

Housing, Subprime Mortgages, and Securitization:

How did we go wrong and what can we learn so this doesn't happen again?

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We are now very slowly emerging from the worst financial and housing crisis since the Great Depression. More than one-in-four homeowners with a mortgage owe more on their mortgage than their house is worth, with some families having lost nearly their entire nest egg for retirement. Millions of Americans face the loss of their home as they can no longer afford in their mortgage payments, while some others are choosing not to pay their mortgage given how bleak their housing and financial situation looks. Taxpayers and depositors have already spent hundreds of billions of dollars covering the housing-related losses from Fannie Mae and Freddie Mac, as well as the many failed banks, with more to come.

The Financial Crisis Inquiry Commission stands in a unique place to examine the causes of this crisis so we can understand how to prevent this from happening in the future. Below, I examine a number of critical topics relating to housing prices, lending practices, foreclosures, and securitization that contributed to the financial crisis.¹

First, I consider the housing market. What caused housing bubbles to form in the first place in the middle of this decade? What was the relative role of lax (non-existent?) lending standards, historically low mortgage rates, and pure speculation? Once the housing market started to turn down, why did foreclosures rise so rapidly? How did new and sometimes deceptive loan terms contribute to the foreclosure crisis? Is the large number of outstanding securitized mortgages making it harder to address the delinquency and foreclosure crisis relative to what would have happened if portfolio lenders (banks and thrifts) had originated the troubled loans?

Next, I turn to understanding failures associated with securitization and credit markets. What role did credit rating agencies play in giving investors false confidence in the securities they were buying? As well, how did the flaws in the structure of securitization contribute to its eventual failure? Why did investors clamor to purchase securities when the flaws of the ratings system and securitization structure were plainly visible for all to see? Finally, I look for the needle in the haystack: were

¹ There are a number of important related topics on the financial and housing crisis such as consumer decision making in choosing mortgages and taking on debt and the role lending institutions that are important, but beyond the scope of this paper. Other papers at the symposium address these crucial topics.

there hidden benefits of securitization that could be preserved while avoiding the negative effects? The paper concludes by putting together some the lessons from the crisis and posing a few of the many questions that still need answers.

A few important themes emerge from this analysis. For the housing market, the picture is much more complex than it might first appear. The housing bubble was global in nature and also included commercial real estate, so simple explanations that rely solely on predominantly American institutions like subprime lending or highly structured securitizations cannot be the only factor leading to real estate market excesses. Housing bubbles formed in countries as diverse as Spain, Australia, and the United Kingdom where there were few subprime loans and mortgages originated by centrally regulated banks with no sign of American-style securitization. My own research shows the important role played by declining long-term, real interest rates in helping drive real estate prices to high levels, at least up to 2005. However, at some point, speculation by both borrowers and lenders took over, leading to excessive appreciation in many parts of the United States and the rest of the world. It is also important to note, though, that bubbles did not appear everywhere in the US. Markets in parts of the South and the Midwest appear to have been immune to the speculation occurring elsewhere. A common denominator across markets is the strong correlation between excessive house price appreciation and percentage of homes purchased by absentee owners during the boom.

As house prices began to fall, foreclosures started rising, well ahead of increases in unemployment. Many new and deceptive loan products became the norm, and these products made it easier for borrowers to take on excessive debt. Both lenders and borrowers seem to have been banking on house price appreciation, and when house prices stopped rising, chaos and catastrophe ensued. Evidence suggests that poor underwriting and unrealistic expectations of future house price appreciation, rather than non-traditional mortgage terms, were the largest contributors to the sharp rise in defaults and foreclosures. The impact of subprime lending was not randomly distributed across neighborhoods in the country. Subprime lending was disproportionately concentrated in minority neighborhoods, even controlling for a

variety of neighborhood factors, often leading to appreciable neighborhood decline when mortgage foreclosures started to rise.

I also believe that securitization itself created incentives that led servicers to foreclose too quickly in the face of a payment default. First, theory suggests that agents (mortgage servicers) acting with perverse incentives and without proper monitoring may not act in the best interests of the principle (investors). Second, although not all authors agree, I believe there is compelling empirical evidence showing that third party servicers have undertaken more foreclosures than would otherwise have taken place if all mortgages had been made by portfolio lenders.

The crisis revealed many flaws associated with securitization. Maybe the biggest failings were with the ratings system for asset-backed securities (ABS). Even as credit fundamentals deteriorated between 2005 and 2007, ratings remained high. Ratings models were extremely sensitive to small estimation errors and underestimated the possibility that risks across types of credit and various housing markets might become highly correlated in a downturn. Competition between rating agencies led to more inflated ratings. Ratings agencies ignored evidence available prior to the crisis that lower quality sponsors issued bonds that were more likely to be downgraded.

There is more controversy about the extent to which conflicts of interest between parties to securitization contributed to the financial crisis. Many, but not all, papers seem to show that adverse incentives associated with the “originate-to-distribute” model² led to lower lending standards. Evidence also seems to show that servicers often behaved in a manner consistent with maximizing their own fees or returns from their ownership of securities at the bottom tranches of a securitization, rather than acting in the interest of investors as a whole. My own interpretation of the evidence is that flaws with securitization are most apparent when examining loans to very risky borrowers where information asymmetries are most severe and proper incentives for servicers to make good decisions are the most valuable. From a

² “Originate to distribute” refers to a system where mortgage brokers originated mortgages that they intended to sell to other investors rather than be held on the lenders’ balance sheet. To the extent that originators knew they would never own the mortgages, these brokers might not have undertaken the same due diligence as if their own capital were at risk.

risk sharing perspective, securitizing risky loans might have made good sense, but from an incentive and information perspective, securitizing these risky mortgages almost surely played a role in the crisis by contributing to poor underwriting practices and failures in managing the foreclosure process effectively.

With many flaws in ratings and securitization plainly visible for all to see, why were investors seemingly willing participants in a troubled system that was doomed to fail? Many of the flaws of securitization were discussed prior to the collapse, as were widespread practices such as making loans to buyers with no money down or the prevalence of so-called “liar loans.” Evidence suggests that some flaws were priced into securities, even if the prices did not fully reflect the subsequent risks, with investors paying slightly higher prices for bonds with better incentives for servicers, less adverse selection, or those issued by higher quality borrowers. In other cases, investors bought collateralized debt obligations (CDOs) that carried huge amounts of systemic risk at incredibly high prices low yields, even while the market set much higher yields for economic catastrophe bonds with similar risk profiles. The bottom line is that investors seemed to underestimate or ignore troubling signs that were apparent well before troubles hit. This is a puzzle that has not been discussed enough. After all, hasn’t everyone hear the mantra “buyer beware?”

Finally, there are lessons to be learned from the few parts of the securitized lending market that held up relatively well throughout the crisis. Credit card and auto loan securitizations survived much longer without government support than commercial mortgage, residential mortgage, home equity, and student loan securitizations. Credit cards utilize a master trust structure³ that places a strong role on the credit quality of the issuer, have relatively low leverage, and have sponsors who originate, service and hold a strong equity position in a securitization. In Europe, many commentators have pointed to the relative success of covered bonds.

³ A credit card master trust is an actively managed structure in which the sponsor can add and remove credit card balances based, in part, on the payment performance of the credit cards. So the exact credit card balances purchased as collateral by bond purchasers may change over time and some issuers might even substitute out poorly performing cards, which is why the economic viability of the sponsor is important. By contrast, most residential and commercial mortgages and auto loans in the U.S. are securitized in a so-called static structure in which there are limited conditions for substitution of one loan for another in a pool.

Covered bonds also place a huge premium on the credit quality of the issuer and involve low leverage. While it is impossible to conclusively understand which factors contributed to the relative success of these securitized products, it is likely that that these structures benefitted from a simpler structure with less leverage and issuers that serviced their own loans, were required to have more capital, and held a stake in the securitization.

Below I provide a more detailed summary of the evidence supporting my views, above, while attempting to cite as much of the relevant literature as possible. The next section discusses the housing market, while section II discusses the foreclosure crisis. Section III addresses the securitization and its role in the crisis. I conclude with an agenda for future research and additional questions the commission might examine.

I. A House of Cards: The U.S. Housing Market in Crisis

This recent crisis has taught us hard and painful lessons about how bad things can get in the housing market. Yet these lessons are not new. Housing markets have long suffered from periods of excessive appreciation and subsequent collapses. One of the most striking examples in recent times was the Vancouver, Canada housing market, where house prices nearly doubled in an 18-month period, only to fall back to their original level in the next 18 months (Bulan, Mayer, and Somerville, 2009). Similarly, Boston, Los Angeles, and San Francisco suffered from appreciable housing excesses in the late 1980s and early 1990s. Texas saw record collapses in the mid-1980s.

My own analysis of the recent housing crisis begins with putting forward three key facts that are important to keep in mind when trying to explain what happened during the U.S. housing boom.⁴

First, the housing bubble was global, not just a U.S. phenomenon. Figure 1 plots house price changes for selected European countries. What really sticks out is how unremarkable the United States house price experience is relative to our European

⁴ These facts are drawn out in much more detail in Hubbard and Mayer (2009).

peers. House prices in the U.S. boom rose less than those in the United Kingdom and Spain, but slightly more than those in Ireland and France. What is striking for the U.S. is how sharply our house prices collapsed compared to most other countries when the boom ended.

A second key fact is that the housing boom was not the only real estate related run-up around the world. Most commercial real estate prices rose at least as quickly as housing prices did. Figure 2 plots prices of commercial real estate indexes in the U.S., Canada, France, Australia, Japan, the U.K., and Singapore. Returns to investing in shares of commercial real estate owners were between 70 and more than 325 percent from the beginning of 2002 to the end of 2006. Even recognizing that leverage will boost these returns, the data suggest commercial real estate prices likely grew even more than house prices, at least on a national basis.

The third important observation is that there is appreciable variation in the house price experience across different U.S. metropolitan statistical areas (MSAs). Figure 3, panels A, B, and C plot house prices for 16 U.S. MSAs. The first six cities in Panel A are historically cyclical markets. These are locations where real house prices have risen consistently over time.⁵ Housing cycles are not new in these markets; cycles predate subprime mortgages and excesses associated with the recent crisis. Panel B shows that house prices in a second group of markets are much more steady over time. These Midwestern and Southern markets either have relatively unrestricted new construction or little growth in demand to live in these MSAs. Housing cycles are much more muted, although these markets surely had access to subprime loans. The third group of MSAs in Panel C exhibits the most striking pattern of price appreciation. Up to the recent crisis, real house prices were amazingly stable, although population in markets like Las Vegas, Miami, and Phoenix grew at 3 to 10

⁵ Gyourko, Mayer, and Sinai (2006) refer to these and similar MSAs as “superstar cities,” making the observation that house prices in cities that are in high demand and with limited growth in construction have seen very high price growth just like the wages of superstars in sports, media, or industry. Himmelberg, Mayer, and Sinai (2005) point out that house prices are predictably more volatile in fast-growing locations where house prices are especially sensitive to changes in interest rates or growth rates.

times the national average from 1970 to 2000.⁶ Yet out of the blue in 2003, house prices seemed to explode for the next 4 years. And when the bubble burst, house prices in these markets returned to their pre-boom level, or in some cases are even lower than where the house prices started. This was a classic housing bubble, following the same pattern as Vancouver two decades earlier.

Housing prices, mortgage rates, and construction costs

Putting together these three facts suggests a more complex story about the housing market than is typically understood. Subprime lending, or any other U.S.-specific factor like securitization cannot fully explain the housing market boom around the globe and for commercial real estate. Hubbard and Mayer (2009) point to declining global interest rates as the common factor across countries with booming housing and commercial real estate markets. The authors present regressions showing that house prices adjust by up to 85 percent of the change in the after-tax cost of owning a home, which itself is predominantly driven by changes in interest rates. For example, a decline in mortgage rates from 6% to 5% could reduce the cost of owning a home by up to 16 percent, leading to an increase in house prices of 13.6 percent. Up to 2005, declining interest rates explain an appreciable portion of the run-up in house prices in many American cities. Mayer and Sinai (2009) show that user costs explain a much greater proportion of the variation in price/rent ratios in the 2000s boom than in the 1980s boom two decades earlier.

Further evidence in favor of the key relationship between mortgage rates and house prices comes from the nascent recovery in many American house prices up to today.⁷ House prices as reported by the Case and Shiller/S&P index hit their trough in April, 2009 and have risen about 5% through December, 2009, despite the continued rise in unemployment and a surge of mortgage defaults over the same period. This slight rise in house prices corresponds to a period in which the Federal

⁶ Population in Las Vegas, Miami, and Phoenix grew by 405 percent, 123 percent, and 212 percent between 1970 and 2000, compared to the U.S. population growth rate of 38 percent over the same time period.

⁷ See Glaeser and Gyourko (2009) for an alternative perspective on the link between mortgage rates and house prices.

Reserve purchased over \$1.0 trillion in mortgage-backed securities, driving down mortgage rates by more than 1 percent, with rates hovering at historic low levels of between 4.75 and 5 percent.

A second factor that helps explain some of the variation in house price changes across U.S. markets is the availability of land for new construction relative to demand for housing. Whether looking at Germany and Japan, or Detroit and Cleveland, slow demand growth helps explain why house prices were stagnant in some markets while house prices boomed in other locations (Glaeser and Gyourko, 2005). In some fast growing Southern markets, the easy availability of land explains how population can grow yet house prices can remain flat. When demand rises, builders acquire land and build new houses. Construction costs determine the price of housing in those markets (Gyourko and Saiz, 2004).⁸

The role of overheated subprime mortgages

While subprime lending alone may not easily explain the pattern of house price appreciation up to 2005, it surely was a strong contributing factor to the housing bubble that developed in many U.S. cities afterwards.

The evidence that subprime lending contributed to the housing bubbles comes in two parts. First, Mayer and Sinai (2009) examine the rise in price-rent ratios between 2000 and 2005. The authors show that the growth in subprime lending is correlated with excessive growth in price-rent ratios up to 2005. However, there is little correlation between excessive price-rent ratios and the previous year's house price appreciation rate, suggesting that a behavioral explanation like pure backward-looking expectations does not help explain pricing inefficiencies.

Of course, causality is very difficult to prove. Did house prices rise because buyers relied on unsustainable lending practices to buy a home, or did subprime lending take off because house prices were rising and buyers needed to rely on subprime loans to afford a home?

⁸ One puzzle to emerge from the crisis is why cities like Las Vegas and Phoenix with plenty of available land suddenly faced an enormous housing bubble in the recent boom, despite having behaved like other steady markets in earlier decades

A partial answer comes from data show that subprime lending was most highly concentrated in markets with excessively high price-rent ratios, not just markets with high house prices, and that subprime excesses are not strongly correlated with homeownership rates. Mayer and Pence (2009) show that bubble markets like Las Vegas, Miami, and Phoenix had a much higher percentage of subprime loans (8, 9, and 12 percent of all housing units in 2005, respectively) compared to much more expensive markets like San Francisco, Boston, and New York (3, 4, and 4 percent of all housing units in 2005, respectively). This suggests that subprime lending was not just used for affordability of housing. Further supporting evidence comes from national data showing that the peak of the national home ownership rate was the 4th quarter of 2004, despite the fact that the most overheated subprime mortgages with the highest loan-to-value ratios were originated in the 2005 to 2007 time period. Similarly, Gerardi and Willen (2009) show that subprime loans only slightly improved the homeownership experience of minority borrowers in Massachusetts.

The second piece of evidence about the role of subprime mortgages in fueling the housing crisis is the marked decline in origination standards for subprime loans between 2005 and 2007, precisely the time that housing markets became most overheated. Mayer and Pence (2009) show that the median loan-to-value ratio for a purchase loan was an astounding 100 percent for subprime mortgages originated in 2005, 2006, and the first half of 2007. Three years earlier, the median subprime borrower made a 10 percent down payment. The percentage of mortgages made to borrowers with low or no documentation grew from 32 to 38 percent for subprime loans between 2003 and 2006, while the share of mortgages with a piggyback second liens grew from 7 to 28 percent. Finally, more than 1 in 3 subprime mortgages had an amortization period longer than 30 years or allowed only interest payments in 2006, a feature contained in only 2 percent of subprime mortgages in 2003. Origination standards for alt-a loans (sometimes considered “investor” mortgages) declined in a similar manner.

That the marked decline in lending standards occurred between 2005 and 2007 is important for my analysis, because 2005 was the year when mortgage rates started rising above their multi-year lows. In that year, housing prices accelerated upwards

in many markets instead of flattening out or falling as theory would have predicted. Lenders appear to have reduced underwriting standards and expanded subprime lending, rather than backing-off in as they might have done if they had recognized seemingly overheated housing markets. Mayer and Pence (2009) show that house price growth preceded increases in subprime loans.⁹ Gerardi, et. al. (2008) document contemporary reports by investment banks exhibiting confidence that house prices would continue to rise, which is consistent with this empirical evidence.

Once house prices had peaked, poor underwriting standards clearly contributed to the sharp collapse in house prices. Gerardi, Shapiro, and Willen run simulations showing that had underwriting standards remained at the 2002 levels, but with house prices following their post-2005 pattern, foreclosures would have been half of what they turned out to be. Campbell, Giglio, and Pathak (2009) show that foreclosures in turn lead to declines in house prices, with 28 percent discounts for foreclosed houses and smaller discounts for houses nearby a property with a forced sale.

Investors, speculators, and fraud

While this discussion has focused on the role of lenders so far, it takes two to tango. Clearly purchasers also got carried away in this crisis. One of the most striking facts in the housing bubble is the strong correlation between investor ownership of property and excess appreciation across MSAs. In ongoing work with Alex Chincio, a PhD student at NYU, we show that the metropolitan areas with the highest percentage of investor-owned properties are the bubble markets like Las Vegas, Miami, and Phoenix. Almost one-third of home purchases from these markets appear to have been made by absentee purchasers in 2006, compared to about one-half that percentage in the cyclical markets of Washington, D.C., Los Angeles, and San Francisco.¹⁰ While I do not have hard data, anecdotal reports suggest that this

⁹ This finding still does not rule out causality in the other direction as well; financially pressed buyers might have also relied on subprime loans as house prices started rising.

¹⁰ The bubble markets also had a much higher percentage of absentee purchasers in 2002 as well, with about 22 percent of absentee purchasers in bubble markets compared to 13 percent absentee purchasers in the cyclical markets.

pattern of absentee ownership was also common in the Vancouver boom of the later early 1980s when Vancouver was a strong investment market for Hong Kong residents.

Once again, it is challenging to determine causality between investor purchases and excess house price appreciation. Investors might have purchased in high appreciation rate markets because they were savvy enough to anticipate that booming house prices would present profitable opportunities. Alternatively, the presence of speculators might have driven prices up higher than would have happened had only owner-occupants participated in the market.

The underpinnings of speculation and its role in the crisis is one that requires much greater research focus in the future. We do not yet understand why speculative bubbles appear in markets that have gone decades without any such excesses and why other similar markets do not suffer from bubbles at the same time period.

Fraud is another common feature of overheated investment markets, and this boom was no exception. Ben-David documents that up to 16% of highly leveraged transactions in Cook County, Illinois were inflated as buyers and sellers included items in the sales price that could not be collateralized, for example, paying buyers closing costs or giving cash back. These inflated transactions had the effect of overstating any down payment by the purchaser, leading to higher observed house prices and mortgages that were larger than would be justified by the quality of houses alone. Similarly, the Miami Herald Tribune published an investigative report on property flipping in Miami during the boom years, documenting \$10 billion in suspicious deals in Florida (Braga et al, 2009):

“The deals – many of them inflated sales among friends, family and business associates – drove up property values and tax bills during the boom, fed bank bailouts and failures after the boom, and fueled the foreclosure wave that has gutted property values.

Unscrupulous property flippers would buy houses or condos, then drive up the price in a few days or weeks by selling it to someone they knew. Buyers used the inflated price to get bank loans for more than the property was worth, leaving money for flippers to split as profit.”

Subprime lending and minority borrowers and neighborhoods

No discussion of the subprime crisis would be complete without considering its disproportionate impact on minority neighborhoods and borrowers. Mayer and Pence (2009) and Calem, Gillen, and Wachter (2004) show that subprime mortgages were much more prevalent in neighborhoods with a higher proportion of black and Hispanic residents, even after controlling for factors like the distribution of income and credit scores of residents. The quantitative impact was large in the Mayer and Pence (2009) study; a one standard deviation increase in the share of black or Hispanic residents (approximately 5.4 percent) is associated with a 6.8 to 8.3 percent increase in the proportion of subprime mortgages in a Zip code. Gerardi and Willen (2009) find a similar pattern of concentrated subprime loans in minority urban neighborhoods in a study using data from Massachusetts. Looking at transitions, they find that subprime loans resulted in a moderate increase in minority home ownership during the boom. However, this homeownership was exceptionally unstable, with subprime mortgages resulting in much higher foreclosure rates when house prices started to fall.

Some studies have suggested that minority borrowers were more likely to obtain high cost loans, even after controlling for borrower's income and various neighborhood variables (Ding, et. al., 2008). However, recent evidence using more complete loan-level data suggests that this claim is not correct. Haughwout, Mayer and Tracy (2009) show that mortgage rates are similar for minority borrowers and whites, once controlling for a more complete set of risk factors including the borrower's credit score and the loan-to-value ratio of the home. In later work, the authors show that minorities pay slightly higher up-front points and fees, on the order of about \$250 at the mortgage origination. The authors also present results suggesting that relatively few subprime borrowers could have qualified for lower cost conforming mortgages and, if anything, minority borrowers are underrepresented among those who might have qualified for a conforming mortgage.

II. The unabated rise in foreclosures

One of the most serious results of the housing boom and subsequent bust has been the sharp rise in mortgage defaults and foreclosures. According to the Lender

Processing Services, about 3.2 percent of all mortgages have been foreclosed on as of December, 2009, although about 15 percent of the riskiest subprime and option ARM mortgages suffered foreclosures. The Mortgage Bankers Association reports that about 750,000 new foreclosures were started in the 3rd quarter of 2009. Many critics have blamed risky and deceptive mortgage products for the sharp rise in foreclosures that are leading millions of Americans to lose their homes. Others claim that the foreclosure crisis is due to sharply falling house prices or loans given to risky borrowers who should never been granted credit in the first place.

One thing is clear: the growth in subprime loans that provided credit to the riskiest borrowers is strongly correlated with the subsequent growth in defaults and foreclosures. Research by Gerardi, Shapiro, and Willen (2009) shows that subprime borrowers were particularly likely to end up in foreclosure when facing negative equity compared to prime borrowers. Mian and Sufi (2008) show that “subprime” Zip codes (with borrowers in the lowest quartile of the credit score distribution in 1996) had the largest increase in credit between 2002 and 2005 and the biggest increase in defaults in 2006 and later.

Unlike previous housing cycles, foreclosure starts spiked well in advance of any problems in the labor markets and began rising rapidly while house prices were still hovering just below their recent peak (Mayer, 2009).¹¹ According to Figure 4, foreclosure starts bottomed out in the second quarter of 2005 at 214,000, and started growing rapidly at the end of 2006. By the third quarter of 2007, foreclosure starts, at an annualized rate of 429,000, had doubled from their trough and were growing at an increasing rate. Yet the labor market was showing few signs of a crisis. The unemployment rate in the 3rd quarter of 2007 was 4.7 percent, below the 5.1 percent rate in the 2nd quarter of 2005 when foreclosure starts were at their low. The large spike in foreclosures in 2006 and early 2007 occurred in an environment where US house prices had fallen only 5% from their peak. When unemployment accelerated rapidly and house prices went into free fall in the second half of 2008, foreclosure

¹¹ Note that foreclosure starts are a lagging indicator of housing problems, because a household would likely be at least 120 to 180 days delinquent before a lender will begin foreclosure proceedings, which are costly.

starts leveled off as lenders were facing political pressure to stop foreclosures.

Why did subprime mortgages perform so badly?

Most researchers would likely agree with two basic observations that may explain the early rise in foreclosures in this crisis, although the interpretation of these facts is in some dispute. First, underwriting standards declined precipitously from 2002 to 2006. Dell’Ariccia, Igan, and Laeven (2008), Demyanyk and Van Hemert (2009) and Mayer, Pence, and Sherlund (2009) document a striking pattern of borrowers who obtained mortgages with ever riskier attributes, including higher loan-to-value ratios, a greater likelihood of undocumented income, and a larger proportion of piggyback second liens. Second, a historic decline in house prices was a strongly contributing factor to the growth in foreclosures (Foote, Gerardi, and Willen, 2008). States such as California, Florida, and Nevada where house price declines were the steepest have a disproportionate share of serious delinquencies and foreclosures (Figure 5).

There is a contentious academic debate about how to interpret this evidence. Dell’Ariccia, Igan, and Laeven (2008), Demyanyk and Van Hemert (2009) and Mayer, Pence, and Sherlund (2009) point to declining origination standards as a primary reason for the spike in foreclosures. For example, Demyanyk, et. al. suggest that rising houses prices during the boom hid the increasing riskiness of subprime loans. Gerardi, Shapiro, and Willen (2009) present a competing interpretation, suggesting that it is falling house prices rather than lax underwriting that led to a burst in foreclosures.¹² The authors concur that underwriting standards were lower in 2005 than in 2002, but argue that it was declining house prices rather than worse underwriting that caused the foreclosure crisis. They state that “...it was beliefs about house price appreciation that led to the observable decline in lending standards not the converse.” Gerardi, et. al. (2008) present similar arguments, suggesting that

¹² To some extent, the link between house price declines and foreclosures is a bit of a tautology. A house price decline is a necessary condition for a foreclosure to take place as long as a buyer has some initial equity in his home. If house prices were flat or rising, a distressed seller could always sell the home at a profit and thus would never allow his house to be foreclosed and his equity wiped out.

lenders knew that declining house prices would have catastrophic consequences, but placed a low probability on this outcome.¹³

Another piece of evidence in favor of the lax underwriting hypothesis is the sharp rise in early payment defaults in 2006 and 2007. On average, 1.5 percent of subprime loans in the 2000–2004 vintages were in default after 12 months, and the situation was just a bit worse for the 2005 vintage. However, 8 percent of outstanding loans in the 2007 vintage were in default within 12 months of origination. These numbers still likely underestimate the problem of early payment defaults, as most securitizations require originators to repurchase mortgages that do not receive all scheduled payments in the first 3 months. A sharp rise in early payment defaults is consistent with borrowers and lenders who were both transacting in risky loans with the expectation that future house price appreciation would bail them out.

To my mind, this debate cannot be easily resolved because it is impossible to disentangle causality based on the evidence to date. Had house prices kept rising, most mortgages would have been money-good. However, the spike in foreclosures due to defaults by poorly underwritten mortgages surely played a strong causal role in contributing to a serious housing market decline (Campbell, Giglio, and Pathak, 2009). As foreclosures started to rise, a vicious circle ensued. Falling house prices led to more foreclosures, pushing down house prices even further and starting the cycle all over again.

To summarize, there is some debate as to the role of poor underwriting standards in helping inflate the bubble, although I believe there is ample evidence to support the view that dysfunctional lending markets helped inflate the bubble. However, there should be little doubt that lax mortgage underwriting standards and unfulfilled expectations of house price appreciation contributed to the subsequent house price crash and the financial crisis that subsequently ensued.

¹³ Theoretical research by Piskorski and Tchisty (2008) helps reconcile these views, showing that many controversial features of subprime lending could be consistent with optimal behavior of both borrowers and lenders. In particular, when house prices are expected to rise, it can be optimal to provide the risky borrowers with lower initial rates, which are to increase over time, and to increase the borrowers' access to credit. A housing slump results in the tightening of borrowers access to credit and default clustering among the least creditworthy ones.

Non-traditional mortgage terms and foreclosures

The data are quite convincing in showing that non-traditional mortgage terms did not disproportionately contribute to the foreclosure crisis. Mayer, Pence, and Sherlund (2009) go through an extensive effort to evaluate how various subprime mortgage terms impacted defaults, which I briefly summarize.

For example, the vast majority of so-called “2-28” and “option ARM” (or “pick-a-pay”) mortgages either default or prepay well before any binding rate reset. During 2005 and 2006, most borrowers refinanced their mortgages before the 24-month reset date (Sherlund 2008), often using newly found equity as house prices were rising.¹⁴ When house prices turned, the Federal Reserve started cutting short-term interest rates, so the mortgage rate typically reset after 24 months to a level that was at or below the initial “teaser” rate. Thus few borrowers faced a large rate shock for adjustable rates mortgages.

A second controversial provision that some have incorrectly blamed on the early spike in mortgage defaults was prepayment penalties. Yet, very few mortgages had a prepayment penalty that extended beyond the period for the initial teaser. Mayer, Piskorski, and Tchisty (2009) show that the vast majority of mortgages with prepayment penalties had lower mortgage rates than equivalent mortgages without a prepayment penalty, and that the riskiest borrowers received the largest rate cuts for accepting a prepayment penalty. Sherlund (2008) points out that default rates were not different for mortgages with and without a prepayment penalty.

Securitization, mortgage modifications, and foreclosures

Probably the most controversial question in the debate over the foreclosure crisis has been the extent to which securitization led to excessive numbers of foreclosures relative to what would have happened had all loans been made by portfolio lenders. The theory seems straightforward. In principle, a third-party servicer must follow the rules in a pooling and servicing agreement as to how to

¹⁴ Some authors have argued that risky mortgage terms might have derived from an optimal contract. For example, Piskorski and Tchisty (2010) find that a high concentration of option ARMs among riskier borrowers could be economically efficient (at least from ex-ante perspective).

manage a mortgage once it becomes delinquent. Agency theory suggests that when the actions of the servicer are unobservable or contracts are hard to enforce, the servicer will maximize its own fees (or minimize effort), even if that means lower recoveries for investors. By contrast, if investors are able to easily coordinate to enforce the contract or if the servicer's reputation is sufficiently valuable, the servicer will choose a first-best solution, the same solution that a servicer would choose in managing a loan that it owned.

On one side is a paper by Piskorski, Seru, and Vig (2009) that focuses on the likelihood that third-party servicers foreclose on a seriously delinquent mortgage compared to the likelihood that a portfolio lender forecloses on a loan with a similar risk. The authors show that portfolio loans have much lower foreclosure rates relative to equivalent mortgages managed by servicers, even controlling for a large variety of risk characteristics. The authors also present comparisons based on sample splits to support their findings, including the observation that differences in foreclosure rates for servicer and portfolio loans are biggest for the highest quality loans where the benefits of renegotiation are the highest and in states where foreclosure times are quite short. Finally, Piskorski, et. al. take advantage of a particular feature of securitized mortgage contracts that requires a lender to repurchase a mortgage that defaults within 90 days of being securitized. The authors examine securitized loans that become delinquent just before and just after the 90-day window. They find that delinquent securitized loans that are taken back on the bank's balance sheet foreclose at a rate that is 6.2% lower in absolute terms as compared to similar delinquent loans that continue to be securitized because the borrower missed his payment just after the 90-day window.

On the other side is a paper by Adelino, Gerardi, and Willen (2009). The authors argue that modifications do not make sense for lenders in most situations due to the likelihood that a seriously delinquent loan may self-cure without a modification and that most modifications fail in that they eventually result in a re-default. Empirically, the authors have two major findings. First, they argue that lenders perform very few modifications of any type, with modifications representing only 3 percent of mortgages whether these mortgages are held in portfolio or managed for a

securitization. When examining modification practices in more detail, they find little difference in the likelihood of modifying a mortgage for portfolio lenders versus third-party servicers. The authors find even fewer differences in modification practices of servicers versus portfolio lenders for subprime loans and mortgages most likely to be securitized.

It is important to carefully read the studies as well as consider outside evidence to really understand the differences in findings between the two papers. For the purposes of public policy, the outcome we really care about is the propensity to foreclose rather than the propensity to modify loans. This is especially critical given that both studies use data from Lender Processing Services that does not include a direct measure of whether a mortgage is modified.

A critical problem for Adelino, et. al. is that their measure of modifications suggests about 3 percent of all seriously delinquent mortgages were modified, but several outside reports suggest appreciably more modifications than that. Piskorski, et. al, cite evidence from Mortgage Bankers Association (MBA), the Office of the Comptroller of the Currency (OCC), and the Office of Thrift Supervision (OTS) to buttress their claims. For example, an MBA 2008 report on data from the 3rd quarter of 2007 shows 54,000 modifications of the type that would be picked up by Adelino, et. al., while there were 183,000 repayment plans that would likely be hard to measure in the LPS data. A later OCC and OTS Mortgage Metrics Report (2009b) provides separate data on 160,000 modifications for bank-held and non-agency securitized loans. Piskorski, et. al. calculate that the bank-held mortgages in the Mortgage Metrics Report were modified at a rate nearly 50 percent higher than the securitized mortgages. Finally, Adelino et. al. cannot measure the commitment of a lender to help a modification succeed. A subsequent OTS and OTC report (2009a) reports that modifications for securitized mortgages had a 70% higher re-default rate than portfolio loans. As well, the OTS and OTC data show that portfolio lenders were

much more likely to do the most successful type of modification; a principal reduction modification.¹⁵

Overall, the evidence seems to support the likelihood that servicers of securitized mortgages foreclosed on properties at a much higher rate than portfolio lenders did. This conclusion is supported by independent studies showing that modifications come in many forms and are not nearly as rare as described in Adelino et. al. As well, portfolio lenders seem to be more successful with the modifications they undertake.

That said, it is almost surely true that all lenders modified mortgages at a lower rate than would have been socially optimal, as Adelino, et. al. suggest. As noted above, high numbers of early foreclosures may well have led to sharp declines in house prices, leading to even greater foreclosure problems. The challenge of how to fight the foreclosure crisis and keep borrowers in their homes while not rewarding strategic defaulters or those who voluntarily cashed out during the boom continues to plague policymakers today.

III. Where to begin? The many failures of securitization

The evidence so far suggests excesses in subprime lending contributed to the crash of the housing market through the lax underwriting practices of originators and excessive foreclosures associated with servicers of securitized mortgages. This observation raises the natural question of how flaws in the securitization system contributed to the broader financial crisis and to the failure of banks and other financial institutions. I explore this question below in several stages, considering flaws with the system of rating securities, conflicts of interest between parties to a securitization, and the failures of investors who bid down yields on asset-backed securities that contained observable flaws and serious risks. I also consider whether there are some positive lessons from things that succeeded in a few securitized markets that survived longer and with less government support.

Ratings agencies had a couple of very bad years and we are all paying the price

¹⁵ Portfolio lenders wrote down principal in 3,300 mortgages in the first quarter of 2009, versus just 3 principal reduction modifications for securitized mortgages.

A number of recent studies demonstrate appreciable failings by the ratings agencies. One of the simplest but most striking criticisms of the ratings agencies is evidence from Ashcraft, Pinkham-Goldsmith, and Vickrey (2009) showing that credit fundamentals deteriorated relative to ratings in the critical 2005 to 2007 time period when lax underwriting took hold and housing prices soared to new highs not justified by improvements in fundamentals. Ashcraft et. al. study subprime and alt-a mortgage-backed securities ratings and show that these ratings became progressively less conservative between 2005 and 2007. This suggests that ratings agencies failed a key role, which was to serve as a check against credit standards loosening too much in a boom. These findings are consistent with the theoretical model of Bolton, Freixas, and Shapiro (2008) in which ratings become less informative at the peak of a market when there are more naïve investors in the market.

In rare circumstances, competition can be harmful for buyers. One of those cases may be the rating of securities, when competition appears to have led to ratings shopping and thus overly inflated ratings. Benmelech and Dlugosz (2009) show that securities rated by only one agency were more likely to be downgraded, consistent with the hypothesis that competition to be the one agency that received the business of rating a particular bond led rating agencies to cut their standards. In other work, Becker and Milbourne (2008) also show that competition between S&P and Moody's leads to lower ratings. Both results are consistent with the model in Skreta and Veldkamp (2009).

Many commentators have also criticized the models used by rating agencies. Evidence suggests that rating models were excessively sensitive to very small errors in economic projections. Coval, Jurek, and Stafford (2009a) compare the process of rating CDOs to that of rating typical corporate bonds and find that CDO ratings were quite sensitive to changes in the model and especially to systematic risk in ways not appreciated by many investors at the time.

Conflicts of interest in securitization structures (abridged version)

Ashcraft and Schuermann discuss seven critical frictions between various parties to a securitization, which they sometimes refer to as the “seven deadly sins.” These

frictions arise because individual parties may not act to maximize the total profits of the whole securitization structure, but instead work to maximize their own returns from participating in the securitization. In this case, the economic interest of one decision maker (such as the servicer or the originator) does not correspond to the economic interest of other parties to the securitization.

Below I discuss several parts of the ABS structure that appear to have failed in the recent crisis. As with the debate in the previous section about the behavior of servicers in residential mortgage-backed securities (RMBS), some of these points remain controversial. For example, some authors argue that incentives such as the maintaining a strong reputation or serving a contractual relationship were sufficient to encourage parties to do the right thing for the structure as a whole, while other authors suggest that these incentives were not sufficient to get securitization to work effectively.

I think about these flaws of securitization as part of the tradeoff associated with potentially offsetting benefits. While securitization creates conflicts of interest and less efficient management of assets it also has potential benefits such as spreading risk and matching investors with investments that correspond to their exact preferences and willingness to take risk. That said, some authors have questioned whether these theoretical benefits of securitization were evident in practice. Shin (2009) argues that securitization managed to concentrate risk in the financial intermediary sector rather than spreading risk to other parties. It is hard to argue with his analysis given the extent to which intermediaries ended up “eating their own cooking.” However, the failure of risk management in the crisis is beyond the scope of this paper and will be covered by other authors at today’s symposium.

Below I focus on the extent to which individual parts of the securitization structure failed. I believe there is compelling evidence that flaws associated with incentives in securitization—the separation of ownership, origination, and control of loans—played an important role in the failures associated with the crisis, and these flaws need to be addressed as we move forward to restart securitization in the future.

Do servicers really act in the best interests of investors as a whole?

In the earlier section, I discussed the literature on whether RMBS servicers acted in the interest of the trust as a whole, suggesting that servicers in fact foreclosed on borrowers more quickly than did portfolio lenders. Other evidence about the costs of not aligning incentives comes from slow foreclosures in commercial mortgage-backed securities (CMBS) and from the fact that asset-backed securities that are serviced by the same party that sponsored the securitization are less likely to be downgraded.

Gan and Mayer (2007) demonstrate that special servicers who are in charge of managing troubled commercial real estate mortgages also act in their own interest rather than that of the pool as a whole. Gan and Mayer point out that the incentives for special servicers are very different in CMBS than for servicers of RMBS. Special servicers collect additional fees from a pool once they classify a mortgage as troubled, encouraging servicers to place loans into special servicing as soon as is possible and, once it is in special servicing, to hold it there as long as possible, often extending the term of a troubled loan rather than foreclosing on it.¹⁶ To mitigate these adverse incentives, arrangers of a securitization often assigned the first loss position to the special servicer so that special servicers were, in essence, paying their own fees. When losses were low, assigning the first loss position to the special servicer encouraged more efficient managing of troubled loans. But when potential losses became big enough, owning the first loss position further encouraged the special servicer to extend loans with the hope that the first loss position would eventually come back in the money. Today, special servicers once again appear to be extending mortgages as long as possible, leading to the pattern where there is large and growing distress in commercial real estate, but relatively few foreclosures and liquidations.

In related work, Faltin-Traeger, Johnson, and Mayer (2009) demonstrate that ABS issued by vertically integrated lenders—those who service their own securitizations—retain their initial rating about 17 percent longer than those issued by lenders who contract out servicing. This further supports the claim that alignment of interests was a key feature in successful securitizations.

¹⁶ Another party, the master servicer, must agree to the classification of an asset into special servicing, but master servicers have few incentives to disagree with a special servicer's request for such a classification.

Did some originators and ABS sponsors sell us a bill of goods without “skin in the game?”

Many commentators have pointed to flaws associated with the “originate-to-distribute” model as being a key contributor to the crisis. These authors argue that originators use private information to sell “lemons”¹⁷ to investors. Once again, this is controversial, with some authors arguing that the market has developed effective mechanisms to mitigate this potential asymmetric information problem. Whether or not the market mitigated these conflicts of interest, it is abundantly clear that investors and underwriters were aware that originators had incentives that were potentially at odds with investors. As presented below, I believe there is quite compelling evidence that originators used their special position to take advantage of loan or securities purchasers in ways that were not fully anticipated by these investors. Although academics have not yet developed a causal link, I suspect that this origination bias became more severe when markets became overheated at the height of the crisis, leading to even worse loans at exactly the wrong time.

Evidence in favor of the flaws associated with the “originate to distribute” model comes from several places. Downing, Jaffee, and Wallace (2009) show that GSEs have private information about the quality of assets that are potentially securitized through bankruptcy remote special purpose vehicles (SPVs) and thus have incentives to put “lemons” into SPVs. The authors find strong empirical support for this prediction using data from sales of mortgage-backed securities (Freddie Mac Participation Certificates) to SPVs from 1991 through 2002.

In especially compelling work, Jiang, Nelson, and Vytlačil (2010) provide evidence of two specific agency conflicts associated with the mortgage origination process. The authors obtain proprietary information from a top-ten national mortgage lender (that eventually failed) from 2004 to 2008. First, they show that

¹⁷ In this context, a “lemon” is an asset that is low quality in a way that is observable to the seller but not to the buyer. Examples of lemons might include a house whose owner knows that the basement floods with a hard rain, or a mortgage made to an owner when a broker knows the owner’s past year’s income was temporarily high due to a big bonus, or a car whose seller just repaired damage from a major accident.

loans obtained from brokers have delinquency rates about 50 percent higher than those originated by their own loan officers. Second they show that borrowers substantially over-report income, using inferences from default equations estimates separately on fully documented loans (“full-doc” loans and a subsample of low-documentation loans (so-called “liar loans” or “low-doc” loans). The results show that the equation estimated from the full-doc sample can predict defaults about 50 percent better explanatory power than equations estimated from the low doc sample.¹⁸ Conservative estimates suggest that borrowers over-reported income by at least 20 percent. Strikingly, broker loans appear to face even larger default problems from low-doc loans than those originated by the bank.

A third paper demonstrates the difficulties associated with separating the performance of the underlying collateral from the credit quality of a security issuer, a key component of successful securitization markets. Faltin-Traeger, Johnson, and Mayer (2010a) show that securities sponsored by high quality AAA-rated parent companies retain their initial ratings up to 32 percent longer before being downgraded than securities (with an identical rating) that are issued by a lender with a non-investment grade credit rating. Securities issued by domestic banks retain their initial rating 12 to 15 percent longer before a downgrade than those issued by domestic non-banks or foreign banks. And securities issued by well-capitalized banks or lenders with a lower default probability are less likely to be downgraded. Finally, the authors provide a direct link between inside information for managers and security performance, showing securities were downgraded sooner when insiders sold stock in the firm in the year prior to issuance.

In a much more discussed paper, Keys, et. al. (2008) argue that securitization led to lax screening based on evidence using a “rule of thumb” that mortgages with FICO scores at or above 620 are much more likely to be securitized. Their results focus exclusively on the subprime lending market among loans likely to be securitized where information asymmetries are likely to be most severe. The authors find that

¹⁸ There is much debate about whether borrowers were always fully aware of misrepresentations of their income, in some cases made by brokers supposedly on behalf of borrowers. The role of consumer education or lack thereof in the crisis is an important question, but one that will be addressed by others in this symposium.

loans above the 620 FICO cutoff have default rates about 20 percent higher than mortgages just below the 620 FICO cut-off. The authors use additional sample splits to further buttress their findings, including the finding that their results fail to hold in states that passed anti-predatory lending laws that effectively limited securitization. The authors conclude that lenders screened loans less effectively if they knew the mortgages were likely to be securitized.

More recently, however, Bubb and Kaufman (2009) present evidence counter to the Keys et. al. findings. They argue that lenders fully understood the conflicts of interest for originators and behaved in a way consistent with a rational lending model. The Bubb and Kaufman paper makes the case that lenders and securitization sponsors were aware of possible “lemons” problems and may have taken steps to mitigate this problem. They show that securitization rates are unchanged around the 620 FICO cutoff, calling into question the Keys, et. al. findings.

In a recent rejoinder, Keys et. al. suggest that the major difference in the findings depends on whether one looks at mortgages originated to be sold to Fannie Fae and Freddie Mac or only mortgages likely to be securitized. Both papers seem to agree that GSEs had effective mechanisms to mitigate the adverse selection problems (refusal to buy mortgages in the future). The Keys et. al. rejoinder suggests that there is no asymmetry at the 620 FICO cut-off for GES loans or mortgages unlikely to be securitized. One especially compelling finding is that securitization rates do appear to show a discontinuity around 620 for mortgages whose mortgage balance exceeds the GSE loan limit and thus could not be sold to the GSEs. Overall, I find the Keys, et. al. finding to be compelling, although it mostly applies to the particularly risky subprime loans. However, that is where the largest lending problems existed.

Across all of the papers, I believe there is quite compelling evidence that mortgage securitization led to the origination of lower quality mortgages and thus was an appreciable contributing factor to the mortgage and financial crisis.

What were investors thinking?

As demonstrated above, flaws were prevalent in many parts of the securitization process. Rating agencies inflated their ratings as the market became overheated, brokers originated loans more likely to fail, GSEs securitized mortgages that were less

valuable due to their higher propensity to prepay when mortgage rates fell, and low-quality sponsors issued ABS that had a greater propensity to be downgraded. Yet all of these facts were well known and discussed by academics and investors at various times before the lending excesses developed into a full-blown crisis. The question remains: what were investors thinking when they bought into these securities?

The existence of information asymmetries (“lemons”) is not new (Akerlof, 1970). Buyers of used cars know that any car they purchase is disproportionately likely to have unreported problems like a previous accident or a transmission that is about to fail. As a result, Genesove (1993) shows that buyers at auction pay less from used car dealers than for cars that come from new car dealers, where some sellers will trade-in a used car every three years to buy a new car whether or not anything is wrong with their existing car. Buyers should mitigate any adverse selection problem by paying a lower price for an asset. Only in rare cases (some insurance markets come to mind) should adverse selection cause a complete market failure.

Nonetheless, where studies have looked at prices paid for assets that suffer from lemons problems, it appears that buyers did not fully recognize and price the conflicts of interest and ex-ante risks of securities they were buying. A notable exception is the tendency of GSEs to securitize less valuable mortgages. Downing, Jaffee, and Wallace (2009) show that buyers of Freddie Mac SPVs recognized risks involved and demanded a “lemons” premium of 13 to 45 percent of the overall prepayment spread.

Adelino (2009) and Faltin-Traeger, Johnson and Mayer (2010b) demonstrate the spreads paid by securities buyers often help predict subsequent downgrades, controlling for ratings, and that less complicated structures obtained slight pricing premiums. However, the predictive power of spreads was far from perfect. Adelino shows that spreads do not predict the likelihood of downgrade for AAA securities, which represented the bulk of MBS securities issued in the crisis. Faltin-Traeger, Johnson and Mayer (2010b) show that securities issued by the highest rated sponsors, if anything, required a spread premium, despite the fact that that these high quality sponsors issued ABS that had the smallest likelihood of downgrade.

More striking is the evidence from Coval, Jurek, and Stafford (2009b) of how little buyers of CDOs seemed to understand about what they were purchasing and to

price risks associated with these securities. The authors show that many structured finance instruments could be characterized as economic catastrophe bonds, but that they offered far less compensation than alternatives with comparable payoff profiles. The authors suggest that buyers focused on expected payoffs as measured by ratings, while ignoring the state of the economy in which defaults occur.

Did anything go right with securitization?

Surprisingly, given my comments up to now, some aspects of securitization worked well and held-up until in the real depths of the crisis at the end of 2008. Table 6, Panel A demonstrates the complete collapse of the non-agency mortgage-backed securities market once the credit crisis hit. In the last two quarters of 2007, a MBS market that had been issuing securities at a pace of almost \$1 trillion per year nearly completely collapsed. Issuance of non-agency MBS in 2008 and 2009 amounted to less than \$100 billion in both years combined. Forecasts of the future growth of this market are bleak at best. Similarly, issuance of home equity loans and student loan securitizations that were not government guaranteed also disappeared in the second half of 2007.

Yet, not all markets failed. In particular, credit card and auto loan securitizations performed much better and did not require a government bailout to keep issuing securities. This statement comes with caveats. Both auto and credit card ABS were eligible for TALF and issuers in these markets extensively used the TALF program, which appears to have brought down spreads appreciably relative to previous levels. And, in the case of credit cards, most major issuers received TARP funds, although the banks like American Express that predominantly operated in credit card markets paid back their TARP funds very quickly. The key to my statement, however, is that issuers of credit card balances and auto loans were able to continue to sell their ABS throughout most of 2008 and 2009, albeit at much higher spreads and subordination levels. This is different from mortgage ABS, where buyers appear to have little faith in the existing structure. Even today, the few CMBS issuances have leverage levels so low as to suggest that losses for most securities are nearly impossible to imagine and thus there is very little risk being taken on by the

securitization structure nor likely problems with how special servicers will handle troubled loans.

In Europe, covered bond markets also appeared to hold-up much better than other securitized or corporate credit markets (Shin, 2009). Trichet (2009) notes that covered bonds markets successfully survived until Autumn, 2008, well beyond when most other securitized markets had failed. In mid-2009, the European Central Bank provided support for covered bonds in the same way that the Federal Reserve started buying GSE bonds in early 2009. However, the structure seems to have survived nearly unchanged.

So why did American credit card and auto loan securitizations and European covered bonds perform relatively better than other ABS structures. Credit cards and covered bonds operate with a master trust structure, where the buyers of securities always paid a lot of attention to issuer credit quality when purchasing bonds. In the case of covered bonds, purchasers have explicit recourse to the issuer. For credit cards, the recourse is more limited, but issuers have been known to substitute better quality collateral for failed collateral when securitizations have gotten in trouble. Issuers understand that their livelihood in the future depends on their ability to float credit card securitizations in the future and support the performance of their securitizations. As well, these two types of securitizations have simpler structures and fewer conflicts of interest between parties to the securitization. The issuer, underwriter, and servicer are the same party, so there are not the usual conflicts of interest that exist with other types of securitizations. Finally, these securities have much lower embedded leverage. That is, these securities involved higher subordination levels and issuers held more equity in every deal. Almost surely the reduced leverage is not accidental, but instead is a function of the reliance on the issuers credit and capital to make the securitization function properly.

Conclusion: Lessons learned and questions to be asked

The financial crisis in the U.S. and across the globe was the worst in many decades. Some of our most important institutions failed at key moments. Housing prices collapsed leaving millions of households at risk of foreclosure and wiping out

trillions of dollars of home equity. The Commission's mandate to better understand the causes and consequences of crisis comes at a critical moment in history.

In this paper, I would like to emphasize several points. First, we should avoid the tendency to look solely within the U.S. and to blame subprime lending and securitization as the only factors behind the housing market crisis. Many countries had housing bubbles. Commercial real estate across the globe suffered from some of the same excesses as housing. Some cities within the U.S. suffered an enormous housing crisis, while other cities were almost entirely spared. Speculation and unrealistic expectations of future house price appreciation by lenders and buyers clearly played an important role in the housing bubble, both in the US and likely abroad.

The foreclosure crisis may well be the most painful and long-lasting residual of the financial crisis in the U.S. Long after credit markets are back to normal and unemployment recovers, millions of Americans will have lost their homes and millions more will be working hard to repair their balance sheet and make up for the lost home equity in the last five years. We have not yet found a successful formula to modify loans for borrowers who are in trouble and have negative equity in their homes. The failure of most mortgage modifications is an important topic that the commission could explore in more detail in the future. Are there any modification plans that worked? What was the role of second liens in putting homeowners underwater and making mortgage modifications even more difficult? My own calculations suggest that as many as one-quarter of borrowers used a second lien to purchase their home at the peak of the market, but in some overheated markets, more than one-half of borrowers used second liens in 2005 and 2006. However, comprehensive data on second liens are very hard to come by. Hold-up problems by second lien holders whose claims are effectively "out of the money" may well be slowing the housing recovery even further and leading to less effective modifications and more foreclosures. As well, the commission should try to put together a more complete picture about the role of speculation and absentee homebuyers in bubble markets. How did diminished lending standards impact long-term rates of homeownership for buyers, versus exist as a primarily speculative-driven crisis?

Finally, we need to learn more about the impact of subprime lending on disadvantaged minority neighborhoods and minority buyers. These are important facts that could help guide future housing and lending policy.

While some cyclical housing markets on the coasts will likely see prices eventually recover to new highs, even if it takes 5 to 10 years, homeowners in bubble markets who bought near the top of the market in places like Las Vegas, Phoenix, Miami, and central California should not expect that house prices will get back to their peak level for a decade or longer (unless we have a bout of unexpected inflation).

Securitization suffered from appreciable flaws that the recent cycle made abundantly clear. I believe it is imperative to look hard at what failed during the crisis and fix it before the next boom arrives. Securitization structures failed due to excessive leverage, reliance on conflicted servicers to manage troubled loans, and poor quality loans made by originators and brokers with incentives that led some of them to lend to anyone who would sign on the dotted line. As evidence of troubled loans became apparent to all in early 2007, MBS markets collapsed, surely playing a critical role in the subsequent run on the financial system that other papers will discuss at this meeting.

The Commission might devote additional attention to understanding what features of securitization contributed to the crisis and what features were in common with securitization markets that succeeded. It is especially important to understand the regulatory features that contributed to the relative stability of credit card ABS compared to MBS and CMBS. From a regulatory perspective, the demand for AAA securities, not matter how risky they really are, could explain why investors paid such high prices for such low quality securities even as the buyers should have known these were low quality securities. Regulation almost surely explains more of what buyers were doing. After all, regulated banks and some insurance companies in the U.S. and around the world, especially in Europe, seemed to be the biggest buyers of the worst securities, leading to large and expensive failures. Hedge funds that had no regulatory reason to buy highly rated securities seemed to emerge with fewer

problems from securitization.¹⁹ I would encourage the commission to further explore how a regulatory system that strongly encourages the purchase of highly rated securities might have contributed to investors' complicity in the crisis.

As the Commission examines the causes of the crisis, it is important to understand that some of the most controversial characteristics associated with risky mortgages are not new. As reported by the Boston Globe:²⁰

"The once-blazing market for condominium sales in New England was artificially inflated ...What looked like a classic "speculative bubble," was actually, in part, created by fraud and abuse promoted by illicit finance practices... a new loan product to the Northeast...lured in less savvy buyers and kept condo prices soaring toward the eventual bust. Dubbed the "no-doc," for no-documentation loans, the idea was to dramatically speed up the home-buying process."

This article was not published in 2007, but in 1991, and was analyzing the lending crisis in Massachusetts in the 1980s. It referred to troubled mortgages originated by lenders including CitiCorp Mortgage Corp., Dime Savings Bank of New York, Prudential Mortgage Corp., and Travelers Mortgage Corp. and involved mortgages held in their own portfolio and not securitized.

The Department of Housing and Urban Development (HUD) has long documented problems with subprime lending. It has compiled a list of lenders who specialize in subprime mortgage lending since 1993. Mayer and Pence (2009) show that such subprime lenders originated 2.1 million mortgages between 1998 and 2000. HUD (2000) called for increased scrutiny of subprime lending due to "growing evidence of widespread predatory practices in the subprime market."

In the last paragraph of the above-mentioned Boston Globe article, an attorney named Stephen Marcus who represented borrowers and condominium associations associated with the 1980s fraud cases, commented, "The effect of this overindulgence is going to be with us for a while even if the lending practices have stopped...My only concern is what happens when the next lending cycle comes around. It's going to take a lot longer for the next one to get here but it will get here. Then everything will

¹⁹ This ignores the role of fraud in hedge funds, an obvious problem for investors in Madoff's funds.

²⁰ Boston Globe, "Fraud, fast banking deals spurred condo crash," by Doug Bailey, Aug 18, 1991, Metro/Region P. 1.

start over again." It is important for us to take a critical look at what went wrong and strive not to repeat it.

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Figure 1

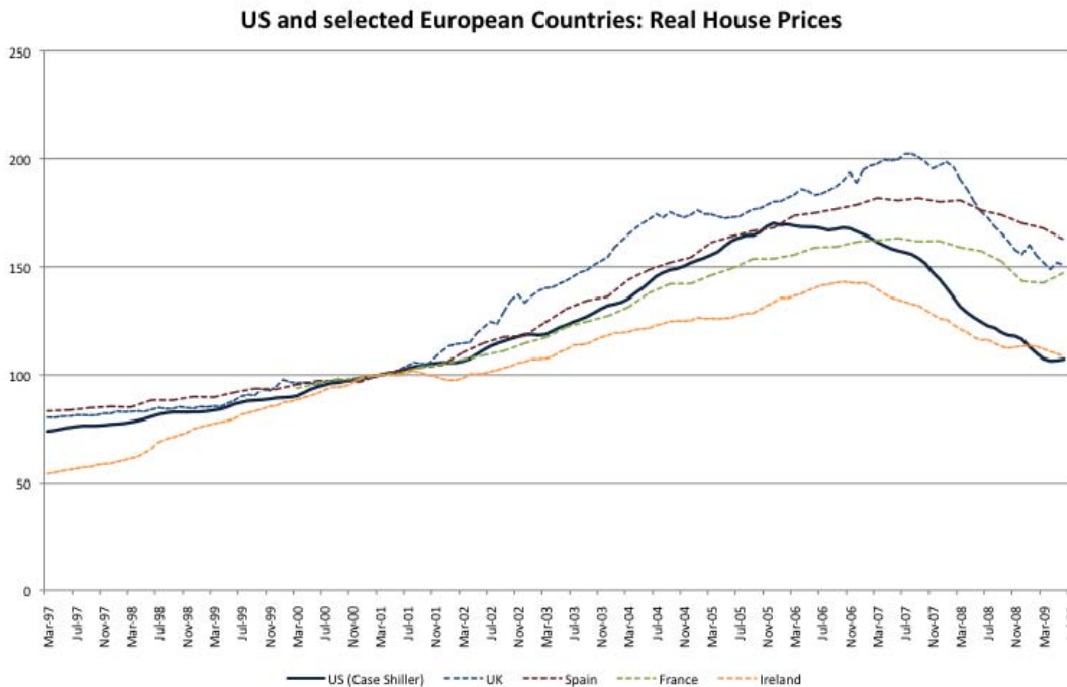


Figure 2

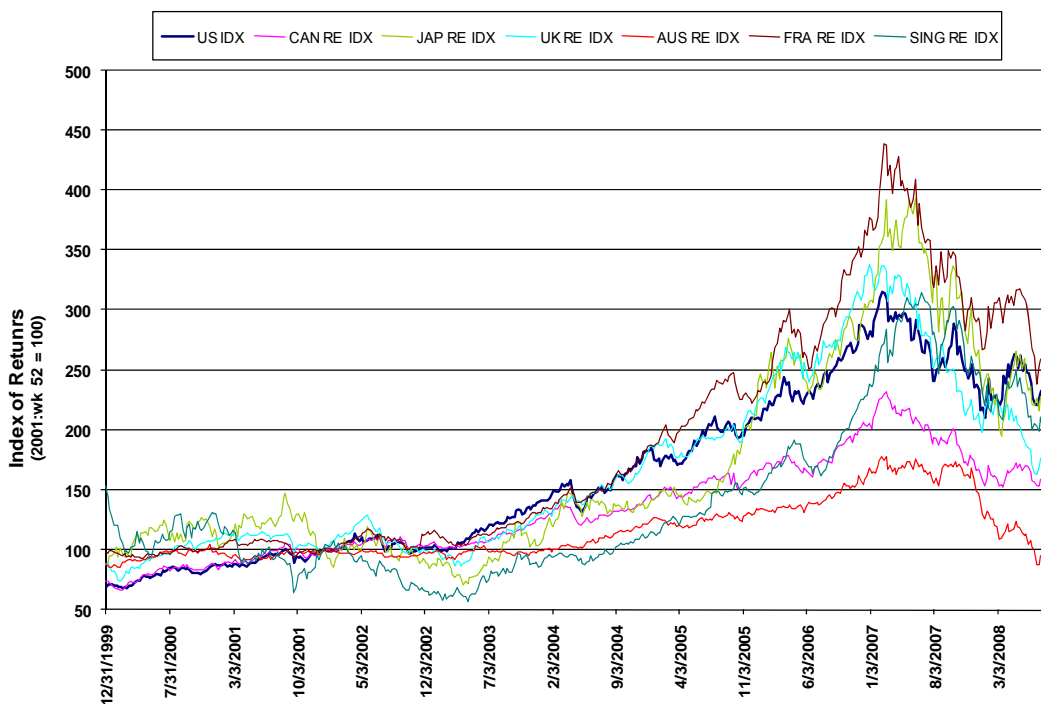
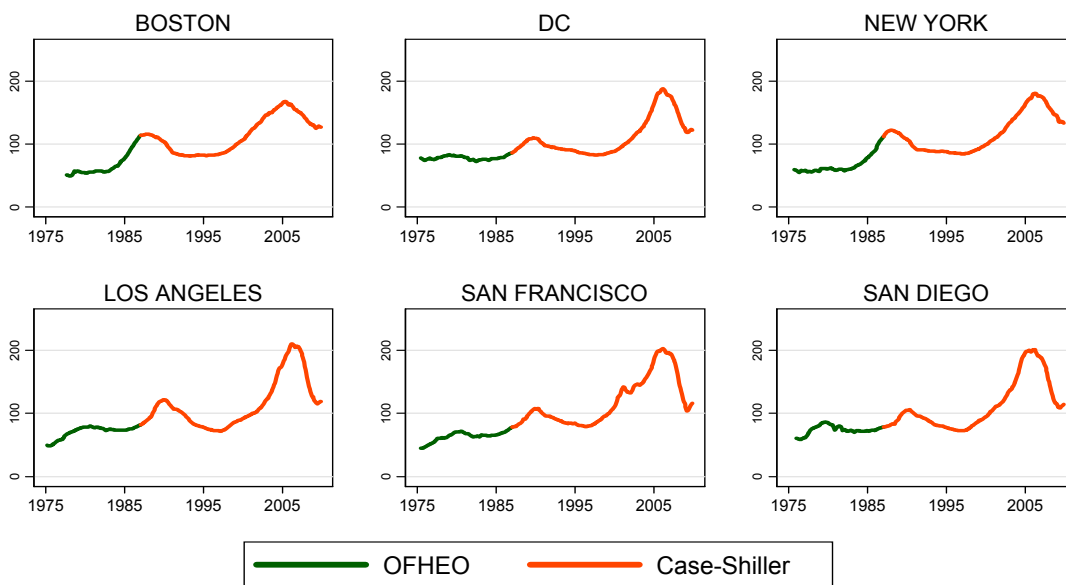
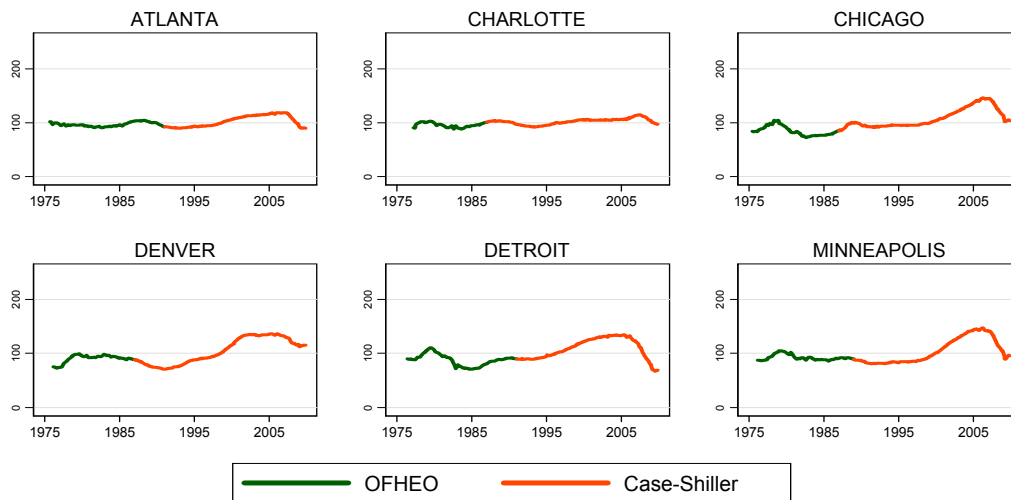


Figure 3, Panel A
House Prices in Cyclical Markets



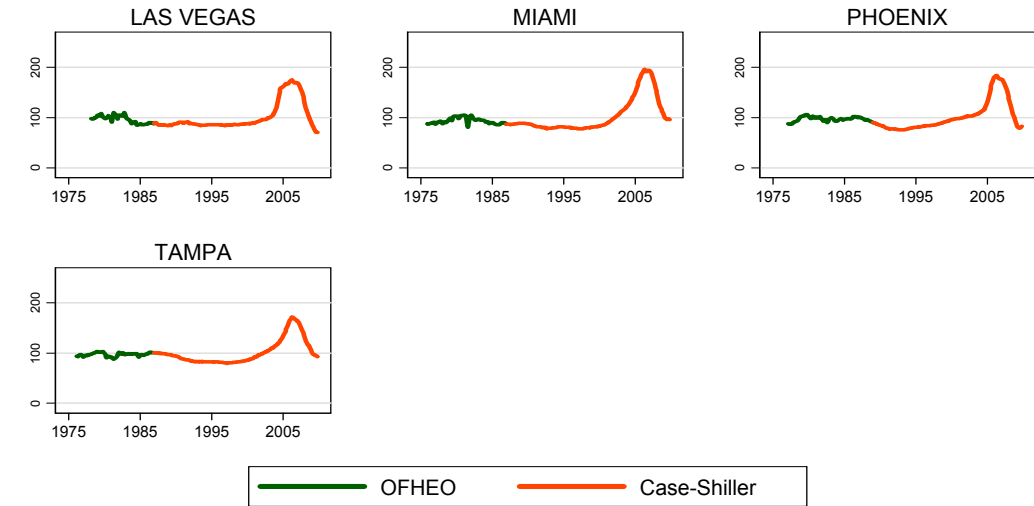
Source: OFHEO, Case-Shiller Index and BLS
OFHEO Index Current as of Quarter 3 2009
Case-Shiller Index Current as of November 2009
Real Home Price Index

Figure 3, Panel B
House Prices in Steady Markets



Source: OFHEO, Case-Shiller Index and BLS
OFHEO Index Current as of Quarter 3 2009
Case-Shiller Index Current as of November 2009
Real Home Price Index

Figure 3, Panel C
House Prices in Bubble Markets



Source: OFHEO, Case-Shiller Index and BLS
OFHEO Index Current as of Quarter 3 2009
Case-Shiller Index Current as of November 2009
Real Home Price Index

Figure 4
Unemployment Rate and Foreclosure Starts

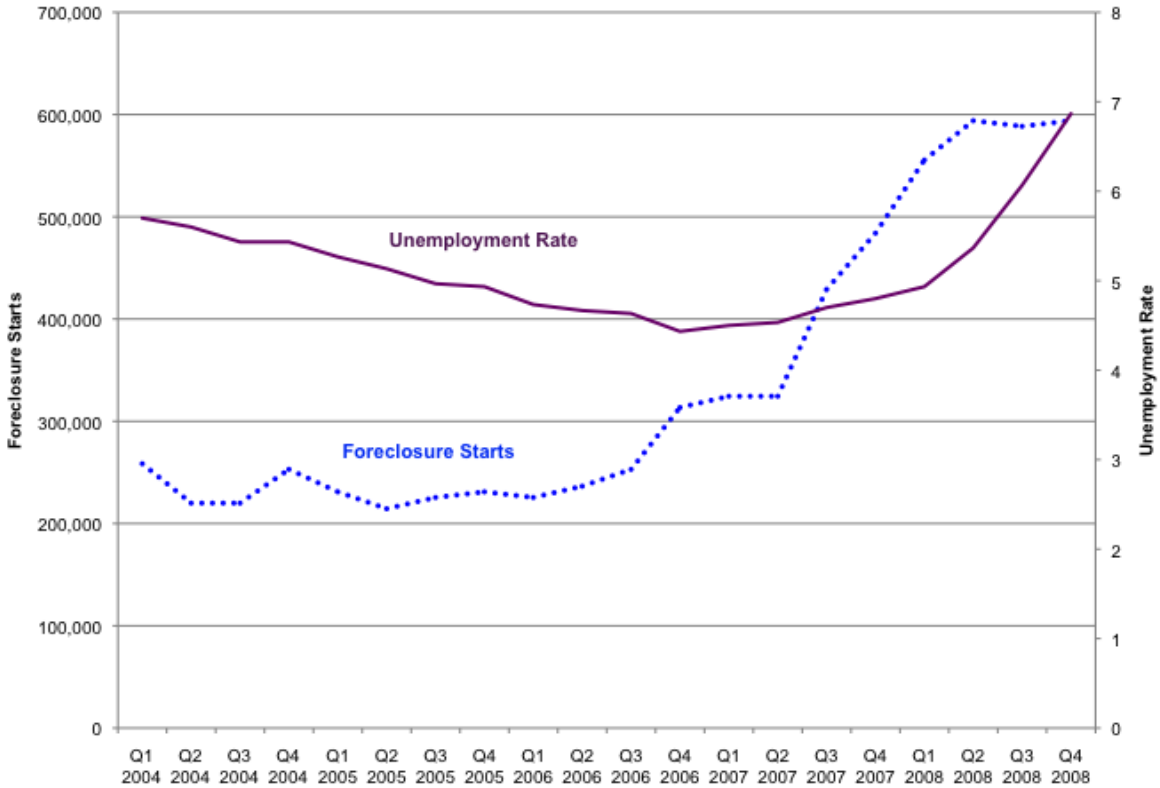


Figure 5

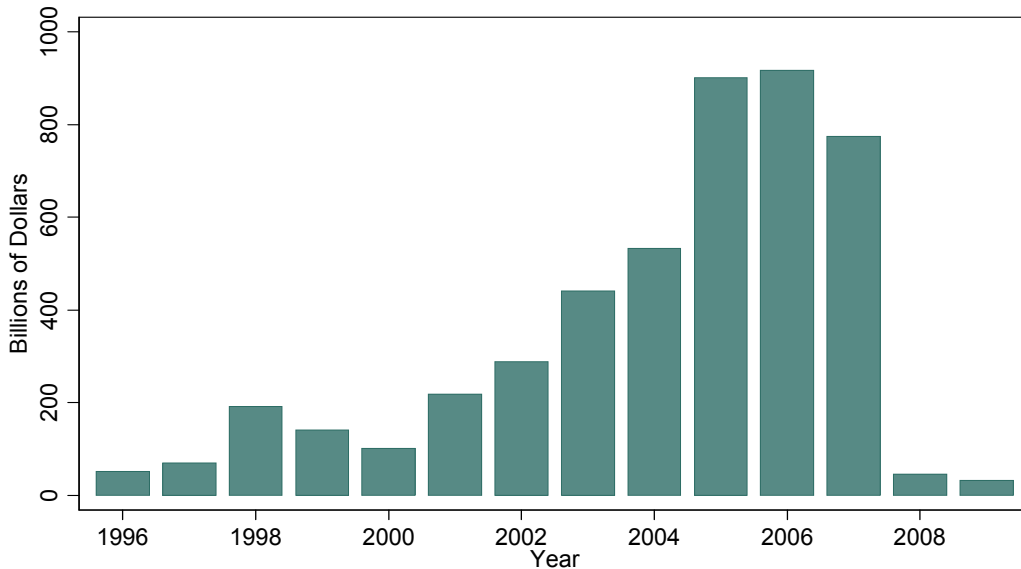
**Delinquency and Foreclosure Rate Table
Ranked based on Non-Current %**

State	Delinquency %	Foreclosure Inventory %	Non-Current %	State	Delinquency %	Foreclosure Inventory %	Non-Current %
National	10.0%	3.2%	13.3%	PA	9.0%	2.0%	11.0%
FL	12.7%	10.9%	23.6%	MA	8.8%	2.2%	11.0%
NV	15.7%	6.8%	22.5%	TX	9.7%	1.3%	10.9%
MS	15.5%	2.3%	17.8%	AR	9.4%	1.5%	10.9%
AZ	12.3%	3.9%	16.2%	WI	7.9%	2.8%	10.7%
GA	13.4%	2.4%	15.8%	MO	9.2%	1.4%	10.6%
CA	11.3%	3.7%	15.0%	ID	7.8%	2.6%	10.4%
IN	11.3%	3.2%	14.5%	OK	8.1%	2.1%	10.1%
MI	11.8%	2.6%	14.4%	UT	8.0%	2.1%	10.1%
IL	10.3%	4.0%	14.2%	NM	7.7%	2.2%	10.0%
OH	10.7%	3.5%	14.2%	NH	8.5%	1.5%	9.9%
LA	11.5%	2.5%	14.0%	VA	8.1%	1.5%	9.6%
RI	11.0%	2.8%	13.9%	DC	7.8%	1.8%	9.6%
NJ	9.1%	4.3%	13.5%	KS	7.7%	1.5%	9.2%
MD	10.8%	2.5%	13.5%	MN	7.1%	1.8%	8.9%
WV	11.4%	1.8%	13.2%	IA	6.7%	2.1%	8.8%
TN	11.6%	1.5%	13.0%	WA	7.5%	1.3%	8.8%
AL	11.5%	1.3%	12.8%	OR	6.6%	1.9%	8.5%
SC	10.1%	2.5%	12.6%	CO	6.4%	1.8%	8.2%
NY	9.1%	3.1%	12.2%	VT	6.0%	1.9%	7.8%
HI	8.0%	3.9%	12.0%	NE	6.4%	1.3%	7.7%
CT	9.0%	2.8%	11.7%	MT	5.5%	1.4%	6.9%
NC	10.1%	1.5%	11.6%	WY	5.6%	1.0%	6.6%
ME	8.5%	2.9%	11.4%	AK	5.0%	1.1%	6.1%
DE	8.8%	2.6%	11.4%	SD	4.4%	1.1%	5.4%
KY	8.8%	2.3%	11.1%	ND	3.8%	0.8%	4.5%

Source: Lender Processing Services as of November, 2009

Figure 6, Panel A

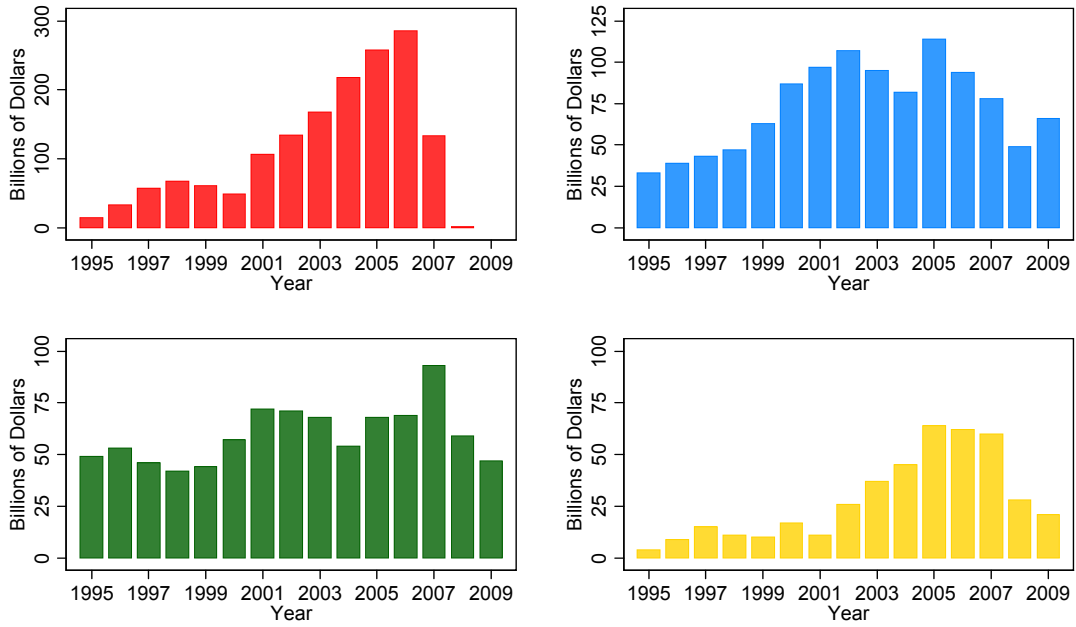
Issuance of Non-Agency Mortgage-Backed Securities



Gross Non-Agency MBS Issuance by Year (Includes CMBS)
Current as of 2010 Q1
Source: SIFMA

Figure 6, Panel B

Issuance of Non-Mortgage, Asset Backed Securities



Gross Issuance of Home Equity, Auto, Credit Card and Student Loan ABS by Year
 Current as of 2010 Q1
 Source: Bloomberg