at the same rate as would have been predicted, but that the unexpected severity of the home-price collapse provided more homeowners with the incentives to default (thus, the problem was not an underestimation of the propensity for default in light of a given price change but rather an underestimation of probability of a severe and nation-wide decline in home prices).<sup>183</sup> Regardless of whether it was an unexpected change in the elasticity of homeowners to default in light of a price drop or the unexpected severity of the price drop—or both—the key change between the first and second phase of the booms is a dramatically different change in the performance profile of loans between these two periods, which may not have been reasonably predictable based on the positive performance of similar loans to similar borrowers in the first phase of the boom.

### ***3. Social Stigma and Foreclosure***

**Zingales, etc.**

### **C. Summary: What Happened?**

The underlying cause of the housing boom and bust, and the subsequent rise in foreclosures, thus seems to be largely explained by two fundamental factors. First,

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<sup>182</sup> Amromin & Paulson, *supra* note, at 32.

<sup>183</sup> GERARDI, MAKING SENSE



artificially-low short-term interest rates relative to long-term interest rates that provided incentives for consumers to switch from fixed-rate to adjustable-rate mortgages, allowed borrowers to qualify for larger mortgages than would otherwise be the case, and resulted in trouble for some borrowers who were unable to make their payments when short-term interest rates rose. This household financial distress was exacerbated as the economy dipped into recession, piling traditional causes of foreclosures (such as job loss), on top of this distress caused by interest rate adjustments. Second, a rapid, severe, and sustained fall in house prices provided many consumers with an incentive to exercise their default option and to allow foreclosure to go forward on their homes. This was exacerbated by a variety of factors that increased the benefits and decreased the costs of exercising this option when home equity turned negative, including new mortgage lending practices that led to little or no equity for many homeowners (such as minimal downpayments, cash-out refinancing, and home equity loans) and certain states' laws that provide great protection for borrowers in the event of a foreclosure, such as antideficiency or non-recourse laws.

The fundamental causes of the mortgage crisis, therefore, lay in a set of misaligned incentives that combined millions of individual decisions into a large-scale catastrophe. The initial cause was flawed Federal Reserve monetary policy that kept short-term interest rates too low for too long. Eventually this spawned a substitution by consumers into ARMs and away from FRMs. These excessively low interest rates, exacerbated by other policies that encouraged overinvestment in housing, drove up prices. In a few markets this created an updraft that pulled speculators into the market, further superheating prices. When the Federal Reserve began to raise interest rates this created payment shock for consumers who had bought or refinanced with ARMs. In turn,

rising interest rates caused prices to fall, creating a second wave of foreclosures driven by negative equity. This surge in foreclosures was concentrated primarily in regions of the country that had seen overbuilding of housing combined with unsupportable price escalation. The presence of oversupply in these markets led homeowners to realize that it was highly unlikely that their house would recover from its negative equity position, encouraging them to walk away and allow foreclosure. This incentive was encouraged in some states, notably California and Arizona, where the presence of antideficiency laws dramatically reduced the costs of walking away, especially among higher-income and wealthier homeowners.

Basic economic theory, therefore, seems to explain most of the underlying dynamics of rising foreclosure rates and bankruptcy filing rates by explaining the basic decision-making of homeowners rationally responding to incentives and relative prices. On the other hand, this analysis does not address the more fundamental questions, which is why did the housing price bubble develop as it did, why did foreclosures rise so dramatically as house prices fell, and why did Wall Street and the banking industry so badly misjudge the financial problems?

## **Other Factors**

### ***Hybrid Mortgages***

One factor that has been often-cited as a cause of rising foreclosures are so-called “hybrid” mortgages, that have an initial fixed period of two or three years (usually at below-market interest rates) followed by adjustable rates for the duration of the loan. It is contended that these hybrid mortgages are “exploding” mortgages that start with

extremely low rates during the fixed-rate period of the loan but then “explode” to extremely high rates after the interest rate reset. But it is doubtful that this phenomenon can explain the rise in foreclosures. One estimate of subprime loans facing foreclosure in the early wave of foreclosures found that 36% were for hybrid loans, fixed-rate loans account for 31%, and adjustable-rate loans for 26%.<sup>184</sup>

But despite the public attention paid to them, there is no evidence that the hybrid interest rate characteristics of these loans contributed to the financial crisis. Of hybrid loans in foreclosure, the majority entered foreclosure *before* there was an upward reset of the interest rate.<sup>185</sup> Most defaults on subprime hybrid loans occur within the first 12 months of the loan, well before any interest-rate adjustment.<sup>186</sup> There is no evidence of a spike in defaults for borrowers at the time of interest-rate reset.<sup>187</sup> Researchers from the Boston Fed estimated that the initial interest rate for subprime 2/28 loans ranged from 7.3% in 2004 to 8.6% in 2007.<sup>188</sup> As they note, “These initial rates are not low’ on the contrary they are quite high.” For those borrowers who actually undergo an interest-rate reset, the new rate is higher, but not dramatically so when compared to the original rate.<sup>189</sup> Upon reset, the fully indexed interest rate ranged from 11.5% for the 2004 vintage to 9.1% for the 2006 and 2007 vintages.<sup>190</sup> In general, interest rate reset

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<sup>184</sup> James R. Barth et al., *Mortgage Market Turmoil: The Role of Interest-Rate Resets*, in SUBPRIME MORTGAGE DATA SERIES (Milken Inst.) (2007); C.L. Foote, K. Gerardi, L. Goette, & P.S. Willen, *Subprime Facts: What (We Think) We Know about the Subprime Crisis and What we Don’t*, FED. RES. BANK BOSTON PUBLICLY POLICY DISCUSSION PAPER 08-02 (2007); C. Mayer, K. Pence, & S.M. Sherlund, *The Rise in Mortgage Defaults: Facts and Myths*, J. ECON. PERSPECTIVES (Forthcoming 2008).

<sup>185</sup> Barth, *supra* note. Of those subprime loans in foreclosure, 57 percent of 2/28 hybrids and 83 percent of 3/27 hybrids “had not yet undergone any upward reset of the interest rate.”

<sup>186</sup> Mayer, Pence, & Sherlund, *The Rise in Mortgage Defaults* at 11; Shane Sherlund, *The Past, Present, and Future of Subprime Mortgages*, Federal Reserve Board (Sept. 2008); Kristopher Gerardi, Adam Hale Shapiro, & Paul S. Willen, *Subprime Outcomes: Risky Mortgages, Homeownership Experiences, and Foreclosures*, Federal Reserve Bank of Boston Working Paper No. 07-15. Mayer, Pence, and Sherlund find a dramatic rise in “early payment defaults” well before any interest rate adjustment takes place.

<sup>187</sup> Foote, et al., *Just the Facts*, *supra* note, at 299.

<sup>188</sup> Foote, et al., *Just the Facts*, *supra* note, at 298.

<sup>189</sup> See C.L. Foote, K. Gerardi, L. Goette, & P.S. Willen, *Subprime Facts: What (We Think) We Know about the Subprime Crisis and What we Don’t*, FED. RES. BANK BOSTON PUBLICLY POLICY DISCUSSION PAPER 08-02 (2007).

<sup>190</sup> Foote, et al., *Just the Facts*, *supra* note, at 298.

increased payments by about 3-4 percentage points, or about a 25 percent increase.<sup>191</sup> Moreover, for subprime 2/28 loans written in 2001-2003, over two-thirds to three-quarters of those mortgages were refinanced before interest-rate reset or within three months of the interest rate reset.<sup>192</sup> Elliehausen, Hwang, and Park find even smaller differences between the initial rate and the reset rate, ranging from about 2 percentage points to a high of 3.45 percentage points.<sup>193</sup> Again, these modest resets cannot plausibly explain widespread defaults.

Economists Anthony Pennington-Cross and Giang Ho found that with respect to the early subprime vintages the transition in a hybrid loan from an initial fixed period to the adjustable rate period resulted in heightened rates of prepayment, not default.<sup>194</sup> They also find that the termination rate for subprime hybrid loans (whether by prepayment or default) is comparable to that of prime hybrid loans. Amromin and Paulson also find that hybrid mortgages are not correlated with higher default rates once other risk characteristics are accounted for.<sup>195</sup> In light of these facts, economists have almost universally concluded that hybrid mortgages (at least alone) cannot explain the rise in foreclosures. After examining the evidence, several economists from the Boston Federal Reserve flatly state, “Interest-rate resets [on hybrid mortgages] are not the main problem in the subprime market.”<sup>196</sup>

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<sup>191</sup> Foote, et al., note that even this may overstate the impact of the interest-rate reset. Many 2/28 mortgages also had fixed-rate second liens as well, so that the reset on a 2/28 only affected about 60% typical borrower’s monthly payment. So even if the interest rate on the borrower’s first mortgage reset over 20%, the impact on the borrower’s monthly payment may have been only 15% or so. Foote, et al., *supra* note, at 299. The change in payment obligations on reset, however, does not address the question about the feasibility of the original loan, just the marginal impact of an introductory rate reset.

<sup>192</sup> Foote, et al., *Just the Facts*, *supra* note, at 299.

<sup>193</sup> Elliehausen, Hwang, & Park, *Hybrid Interest Rate Choice*, *supra* note, at 7-8. In 2004, which had the largest difference between the initial and reset rates, the initial rate was just under 8% and the reset rate was about 11%.

<sup>194</sup> See Anthony Pennington-Cross & Giang Ho, *The Termination of Subprime Hybrid and Fixed Rate Mortgages* 18 (Fed. Reserve Bank of St. Louis, Working Paper No. 2006-042A, 2006).

<sup>195</sup> Amromin & Paulson, *supra* note, at 27.

<sup>196</sup> Christopher L. Foote, Kristopher Gerardi, Lorenz Goette, and Paul S. Willen, *Subprime Facts: What (We Think) We Know about the Subprime Crisis and What We Don’t*, FED. RES. BANK OF BOSTON PUBLIC POLICY DISCUSSION PAPERS 2 (May 30, 2008).

What explains the growth of hybrids? Hybrid subprime mortgages provided much lower up-front points and fees as compared to FRM and ARM mortgages.<sup>197</sup> Between 1998-2006 average points and fees on subprime FRMs ranged from 0.95 to 2.46 percent of loan amount and 0.93 to 1.37 for variable-rate mortgages. Points and fees for hybrid mortgages, by contrast, were on average less than one-half percent of loan amount and in some years zero or negative, indicating a choice by hybrid borrowers to pay higher interest rates to obtain a zero point loan or a rebate to pay points and fees at the outset of the loan.<sup>198</sup> This choice of low or zero up-front costs would be especially appealing to an investor who planned to hold the home for a short term. In comparison to ARMs and FRMs, hybrid loans also were more likely to be purchase-money mortgages rather than refinance loans and hybrid mortgage borrowers also tended to be higher income.<sup>199</sup> Use of hybrid mortgages was especially tied to purchases of lower-priced homes in areas with rapidly appreciating home prices.<sup>200</sup> This higher income and propensity for purchase-money loans would also be consistent with the hypothesis that hybrids were disproportionately used by investors.

Economists generally conclude that of more importance to foreclosures is falling house prices—the interest rate on a mortgage, whether “exploding” or not, is largely irrelevant if the borrower can refinance or sell out of the mortgage. It is only when the borrower is unable to sell or refinance that the interest rate matters, thus hybrid

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Other studies have confirmed this conclusion about the limited role of interest-rate resets in driving increased foreclosures when compared to falling house prices and deteriorating underwriting standards. See Patrick Bajari, Chenghuan Sean Chu, & Minjung Park, *An Empirical Model of Subprime Mortgage Default from 2000 to 2007*, NBER WORKING PAPER 14625 (Dec. 2008) (finding that interest rate resets play a positive, but relatively minor role, in defaults).

<sup>197</sup> Elliehausen, Hwang, & Park, *Hybrid Interest Rate Choice*, at 6.

<sup>198</sup> Elliehausen, Hwang, & Park, *Hybrid Interest Rate Choice*, at 6.

<sup>199</sup> Elliehausen, Hwang, & Park, *Hybrid Interest Rate Choice*, at 12.

<sup>200</sup> Elliehausen, Hwang, & Park, *Hybrid Interest Rate Choice*, at 12. Price increases in “bubble” markets were largely concentrated among lower-priced homes, which appreciated the most and then fell the most in price as the bubble burst. Prices in the highest tier appreciated the least and fell the least. See Steven Gjerstad & Vernon L. Smith, *From Bubble to Depression?*, WALL ST. J. at p. A 15 (April 6, 2009).

mortgages (or adjustable rates generally) matter for foreclosures only in a falling real estate market. Mortgages with positive equity tend to terminate in a prepayment of the mortgage (either as the result of a sale or refinance) whereas those with negative equity tend to terminate in foreclosure.<sup>201</sup> Thus, Foote, et al., find that refinance rates fell to about 53% with the 2005 2/28 vintage, which reflects the declining home prices in 2007 when resets came due.<sup>202</sup> Foreclosures on 2005 loans by contrast, exceeded 20 percent. For the 2006 vintage of 2/28s, only 27 percent refinanced and 28 percent were in foreclosure, even though the fully indexed interest rate on those loans rose by only six-tenths of a percentage point (from 8.5% to 9.1%). As one report concluded, “Without home price increases, hybrid loans will surely exacerbate the foreclosure problem if interest rates reset upward, but they [were] not the basic cause of it.”<sup>203</sup> Finally, to the extent that hybrid or adjustable-rate loans are associated with higher levels of default and foreclosure, this may be a result of a selection effect bias rather than a reflection of the products themselves—borrowers with the most fragile finances are those most likely to choose (or accept) an ARM or a hybrid loan with a teaser rate, and thus their propensity to default may reflect their underlying riskiness rather than the riskiness of the products that they choose.<sup>204</sup>

### ***Securitization***

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<sup>201</sup> Anthony Pennington-Cross, *The Duration of Foreclosures in the Subprime Mortgage Market: A Competing Risks Model with Mixing* 4-5 (Fed. Reserve Bank of St. Louis, Working Paper No. 2006-027A, 2006).

<sup>202</sup> Foote, et al., *Just the Facts*, *supra* note, at 299.

<sup>203</sup> Barth et al., *supra* note 184, at 2.

<sup>204</sup> See *Ending Mortgage Abuse: Safeguarding Homebuyers: Hearing Before the Sen. Subcomm. on Hous., Transp. and Cmty. Dev. of the Sen. Comm. on Banking, Hous., and Urban Affairs*, 109th Cong. 5 (2007) (statement of Anthony M. Yezer, Professor of Econ., George Washington University).

Many commentators have charged that the rapid spread of securitization of mortgage debt, especially subprime mortgages, explains the underlying mortgage crisis. The basic story is that over time, securitization of mortgage debt, especially subprime mortgages, rose dramatically. This is true.<sup>205</sup> From 2000-2005, for instance, the volume of subprime mortgages securitized by Wall Street rose almost tenfold, from about \$56 billion annually to \$508 billion and the percentage of subprime loans that were securitized rose from about 50% to over 80% during that same time frame, a time period that correlates with the expansion of the subprime market.

The link between securitization and risky mortgage underwriting, it is argued, is a chain of agency cost relationships generated by securitization.<sup>206</sup> In particular, securitization is said to have given rise to an “originate to distribute” model of mortgage lending, where the originating lender does not bear the risk that the loan will fail. Thus, mortgage brokers originate the loan, but resell it to the wholesale supplier of money, which then in turn bundles the loans, subdivides them into tranches, and resells those bundles to investors. It is argued that this creates a series of agency relationships, all of whom have incentives to maximize loan volume and ignore heightened risk and deteriorating underwriting standards so long as they can pass on these loans (and their risk) to subsequent holders. Thus, the whole scheme of securitization is considered to be like a sort of “ponzi scheme” where bad risks get passed along until someone is left holding the bag.

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<sup>205</sup> Kathleen C. Engel & Patricia A. McCoy, *Turning a Blind Eye: Wall Street Finance of Predatory Lending*, 75 *FORDHAM L. REV.* 2039, 2045 (2007). Gary B. Gorton, *The Subprime Panic* 6 tbl.4 (Nat’l Bureau of Econ Research, Working Paper 14398 Oct. 2008), available at <http://www.nber.org/papers/w14398>.

<sup>206</sup> Engel & McCoy, Christopher L. Peterson, *Predatory Structured Finance*, 28 *CARDOZO L. REV.* 2185, 2200–06 (2007)

Plainly there seems to be a correlation between the rise of securitization and the subprime lending boom and housing price bubble. But it is doubtful that the growth of securitization can provide a convincing causal explanation. First, securitization has been a well-established model of lending for years in other consumer credit markets (such as credit cards, auto loans, and prime mortgages) and there is no evidence that this sort of ponzi scheme has existed in these markets. Second, many of those who either sold or bought these securities were highly-sophisticated investors such as Bear Stearns, Merrill Lynch, or Citibank. If there were obvious agency-cost problems in the system, surely these sophisticated investment banks were aware of these risks as well and would have taken precautions against them. Nonetheless, the investment banks that supposedly orchestrated this ponzi scheme are now either bankrupt or have been merged into other financial institutions as a result of investing in securities backed by subprime loans. Moreover, these bankruptcies were triggered in part by the fact that these same lenders held much of this securitized paper on their own books, especially the most risky tranches, a reality that is difficult to square with the purported incentives of the originate-to-distribute model. For the incentives created by securitization to unlock this story it also would have been necessary to believe that financial investors were foresighted enough to anticipate that they had to try to pass off the paper to third-party investors, but not so fore-sighted as to recognize that the paper would eventually result in massive losses to themselves. In fact, significant losses have been suffered at virtually every level of the subprime chain, suggesting that originators and others did not in fact pass along the risk of these loans down the chain. Moreover, originators usually were contractually obligated to repurchase the worst-performing loans, thereby seemingly relieving the incentive to try to pawn them off *ex ante*—although the subsequent bankruptcies of these originators when confronted with repurchase demands showed those promises to be chimerical *ex post*. Similarly, although mortgage brokers have obvious incentives to engage in fraudulent lending or to extend credit to borrowers with weak credit,



surely those buying those loans were aware of this risk and the recognition that many of those loans would later fail to perform.

In addition, many of the big sub-prime losers were captive lenders owned by the investment banks themselves, and thus the agency-cost problems would have been mitigated in these institutions. Nonetheless, they behaved like and eventually collapsed like the others. Scholars also have noted that other countries have seen a dramatic rise in home prices and a deterioration of underwriting standards, most notably England, even though securitization remains nonexistent.<sup>207</sup> In addition, many types of consumer debt have long been securitized in the United States, notably credit card debt and car loans. Yet neither of these markets saw the sort of boom-and-bust cycle of mortgage lending. Thus, although the role of securitization in creating agency costs is theoretically possible as a major cause of the subprime mess, it seems doubtful that the incentives created by securitization was an important contributor to the mortgage crisis—although, of course, simple errors and miscalculations are possible for reasons unrelated to the incentives created by securitization.<sup>208</sup>

Other considerations contribute to skepticism about the role of securitization in fueling the mortgage crisis. For instance, as noted above, the subprime mortgage boom appears to have two distinct phases—the first phase of 2001-2004 and a second phase from 2005-2007—during which loan performance was dramatically different. Securitization, however, grew steadily throughout this period including during very rapidly during the first period. Thus, the incentives created by securitization were constant during this period, suggesting that some factor *other than securitization* intervened between the first and second periods to lead to the dramatically worse performance of the mortgages originated in the second period. Moreover, many of the worst-

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<sup>207</sup> Bank of Australia study

<sup>208</sup> Gerardi, et al., also doubt the importance of securitization in explaining the subprime boom and bust suggesting that there is no inherent link between them. GERARDI, ET AL., MAKING SENSE.

performing loans were loans such as “Option-ARM” and “negative amortization” loans that were alt-A loans, not subprime, and were not generally securitized but were held in portfolio.<sup>209</sup>

Securitization followed the thesis laid out in this chapter. Securitized loans were more common in higher-income areas where loan values were also higher.<sup>210</sup> This is consistent with the view that subprime lending, and securitization as well, was related to new home purchases and, in some areas widespread speculation, rather than the conventional wisdom that subprime lending fueled by securitization was more prominent in lower-income areas.

### ***Government Policies***

Other commentators have stressed the role of various government housing policies that encouraged lending to higher-risk borrowers and overinvestment in housing by consumers. Some of these factors almost certainly exacerbated the mortgage crisis, although it is less-clear that they were primary causes of the situation.

In addition to low short-term interest rates, a variety of other factors raised the return to home ownership and led to increased house prices. Most notably, in 1997 the tax code was amended to permit homeowners to pay no tax on any capital gains of up to \$500,000 upon the sale of their home.<sup>211</sup> This led to a strong tax code preference for investments in housing relative to other forms of investment and saving, which created incentives to overinvest in housing as well as to purchase homes more rapidly in order to cash out equity.<sup>212</sup> By contrast, ordinary saving is “double-taxed” as income when first earned as well as when interest is paid and capital gains on financial instruments are not

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<sup>209</sup> Coleman, et al., *Subprime Lending and the Housing Bubble*, *supra* note, at 289.

<sup>210</sup> Major Coleman IV, Michael LaCour-Little, Kerry D. Vandell, *Subprime Lending and the Housing Bubble: Tail Wags Dog?*, 17 JOURNAL OF HOUSING ECONOMICS 272-290, 279 (2008)

<sup>211</sup> See Vikas Bajaj & David Leonhardt, *Tax Break May Have Helped Cause Housing Bubble*, NY TIMES (Dec. 19, 2008).

<sup>212</sup> Vernon Smith in *wsj*; Hui Shan, *The Effect of Capital Gains Taxation on Home Sales: Evidence from The Taxpayer Relief Act of 1997*, Federal Reserve Board Finance and Economics Discussion Series, Divisions of Research & Statistics and Monetary Affairs (Sept. 28, 2008). Shan estimates that the change in the tax treatment of capital gains on the sale of homes increased sales of houses under the \$500,000 threshold by 13-22 percent.

treated so generously. Moreover, the bursting of the dot.com bubble and the struggles of the stock market in the immediate aftermath may have persuaded many consumers that homeownership was a more reliable form of wealth accumulation than financial assets, as indicated by the growing number of people who concluded that housing prices never decline.<sup>213</sup>

### **Extra stuff**

The surge in foreclosures is often attributed to the growth of the subprime segment of the market during the 1990s and 2000s and the extension of mortgages to high-risk consumers who historically were locked-out of the mortgage market. Congress, the Department of Housing and Urban Development, and Fannie Mae and Freddie Mac all encouraged more lending to higher-risk borrowers.<sup>214</sup> Others have argued that this growth in high-risk lending was spawned by the rise of securitization of mortgages by Wall Street, which created an “originate to distribute” model of reckless lending.<sup>215</sup> Whatever the inspiration for increased lending to higher-risk borrowers (which is beside the point for the current discussion), to make these loans possible mortgage originators developed a variety of novel lending products, such as no or low downpayments, interest-only loans, reverse amortization, no or low documentation loans, and loans with high

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<sup>213</sup> See Monika Piazzesi & Martin Schneider, *Momentum Traders in the Housing Market: Survey Evidence and a Search Model*, NBER Working Paper 14669 (Jan. 2009) (noting rise of “momentum traders” in the housing market in the later stages of the boom). For a general analysis of how momentum trading can create bubbles emerge in asset markets, see Vernon L. Smith, Gerry L. Suchanek, & Arlington W. Williams, *Bubbles, Crashes, and Endogenous Expectations in Experimental Spot Asset Markets*, 56(5) *ECONOMETRICA* 1119-1151 (Sept. 1988).

<sup>214</sup> Russell Roberts, *How Government Stoked the Mania*, WALL ST. J., Oct. 3, 2008; Peter J. Wallison & Charles W. Calomiris, *The Last Trillion-Dollar Commitment: The Destruction of Fannie Mae and Freddie Mac*, AM. ENTER. INST. FOR PUB. POLICY RESEARCH, Sept. 30, 2008, [http://www.aei.org/docLib/20080930\\_Binder1.pdf](http://www.aei.org/docLib/20080930_Binder1.pdf).

<sup>215</sup> On the other hand, those involved at every step in the loan process from origination to securitization to default insurance have suffered massive losses from the collapse of the subprime market thus it doubtful that this “originate to distribute” model explains much of the rise and fall of the subprime market. See Todd J. Zywicki and Joseph A. Adamson, *The Law and Economics of Subprime Lending*, \_\_ U. COLO. L. REV. \_\_ (2009).

loan-to-value (LTV) ratios. In turn, many of them were securitized and sold throughout the United States and the world leading to global economic problems.

Exacerbated but probably not caused by (1) Fannie crisis—volume (malanga), (2) maybe securitization, but Britain had subprime loans and price appreciation (no securitization and no brokers), credit cards and other consumer loans, commercial real estate boomed as well, captive lenders collapsed, (3) speculation, (4) maybe brokers (lending volume—note elliehausen, hwang, and park find brokers *less* likely to originate hybrids than arms or frms). Probably not CRA<sup>216</sup> (at least directly).

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<sup>216</sup> See Speech of Governor Randall S. Kroszner, *The Community Reinvestment Act and the Recent Mortgage Crisis*, speech at the Confronting Concentrated Poverty Policy Forum (Dec. 3, 2008), available at <http://www.federalreserve.gov/newsevents/speech/kroszner20081203a.htm>.