

The Subprime Mortgage Market, a Review and Compilation of Research and Commentary

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Introduction

The subprime market for residential mortgage loans serves borrowers who do not qualify for the “prime” market interest rates because of limited or blemished credit histories. Typically, the characteristics of the borrower include; recent delinquencies, foreclosures, judgments, bankruptcies and comparably high debt to service ratios. Subprime lending has expanded beyond the low-wealth markets and into the middle class including the issuance of loans that cannot be sold on the primary market. Examples include loans on certain types of investment and second home properties and certain categories of self-employed individuals. From the borrowers perspective the upfront and continuing costs are higher for subprime loans (Chomsisengphet and Pennington Cross, 2006). Fortowsky and LaCour-Little (2002) illustrate that many factors, including borrower credit history and prepayment risk; can substantially affect the pricing of loans. The premium charged to a subprime borrower according to the LoanPerformance dataset is typically around 2 percentage points. The spread increases when rates are higher and decreases when rates are generally lower.

Capozza and Thomson (2005) suggest that subprime loans are more costly to administer and as such it is appropriate that they are priced higher. The authors posit that, lender losses occur at the time of default and, in a second stage, during the remediation period. Although subprime borrowers default earlier than their prime counterparts, resulting in reduced losses, these borrowers impose greater realized losses on mortgage lenders. In a second paper they provide a test and example of the increased costs. Their data and analysis indicate that, relative to prime loans, when subprime loans become seriously delinquent (90 days or longer) they are about twice as likely to become *real estate owned*, but take about four times longer to get there.¹ It is unusual for a subprime default to be cured suggesting considerable forbearance by subprime lenders. They find that the most economically important predictors of transition from default to any other state are the number of payments the borrower has made and the loan to value ratio (Capozza and Thomas, 2006).

For many, the subprime market has been viewed as providing access to homeownership for households that would otherwise be relegated to the rental market. “Contrary to many perceptions that subprime loans are just a way for people to refinance their way out of other debt problems, many consumers use subprime first mortgage credit to purchase a home. In the first half of 2006, 45 percent of subprime originations were for purchase of a home. 25% of these purchase loans were made to first-time homebuyers (Duncan, 2006).” Chinloy and Macdonald (2005) provide an economic basis for this price rationing benefit offered by subprime loans arguing a social welfare gain and the completion of the capital market. Although the subprime mortgage loan product clearly expands access to credit, concerns have been raised about its costs, particularly to lower-income and minority populations (An and Bostic, 2006).

As Calem, Gillen and Wachter (2004a & b), point out that there is geographical concentration of subprime mortgages in Census tracts where there are high concentrations of low-income and

¹ The phrase real estate owned property indicates that the property in question has been foreclosed on and has been taken back by the mortgage lender or trustee. Real estate owned and foreclosures are not the same thing, however an REO is only produced as a result of an unsuccessful foreclosure, in which a buyer for the property cannot be found, and so the mortgage lender repossesses the property to sell separately.

minority households. The observed concentration in minority and lower income neighborhoods has generated concerns that these households may not be obtaining equal opportunity in the prime mortgage market. Such lending may undermine revitalization to the extent that it is associated with so-called predatory practices. This spatial concentration in low-wealth and minority neighborhoods was observed as early as 2000 when HUD released a study that indicated subprime loans were three times more likely in low income neighborhoods than in high-income neighborhoods, and subprime loans were five times more likely in black neighborhoods than in white neighborhoods (HUD, 2000)..

By virtue of this observation and the recent financial crisis, subprime lending is highly controversial. Opponents have alleged that the subprime lending companies engage in predatory lending practices such as deliberately lending to borrowers who could never meet the terms of their loans, thus leading to default, seizure of collateral, and foreclosure. Proponents of subprime lending maintain that the practice extends credit to people who would otherwise not have access to the credit market.

The controversy surrounding subprime lending has expanded as the result of a contagion within both the subprime industry, and in the greater financial markets. Hundreds of thousands of borrowers have been forced to default and several major U.S. subprime lenders have filed for bankruptcy. A total of 243,947 foreclosure filings were reported in August of 2007, up 115 percent from 113,300 in the same month a year ago, and a 36% increase over July according Irvine, California based RealtyTrac Inc. The filings include default notices, auction sale notices and bank repossessions. Some properties might have received more than one notice if the owners have multiple mortgages. The August total represents the highest number of foreclosure filings reported in a single month since the company began tracking monthly filings two years ago.

Investment banks securitized subprime mortgage loans into collateralized debt obligations (CDOs) and sold risk-differentiated tranches of these CDOs to various investors. Over the summer of 2007, as the interest rates on subprime loans increased rapidly (end of many teaser rate periods) and the ensuing default and foreclosure rate increased, a panic in the credit markets threatened to eliminate funds for private loans unrelated to the housing market. Central Banks, including the Federal Reserve added billions of dollars in short-term credit to provide liquidity to credit markets (Saxton, 2007).

A recent issue paper prepared by the staff of Center for Responsible Lending (2007), reports that while the subprime market has produced more than \$2 trillion in home loans over the past nine years; these loans have led or will lead to a net loss of homeownership of nearly 1 million families. The reason for this net loss is that from 1998-2006, only 9% of subprime loans went to first-time homebuyers, but over 15% of subprime loans ended (or will end) with borrowers losing their homes through foreclosure (CRL, 2007).

An estimated 2 million to 2.5 million adjustable-rate mortgages are scheduled to "reset" through 2008, jumping from low "teaser" rates for the first two or three years to much steeper rates that could cost borrowers their homes. The wave of resets could crest during the presidential and congressional election campaigns next year, and the issue has brought politically charged debate in recent weeks over possible responses by the government. The latest figures also reflect an

increase in the number of homes going into foreclosure that are not being picked up in estate sales and are to lenders. The number of bank repossessions jumped to 42,789 in August, 2007 compared with 20,116 a year earlier, RealtyTrac said. In July, there were 26,842 bank repossessions.

Because homeownership is such a significant economic factor, a great deal of attention is paid to the mortgage market. What follows is a synopsis of the current state of affairs as presented in government reports and the popular press, and a review of the academic literature pertaining to the subprime market. To date the academic literature has focused attention on the history and structure of subprime lending and the issues of equity and efficiency in the market. Further, research and an evaluation agenda should be formulated that address both short and long term concerns. Such work might focus on the role of regulation in curtailing potential predatory lending practices that prevail. In a similar vein, a strategy for providing the lending community with risk priced mortgage instruments that have moderating circuit breakers to limit the dramatic rate adjustments prevalent in subprime loans is warranted. Traditionally, the mortgage market has relied on a *nonprice*, credit rationing approach for distributing loans. Subprime lending, however, marked the introduction of many different products and pricing tiers moving the market in the direction of risk based pricing. Another question worthy of consideration, what role will subprime mortgage servicers have in limiting the level of default, if any (see Moody's, 2007).

Additional work should be conducted on the role of federal regulation in the mortgage bank industry. As will be illustrated in the following literature, state level regulation has had only moderate influence on the distribution and growth of subprime lending. Devising such regulation will require attention to the spillover impacts to the commercial lending institutions. To this end a review of history, specifically the savings and loan turmoil of the early 1980's, and the financial crisis of 1998 and 2001 could provide insight. Consider the following summarized from a statement by Saxton (2007) on the sources of the subprime implosion.

- *Some subprime mortgagers exaggerated their income and net worth,*
- *Some subprime mortgagers speculated that they would be able to sell their home prior to the end of the teaser rate,*
- *Some mortgage banks and brokers pushed borrowers into IOMs, NegAmMs, etc. and mortgagers were oblivious to the potential increases,*
- *Some mortgage bankers and brokers submitted false appraisals and financial information,*
- *Some mortgage bankers did not verify the income, net worth and credit history of borrowers.*

Opponents of increased regulation of the subprime market often argue that amplified restrictions will result in higher costs of borrowing for many borrowers and perhaps even reduce credit access for some. Immergluck and Smith (2005) argue that the social costs including substantially higher foreclosures in many struggling neighborhoods might not be easily outweighed by marginally lower borrowing costs spread thinly across a broad set of borrowers.

Analysis of financial market mechanisms are also needed in order to ensure proper pricing, rating and information exchange services are adequately informing market participants.

Likewise, the continuing globalization of financial markets, and the advancement of securitization instruments calls into question the future role of central banks and monetary policy.

It is unclear if the fallout from the currency crunch will ripple across the global financial markets tightening funds in unrelated sectors. At the other end of the subprime spectrum it is equally unclear if the rising default and delinquency pattern will continue to nudge a potentially soft domestic economy into a recession. What is clear is that public policy should be targeted on two fronts. One front would address the current concerns of mortgagers (many steps have already been taken to stabilize the financial markets), and the other would target the long term structure of a mortgage market with subprime instruments among the options.

History

According to the magazine Inside B&C Lending, the total subprime loans have grown from \$65 billion in 1995 to \$332 billion in 2003. Despite this dramatic growth, the market share for subprime loans dropped from 14.5 percent in 1995 to 8.8 percent in 2003 (Chomsisengphet and Pennington-Cross, 2006). The subprime loan securitization rate, however, has grown from less than 30 percent in 1995 to over 58 percent in 2003. The 2003 securitization rate of subprime loans is comparable to that of prime loans in the mid 1990s (58.7% in 2003 according to Inside MBS & ABS). Immergluck and Wiles (1999) reported that more than half of subprime refinances originated in predominately African American census tracks, whereas only one tenth of prime refinances originated in predominately African American Census tracts. Nichols, Pennington-Cross and Yezer (2005) found that credit constrained borrowers with substantial wealth are most likely to finance the purchase of a home by using a subprime mortgage.

Many factors have contributed to the growth of subprime lending. Most fundamentally, it became legal. The ability to charge high rates and fees to borrowers was not possible until the Depository Institutions Deregulation and Monetary Control Act was adopted in 1980. The act preempted state interest rate caps. Additionally, the Alternative Mortgage Transaction Parity Act in 1982 permitted the use of variable interest rates and balloon payments. Although these laws opened the door, subprime lending would not become a large scale lending alternative until passage of the Tax Reform Act of 1986 (TRA).

The TRA increased the demand for mortgage debt by prohibiting the deduction of interest on consumer loans, yet retained the interest deduction on mortgages for primary and secondary homes. In the late 1990s cash out financing became a popular way for homeowners to tap into equity in their homes. On the supply side of the market two events stand out as stimuli for the growth in subprime lending. In 1994 there was a sharp, though not particularly large, increase in interest rates that slowed the borrowing market. Mortgage brokers and mortgage companies responded by looking to the subprime market to maintain volume. The mid-1990s was also a time of expanding interest in mortgage backed securities (Chomsisengphet and Pennington-Cross, 2006).

The conclusions from Chomsisengphet and Pennington Cross, (2006) suggest that the subprime market has grown substantially over the past decade, but the path has not been smooth. For

instance, the market expanded rapidly until 1998, then suffered a period of retrenchment, but beginning around 2003 began to expand again. This expansion has been most prominent in the least-risky segment of the subprime market (A- grade loans). Furthermore, lenders of subprime loans have increased their use of mechanisms such as prepayment penalties and large down payments to, respectively, increase the duration of loans and mitigate losses from defaulted loans. According to Pennington-Cross (2007) the lower the grade or credit score, the larger the down payment requirement. This requirement is important because loss levels are strongly linked to the amount of equity in the home and price appreciation patterns.

This finding by Chomsisengphet and Pennington Cross (2006) responds, on one level, to a question of expansion up the FICO score ladder, but raises another. Do the moves to mitigate losses, increasing penalties and down payment requirements, have any effect on the probability of default?

In a paper on subprime variations in fees and interest rates Gruenstein Bocian, Ernst and Li, (2006) point to two key findings. First, African-Americans are more likely to receive higher-rate home purchase and refinance loans than similarly-situated white borrowers, particularly for loans with prepayment penalties. African-American borrower on the cost of credit was greatest for loans containing penalties for early payoff, which comprised over 60 percent of the loans we examined. • As shown in the chart below, African-American borrowers with prepayment penalties on their subprime home loans were 6 to 34 percent more likely to receive a higher-rate loan than if they had been white borrowers with similar qualifications. Results varied depending on the type of interest rate (i.e., fixed or adjustable) and the purpose (refinance or purchase) of the loan.

Second Latino borrowers were more likely to receive higher-rate loans than similarly-situated non-Latino white borrowers for mortgages used to purchase homes. Differences for refinance loans were not significant at a 95 percent confidence level. Latino borrowers purchasing homes were 29 to 142 percent more likely to receive a higher-rate loan than if they had been non-Latino and white, depending on the type of interest rate and whether the loan contained a prepayment penalty. Pricing disparities between Latinos and non-Latino white borrowers for refinance loans were not significant at the 95 percent confidence level in our dataset.

The authors argue that discretionary pricing on the part of the mortgage broker may be at the root cause of these disparities, and offer the following prescriptions. Lenders and policymakers can take a number of constructive actions to help ensure more equitable pricing for all borrowers. These include:

- *Curtailling steering by requiring objective pricing standards;*
- *Holding lenders and brokers responsible for providing loans that are suitable for their customers;*
- *Amending HMDA to expand the disclosure requirements for risk and pricing information;*
- *Ensuring that adequate resources are dedicated to fully enforcing fair lending laws;*
- and*
- *Creating incentives and supporting a policy framework that lead the market to better serve African-American and Latino communities.*

State Level Regulatory Impacts

The first legislation addressing predatory mortgage lending was the Federal Home Ownership and Equity Protection Act of 1994 (HOEPA) (Pub. L. 103-325, 108 Stat. 21600).² HOEPA defined a class of mortgage loans that can be classified as “high-cost” if they exceed a specific annual percentage rate and fee threshold. In a study by Ho and Pennington-Cross (2005), using HMDA data the authors find that the presence of a predatory lending law alone has little impact on loan originations, but applications and rejection rates generally decline. The authors find the declines in applications and rejection rates become more prominent in areas with stronger laws. The authors conclude that, when faced with increased regulatory costs imposed by the laws, subprime lenders may have been less aggressive in marketing their products to higher risk applicants. Thus, limited or moderate laws appear to change the composition of subprime lenders’ portfolios, but produce little change in the number of subprime originations. Severe laws produce a decline in originations by subprime lenders. These changes appear to occur because of changes in marketing. The results are consistent with subprime lenders’ avoidance of loans made to higher risk borrowers that are covered under state predatory mortgage laws.

Since the enactment of HOEPA in 1994, a growing number of states have enacted mini-HOEPA statutes to counteract predatory lending. Other states have laws that regulate a more limited set of lending practices associated with predatory lending, such as prepayment penalties. Today, well over half the states have anti-predatory lending statutes of one kind or another. The effect of these statutes is a matter of debate. Critics charge that anti-predatory lending statutes reduce the availability of credit to borrowers who previously were credit constrained, including lower-income households and people of color, by rationing credit and increasing the price of subprime loans. Supporters of these statutes argue that regulation is needed, both to allay consumer fears about dishonest lenders and to ensure that creditors internalize the cost of any negative externalities resulting from predatory loans (for an overview of predatory lending from marketing to securitization see Renuart, 2004).

In the late 1990s, many states began adopting legislation to redress predatory lending. Some of these state laws are patterned on older laws that pre-dated HOEPA. For example, new laws enacted by Colorado, Louisiana, Michigan, Nebraska, Vermont, and Virginia restricted prepayment penalties or balloon payments on some loans (Nebraska not terribly effectively) with low triggers or none at all. Vermont, Michigan, and Tennessee adopted new disclosure statutes (An and BOSTIC, 2006).

² Although subprime lending and predatory lending are not synonymous the similarities in the target borrower segment and the results in high fee and interest costs to the purchaser are uncanny. There are no legal definitions in the United States of predatory lending, though there are laws against many of the specific practices commonly identified as predatory.

In the strictest and legal sense of the word Predatory lending refers to secured loans such as home or car loans which are made by the lender with the intention that the borrower can't really pay them which would allow the lender to seize the car or home and sell it for a profit. The word has been expanded to refer to the practice of convincing borrowers to agree to unfair and abusive loan terms. This could be done either through outright deception or through aggressive sales tactics, taking advantage of borrowers' lack of understanding of extremely complicated transactions. Predatory loans, for instance, for the purchase of a home, could lead to foreclosure (Investordictionary.com, 2007).

Beginning in 1999, states began pursuing a different tack by enacting statutes patterned directly on HOEPA. North Carolina, the first state to adopt a true state “mini-HOEPA” law, passed its statute in 1999. In short order, North Carolina’s mini-HOEPA law inspired other states to enact mini-HOEPA laws of their own, which generally operate in addition to the other state laws mentioned above. As of January 1, 2007, twenty-eight states and the District of Columbia had mini-HOEPA statutes in effect (Bostic, Engel, McCoy, Pennington-Cross and Wachter, 2007).

Early studies of the North Carolina law used simple statistics to draw inferences. Ernst, Farris and Stein (2002) used Home Mortgage Disclosure Act (HMDA) data to compare subprime lending in North Carolina in 1999 and 2000 with subprime lending in the rest of the country. The authors found that total subprime originations fell in North Carolina in 2000, compared with other states. The study reported, however, that North Carolina had 15 percent more subprime home loans per capita than the national average in 2000 and that lower-income borrowers in North Carolina received a higher proportion of subprime to prime loans in 2000 than lower-income borrowers in any other state (Bostic, Engel, McCoy, Pennington-Cross and Wachter, 2007).

Another study focused on credit flows by surveying the rate sheets of several large subprime lenders who were active in North Carolina after enactment of the law (Inside B&C Lending, 2001). The results indicate that the lenders still offered a full menu of loan products with little or no effect on loan prices. Elliehausen and Staten (2004) conducted a multivariate regression study to compare the volume of subprime mortgage originations in North Carolina with that in South Carolina, Tennessee, and Virginia before and after passage of the North Carolina law. The study found that the volume of subprime mortgages originated in North Carolina counties dropped about 14 percent, relative to other counties in the control states, after passage of the state law. In a pre/post-law comparison, subprime originations dropped for North Carolina borrowers with annual household incomes of \$50,000 or less, but rose for higher-income borrowers in that state (Bostic, Engel, McCoy, Pennington-Cross and Wachter, 2007).

Two other studies looked at whether the reduction in North Carolina subprime loans post-law was due to supply-side or demand-side effects. A report by Burnett, Finkel and Kaul (2004), which used HMDA data and cross-tabulations, found that loan originations fell in North Carolina relative to South Carolina and Tennessee after passage of the law. The North Carolina decline was due to relative drops in application volumes; denial rates were lower in North Carolina than in the control states post-law. Similarly, using multivariate regression, Harvey and Nigro (2004) analyzed HMDA data before and after passage of the North Carolina law in July 1999 to determine the law’s effect on home mortgage applications, originations, and denials. The authors found that the probability of subprime loan applications and originations fell in North Carolina post-passage, but the probability of subprime loan denials did not, relative to the control states. They attributed the falloff in North Carolina originations to reduced demand, not supply. Contrary to Elliehausen and Staten, they reported that the law had no differential effect on North Carolina borrowers with household incomes of \$25,000 or less. Similarly, subprime lending by bank lenders held steady in North Carolina following adoption of the law, while subprime lending by nonbank lenders fell there, in comparison with the control states. Finally, the market share of subprime loans fell in North Carolina after passage, compared with the control states.

A last group of studies examined whether the North Carolina law had struck a balance between curtailing abusive loans and ensuring the availability of credit to subprime borrowers. Ernst, Farris and Stein (2002) estimated that the North Carolina law saved North Carolina borrowers \$100 million by deterring predatory loan practices. Quercia, Stegman and Davis (2004) used loan-level Loan Performance data on over 3 million securitized subprime loans originated from 1998 through the first quarter of 2002. The authors confirmed that overall subprime originations dropped in North Carolina following enactment, while subprime originations elsewhere increased. They found, however, that the North Carolina falloff was confined to the refinance market, where loanflipping abuses can occur. In contrast, subprime home purchase originations in that state grew as fast as or faster than in some nearby states and the U.S. generally. Almost ninety percent of the reduction in subprime mortgages in North Carolina post-law consisted of subprime loans with at least one predatory feature.

Rose (2006) using data on subprime refinance and home purchase mortgages from the Chicago metropolitan area, examines the impact of long prepayment penalty periods, balloon payments and a non-standard application process (i.e., low- and no-documentation) on the probability of foreclosure. Results suggest that the relationship between predatory lending practices and foreclosure rates is much more complicated than the arguments for restricting their use assume.

The findings indicate that the impacts of the examined loan features on the probability of foreclosure vary significantly across subprime refinances and home purchase mortgages, and within these categories vary further across fixed-rate mortgages (FRMs) and adjustable-rate mortgages (ARMs). In some cases, these features are even associated with reductions in the probability of foreclosure. Rose also finds that where there is an association between a particular “predatory” loan feature and a greater probability of foreclosure, the feature itself may not drive the association; rather, some associations appear driven by characteristics of the lender, the borrower, or both that are not fully captured in the available data. These results weaken the case for federal legislation, such as the enactment of a national predatory lending law, or regulatory action to restrict these “predatory” lending practices.

Harvey (2003) studied HMDA data to ascertain the effect of anti-predatory lending ordinances adopted by Chicago and Philadelphia on subprime originations, applications, and denials. For Chicago, multivariate regression analysis showed that the likelihood of subprime loan denials and of nonbank originations of prime loans was no different in Chicago post-law than in the rest of Illinois. In contrast, after enactment of the ordinance, the likelihood of subprime originations generally and by nonbanks in particular was greater in Chicago than in the rest of Illinois. Among other things, this suggests that subprime lending migrated from banks to nonbanks after passage of the law. No conclusions can be drawn from the Philadelphia results because the study did not examine data during the brief time-period when the Philadelphia ordinance was in effect.

With the growth in state mini-HOEPA laws, more recent studies have examined the effects of the state and local laws on a national scope. An early study by Morgan Stanley (2002), for example, surveyed subprime branch managers and mortgage brokers across the country. The investment bank reported that growth forecasts by respondents in “tough” states were not significantly different from growth forecasts by respondents in “easy” states. Li and Ernst (2006, a&b) ranked state laws according to the type of loans covered, points-and-fee triggers, substantive legal

protections, and remedies available to borrowers. The authors concluded that state anti-predatory lending laws reduced the prevalence of predatory loan terms, without reducing subprime loan originations (except in Georgia and New Jersey), compared with unregulated states. In addition, nominal interest rates on mortgages stayed level or dropped in all states with anti-predatory lending laws except Georgia and Virginia, compared with the controls.

Ho and Pennington-Cross (2006a, 2005) constructed a legal index to examine the effect of state anti-predatory lending laws on the probability of subprime applications, originations, and rejections. Having a state anti-predatory lending law had no effect on the probability of origination and only a scant negative effect on the probability of applications, while it reduced the likelihood of being rejected. Stronger restrictions reduced the likelihood of origination and applications, but had no effect on the likelihood of rejection. Conversely, stronger coverage increased the likelihood of origination and applications without affecting the likelihood of rejection, suggesting that anti-predatory lending laws with lower triggers boost demand by reducing consumer fears about abusive lenders. Ho and Pennington-Cross (2006b) used the same legal index and border area methodology to examine the effect of state anti-predatory lending laws on the cost of credit. Using HMDA data from 2004, they discovered that subprime loans originated in locations with anti-predatory lending laws and had lower APRs than loans in unregulated states. They also found that increasing the strength of a law had similar effects. In both cases, greater coverage rather than stronger loan restrictions explained the lower APRs in regulated states.

A national study by Elliehausen, Staten and Steinbuks (2006) used a proprietary database of subprime loans originated by eight large lenders from 1999 through 2004, covering about 22 percent of high-priced residential mortgages. The state-by-state results were randomly distributed. About half of the states with strong laws had higher-than-expected originations and about half of those states had weaker-than-expected originations. For the vast majority of laws with high combined scores for coverage and restrictions, high-cost originations fell while non-high-cost subprime originations remained the same or grew. The authors interpreted these findings as evidence that lenders shifted lending from covered high-cost loans to uncovered loans in response to the enactment of state mini-HOEPA statutes. It is not clear from the study, however, what role coverage played versus restrictions. Similarly, it is not clear whether any decrease in originations was due to a reduction in demand, in supply, or in both.

An and Bostic, (2006) consider a broader set of statutes than prior research, which allows for a more comprehensive, and more accurate, characterization of the legal environment. Moreover, their study takes into account enforcement mechanisms of anti-predatory lending laws that have not previously been examined in any detail, with the goal of broadening understanding of the effects of government enforcement, private rights of action, and assignee liability provisions.

The results are consistent with the view that anti-predatory lending laws have not harmed subprime lending markets and indeed may have enhanced the functioning of the market. The data show that applications for, and originations of, subprime lending are higher and denial rates are lower in states that have stronger anti-predatory lending laws. Such a pattern suggests that the presence of these laws induces some borrowers to apply for subprime mortgages, who otherwise would be unwilling to borrow money for fear of being taken advantage of by a predatory lender.

Moreover, the fact that originations rise and denials fall suggests that these additional borrowers possess higher than anticipated quality credit, which is consistent with the view that predatory lending has adversely affected access to credit for marginal borrowers who would be served by the subprime lending market. Provisions of anti-predatory lending laws also seem to matter, as the observed overall patterns (higher applications and originations, lower denial rates) are stronger in locales whose laws have wider coverage, greater restrictiveness, and stronger enforcement mechanisms.

In a study of neighborhood level foreclosures (Immergluck and Smith, 2005) suggest that significant increases in neighborhood foreclosure rates can be attributed to the proportion of subprime loans in the area. Further, in neighborhoods with high rates of foreclosure the loans that are closed are predominately subprime.

The effect of predatory lending practices on foreclosure rates appears more complex than a superficial view would suggest, raising the probability of unexpected and undesired consequences arising from broad restrictions or prohibitions of these practices. A sounder approach may be for lenders, regulators, and other major players (such as the government sponsored enterprises) to emphasize prudent loan terms and underwriting standards rather than restricting particular loan features.

Recent Action/Legislation

The House of Representatives, on September 18, 2007, approved a plan to allow the Federal Housing Administration (FHA), to back refinanced loans for tens of thousands of borrowers who were delinquent on payments because their mortgages are resetting to sharply higher rates from low initial "teaser" levels. The previous week the Senate passed legislation proposed by the Senate Banking Committee under Chairman Christopher Dodd, D-Connecticut, titled the Building American Homeownership Act of 2007, that included \$200 million in aid to nonprofits and other groups that offer counseling and information to help homeowners avoid foreclosure (AP, September 18, 2007).

Both bills call for a series of revisions to the federal loan program, including the following that were passed by the House Financial Services Committee (HFSC):

- *Lower down payments:* Authorizes zero and lower down payment loans for borrowers that can afford mortgage payments, but lack the cash for a required down payment.
- *Housing counseling:* Authorizes more than double the current funding level for housing counseling, to help subprime homebuyers and borrowers late on mortgage loan payments.
- *Subprime borrowers:* Directs the Federal Housing Authority (FHA) to provide mortgage loans to higher risk (but qualified) borrowers, without authorizing unnecessary fee hikes on such borrowers.
- *Reverse mortgages:* Enhances the FHA reverse mortgage loan program to help seniors pay for health and other expenses, by removing the loan cap to avoid program shutdowns, raising loan limits, and by reducing the maximum fee lenders can charge for these loans.
- *Multifamily loans:* Raises FHA multifamily loan limits, so these loans can fully fund construction costs in high cost areas, and enhances sale of foreclosed FHA rental housing loans to localities, so that affordable housing can be maintained in local communities.

- *Affordable housing fund:* Authorizes up to \$300 million a year from the bill's excess profits for affordable housing, instead of returning such funds to the General Treasury.
- *Higher loan limits:* Adopts the Frank/Miller/Cardoza amendment that would raise FHA single family loan limits, which now bar loans above 95 percent of the median home price in each local area and shut FHA out of higher cost home markets.

The Senate amendment raises the FHA loan limit in each area to the lower of (a) 125 percent of the local area median home price or (b) 175 percent of the national GSE conforming loan limit. The amendment also retains the bill's provision for a nationwide FHA loan floor of 65 percent of the GSE conforming loan limit, and gives HUD authority to raise these loan limit amounts by up to \$100,000 "if market conditions warrant," according to an HFSC release (September 18, 2007). Contrary to the House Bill the Senate Bill did not agree to the same terms, did not authorize zero down loans, and failed to raise the conforming loan limit beyond the current \$417,000 for high cost areas (Evans, 2007). Government officials and real-estate industry interests maintain that the FHA, which now backs some 3.7 million loans in the event of default, is hamstrung by existing law. The size of mortgages the agency can insure is often too small to attract borrowers in expensive areas such as California and the Northeast — reducing the FHA share of the home-loan market to around 4 percent from 19 percent a decade ago. The legislation would lift the limit to as much as \$729,750 in high-cost areas, from the current \$362,000 (AP, September 18, 2007).

For homeowners whose situations can't be remedied with refinancing, they may get tax relief if they end up facing foreclosure. Currently, if homeowners face foreclosure and the bank forgives a portion of the mortgage debt which is not recovered by the sale of the home, that forgiven debt is treated as taxable income (AP, September 18, 2007).

Prior to this most recent spate of legislation about 240,000 borrowers of the estimated 2 million with adjustable-rate loans scheduled to reset in the next year were eligible to refinance into a loan insured by the Federal Housing Administration (FHA) - roughly 80,000 of them because of the recently approved FHASecure Act, which loosens FHA's criteria for refinancing. Before FHASecure, borrowers could not refinance into an FHA loan if they were delinquent in their payments for any reason. With the FHASecure Act, delinquent homeowners qualify for an FHA-insured refinancing loan if they have:

- *A history of on-time payments for at least six months before their loans reset to higher rates*
- *Interest rates scheduled to reset between June 2005 and December 2009*
- *3 percent equity in their home, or the cash equivalent*
- *A sustained history of employment*
- *Sufficient income to make their FHA-insured mortgage payment and all other obligations (Sahadi, 2007: FHASecure, 2007).*

As the House and Senate rush to pass policies that respond to the results of a subprime lending market in a period of rising interest rates it is valuable to reflect on the source(s) of the problem for future policy. The blame game began to heat up in the Spring of 2007 when Chairman Chris Dodd made the following comments during his opening statement during hearings on "Mortgage Market Turmoil: Causes and Consequences, March 22, 2007,

Our mortgage system appears to have been on steroids in recent years – giving everyone a false sense of invincibility. Our nation’s financial regulators were supposed to be the cops on the beat, protecting hard-working Americans from unscrupulous financial actors. Yet, they were spectators for far too long. Risky exotic and subprime mortgages – all characterized by high payment shocks – spread rapidly through the marketplace. Almost anyone, it seemed, could get a loan. As one analyst put it, underwriting standards became so lax that *if you could fog a mirror, you could get a loan.*”

”Some of these loans have legitimate uses when made to sophisticated borrowers with higher incomes. But a sort of frenzy gripped the market over the past several years as many brokers and lenders started selling these complicated mortgages to lower-income borrowers, many with less than perfect credit, who they knew, or should have known, would not be able to afford to repay these loans when the higher payments kicked in.” So where should the “blame” be placed and where should future policy be addressed.

A report prepared for the Center for Responsible Lending, point to three general sources of the subprime collapse. First, the drive for growth in the subprime market has led to a proliferation of risky loan products and lax standards for qualifying borrowers. A 2005 survey of credit underwriting practices by the Office of the Comptroller of Currency (OCC) found a “clear trend toward easing of underwriting standards as banks stretch for volume and yield (OCC, 2005).”

Second, there is the structure of the industry itself. The high proportion of broker-originated loans in the subprime market (about two-thirds of the total) means that the primary loan sellers are those who have strong incentives to close as many loans as possible with little direct incentive to consider the viability of the loans. Lenders, in turn, can minimize the cost of unexpected foreclosures because they typically cede much of the risk to the secondary loan market.

Finally, there are insufficient legal and regulatory consequences for making home loans that are predictably unsustainable. Federal banking regulators recently issued guidance on nontraditional mortgages that requires depository institutions (such as banks) and their affiliates to tighten credit standards for certain nontraditional loans, such as interest-only and payment-option ARMs (OCC, 2006). Similarly, the Conference of State Bank Supervisors issued guidance that largely is equivalent to the federal guidance, but is intended to apply to state-chartered non-depository institutions and state licensed-mortgage brokers. Observers expect that forty-nine states and the District of Columbia will issue the model guidance in some form (CSBS, 2005). However, it is not clear that these standards apply to all types of risky loan products and practices common in the subprime market.

Not everyone will agree with the creation of federal legislation that appears to offer bailout or safety nets to homebuyers that purchased beyond their financial means. As with any economic correction there is the requisite hand wringing and finger pointing. This is the one element of this topic that is so brilliantly interesting. For once the poorest are aligned with the richest as they are the two groups most affected. Given this and the power of voice, it is not likely the rich will allow defaults beyond control - expect bailout legislation for financial institutions and borrowers

as needed. Furthermore, there is the whole question of blame. Those being accused include nearly all the participants in the mortgage process from the borrowers, who are charged with of assuming debt they were incapable of servicing, to the federal regulators for not tightening requirements on unregulated lenders.

They are all Culpable: The Blame Game and Spillovers

Mortgagers

Homeowners had been using the increased property value to refinance their homes with lower interest rates, acquiring cash out first and second mortgages against the added value to use the funds for consumer spending. People for whom home ownership once seemed out of reach took on far more debt than they could ever hope to repay. John Hope Bryant, founder of Operation Hope bristles at the suggestion that subprime borrowers are not up to the challenge of owning homes. Operation Hope provides training and financial awareness programs to home buyers, and suggests evidence is available that indicates low-wealth borrowers can be given the tools necessary to make sound financial decisions (Montange, 2007).

Support policy is exactly what we do not need, according to Alex Epstein, an analyst at the Ayn Rand Institute. "The current subprime problems are the result of borrower and lender irrationality and of government intervention in the market to 'help homeowners.' Government housing assistance programs, like Fannie Mae and Freddie Mac, encourage people to buy homes even when they cannot truly afford them. The individual who buys an expensive home counting on interest rates to stay low forever is responsible for the consequences of his risky decision. For the government to 'do something'--anything--to alleviate a mortgage failure necessarily rewards those who took on large housing risk at the expense of those who didn't (Ayn Rand Institute Press Release, 2007).

There is also the issue of fraud and misrepresentation on the part of mortgage brokers. Couple this with the lax employment of controls built into the system to guard against excesses in lending and "The only moral and rational response by the government, besides prosecuting genuine cases of fraud, is to stop encouraging people to make bad decisions--but then leave them to face the consequences when they do." In a statement to the Associated Press David Downs indicated the consumer should be held accountable first and foremost for failed loans. "If somebody takes on financial risk, it is incumbent on the consumer to understand that risk (Carpenter and Elphinstone, 2007). This view is supported by the accusations that borrowers have also been criticized for over-stating their incomes on loan applications and entering into loan agreements they could not meet (Greg, 2007; Christie, 2007).

Mortgage brokers and lenders

The huge increase in mortgage originations, including a spike in refinancing, during the first half of the 2000s, attracted a flood of new mortgage brokers into the industry. Despite a lack of experience, many were soon earning six-figure incomes. Critics also charge that many borrowers, especially minorities, whose credit scores qualified them for prime loans ended up in the subprime category and brokers steered borrowers to loans they could not afford. Mortgage

brokers are particularly talented at enabling borderline borrowers to get their dough. They made millions, and as pure middlemen, and they will feel relatively little in the way of consequences - aside from a sharp drop off in business.

Once mortgage banks had made all the loans they could reasonably make to qualified borrowers, they systematically relaxed underwriting standards and in many cases awarded loans, it is argued, they knew borrowers were unable to repay. Even though a far higher percentage of the loans would go delinquent as mortgage banks reached further down the credit scale, the higher payments from borrowers still paying back the loans would more than offset the delinquencies. They had discovered years ago that they could sell subprime loans in the secondary markets by adding stiff risk premiums to the interest rates they charged.

Dozens of mortgage companies have gone bankrupt, including American Home Mortgage. And Countrywide Financial, the nation's largest mortgage lender - responsible for nearly one of every five mortgages in the U.S. - has seen its stock crater amid concerns that it will become a victim too. In the Survey of Credit Underwriting Practices 2005, prepared by the Office of the Comptroller of Currency's (OCC) National Credit Committee, the agency commented, "ambitious growth goals in a highly competitive market can create an environment that fosters imprudent credit decisions." In fact, 28% of the banks eased standards, leading the 2005 OCC survey to be its first survey where examiners reported net easing of retail underwriting standards. The trend was continued in 2006 as well.

In order to move into lower rungs of potential borrowers the market developed instruments that accounted for the increased risk. The profit in this market is in creating economies of scale, and for many years the underwriting process has always been an impediment to increasing the production pace in mortgage sales. The industry response to this need for rapid processing came in the form of a piece of software that used the Internet to screen borrowers with weak credit histories in seconds. The software was among the first of its kind and allowed subprime lenders like First Franklin to grow at warp speed. By 2005, at the height of the housing boom, First Franklin had increased the number of subprime loan applications it processed sevenfold, to 50,000 every month. Since 1999, the software has been used to produce \$450 billion in subprime loans (Browning, 2007).

Automated underwriting "replaced the ways we used to extend credit," said Prof. Nicolas P. Retsinas, director of the Joint Center for Housing Studies at Harvard. Automated underwriting is now used to generate as much as 40 percent of all subprime loans, according to Pat McCoy, a law professor at the University of Connecticut. Subprime lenders like automated underwriting because it is cheap and fast. The 2001 Fannie Mae National Housing Survey found that automated underwriting reduced the average cost to lenders of closing a loan by \$916 (Browning, 2007).

The software itself, of course, cannot be blamed for lowered lending standards or lax controls. Critics of the automated brokerage process say the push for speed influenced some lenders to take shortcuts, ignore warning signs or focus entirely on credit scores. "Used properly, automated underwriting is a wonderful thing." The problem comes when lenders customize it to approve the wrong borrowers. Proponents say the software makes the market fairer and more

objective for risky borrowers. Automated underwriting put the credit score on such a pedestal that it obscured the other important things, like is the income actually there," said Nicolas P. Retsinas, director of the Joint Center for Housing Studies at Harvard. Before there was automated underwriting, the down payment mattered (Browning, 2007).

As early as 2002 there were signs of collapse in the subprime market. The Mortgage Bankers Association of America (MBAA) reported a delinquency rate of 5 ½ times higher than that for prime loans (14.28 versus 2.54 percent) and the rate at which foreclosures were begun for subprime loans was more than 10 times that for prime loans (2.08 versus 0.20 percent) (Chomsisengphet and Pennington Cross, 2006). Further, the MBAA reported (through the MBAA delinquency Survey) that 4.48 percent of subprime and 0.42 percent of prime fixed-rate loans were in foreclosure during the third quarter of 2004.

Political

Some observers expect the subprime meltdown to have significant ramifications for the 2008 U.S. presidential elections, particularly if it worsens into "a full-blown crisis". John Edwards, , who is "framing the campaign as a struggle that pits the political and corporate elite against regular people" David Rohde, a political science professor at Duke University has said "the time might be right for a resurgence of populism" and "what would make it even more plausible is if the economy went into a tailspin". Edwards has already made "fighting predatory mortgages" a central theme of his run (Keen, 2007). Presidential Candidate and Senator Hillary Clinton presented a plan to curb mortgage abuses, assist families facing foreclosure, and expand affordable housing to protect the American dream of home ownership. Among the objectives the proposal includes:

- *Require mortgage brokers to disclose to borrowers that their compensation rises when borrowers' mortgage rates and mortgage fees are high,*
- *Work with states to develop strong licensing standards and require federal registration for mortgage brokers,*
- *Crack Down on Mortgage Lending Abuses,*
- *Eliminate prepayment penalties on mortgage products,*
- *Establish a \$1 billion fund to assist state programs that help at-risk borrowers avoid foreclosure,*
- *Expand Fannie Mae's and Freddie Mac's Foreclosure Prevention Efforts,*
- *Establish a \$1 billion fund to provide federal support to housing trust funds established by state, county, and municipal governments.*

The Dollar

The financial crisis has been blamed for causing the U.S. dollar to continue its decline. The Daily Telegraph recently reported that "the Chinese government has begun a concerted campaign of economic threats against the United States" and "that Beijing had the power to set off a dollar collapse if it chose to do so" with economic analysts saying it "could have very serious consequences at a time when the credit markets are already afraid of contagion from the subprime troubles" (Evans-Pritchard, 2007). For the first time since the early 1970's the Canadian dollar is at parity with the U.S. dollar and the point is trading at \$2 U.S. to \$1. On July 12, 2007,

the decline of the dollar "was broad as well as deep", with it reaching "a record low against the Euro as the U.S. subprime mortgage market crisis damaged sentiment on the greenback" (Plumberg, 2007).

Wall Street, Financial Markets & Rating agencies

The behavior of investors with respect to subprime mortgages had been interpreted as irrational in the face of risk/return imbalances in the mortgage backed securities (MBS) and collateral debt obligation (CDO) markets. Mortgage originators had powerful incentives to originate loans, regardless of quality: every mortgage that was successfully originated and sold to an investor produced a fee for the originator. While companies that originated the loan, such as New Century, could give representations and warranties to investors that loans met some minimum standard, they were not well enough capitalized to make good on any promises in the event of large-scale default. It is difficult to understand why this was not clear to investors ex ante (Green and Wachter, 2007).

Investors bought securitized loans with no regard for whether they met underwriting standards. Concerns about mortgage quality within a relatively limited segment of the residential market have expanded into a repricing of risk in the overall credit market, with broader implications throughout the capital markets. In the process, the curtain has been drawn back on dark side of hedge funds and what happens when illiquid assets need to be marked to market as lenders signal margin calls. The result has been broader market selling of liquid assets, accompanied by wider credit spreads, volatility in the stock market and central bank action to provide liquidity and calm fears of a financial market meltdown (Watkins, 2007).

Wall Street investors introduced lots of liquidity into mortgage markets during the boom years, which helped increase home ownership. Until two months ago U.S. banks were able to package billions of dollars of mortgages as bonds and sell them to investors, which included other banks, pension funds and mutual funds. Foreigners were huge buyers of U.S. mortgage paper. The result was seemingly bottomless demand for whatever Wall Street could put on the table. Naturally, the amount of subprime mortgages soared. In 2006, subprime-mortgage origination amounted to \$600 billion, 20 percent of total mortgage originations, massively up from 2001, when \$160 billion of subprime mortgages were issued, representing 7 percent of total mortgage lending, according to Inside Mortgage Finance. In addition, any concentration of foreclosed property can potentially adversely impact the value of the property in the neighborhood as a whole (Chomsisengphet and Pennington-Cross, 2006).

In hindsight, many lenders had under priced subprime mortgages in the competitive and high-growth market of the early to mid 1990s (Temkin, Johnson, and Levy, 2002), providing hints into the future. The effects of this under-pricing spilled over into the secondary market, MBS prices dropped and lenders had difficulty finding investors to purchase the high-risk tranches. Evidence of this market response is evident in the level of securitization of subprime loans that drops from 55.1 percent in 1998 to 37.4 percent in 1999 (Chomsisengphet and Pennington-Cross, 2006)

In the Wall Street pecking order, rating agencies are seen as worthy but plodding accessories. Analysts at the agencies earn far less than their brokerage counterparts, and decisions are nearly always made by a tedious committee process. As a result, they typically fail to react quickly enough to questionable trends and innovations. They have long played a big role in helping investment banks structure mortgage-backed securities by conferring with the banks on what rating a certain structure might get. S&P spokesman Chris Atkins replies: "Dialogue helps issuers understand our ratings criteria and helps us understand the securities they are structuring so that we can make informed opinions about creditworthiness (Eavis, 2007)." Some have argued that bond buyers are sophisticated institutions that can make their own judgments, and that rating agencies are like stock analysts whose recommendations investors could choose to ignore. The rating agency argument is inaccurate. If a bond carries less than an investment-grade rating, many insurance companies, pension funds and mutual funds are restricted in their charter from buying it. When the rating agencies bless the mortgage-backed paper, it becomes- an instrument of interest with high potential payoffs.

The Federal Reserve, Other Central Banks & Regulators

Many critics have charged the Federal Reserve as a key source of the problem, given their power to influence lending through interest rates. The chief charge against the Fed is that former chairman Alan Greenspan kept interest rates at very low levels far longer than necessary, which in turn sparked the bubble in housing prices and mortgage lending. It kept the key Federal funds rate at 2 percent or lower from November 2001 right through to the end of 2004.

In 2002 Greenspan called mortgage markets a "powerful stabilizing force" because they allowed people to extract equity from their homes, and in 2004 he said that homeowners should consider using adjustable-rate mortgages to save on interest and prepayment costs. In 2005, when a record \$625 billion in subprime mortgages were made, Greenspan gave a speech that blessed the creation of new loan products, including subprime home loans (Christie, 2007).

Harry Dinham, president of the National Association of Mortgage Brokers, says, "The majority of these loans were originated by companies like New Century and Countrywide that were not under the control of bank regulators." Furthermore, there's nothing inherently wrong with the loan products themselves, according to Dinham. "They were designed to give the credit-challenged a chance," he says. "To see if they could make it (Christie, 2007)."

Some observers claim that government policy actually encouraged the development of the subprime debacle through legislation like the Community Reinvestment Act, which directs banks to lend to otherwise uncreditworthy consumers. Regulators, however, argue they were following a policy that they hoped would help increase home ownership, a goal regularly lauded by politicians (see An and Bostic, 2006). The S&P commented, "ambitious growth goals in a highly competitive market can create an environment that fosters imprudent credit decisions." In fact, 28% of the banks eased standards, leading the 2005 OCC survey to be its first survey where examiners reported net easing of retail underwriting standards. The trend continued in 2006: *see Survey of Credit Underwriting Practices 2006*, Office of the Comptroller of the Currency (October 2006) at <http://www.occ.treas.gov/cusurvey/2006UnderwritingSurvey.pdf>.

Central banks around the world have begun coordinated efforts of their own to increase liquidity in their own currencies to stabilize foreign exchange rates, in an effort to stave off a run on the U.S. dollar. As of August 10, 2007, the United States Federal Reserve (Fed) has injected a combined 43 billion USD, the European Central Bank (ECB) 191 billion USD, and the Bank of Japan 8.4 billion USD. Smaller amounts have come from the central banks of Australia and Canada. Meanwhile, the LIBOR rate, the interest rate that banks charge each other rose to 5.72%, the highest it had been in seven years.

Real estate agents

Real estate agents are salespeople and, as with most salespeople, it is in their best interest to move up their customers into a bigger, more expensive product. Real estate agent/brokers are not always scrupulous about fulfilling their fiduciary responsibilities to their clients. They sometimes persuade consumers to overspend and take on mortgage payments that may ultimately be unaffordable. However, the onus is on the borrowers to take responsibility for staying on budget (Christie, 2007).

Appraisers

The appraiser's job is pretty straightforward: put an objective dollar value on a home. According to Thomas Inserra, CEO of Zaiio, an Internet-based appraisal service, inaccurate appraisals have become one of the substantial contributing factors to the subprime challenges. When a property is valued much higher than its actual worth, a borrower could owe more for the home than it would sell for on the open market, putting home buyers in immediate jeopardy. Inaccurately high appraisals may have also fed the rising home prices, which, by making homes less affordable, ensured that more borrowers would default on loans. The 2007 National Appraisal Survey found that 90 percent of licensed appraisers had felt pressure to restate appraisals in order to “hit a certain property value,” up from 55 percent in 2003 (October Research Corporation, 2007)

Efficiency & Equity

Subprime loans have helped boost US homeownership to a record 69 percent of households. They are being tapped by borrowers in all income ranges, who struggle with poor credit ratings stemming from modest incomes or excessive credit card or other debts. In Massachusetts, subprime loans, fueled by refinancings, have grown from 1.6 percent of mortgages in 2000 to 12.3 percent in 2004, and the industry's growth has brought problems (Lax, Manti, Raca, and Zorn, 2004). Subprime lenders foreclose on properties much more frequently than do conventional lenders. About 3.5 percent of subprime mortgages and refinancing loans go into foreclosure, but a study by the University of North Carolina Kenan-Flagler Business School found that 20 percent of refinancings in 1998 through 2000 that were examined wound up in foreclosure. For conventional loans, the rate is 1.1 percent of mortgages and refinancing (Quercia, Stegman and Davis, 2005).

The prevalence of subprime loans contributed to a 31 percent spike in foreclosure filings in the first half of 2007 in the state's Land Court, as tracked by ForeclosuresMass Corp. If house prices in Greater Boston's overheated real estate market fall, subprime loans could accelerate a

downturn as overleveraged homeowners throw their houses on the market or lenders sell foreclosed properties at fire-sale prices.

The literature also points out variations in efficiency within the subprime industry. Crews-Cutts and Van Order (2005), create stylized models of the subprime market reflecting both the options based approach to pricing and a pair of models addressing the information asymmetries between the lender and borrower and the lender and the secondary market. The authors articulate the persistence of the information disconnect and note the presence of adverse selection when limited information is available to price risk.

Lax, Manti, Raca, and Zorn (2004) report on the borrower characteristics from survey data drawn from a population of borrowers between January 1996 and June 1997. Although the report is on borrower characteristics the authors' objective is to address concerns of the relative efficiency of the subprime market. The authors interpret their findings as evidence that the subprime market operates less efficiency than the prime market. They base this on three broad observations: 1) credit risk is the key element in explaining whether loans are originated as prime or subprime, but they also find that borrowers' demographic characteristics, knowledge, and financial sophistication also play a statistically and practically significant role in determining whether they end up with a subprime mortgage, 2) Relative to prime borrowers, subprime borrowers are less satisfied with their borrowing experience, 3) the higher rates charged by subprime lenders cannot be fully explained solely as a function of the additional risks they bear. Calem, Hershaff and Wachter (2004), in their examination of subprime distributions across neighborhoods also find that neighborhoods with high proportions of minorities and lower educational achievements have a higher share of subprime loans.

Courchane, Surette and Zorn (2004) observe mixed results in their analysis of both equity and efficiency issues. They conclude that subprime borrowers are less knowledgeable about the mortgage process, are less likely to search for the best mortgage rates, and are less likely to be offered a choice among alternative mortgage terms and instruments—possibly making them more vulnerable to unfavorable mortgage outcomes.

Extending beyond temporal and spatial variations in the subprime market Pennington-Cross and Chomsisengphet (2007) observe variations in borrower characteristics within segments of the subprime mortgage market. Specifically they compare cash out refinancing with zero cash out refinancing. Their findings indicate differences in the two segments. Cash out refinances are significantly lower in the zip code areas with relatively higher median income households. This result is consistent with expectations and may reflect the ability of areas with relatively higher income households to weather adverse income shocks. The results indicate that the higher the relative cost of using a credit card or a car loan, the higher the probability of households extracting equity from a home. These figures indicate that cash-out loans may default and prepay at different rates and respond differently to shocks that may increase or decrease the propensity to terminate through default or prepayment.

Their analysis of market segmentation confirms that typical mortgage underwriting criteria are most important in explaining whether borrowers obtain prime or subprime mortgages—higher credit risk borrowers are more likely to get a subprime loan. This is consistent with an efficient

market. On the equity front their results further show that search behavior and other demographic factors including adverse life events, age, and Hispanic ethnicity contribute to explaining market segmentation, suggesting that borrowers may be inappropriately directed toward subprime mortgages.

Alexander Grimshaw, McQueen and Slade examine the nature of an agency between third party originators (TPOs) and mortgage banks. They argue that TPOs are compensated for writing loans, but are not completely held accountable for the subsequent performance of those loans. After controlling for the ability to pay and the value of the put option, they find that loans originated by TPOs are more likely to default than loans originated by the retail arm of the lending institution. This variance, however, in and of itself does not imply a market efficiency, but is enhanced by a second level finding of the authors. Inefficiency exists only if loans with different risk receive similar interest rates, and they document this inefficiency. In the early years of their sample, the interest rate charge on TPO loans equaled the interest rate on similar retail loans even though, in hindsight, the TPO loans were more risky. Interestingly, as the subprime industry grew and matured, it also learned. They show that after the initial short-lived inefficiency, lenders apparently learned that TPOs default at a greater rate than similar retail loans and began to price the default risk. Calem, Hershaff and Wachter (2004) also observe learning in the subprime lending market in the form of tighter loan standards over a five year period ending in 2002.

Two of the major benefits of this type of lending, are the increased numbers of homeowners and the opportunity for these homeowners to create wealth (Chomsisengphet and Pennington Cross, 2006). Subprime lending is most prevalent in neighborhoods with high concentrations of minorities and weaker economic conditions (Calem, Gillen and Wachter, 2004; and Pennington-Cross, 2002). Preliminary evidence indicates that the probability of default is at least six times higher for nonprime loans (loans with high interest rates) than prime loans. In addition, nonprime loans are less sensitive to interest rate changes and, as a result, subprime borrowers have a harder time taking advantage of available cheaper financing (Pennington-Cross, 2003 and Capozza and Thomson, 2005).

Subprime loans are riskier in and of themselves, not just because the borrowers may have weaker credit. Borrowers who are already financially vulnerable are receiving loans associated with a higher risk of default. In a study on foreclosures, Schloemer, Ellen, Wei Li, Keith Ernst and Kathleen Keest, 2006 obtain the following very telling results regarding the relationship between foreclosure potential and the subprime market. For subprime mortgages originated from 1998 through 2006:

- *The authors project that 2.2 million U.S. households will lose their homes to foreclosure, costing these households as much as \$164billion. One out of every five (19.4 percent) subprime loans made today will fail,*
- *Even under recent favorable economic conditions, as many as one in eight subprime loans originated between 1998 and 2004 ended in foreclosure within five years.*
- *One in 10 subprime mortgages in recent years have prepaid while delinquent. When these distressed prepayments are added to the foreclosure rates, the composite subprime “failure rate” approaches 25 percent within five years of origination.*

- *Regression results show that distressed prepayments and foreclosure rates move in opposite directions in response to changes in housing appreciation. This suggests that distressed prepayments are “substitutes” for foreclosures in strong housing markets. In other words, strong housing appreciation may protect a market from high foreclosures, but not from failed loans.*
- *While one in five households with subprime loans originated in 2005 and 2006 is projected to foreclose, other families who took out these loans and then refinanced into subsequent subprime loans also will experience foreclosure. Using the best information available, we estimate that one-third of families who received a subprime loan in 2005 and 2006 will ultimately lose their homes.*
- *Many local markets that have experienced extraordinary housing price appreciation in recent years are likely to experience marked increases in subprime foreclosure rates.*

How investment banks distribute the debt

There has been concern about the risks of securitization, particularly bonds that are backed by home equity loans, automobile loans or credit card debt. In fact, Standard & Poors, sounded a warning call in 2005 that the risk of default represented a significant threat to the well-being of the financial markets (Jordon, 2007). As designed, the process of securitization eliminates the incentive for the originator of the loan to be credit sensitive. With securitization, the dealer is not directly impacted if the loans can be passed on through securitization. Thus, the loss experienced on these loans after securitization will no longer be comparable to that experienced prior to securitization (moral hazard). This is not a small problem. There is \$1.0 trillion in asset-backed bonds outstanding as of December 31, 2003 in the U.S, owned by insurance companies, money managers, pension funds and banks all reaching for yield given the excellent ratings for these bonds.

Mortgage banks and brokers originate about two-thirds of subprime mortgages. Mortgage banks sell packaged loans to investment banks and brokers frequently serve as mortgage representatives of investment banks. Brokers market to prospective borrowers, assess a borrower’s creditworthiness, recommend loan products, and prepare and submit loan applications to mortgage lenders, who fund the approved loans. When a loan closes, the broker collects a fee from the borrower, and may also collect a “yield-spread premium,” which is a cash bonus a broker receives for charging a higher interest rate on a loan than required by the lender.

As a consequence, brokers have a direct incentive to steer borrowers into excessively high interest rates, since higher rates produce higher premiums for the broker. About six million people in the United States who have no money have borrowed about 100% of the value of a house, right at the top of the housing market which has since fallen sharply. These are the subprime borrowers. Advocates and policymakers have long expressed concerns about abusive broker practices and excessive fees. Because brokers’ compensation is based on making the loan, regardless of its risk of foreclosure, they have little incentive to focus on the likely performance of the loan in the future. While brokers focus on delivering a high volume of loans to lenders, lenders in turn sell the loans to investors, creating a “secondary market” in mortgage loans.

By virtue of the higher risk associated with subprime loans when compared to prime loan investments, mortgage investors use sophisticated financial tools to limit their financial exposure from foreclosures. The majority of subprime loans are pooled together and then divided into tranches which are sold as MBS securities to large numbers of investors. The better-performing loans subsidize the losses on defaulted loans. As of June 30, 2006, MBS accounted for the largest segment of the United States bond market, accounting for 23 percent of all bond market debt outstanding.

Further, the only “regulatory” oversight of the secondary market comes from third-party rating agencies, who evaluate the credit risk of mortgage-backed securities and award credit ratings that determine the market price for the security. However, rating agencies make no determination about “the suitability of the underlying loans for individual borrowers, and until recently would only give the subprime MBS a low credit score, which means it is not considered investment grade. That disqualifies it from the portfolios of many professionally managed funds.” Both Standard & Poor’s and Moody’s have recently refined their approach to analyzing and rating funds containing subprime loans (Jordan, 2007; Moody’s Investor Service, 2007).

The idea is to create some higher risk assets and some much safer ones by slicing up the MBS into what are called equity (high risk), mezzanine (middle risk) and the much sought-after investment grade bonds (low risk). Higher risk equals higher returns, of course, so the equity tranche of the MBS will earn the highest profits under “stable” conditions. In this way the investment bank creates a highly marketable bond out of a package of low-quality mortgages. In the market for CDOs, the investment bank will find it relatively easy to sell the investment grade bonds. They go mostly to respectable institutions. But the mezzanine and particularly the equity tranches can be trickier to dispose of. The effect of concentrating the risk, as well as the upside, in these tranches is to make them “hot” – so hot, in fact, that investment insiders sometimes call them “toxic waste”. There are several ways (The follow is extracted from Morgenson, 2007, and Tustain, 2007, Adelson, 2004).

A CDO is similar to a regular mutual fund that buys bonds. However, unlike a mutual fund, most of the securities sold from a CDO are themselves bonds, rather than shares. In simplest terms, a CDO is an arrangement that raises money primarily by issuing its own bonds and then invests the proceeds in a portfolio of bonds, loans, or similar assets. Payments on the portfolio are the main source of funds for repaying the CDO's own securities.

CDOs vary in structure and underlying collateral, but the basic principle is the same. First, a CDO entity acquires its inventory - such asset-backed securities (e.g. MBS). Then, the CDO entity sells rights to the cash flows from the inventory along with associated risk. The investor has taken a position not in the mortgages or asset backed securities, but in an entity that has defined risk and reward. Therefore, the investment is dependent on not just the quality of the inventory but also of the quality of the metrics and assumptions used for defining the risk and reward of the tranches. The latter can trump the former just as the inventory can trump the investment.

The manufacturer of this entity, typically an Investment Bank, itself takes a cut of the value of the inventory and obtains management fees. It is the very existence of an intermediary, defining risk and reward parameters for a shareholding in that entity, that moves a CDO tranche holder

farther from investing in an asset backed security and more towards investing in the promises and the mathematics model the manufacturer of a CDO used. CDOs are not mortgages. CDOs are not mortgage backed securities (MBS).

The loss of an investor's principal is applied in reverse order of seniority (i.e., highest credit risk tranches to lowest). The arbitrage of a CDO involves the spread between the income generated from the higher-yielding assets the CDO holds in its portfolio and the lower-yielding liabilities the CDO issues. Since the CDO issues mostly high-rated debt, the cost of the debt is less than the before-default cash flow generated by the CDO's assets.

The investment bank might choose to set up a hedge fund, possibly even using some of its own money to get the fund started. The hedge fund's objective is to trade in the high-risk equity and mezzanine CDO instruments. The hedge fund then buys the equity tranche of the CDO from the investment bank. In effect, the investment bank is actually buying the equity from itself. With a bit of luck – and this is what happened over recent years – the housing market then goes up. Now the CDO equity is floating higher in the water, because there's a cushion of higher house prices preventing those original subprime borrowers from defaulting. This rather obscure equity instrument, which is not traded on any open market, and so is not a liquid asset that can readily be bought and sold, should now be worth more than it was at issue. It gets marked up in value, and it gets marked up much faster than the underlying house prices, because all the price volatility is concentrated in this thin slice of CDO equity. The hedge fund is now a real performer! And that means it will be rewarded by further investment from outside. So what started as a vehicle with a little investment bank cash can grow the funds it manages under its own steam.

Next, the hedge fund will leverage the risk. The hedge fund goes out to an unrelated lending bank, holding its high-performing but illiquid CDO, and asks to borrow money using the waste as collateral. The lending bank has access to cheap money, and so it has the prospect of lending for spectacular profits. Now the MBS wheel is fully in motion. With a little co-operation from the investment bank, to which it is closely related, the hedge fund loses no time in marking up the value of its equity CDOs, on the basis of rising house prices. The lending bank can see its collateral floating higher and higher in the water, and so it lends ever more cash against it to the hedge fund, and it picks up the new CDOs bought by the hedge fund as further collateral on new loans. Naturally, as with all collateral, the bank claims the right to sell the bonds if the underlying debt gets into trouble.

The money lent by the bank against the CDO equity goes back to the hedge fund, which buys more CDOs from the investment bank, which buys more MBS from the mortgage lender, which provides more money to subprime borrowers, who then buy more houses, pushing real-estate prices higher again. This solution only gets into trouble when house prices turn sharply down. The lending banks call the loan, but the hedge funds have invested the funds in CDO tranches. So the collateral needs to be sold.

This is how the lending banks were surprised when they went to redeem the collateral with a sale. This is similar to what happened to Bear Stearns' hedge funds. Its two funds were leveraged in CDOs 5 times and 15 times respectively. The smaller, more cautious fund had 5 the amount

invested in CDOs as it had received from its hedge fund investors in cash. The story is exacerbated by the fact that much of the Bear and Sterns funds were considered investment grade, meaning if their value was eroded there was, and is, no value in the mezzanine or the equity. One question that is as yet not fully answered is where the lower grade bonds are held.

Another method for investment banks to deal with equity and mezzanine tranches is to keep them in house, with their creator, and offer synthetic CDOs. This is accomplished through the use of credit derivatives. The investment bank is now the owner of the hard-to-sell and risky mezzanine and equity tranches. The investment banker managing these CDOs also decides to take out an insurance policy – just in case the home loans go into default. The investment bank pays an insurance premium to another investment institution for underwriting the risk of the underlying home-loans defaulting. Apart from a bit of legal drafting little more workout is necessary to create a Credit Default Swap. In return for a cash payment, you swap the risk of default. These insurance premiums, paid to the underwriter of the CDS, appear to the receiver as income – just like bond interest payments. Unlike a standard bond, they are paid without the receiver having to part with any cash himself.

The investment bank can continue to expand this because what the underwriting institution would see is just a stream of income payments. Just like the typical mortgage streams of the MBS, these CDS streams can be aggregated into a pool...then divided into tranches with different risk profiles...producing the magic of higher credit ratings for lower-risk tranches. If will assess the newly created tranches, the result is something that looks like a CDO – and smells like a CDO – but which is not now based on cash flows deriving from borrowed money. Instead it is based on cash flows deriving exclusively from insurance premiums that are paid to cover the risk of mortgage default. That's how CDSs get packaged into what is known as a "synthetic CDO", and the investment bank can sell them for what appear to be fantastic yields (Gilbert, 2007: Tomlinson and Evans, 2007).

On October 15, in a move to shore up financial markets and add stability Citigroup Inc., Bank of America Corp. and JPMorgan Chase & Co. agreed to start a fund of as much as \$80 billion to help revive the asset-backed commercial paper market. The fund will buy assets from structured investment vehicles (SIVs), units set up to finance purchases of securities such as corporate bonds and subprime mortgage debt, the banks said today in a joint statement. Other financial companies may join the master liquidity enhancement conduit, or M-LEC, the banks said. The fund is designed to help SIVs avoid selling their \$320 billion in holdings at fire-sale prices, further roiling the credit markets. The Treasury Department in Washington brokered talks between the nation's largest banks after a shutdown of the commercial paper market left SIVs and other sellers unable to borrow, forcing sales of about \$75 billion of assets. The bank conduit will finance the purchase of the assets by selling medium-term notes and commercial paper to investors. While the banks are still deciding which assets to buy, the fund will purchase highly rated securities, the banks said. It probably won't buy subprime mortgage assets, according to the people familiar with the agreement, who declined to be identified because some terms weren't made public.

Setting up talks between the banks is the latest effort by government officials to help restore liquidity to credit markets, a campaign started by the Federal Reserve in August, when it cut the

interest rate on direct loans from the central bank. Treasury's involvement in bringing the banks together is reminiscent of 1998, when William McDonough, then the New York Fed president, rallied banks to bail out Greenwich, Connecticut- based hedge fund Long-term Capital Management LP after it lost \$4 billion from bad bets on interest rates after Russia defaulted on \$40 billion of debt.

Banks worldwide manage a total 36 SIVs, according to Moody's report Banks that sponsor SIVs have reputations to protect so they will act to support the financing vehicle even when they have no legal obligations to do so, Moody's said in a Sept. 5 report. Many people view this latest move as more symbolic than substantive, arguing the banks were going to need to inject more liquidity into the SIVs anyway, so the public co-operation just makes the bail-outs of SIVs seem more orderly.'

While concern about rising subprime mortgage defaults triggered the losses on SIVs, the funds only have about 2 percent of holdings invested in the debt. SIVs have about 41 percent in financial-sector debt, 22 percent in prime residential mortgage securities and 12 percent in collateralized debt obligations. Commercial mortgage-backed securities and non-mortgage asset-backed bonds each account for a further 8 percent, according to a Sept. 11 report by UBS AG in Zurich (Pittman, 2007).

Summary and Points to Ponder

The following summarizes the current condition in the residential real estate market. Understanding the interdependence of housing space markets and the capital market is essential to developing an effective strategy to ward off a bubble in the housing market. With more than \$1.8 trillion worth of securities backed by subprime mortgages created since 2000, banks and investors are suffering losses that are exposed every week, affecting overall confidence in the credit markets." "Sales of new homes are down 22 percent below a year ago." Negative equity exists in 20% of adjustable rate mortgages and it will increase as teaser rates kick in. The default rate on prime home equity loans has tripled from a year earlier.

The role played by the mortgage market is centered on the rise and fall of subprime mortgages including the innovative packaging and distribution of the assets in the form of sliced and diced risk positions. The impact of the subprime mortgages was exacerbated by hedge fund investing with the use of leverage.

The current debacle is not only attributable to sophisticated investors making errors, and to rating agencies underrating risks, but to naïve borrowers, some greedy, but others just hoping for better housing. The euphemism of subprime obfuscates the reality of exceptionally high risk that would probably not be taken by a lender that intends to hold the mortgage for a long term investment.

The subprime market is new, and it has grown very fast. It barely existed 20 years ago; now, it constitutes about 15 percent of the home mortgage market, and may have accounted for 20 percent of home mortgage originations last year. paper contains a discussion of the growth indicating that it stemmed from three public policy changes; the 1986 Tax Reform Act, Financial

Institutions Reform, Recovery and Enforcement Act of 1989 (FIRREA), and the “federal encouragement of a conventional mortgage-backed securities market (Weicher, 2007).”

The first generated its influence by ending deductibility of consumer interest; IRS regulations encouraged home equity lines of credit. The second public policy generated its influence through an increase in the stringency of regulations that encouraged the financial intermediaries to shift to mortgage banking activities rather than focusing on being long term holders of mortgages. That increased activity in the secondary market, especially with purchases by Fannie Mae and Freddie Mac. The regulatory changes to the traditional lenders encouraged them to move “away from making relatively risky loans, [and so] they left an opportunity for the consumer lenders.” The third policy “was more amorphous: federal encouragement of a conventional mortgage-backed securities (MBS) market. For many years the financial markets were only willing to accept MBS with an explicit or implicit federal guarantee. Market acceptance of MBS backed by conventional mortgages and issued by fully private institutions came slowly, but by the late 1980s conventional MBS were being successfully issued. During the early 1990s, subprime MBS were beginning to earn market acceptance (Weicher, 2007).

While it is true that housing markets are local, there are two ways in which seemingly unconnected housing markets relate to each other. One is that local housing markets are generally tied to their local economies, and not only do downturns in local economies affect the local market, but downturns in the local housing market affects the local economies. Further to this line of reasoning, various local economies are linked by their respective economic bases such that depending upon the linkage, what happens in on local economy will generate impacts on its linked other local economies, those from which it buys and those to whom it sells. In a sense, the national economy is a series of linked local economies, some with closer ties than others, but linked. To an increasing extent this is becoming true of selected international economies which may be view as linkages of metropolitan areas.

A second way in which seemingly unconnected markets relate to each other is through the psychological impact of events. A series of downturns in various local markets will cause some alarm in other markets and may curtail home buying decisions because of the appearance of rising risk. Behavioral science studies show that many people even when told that some event resulting from behavior isn't necessary typical of most other cases because the behavior is not representative, nevertheless proceed to act on the unrepresentative behavior (Seldin, 2007).

The recent revelation by policy makers and investors that a mortgage instrument designed to provide risk based pricing to the market and access to loan funds for otherwise credit challenged households has the potential to collapse both the domestic housing market and the international financial markets has garnered attention from all corners of the political, academic and professional community. If the goal is to derive a research agenda then one thing comes clear from this review – there are many unanswered questions – many rocks yet to be turned over, in the pursuit of answers. If the goal is to utilize the knowledge exposed here as a foundation for policy there are numerous and meaningful directions consider.

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