Strategic Foreclosure A Mortgage Lender's Considerations

By: Erich R. Sorger

Abstract:

The United States (US) housing crisis is widely believed to have sparked and propelled today's financial and economic meltdown. The objective of this paper is to ascertain whether foreclosures are more favorable to lenders than renegotiating loans in the US, and its implications for Israel. The multitude of foreclosures occurring in the US displays the lack of success of current US government programs to reduce them. We survey the extensive underlying reasons for their shortcomings. An analysis of observational, statistical, and historical data disputes mainstream views that renegotiation is necessarily more profitable than foreclosure for US lenders, and does not support generally held views that weak servicer incentives and junior lien holders are the root causes of the lack of renegotiation. Using that information, we review deeper rationales for the massive amount of foreclosures that are occurring. An analysis of a number of different models leads to three theories based on screening practices, deterrence effect, or asset liquidity, which reframe our understanding of the crisis. All three cases substantiate the conclusion that due to the nature of collateralized loans, especially mortgages, it can be more profitable to foreclose than to renegotiate loans in the US. Applying the analysis outlined in this paper to the Israeli financial system, we find that renegotiation of mortgage and, perhaps, corporate debt is likely to be considerably more appealing to lenders in Israel than lenders in the U.S. The important implication of our analysis is that for US lenders, even during a crisis, foreclosure may actually be the better option.

Erich R. Sorger is an intern at the Bank of Israel, a BSE candidate at the Wharton School of Business, and a BSC candidate in the School of Engineering and Applied Sciences at University of Pennsylvania, in the Jerome Fisher Management and Technology program. He can be contacted at <u>eriches@wharton.upenn.edu</u>.

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The views in this paper are my own and not necessarily those of the Bank of Israel.

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Section I: Introduction

It is widely believed that the recession beginning in mid-2007 is the worst of the post-World War II era. Precipitated by the subprime mortgage crisis in the United States of America, financial markets have collapsed worldwide. Successful solutions to the current US housing crisis must provide reasonable alternatives to address an estimated USD 420 billion in subprime and Alt-A mortgages.¹

In the last two years, US lenders in the housing market have foreclosed a record number of mortgages, refusing to renegotiate.² Intuitively, loan modification, to maintain long term asset values and incomes, would seem to be more profitable for lenders to carry on their balance sheets than foreclosures, which lead to large, immediate, and real losses. Therefore, hoping to quickly end the downturn in the housing market, the US government has designed programs to entice lenders to renegotiate with borrowers. Yet these programs have been singularly unsuccessful, perhaps because they do not address US lenders' reluctance to renegotiate, which is perplexing and unclear. Mainstream views seek to explain these failures on the basis of agency and coordination problems. However, in this paper, it is shown that these programs fail because foreclosures are strategic and more profitable to lenders than renegotiation, when longer run considerations are brought to bear. Until real incentives reverse this situation by increasing the profitability of renegotiation to lenders, foreclosures will continue unabated as the recession continues causing more markets to collapse under the unconscionable losses that will ensue.

This paper seeks to show that regulatory failure and macroeconomic imbalances were key factors triggering the current economic crisis. However, once the crisis was apparent, current US government programs designed to mitigate the crisis have not been as successful as intended. Therefore, this paper reviews possible explanations for the shortcomings of these government programs, which should provide a basis for future improvements. It is organized as follows: Section II provides background of and explanation for the current financial crisis; Section III describes US governmental programs designed to aid renegotiation; Section IV discusses the mainstream view that lender failure to renegotiate in the US is promulgated by agency inefficiencies; Section V illustrates a number of strategic considerations for foreclosure over renegotiation; Section VI uses our findings to analyze Israel; and Section VII concludes with lessons for the future and a broader look at the financial industry with respect to the findings presented.

Section II: The Crisis

The current crisis in financial markets has roots in the accumulation of risky mortgage loans and their securitization. There are three interrelated reasons for the mortgage crisis: extensive speculation, widespread securitization, and lax lending standards.

II.1 Speculation

The late 1990s saw the fastest and longest increase in real estate speculation in history (Figure 1). Continuing into the 2001 recession, USD 2.2 trillion worth of new mortgage loans were originated (Figure 2). Low interest rates and new lending practices of 2003 were the impetus for the additional USD 4 trillion worth of new mortgage loans. Simultaneously, prime mortgages began to abate and lending standards and mortgage loan quality eroded. By 2006, home equity (Alt-A) and subprime loans—the riskiest loans—comprised 50% of mortgages originated, up from 15% in 2003. ³

II.2 Securitization

Traditionally, banks produced mortgages and were funded by deposits. Banks evaluated the loans and assumed all risks. To reduce depositors' vulnerability to the risk of losing their investment in a bank failure, due to poor management and bad loans, the US government insured deposits through the Federal Deposit Insurance Corporation (FDIC). This was the depositor's incentive to have faith in banks and store their money in low risk, low yielding liquid passbooks and higher yielding less liquid, but equally low risk Certificates of Deposits, CDs. Depositors provided the fuel for the mortgage and credit markets.

This system collapsed in the Savings and Loan (S&L) crisis of the mid-1980s when S&Ls failed to cope with the inherent risk in long-term mortgages, shaking the faith of depositors in S&Ls, especially those with deposits above the FDIC limit whose principal and interest were at risk. "Securitization was seen as a part of the solution to this problem [of risk in long-term mortgages] because it allowed" lenders to originate and sell mortgages in the form of Mortgage-Backed Securities (MBSs).⁴ Consequently, banks could then liquefy mortgage loans and record them as a sale, which immediately removed them from their balance sheets. The proceeds from the sale of these securities, rather than depositors' funds, could immediately be used to create more mortgages, and thus sell more MBSs, which came to be known as "originateand-distribute." This carefully thought out method would continue to work as along as the underlying mortgagees continued to pay off their loans. In addition, since these loans were immediately removed from lenders' respective balance sheets through securitization, significant monitoring or regulation of these securities was non-existent by the SEC or any governmental agency designed to insure the solvency of the lender or the prudence of its practices.⁵

This "originate-and-distribute" model began with government-sponsored enterprises (GSEs), Fannie Mae and Freddie Mac. These institutions were created by Congress to increase home ownership, but were privately held. The GSEs purchased conforming fixed-rate mortgages from lenders, pooled them, securitized them, and sold the resulting MBSs. In a GSE-created-MBS, MBS investors assumed the interest rate risk while the GSE assumed the credit risk by guaranteeing the principal balance to the investors.^{6,7}

Although, GSEs initially started the MBS market, once a market was established, privatelabel enterprises added to the market MBSs with loans that were not required to conform to the lending standards of GSEs, or any other lending standards. This was a new, completely unregulated and mostly unmonitored market. In order to create a private-label MBS, Special Purpose Vehicles were created by lenders. Special Purpose Vehicles are shell corporations or trusts which bought mortgages from lenders, securitized them, and raised capital by selling MBSs to investors, who held the original pool of loans. Special Purpose Vehicles hire a third party servicer to manage the loans purchased from the banks, collect payments, handle loss mitigation, and funnel the interest payments to the Special Purpose Vehicle, who is then responsible for distribution of payment to security holders. Also, to enhance their "safety," these entities bought insurance from companies such as AIG to pay off these investors in the event the pools went bad. Third Party Servicers are supposed to act and operate as if they are the single owner of each mortgage. For these private label MBSs, the investors were at risk for both the interest and principal. Thus, this was another incentive to deviate from prudent lending practices. Banks could originate any loan for any reason, making money both in the origination and sale of the loan to Special Purpose Vehicles, which in turn removed the loans immediately from their balance sheets. Though the original intent of the Special Purpose Vehicle was actually to give investors more specific ownership in a product rather than in the entire bank, this side effect of balance sheet removal increased the net worth of the lending institutions through continuous income at both ends. These risky loans were easier to originate and far more lucrative than the traditional income made on the spread between the interest paid to depositors and the interest accrued on sound mortgages held by the banks for the long term.^{8,9}

These private-label MBSs were the fuel, i.e. the primary source of funding for riskier subprime and Alt-A loans, or in other words, the incentive to banks to continue to make these kinds of loans in the recent decade. Issuance of these private-label MBSs increased from USD 11 billion in 2001 to USD 449 billion in 2006. Over time, these riskier subprime and Alt-A loans became a larger share of the mortgage market, and by the end of 2007, they accounted for 16% and 25% of outstanding mortgages and MBSs, respectively. Mortgage originators, i.e. the banking industry, saw this new liquid MBS market as a way to eliminate their exposure to the underlying risk of borrowers and the value of collateral in a market known to be cyclical. In essence, this was a game of musical chairs, where no one cared what the ultimate outcome to the economy and the public was going to be, if and when losses arose. ^{10,11}

In most countries, MBSs rarely exceeded 20% of the total mortgage loans originated. In the US, 67% of total mortgage loans were erased from the books of the originating banks through securitization, creating the false façade of immediate solvency of individual banks. In some cases, these banks still managed the Special Purpose Vehicles and even had their own guarantees on the MBSs.^{12,13} However, by flooding the market with MBSs based on the false predictions of endless collateral appreciation, the banks created a catastrophic set of circumstances that would affect their depositors, the entire financial markets, and ultimately all markets, which are intertwined by the flow of money. Once the traditional cycle of collateral depreciation started, the risky nature of the MBSs snowballed the destruction of the economy, which is primarily based on the flow of credit from a banking industry that was quick to freeze credit in order to try and forestall its own destruction.^{14,15}

II.3 Lax Lending Standards

Without the ability of issuers to obtain a high credit rating for these riskier MBSs, their pervasion and perversion of the financial markets could never have been attained. That ability was the critical feature that provided the motivation for banks to enter into a practice that would ultimately and inadvertently result in the current financial and economic crisis.

GSE MBSs, which are guaranteed by the federal government, were given the highest rating, AAA.¹⁶ Therefore, unsecured private-label MBSs achieved a AAA rating through ingenious financial innovation. Private label mortgages were expected to underperform and were not guaranteed by the federal government. Nevertheless, the mortgages underlying these securities were pooled, and the MBS created was given a capital structure based on payout

timing. This structure consists of three levels of tranches, which were originally securities split into smaller pieces to allow the individual sale of the parts to investors: the Senior Tranche, Mezzanine Tranches, and Equity Tranche. The Senior Tranche would be given a preferred claim on the cash flows from the securities, followed by the Mezzanine Tranches, and lastly the Equity Tranche. As the first to be paid, "the holders of the Senior Tranche have an asset that is less risky than the underlying pool of mortgages."¹⁷ Credit agencies gave senior tranches AAA ratings and considered them as safe as the regulated GSE MBSs. Private labels were held to few standards and needed this tranche system to obtain AAA credit ratings for their product, i.e. the senior tranche, they were selling. However, Mezzanine and Equity tranches were given lower ratings, and were therefore harder to sell, as it was difficult to assess when a loss might occur with lower priority claims on the underlying assets pooled from various quality mortgages from across the nation (Figure 3). To improve the ability to sell them, these higher risk and lower rated tranches were often re-securitized into Collateralized Debt Obligations, which were new securities collateralized by other securities. Re-securitization and pooling of the lower tranches in MBSs gives higher credit ratings again to the Senior Tranche of these new Collateralized Debt Obligations. The lower tranches of the Collateralized Debt Obligation can be re-securitized again into "Collateralized Debt Obligations Squared." While this process is not endless it can be-and was-repeated often, making it nearly impossible for Third Party Servicers to identify the actual owners of the original MBSs.¹⁸

In retrospect, the credit agency ratings did not adequately account for the possibility that substantial portions of the underlying assets could default. They believed the risk of the MBSs incurring large enough losses to reach the safer senior tranche was extremely small, warranting the AAA rating of the senior tranche. Credit agencies' reasoning hinged on the historical assumption that average nominal housing prices always appreciated on a national scale (Figure 4). They assumed therefore, that the homeowners from this national pool of mortgages of the MBS would overall always be able to refinance. However, if defaults did occur, it would simply lead to foreclosure that would repay the primary mortgages, and the overall average of the asset pool backing the securities would have the same or greater value (Figure 4). Credit agencies were part of the process that generated rapid expansion of credit and weakening standards. Although national nominal housing prices had always appreciated, mortgages had never been packaged on a national scale. They should have realized the endogenous nature of increased risk.

Regardless of the initial amount of risk they assigned to the possibility of mass defaults, they should have realized that their actions were generating that very likelihood. The ability of originators to reap immediate pay-offs for themselves and to achieve AAA ratings for these riskier loans in order to be able to then sell them, with little or no accountability and due diligence, created a surge of increasingly risky loans in the market with lax or no standards. This incentivized originators to create larger and larger quantities of MBSs rather than focus on the quality of the underlying loans.¹⁹

In addition, from 2003 to 2006, there was an increase in adjustable interest rate (ARM) mortgages. The ARMs gave "teasers," very low rates in the beginning of the mortgage, and then shifted those rates to a much higher level later on. They offered these rates based on low market interest rates, which were in turn based on the Federal Reserve Bank's expansionary monetary policy. Teaser ARMs had wide permutations with little or no prudent and conservative lending standards. Terms consisted of interest only, reverse amortization, negative amortization, balloon payments in 5 years, adjustments made every month or every year, or even fixed for 5 years and then had flexible adjustments, and so on. For example, one ARM originator advertised on the radio that anyone could buy a house for no money down and USD 69 per month stating, "why rent when you can own for less than you probably pay for your cell phone service."^{20,21} Originators would only make such loans if they could be sure they could sell them as MBSs, making money for originating what would likely turn out to be worthless paper.²² Seducing average Americans by advertising ARMs as an affordable way to own homes, "that let people pick how big a payment they will make from month to month," ARM originators were able to dramatically increase the volume of mortgages on the market.^{23,24,25} Though ARMs taken by low-risk borrowers may be a prudent method of debt management, almost 50% of ARMs were on subprime loans, and relied on unverified borrowers to make "balloon payments" or refinance once the loan interest rate rose. Borrowers could "serial refinance" into low teaser rates. Becoming more widespread, "ARM origination rose from about 10% in 2001 to over 35% in 2004, and remained at record levels thereafter."²⁶

As underwriting practices began to erode, lenders gave loans with high loan-to-value (LTV) ratios on mortgaged properties to borrowers with poor credit histories and with little or no documentation of their income or assets. Borrowers could give false information without fear of being caught, since no one in the entire MBS chain from originator to the final investor

undertook the effort to investigate their applications.²⁷ Furthermore, the share of Alt-A and subprime loans with a silent second mortgage increased from 10% to 30%. Risky ARMs, subprime loans, combined with deteriorating underwriting standards, and high LTVs left borrowers and lenders exposed to the risk of weaker economic conditions.

II.4 The Result

When the depreciation part of the current housing cycle inevitably occurred about mid-2004, borrowers with little or no equity were unable to refinance to keep payments affordable and lenders could not liquefy these loans through sale on the secondary market or as pools for MBSs. This caused a vicious cycle of increasing LTV ratios to "underwater levels," a term commonly used to mean the value of the homes fell below the value of their mortgages. These negative equity positions had a snowball effect, which caused the decline of housing collateral values to accelerate, precipitously eroding the housing market.²⁸

This situation resulted from rising supply and falling demand, creating an oversupply of unsold homes. Housing price increases continued to slow down and eventually these prices even posted declines. Although initially, there were only small decreases in home asset values, it was enough to initiate a vicious cycle of defaults and further asset declines. This was due to the risky lending practices of approving the previously high LTV ratios. Many of these loans were interest-only or designed with negative amortization to keep monthly payments low. Housing prices fell more abruptly than in the past as sale of depreciating and underwater assets could not be attained and refinancing was not available, preventing weak borrowers from reducing or evading the immediate impact of their debt burden. As the economy continued to slow, the ensuing increase in job losses engulfed even the good borrowers, creating further havoc and defaults. As the number of defaults increased dramatically, the downward pressure on collateral prices accelerated, creating the viscous cycle of still further housing asset declines. This imploded the industry, which led to massive performance decreases on mortgages and even further declines in the value of collateral to levels far below the principal amounts loaned, for many to less than 50%, resulting in the housing crisis.

This dominoed to the insurance agencies that had to cover the losses, now estimated at many fold times their original risk assessment, jeopardizing the solvency of the entire financial market industry. Delinquency rates began to rise quickly, especially on subprime ARM mortgages. As delinquency rates increased, so did foreclosures, which rose from 650,000 homes

in 2005 to 1.3 million homes in 2007. With weakening economic conditions and rising unemployment as a result of tightened credit and declining consumer spending, a large portion of underwater loans defaulted, and foreclosures increased to record numbers. During 2007-2009 aggregate national nominal housing prices faced a significant decrease for the first time in recorded history and financial institutions reported heavy losses (Figure 4). Some banks took Special Purpose Vehicle assets back onto their balance sheets in order to avoid losses in reputation or lawsuits. With the public refusing to buy Special Purpose Vehicle commercial paper, Special Purpose Vehicles began turning to banks for lines of credit. But "Financial firms worldwide were encouraged to question the value of a variety of collateral they had been accepting in their lending operations...the result was sudden hoarding of cash and cessation of inter-bank lending, which in turn led to severe liquidity constraints."²⁹

To avert a catastrophic and precipitous "second Great Depression", as Federal Reserve Chairman Ben Bernanke put it, the FDIC and US government began injecting money and creating federal programs to aid the financial industry.³⁰ The US Government was not fast enough however, on September 29, 2008 the Dow Jones Industrials dropped 777 points, the largest single day drop ever. Lehman Brothers – an investment bank with more than USD 600 billion in debt-eventually filed for bankruptcy. At this point, according to the Mortgage Bankers Association, 3.0% of mortgages properties were in the process of foreclosure – the largest percentage since Mortgage Bankers Association began publishing these statistics 18 years ago. In July of 2008, Fannie Mae and Freddie Mac share prices dropped sharply. With the US government unable to restore confidence in the GSEs, the US Government was forced to put them into conservatorship, or federal supervision, effectively nationalizing them. By a number of estimates, 8 to 12 million homeowners were in a negative equity situation, which amounted to USD 600 billion of homes underwater. Additionally, during 2008, Bear Stearns, IndyMac Bank, Washington Mutual, Wachovia, AIG, and others failed and had to be resuscitated through government and private intervention. With continued falling home prices, fueled by increasing upside down LTV ratios, this cycle was causing the number of homes underwater to grow dramatically, further exacerbating global financial problems.^{31,32}

Section III: Government Programs

In order to combat the increase in foreclosures and supply of homes, and thus stabilize home prices, the US government has taken a number of steps to create or support several programs. These programs include the HOPE NOW Alliance, FHASecure, HOPE For Homeowners, FDIC "Mod in a Box" program, GSE Streamlined Modification Program, and Making Home Affordable. Unfortunately, as Robert Blackwell and Steven Sloan have said, "It's becoming something of a pattern: The government announces a program designed to stabilize financial markets or kickstart lending, but after weeks or months of delay, the goal is shifted [due to timing or political constraints] or the program simply doesn't work as expected."³³ To understand the regrettable conclusion of Blackwell and Sloan, an assessment of these programs and their results must be examined.

III.1 HOPE NOW Alliance

III.1.1 Plan

The HOPE NOW Alliance was created by the private sector on October 10, 2007, with Treasury Department and Department of Housing and Urban Development encouragement. It is a private, voluntary alliance of Third Party Servicers, lenders, investors, housing counselors, and other market participants. HOPE NOW Alliance aims to develop a centralized approach to loan workouts within the industry. HOPE NOW Alliance members represent over 70% and 90% of the prime and subprime mortgage markets, respectively. It has no authority to command action from its members, and participation is purely voluntary and self-regulated. ^{34,35}

To deal with shocks that may occur when "teaser" rates on ARMs expire, HOPE NOW Alliance members have designed collective approaches. As home prices were rising, borrowers that could not pay the ARM reset rates were able to refinance into new "teaser" rates ARMs. This collective approach was known as serial refinancing. However, as a result of housing price declines, caused by the inevitable and predictable housing cycle, ARMs originally made at 100% LTV and higher with interest only or with negative amortization schedules made serial refinancing unfeasible, because borrowers owed more on their loans than their house was worth (negative equity). Accordingly, HOPE NOW Alliance members have agreed to contact borrowers at least 120 days in advance of their ARMs' reset to determine whether the borrowers are experiencing financial difficulty. If so, HOPE NOW Alliance will extend teaser rates for five more years, a workout, but only to borrowers with "mortgages backed by owner-occupied residential properties." ^{36,37}

III.1.2 Results

Between July 2007 and November 2008, HOPE NOW Alliance members touted the success of their collective approach by reporting 2,911,609 workouts. Upon closer inspection, this number was found to severely overstate HOPE NOW Alliance effectiveness. "The Conference of State Bank Supervisors found that only 34% of seriously delinquent borrowers were being offered loan modifications," ³⁸ despite eligibility. Also, a new study by Professor Alan White, of Valparaiso University School of Law, increased skepticism on whether HOPE NOW Alliance loan modifications have been successful.

White found that 63% of that 34% were merely workouts that created repayment schedules of mortgage arrearages, and did not change the actual terms of the loans themselves. Of the remaining 37%, White found that "only 49% of loan modifications resulted in lower monthly payments; 17% had no effect, and 34% resulted in *higher* monthly payments." ³⁹ Also, none of these HOPE NOW Alliance modifications have produced any uniform standards within the industry. Similarly, a study by the Center for Responsible Lending found that just 20% of HOPE NOW Alliance modifications resulted in lower monthly payments. Putting these workouts in perspective, The State Foreclosure Prevention Working Group estimates that 20% of HOPE NOW Alliance modifications made in the last year have become delinquent. In addition, they went so far as to say that these "unrealistic or 'band-aid' modifications have only exacerbated and prolonged the current foreclosure crisis." ⁴⁰ Accordingly, the rate of default on these newly modified loans is fairly high (Figure 5).

III.2 FHASecure

III.2.1 Plan

The Federal Housing Administration's FHASecure program, introduced on August 31, 2007, sought to allow distressed homeowners to refinance into FHA-insured loans. The lender had to agree to write down the loan to 97% of the present home value for borrowers two payments behind or to 90% of present home value for borrowers three payments behind. "The payments on the new loan were not to exceed 31% of income, and the total of all debt payments (home and non-home) were not to exceed 43%. Delinquent borrowers had to pay a 2.25% up-front mortgage insurance premium (UFMIP) and 55 basis points annually, while current

borrowers paid 1.50% up front and 50 basis points annually."⁴¹ No investor-owned (unoccupied) properties were eligible.

III.2.2 Results

FHASecure was significantly amended on May 7, 2008, and eventually phased out at the end of 2008. The program processed 487,818 loans. Nevertheless, this number is exaggerated, since only 4,128 FHASecure borrowers were delinquent at the time they were given the refinanced loan, because formerly delinquent borrowers were helped through other FHA programs. ⁴²

The reason for such inadequacy is due in part to strict FHASecure eligibility requirements. The Federal Housing Administration's decision to shut down the program substantiates the program's failure.

III.3 HOPE For Homeowners (H4H)

III.3.1 Plan

The program's initial goal was to permit more FHA-insured refinancing, expand eligibility requirements to cover more delinquent debtors, and create a standard loan modification mechanism for the entire industry. Again, the incentive to lenders to perform modifications and take an immediate loss now in order to prevent further losses down the road is the FHA insurance. There was no immediate monetary gain to the lender at all, and the only gain of any kind that could be realized is lowering their risk of future losses on these toxic loans in a declining market, with asset values dropping at rapid rates. For this to be effective at all, speed would be essential before asset values fell further and borrowers became further in arrears.

The H4H program was established in July 2008 and activated on October 1, 2008 under the US Department of Housing and Urban Development (HUD). H4H was amended on November 19, 2008, with the goal of providing incentives for second lien write-offs and primary lien holders. The modification allows the government to make upfront payments to 2nd lien holders in refinancing. H4H applies to borrowers whose mortgages were originated before January 2, 2008 and whose payments exceed 31% of gross income.

Lenders must agree upfront to write off the principle amount of the loan above 96.5% of present home value. This is an immediate loss to the lender on the original value of the home, which could be a great deal more than 3.5% of the present value. Additionally, all late fees and penalties must be waived. This is another expense in the form of lost collection costs to the lenders on the

money that had not been timely received. The refinancing is funded through an FHA-insured fixedrate 30 to 40 year loan, "with payments that are at or below 31 percent of income, and ensuring that all debt payments (home and non-home are at or below 43 percent. For borrowers with higher debt loans the debt-to-income ratio (DTI) can be expanded to 38 percent, but the new principal amount" must be written off to at least 90% of present home value. ⁴³ The homeowner is charged a 1.5% annual premium, while 1st lien lenders must shell out a 3% FHA-insurance premium, another loss for the lender. "In addition, if the homeowner sells the house or refinances the new mortgage, the [government]...gets back some of the 'instant' equity (100% in the first year, declining to 50% after five years)."⁴⁴ If the house is sold, the government retains 50% of any future home price appreciation. Furthermore, no new loans can be taken out on the home for five years, unless the new liens are for maintenance. Only owner-occupied properties are eligible. ⁴⁵

III.3.2 Results

H4H was designed to help 400,000 homeowners. As of January 3, 2009, it had only processed 373 applications and only refinanced 13 – none of which had been FHA-insured. Many issues contributed to H4H's failure including the programs limitations on flexibility and reliance on voluntary principal write-downs by the private sector lenders. Lenders unwilling to write-down loans to 96.5% of present home value, and thus take large losses, cannot participate. Borrowers may also be unwilling to share future home price appreciation, deal with such a complex program, and take on a 30 to 40 year loan.^{46,47} The HUD Secretary, Steve Preston, said, "The centerpiece of the federal government's effort to help struggling homeowners has been a failure, and I'm blaming Congress."⁴⁸

Recognizing the ineffectiveness of the program, the government amended the program and added it to the Making Home Affordable initiative on May 20, 2009. The amendments included an elimination of the 3% upfront premium and reduced the 1.5% annual premium to between 0.55% and 0.75%, based on risk. They raised the LTV requirement, eliminated a government split of future home appreciation profit, and authorized bonuses to servicers upon successful refinancing. Administratively, they tried to eliminate a number of eligibility requirements and prohibitions in order to streamline the process, including eliminating prohibition against taking out future second loans. It is too soon to tell what the effects of these changes will be.⁴⁹

III.4 FDIC "Mod in a Box" Program and GSE Streamlined Modification Program III.4.1 Plan

When FDIC took over IndyMac Federal Savings Bank, they implemented a streamlined modification program known as the FDIC "Mod in a Box" program on August 20, 2008. Similarly, when the Federal Housing Finance Agency took Fannie Mae and Freddie Mac under conservatorship, they introduced the GSE Streamlined Modification Program in November of 2008. Both programs center on income and affordability, rather than write-downs and negative equity. Both programs only consider severely delinquent borrowers with FDIC and Streamlined Modification Program utilizing either 60 days or 90 days or more overdue on payments, respectively. Both programs provide a bonus to servicers to compensate them for the effort of modification. "The programs then attempt to find the modification with the minimum [net present value] NPV impact that achieves a 38% DTI," utilizing gross monthly income to measure DTI. ⁵⁰ Gross monthly income does not take into account the other expenses that could severely decrease the borrower's net income and ability to repay the loan. Most self-employed individuals have a high gross and a low net.

"The sequential process used by the FDIC program starts by capitalizing the arrearage into the unpaid balance, and if the resulting payment puts the borrower's DTI over 38 percent, interest rate reductions and amortization term extensions are offered. If the DTI is still over 38 percent, principal forbearance is applied, involving converting a portion of

the unpaid balance into a zero interest note due when the mortgage is paid off.⁵¹ Finally, if none of the above decreases DTI to the 38% level, FDIC asks lenders to write-down the loans.⁵² Only owner-occupied properties are eligible.

III.4.2 Results

As of December 2008, the FDIC "Mod in a Box" program only awarded modifications to 7,200 of the 65,000 eligible IndyMac borrowers. In addition, the pace of modification has been slow. ⁵³ It is too soon to assess the Streamlined Modification Program program, yet results are projected to be similar to the FDIC program. Though the Federal Housing Finance Agency reports that 37,000 mortgage modifications, a 57% increase, have occurred in the first quarter of 2009 in the GSEs' portfolios, no studies have yet been done as to the effectiveness of these modifications.⁵⁴ Another obvious challenge of these programs is re-default, with a significant portion of modified loans re-defaulting after six months.⁵⁵ Nevertheless, there is some evidence

that the industry is beginning to adopt these plans.⁵⁶ A comparison between these programs and H4H can be seen in Figure 6.

III.5 Making Home Affordable Initiative III.5.1 Plan

Making Home Affordable is a new Obama administration initiative started in February 2009 designed to supplement current programs and increase funding and participation. On March 4, 2009, the initiative was modified to include a Second Lien Program. The three facets of the initiative are GSE monetary support, the Home Affordable Refinance Program (HARP), and the Home Affordable Modification Program (HAMP).

The GSE monetary support includes doubling Treasury investment to USD 200 billion and raising the cap on the amount of mortgages GSEs may hold in their portfolio by USD 50 billion.⁵⁷

Home Affordable Refinance Program will be available to Fannie Mae and Freddie Mac mortgage holders. It is aimed at homeowners with an LTV over 80% but below 105%. No principal write-downs will be necessary. It will apply to loans originated before January 1, 2009 with an unpaid principal balance up to USD 729,750. It will allow homeowners to refinance ARM loans into fixed-rate 30 to 40 year loans. All properties must be owner-occupied.

Home Affordable Modification Program will have similar eligibility requirements, and will require GSEs, and other servicers who agree to its terms, to modify loans if net present value (NPV) tests for the modification are positive. The NPV test is designed and will be preformed like the FDIC "Mod in a box" NPV test aforementioned. Servicers are instructed to reduce payments on the mortgage to no more than 31% DTI. Home Affordable Modification Program will work in tandem with H4H, and if principal forgiveness does not achieve 31% DTI, then H4H refinancing will be an automatic and acceptable alternative.

Lastly, the Second Lien Program will complement the first lien Home Affordable Modification Program. The government will share the cost of interest rate reductions on 2nd liens for servicers who participate in the program. If 2nd lien holders would rather extinguish the lien instead, the government has several offers depending on the delinquency of the mortgage. If the loan is 180 days past due, the government will pay investors 3 cents on every dollar of unpaid principal balance extinguished, and differing amounts are offered for mortgages that are less delinquent (Table 1). Additionally, the treasury will match every dollar for every two dollars paid by investors to junior lien holders to coax them to extinguish their loans.⁵⁸ In these programs, both the US Government and Third Party Servicers share the cost of reduction in monthly payments in order to reduce the DTI from 38% to 31%. Servicers and lenders will also receive one time bonuses and fees if they participate in successful modifications.⁵⁹

III.5.2 Results

Initially, the Making Homes Affordable initiative targeted people who owed less than 105% on their homes current value. This made it unavailable to many delinquent borrowers. After five months, on July 1st, 2009, the US government announced the program would expand to allow homeowners who owe more than 125% of their homes current appraised value to participate. Economists are skeptical regarding the value of these changes citing an almost 8% decrease in the number of refinancing nationwide in just one week in late June 2009, as borrowers and lenders shy away from the practice.^{60,61,62} Taken as a whole, though eligibility requirements are easing, it is too early to tell whether the initiative is a success. However, there does not seem to be the massive 9 million homeowners rushing to apply for these programs as the initial plan aspired.⁶³ Recent speculation suggests the Obama administration will soon be announcing new incentives to entice lender participation in the above programs.⁶⁴ Eileen Mauskopf, Senior Economist of the U.S. Federal Reserve Board, said, "The Administration is modifying and adding provisions and programs to make the modifications more attractive to servicers and to investors and to make it easier for borrowers to qualify for the program."⁶⁵

Section IV: Agency Theory

The academic community overwhelmingly argues that the lack of voluntarily renegotiation on the part of lenders and the failure of most government programs is a consequence of agency and coordination problems, caused by weak servicer renegotiation incentives and the refusal of junior lien holders to re-subordinate or extinguish their liens. We name this approach the "Agency Theory."

In support of Agency Theory, an often cited study by White, in the Connecticut Law Review, tries to show that modifications mitigate loss better than foreclosures, and therefore, should be a more profitable and better alternative. He states that the average loss of a pool of 21,000 first lien mortgages liquidated in November 2008 was USD 145,000, or 55% of the amount due. For second liens in the same study, losses were estimated at 100%. In comparison,

White stated that the average loss for modifications with write-offs was USD 23,610. The number often cited as the scale of preventable foreclosures is 1.5 million. ⁶⁶ Multiplying this figure by the approximately USD 120,000 that would potentially be saved in modification according to White, gives USD 180 billion in deadweight loss.

IV.1 Agency Theory

IV.1.1 Third Party Servicer Institutional Issues

The most problematic institutional issues within the servicing industry include pooling and service agreement restrictions on modifications of loans, Third Party Servicers' fear of litigation from investors, and weak servicer renegotiation incentives.

IV.1.1.1 Pooling and Servicing Agreements

Agency Theory states that the constrictive nature of Pooling and Servicing Agreements motivate Third Party Servicers to forgo renegotiation in favor of foreclosure. During the process of securitization, Special Purpose Vehicles contractually specify the duties and authority of their Third Party Servicers in contracts known as Pooling and Servicing Agreements. These contracts grant loan modification authority to Third Party Servicers that are instructed to act as if they own the mortgages, maximizing NPV. Regardless of the Third Party Servicers willingness, Pooling and Servicing Agreements can restrict the ability of the Third Party Servicers to modify loans. Restrictive clause examples include but are not limited to: modifications forbidden, modification of interest rates allowed but principal prohibited, or modification of maturity date prohibited. Pooling and Servicing Agreements may also cap the number of mortgage modifications. Only about 5% of Pooling and Servicing Agreements block modification completely, and 35% limit modifications to 5% of the total pool.⁶⁷ Additionally, the Trust Indenture Act of 1939 states that any modification to a Pooling and Servicing Agreement that changes cash flow must have the consent of 100% of the MBS holders. Whether loan modifications directly affect overall cash flow is debated. However, that debate is important, because if loan modifications do not affect cash flow, the number of MBS holders needed to modify the Pooling and Servicing Agreement would be far less than 100%.⁶⁸ Customarily, Pooling and Servicing Agreements require only a majority or two-thirds agreement of MBS holders to make changes that do not affect cash flow. Many feel that because there is a plethora of MBS and Collateralized Debt Obligation holders, a 100% consensus to change Pooling and Servicing Agreements to allow for modifications that affect cash flow is essentially impossible. On the other hand, gaining even a simple or two thirds majority to allow more modifications to

occur that do not change the cash flow is still very challenging, time consuming, expensive, and likely unattainable, given the large numbers of holders involved.

IV.1.1.2 Tranche Warfare

Agency Theory holds that Third Party Servicers refuse to modify a massive number of loans because they believe it will invariably hurt one of the MBS tranches and lead to class action litigation by the tranche being hurt. This premise is based on the different tranches within an MBS capital structure having different renegotiation priorities. For example, senior tranche investors want more immediate recovery from a defaulted loan and lobby for foreclosure, because they are shielded from large losses. On the other hand, mezzanine and equity tranche investors may lose significantly in foreclosure, and push for modification. If principal and payment are allocated separately among tranches, as they sometimes are, this may also affect the process. The resulting actions of these confounding priorities are dubbed "tranche warfare" with the Third Party Servicer caught in the crossfire. The well-publicized 2008 lawsuit against Bank of America (BofA) is most often cited to support this Third Party Servicer fear of litigation.⁶⁹

IV.1.1.3 Lack of Compensation

Agency Theory asserts that although Third Party Servicers have a duty to maximize NPV on loans, there is a lack of incentive to renegotiate loans, since Third Party Servicers are not compensated for modifications and are only compensated for foreclosures. For example, although private label MBS Third Party Servicers will maintain servicing fees on modified loans, they are not encouraged to renegotiate, since they will not receive compensation for their time or reimbursement for their expenses involved in the modification process. Yet, when a Third Party Servicer forecloses, although they do lose servicing fees, they are able to shift to a cost-plus basis on foreclosure expenses, making a profit on any legal fees, inspection fees, or other associated foreclosure expenses and are compensated for their time in the foreclosure process. Agency Theory contends that with the influx of delinquent loans, Third Party Servicers lack the capacity to exercise modifications, and therefore, do not make them. In support of this contention, economists have cited that Third Party Servicers must spend time and expense training personnel to educate and handle the many mortgagees of an MBS most of whom are unaware that their mortgages have been securitized. Many borrowers complain they are unable to get the Third Party Servicers to even answer their phones, and therefore, give up trying to renegotiate their loans.⁷⁰ Since Third Party Servicer's only incentive to go through the modification process is to

continue to receive servicing fees, they are reluctant to build infrastructure to forge the difficult and complex path of renegotiation due to lack of compensation.⁷¹

IV.1.2 Junior Mortgages

Agency Theory maintains that the difficult process of identifying a junior lien and the refusal of junior lien holders to re-subordinate or extinguish their liens, creates a coordination problem and resistance to modifications. According to this argument, senior liens are uninformed that the properties they own have junior liens, called silent junior liens. The Congressional Oversight Panel has stated that the existence of junior liens has complicated the mortgage crisis. By 2006, over 50% of Alt-A mortgages included a second mortgage at origination (Figure 7). If a senior lien is modified, the loan workout is considered a completely new lien and would become subordinate to the initial junior lien. Senior lien holders do not want to lose their lien priority on the property, which increases their risk of loss, and many junior mortgages, rightfully fearing a total loss, are refusing to re-subordinate to new senior mortgages. "These second mortgage lenders are reluctant to give up their [only] leverage and agree to any concessions absent a payoff."⁷²

IV.2 Reasons to Doubt Agency Theory

Paul Willen, Senior Economist at Federal Reserve Bank of Boston, states, "The evidence, theoretical, empirical, and even institutional, rejects the claim that contract friction is preventing large-scale renegotiation of mortgages."⁷³ Logical observations, statistical evidence, and historical evidence support this view that Agency Theory does not explain the continuous reluctance of lenders to renegotiate. An analysis of current programs and the number of renegotiations completed disputes many of the arguments that point to institutional problems.⁷⁴

IV.2.1 Logical Observations

Agency Theory would seem to be the logical answer for the lack of modifications in the face of deadweight loss calculations by White. However, Agency Theory must show that renegotiating transaction costs and legal fees to Third Party Servicers are large enough (i.e. greater than USD 180 billion) to upset efficient modifications. To date, that has not been shown to be the case. Eric Maskin's critique of Agency Theory in the *New York Times* draws reasoning from the Coase Theorem. "The Coase Theorem implies that economically efficient decisions will be made as long as property rights are well-defined and transaction costs are not of first-order importance." ^{75,76} It is unimportant whether Third Party Servicers suffer losses, as they are a

third-party by definition. Expanding on the theorem, if one party has more to gain from renegotiation than the other party stands to lose, the first party has enormous incentive to strike a deal, regardless of third party obstacles.

Investors –the parties that do suffer the loss—have incentives to change contractual arrangements or make other arrangements to prevent the White hypothesized massive USD 180 billion loss caused by foreclosure from occurring. As Maskin states:

"If, as claimed [by White] such write-downs are truly 'win-win' situations...they might not need the government's assistance...mortgage holders themselves have strong motivation to renegotiate those contracts, so that servicer's incentives are corrected...and to complete their argument, the writers must show why it won't [and hasn't] happen"⁷⁷ A loss of this size does not fit well with economic theory. ⁷⁸

Agency Theory states that Pooling and Servicing Agreements are preventing renegotiations by Third Party Servicers. However, a 2007 Credit Suisse study showed that at least 50% of Pooling and Servicing Agreements have no restrictions on making modifications, and therefore could not be limiting renegotiating.⁷⁹ Further, the Congressional Oversight Panel indicated for the 35% or more of Pooling and Servicing Agreements that had a 5% cap, the Pooling and Servicing Agreements could not be preventing Third Party Servicers from renegotiating because none of their respective Third Party Servicers modified to such an extent that they bumped up against the 5% limit. Thus, for 85% or more of MBSs, their Pooling and Servicing Agreements could not be preventing Third Party Servicers from renegotiating.⁸⁰ Corroborating this contention is a study by Berkeley Center for Law, Business and Economy that found in 95% of all cases, when the Pooling and Servicing Agreements does not ban modification, the Third Party Servicer can proceed with a modification without the approval of any MBS investors. They found that outright bans on modifications to be rare, and that Pooling and Servicing Agreements endeavor to "cause loans to be serviced as if they had not been securitized."^{81,82} They showed that investor approval is only necessary to change or modify the Pooling and Servicing Agreement itself, and questioned whether a single investor could or would block a modification because of the cash flow issue and the Trust Indenture Act of 1939.⁸³

Agency Theory holds that Third Party Servicers do not modify loans for fear of tranche warfare litigation. However, it is unlikely that tranche warfare litigation will come about for two reasons: First, no Third Party Servicers have been sued for making too many or too few

modifications. Given the current housing meltdown, one would have expected lawsuits to have already occurred, if they were going to occur at all, to comply with the statute of limitations for such lawsuits. In particular, there is a lack of tranche warfare litigation by mezzanine and equity tranches, the most likely plaintiffs, expecting Third Party Servicers to make modifications to protect their interests. Second, investors accept the risks when buying their respective tranche. They all had to agree to the Pooling and Servicing Agreement that stated the Third Party Servicer must act as if it is the sole owner of the mortgages. Therefore, if the Third Party Servicer modifies or forecloses loans "acting as the owner" to minimize risk, maximize cash flow, and maximize NPV, it would be shielded from lawsuits, with an affirmative defense based on the Pooling and Servicing Agreement, and the payout to the three different tranches would follow as before in their respective priorities with the same associated risks. However, in support of Third Party Servicer fear of litigation, many cite the only lawsuit to date against a Third Party Servicer, filed on December 1, 2008 against BofA. On closer inspection, it becomes clear that the suit claimed that BofA modified mortgages in a mortgage pool in its own self-serving interest to settle predatory lending claims against it as a corporation, and not because it was in the best interest of the MBS overall or of any particular tranche over the others. Therefore, the plaintiff is asking that BofA repurchase that mortgage pool. Also, several studies have found that while investors are slightly concerned about Third Party Servicer capacity given the number of delinquent borrowers, most are not concerned about the massive number of foreclosures.⁸⁴

Agency Theory asserts that Third Party Servicers do not make modification because they are not compensated for that work, but are compensated for the work of foreclosure. However, many government programs have set aside bonuses for Third Party Servicers to renegotiate in order to provide a payment incentive to modify loans and keep the borrowers in their homes. Yet those programs have failed miserably to increase the number of modifications made to the levels anticipated by the designers of the programs.

If Agency Theory is correct and renegotiation improves the lender's position over foreclosure, then the majority of junior liens should not be refusing to re-subordinate on modifications that would most certainly put them in better positions. If renegotiation were a better option for all involved, junior liens would re-subordinate for selfish reasons. Given the choice between foreclosure or re-subordination, modification would be driving the market, if that was clearly to everyone's advantage. Since that is not the case, it further refutes the Agency Theory observations.

Another reason to doubt Agency Theory is Mauskopf 's analysis, which demonstrates that the NPV test elucidates government program failure to make renegotiation profitable. She uses the example of a household at 31% DTI that has gone into unemployment and is collecting unemployment insurance. The assumption made is that the household now only receives 50% of the original income. Therefore, in order to meet the 31% DTI, Third Party Servicers must modify the loans to reduce payments by 50%. This is a dramatic reduction in payments to lenders. The government would have to share much more than it does now in the cost burden to make modification desirable over foreclosure. Home price declines plus foreclosure costs would have to reach at least 50% for Third Party Servicers to agree, and that does not insure that the property will not end up in foreclosure anyway at a later time. This probability of re-default is between 52% and 69%, as will be discussed later in this paper. Regardless of Pooling and Servicing Agreement restrictions, Third Party Servicer compensation or fears of litigation, or junior lien issues, the NPV test shows that renegotiation is highly unlikely to be more profitable than foreclosure with the current government programs, and therefore less likely to occur.⁸⁵

IV.2.2 Statistical Evidence

For Agency Theory to hold, securitized loans – due to weak Third Party Servicer incentives – must have less renegotiation than the portfolios of single financial institutions. However, the data shows that they have about the same or greater number of modifications, using Foote et. al's definition of modification as any change from the initial terms at inception. By performing econometric tests on Agency Theory using mortgages held by a financial institution securitized by GSEs or private label enterprises, the frequency of renegotiation comparisons can be made between the portfolios of financial institutions and that of MBS mortgage pools.

Based on the sheer increase in number of modifications made since 2007, an inference could be made that Agency Theory does not seem to support institutional obstructions to making these modifications. There were seven times as many modifications made in the last quarter of 2008 versus the first quarter of 2007, although it is very significantly less than the White's envisioned 1.5 million loan modifications possible (Table 2). Therefore, other considerations for making these modifications rather than foreclose must be predominant. The data in Table 2 illustrates the types of modifications that were made in each quarter and the changes that this composition has undergone over time. Not surprisingly, the greatest number of modifications is of the principal balance increase type, most likely because of mortgage arrears additions. Although it would appear in Foote's calculations principal loan increases are falling, in actuality, the trend is increasing (Figure 8). As expected principal balance increases have gone up modestly, to include arrearages, protecting lender loan values. But the most dramatic rise is in interest rate reductions, similar to the Great Depression, because the interest rate from the 20's to the 30s was falling. With falling interest rates over the past few years, lenders could, in essence, modify loans by internally refinancing them at lower interest rates and add loan extensions to try to decrease monthly payments somewhat, while maintaining principal balances or increasing them to incorporate arrearages and default costs to minimize losses, and this is exactly what occurred from end of 2007 to the last quarter of 2008.

However, it has been shown that modifications that decrease monthly payments, by any method, increasing terms or forbearance or principal reductions, are far more successful (Figure 9). The probability of a re-default after 90 days on a modification that increases payment is 69%, while it is still 52% for a modification that decreases payments. Although 52% is very high, it is relatively better, but may not be significant. Also, in a falling market, a re-default at a lower asset value means the ultimate foreclosure will net a lower amount for the lender, making the original modification less profitable than foreclosing in the first place. Therefore, only in 31% and 48% respectively of the modifications described above is it more profitable than foreclosure as calculated by White. That is not enough to offset the losses to lenders in a downturn that are incurred with the 69% and 52% of the loans where foreclosure is merely postponed, which is the more likely explanation than Agency Theory for the lack of widespread modifications. In other words, in a falling market with a long or unknown time to recovery fixing the loss early through foreclosure is best for investors to mitigate the continued decline of the return on their investment. If modification is done early while the asset is falling and foreclosure occurs later when the asset value has fallen even further, the investors have not only lost income due to the modification but also have lost income at the postponed foreclosure sale, which can only recover a still lower asset value. However, when the market nears the bottom or it is anticipated there will be a quick recovery, modification may forestall foreclosure to a time of higher collateral values or perhaps eliminate foreclosure altogether providing a better way to minimize losses.

Therefore, the outcome of the analysis is dependent on current conditions at the time of the analysis and anticipated future conditions in the short and long term.⁸⁶

As expected, there is a low incidence of principal reductions in 2007 and the early-to-mid 2008 (Table 2). However, this may be due to the fact that the dataset used only includes the 35% of mortgages securitized by private label firms whose portfolios consist mostly of subprime mortgages. The re-default results, with only 35% of the private-label market, are probably optimistic. Higher re-default rates would make modification even less profitable than foreclosure, explaining why fewer are made, rather than relying on Agency Theory as the root cause. ⁸⁷

From the theoretical perspective, lenders have strong incentives to provide principal payment reductions to those borrowers who are in very serious danger of default. To control for differences in loan quality between portfolios and securities, the data is differentiated by the number of days of delinquency (Table 3). When modifications are calculated as a percentage of total loans, modification is more frequent in private securitization, which would lend support to doubting Agency Theory. However, this might be because private label MBSs have a riskier loan pool. When the sample of loans is narrowed to delinquent loans only, the results become more apparent. "Portfolio loans have a slightly higher incidence of modification compared with privately securitized ones in Panel A, while modifications are less common among portfolio loans in many instances in Panel B (except in the fourth quarter of 2008)." This again supports to the repudiation of Agency Theory.⁸⁸

The two important inferences that can be made from Table 3 are that portfolio loans do appear to be modified slightly more frequently than securitized loans in Panel A, for delinquent loans, and GSEs, presumably the more responsible corporations, have less frequently modified loans, perhaps because they have higher standards and better borrowers. However, government and media reports have exaggerated the differences in modification frequency between portfolio and securitized loans. For example, in the 30-day delinquency group, there was only 0.53% more modification for portfolio than securitized loans in the third quarter of 2008, for all loan types. The discrepancy is somewhat smaller for only Alt-A and subprime mortgages, but surprisingly more modification takes place in securitized mortgages, which would support the fact securitization does not lead to decreased modifications as purported by Agency Theory.

Although the information provided by Table 3 seems to support the lack of obstruction due to Agency Theory, the differences are even more apparent in favor of Third Party Servicers making modifications when a time lag is considered from the first day of delinquency to eventual loan modification. Table 3 only has data for 30 and 60-day delinquencies. If as suspected, portfolio lenders are able to modify their loans quicker than Third Party Servicers, then the data in Table 3 is skewed in favor of portfolio lenders making modifications in the short term. When a time lag from delinquency to modification is taken into account, securitized loans are modified a great deal more frequently than portfolio loans. To account for this time lag, we look at Figure 10. Therefore, in the transition from 30-day delinquency to loan modification, Figure 10 shows GNMA is more likely to have loans that have been modified in their portfolio over FNMA loans, over time. Also, private label MBSs have a 15% probability of modification after two years, and 26% after three years, while portfolio loans only have rates of 11% and 16%, respectively, showing the data is inconsistent with Agency Theory. Over shorter horizons the differences are much less, mistakenly skewing the data in favor of Agency Theory.

On the other hand, "Piskorski, Seru, and Vig (2009) find that seriously delinquent portfolio loans are less likely to experience a completed foreclosure."⁸⁹ On the face of it, this would support Agency Theory. Thus, though a borrower may default, he eventually cures the loan (i.e. becomes current on his payments), and the foreclosure and sale of his home does not take place.90 Piskorski attributes this to securitized-lenders' aversion to modify loans, but the analysis does not support this observation. As shown, the likelihood of modification is not significantly higher for portfolio lenders in the short term, and is significantly higher for privately securitized loans in the long term. Therefore, perhaps portfolio lenders are making better types of modifications with lower re-default rates, which could possibly explain the smaller number of foreclosures among them. However the numbers of modifications (about 7%) overall are not high enough to explain this. Also, if Agency Theory is the cause, then portfolio loans would not only foreclose less often, but would become current more often. However, they are no more likely to become current than securitized loans.⁹¹ The more "likely explanation for the Piskorski et al. finding of fewer foreclosures is not a higher willingness of portfolio lenders to modify loans, but rather various accounting and regulatory issues that make portfolio servicers less willing to complete the foreclosure process"⁹²

Overall there appears to be substantial statistical evidence to show that portfolio loans and securitized loans invariably have approximately the same comparative amount of modification or that securitized loans are modified more often. This would fail to support Agency Theory as the cause for the lack of modifications that White's calculations would predict should occur. When the statistical evidence is taken as a whole, it would appear that fewer modifications are being made overall because foreclosure is more profitable than modifications in the majority of cases.

IV.2.3 Historical Evidence

It is habitually stated that renegotiation frequently occurred in the past, but that securitization and other agency problems are not allowing such beneficial cooperation between lender and borrower today. The Congressional Oversight panel and dozens of economists and authors support this claim.^{93,94,95} If this claim of a "history of renegotiation" is true, then it would support Agency Theory. On the other hand, if false, it supports the argument that renegotiation has not been and is not more profitable than foreclosure in most circumstances.

There are a number of reasons to doubt this claim. An analysis of the data illustrates that far fewer foreclosures are completed today, compared to the 1930s, but modifications did take place in the past. On the face, this conflicting information requires closer examination. During the Great Depression, from 1929 to 1936, 1.8 million US foreclosures were completed. There were 22.9 million occupied dwellings in 1930, and 105 million by 2000 – over four times the amount. More importantly, the number of mortgaged homes has increased from 4.8 million in 1940 to 39 million in 2000 – over eight times the amount. Today's mortgage market is much more widespread, with more possibility for greater numbers of foreclosure. Consequently, an equivalent number of completed foreclosures in the current decade would need to be between 8.3 and 17 million. Figure 11 examines the fraction of loans foreclosed by year of origination for savings and loans, life insurance firms, and commercial banks. ⁹⁶

"The worst vintages were those of the late 1920s, when approximately 30 percent of loans originated by life insurance companies, 20 percent of S&L mortgages, and about 15% of commercial bank loans were foreclosed upon. The bottom panel shows the fraction of homeownerships (not loans) originated each year in Massachusetts from 1988 through 2008 that eventually ended in foreclosure. Since at least some of these foreclosures did not occur on purchase mortgages, but rather on subsequent refinances, one can view this as an upper bound on a similar measure using date." ⁹⁷

In the current crisis, the peak year would seem to be 2005, with a max foreclosure rate of less than 5% as opposed to the peak foreclosure year of 1929 during the Great Depression with maximums reaching 30%. There does not appear to be a beneficial cooperation between lender and borrower in the Great Depression, which lends doubt to Agency Theory being the cause of this today.

The Home Owners Loan Corporation (HOLC) was chartered by Congress in 1933 to buy loans from lenders, using taxpayer money, at significant discounts. This provided lenders with the ready cash they needed, but at a considerable loss. Yet it afforded government the opportunity to keep borrowers in their home by rewriting the loans with affordable terms. This is a government program, not private, with the government as a direct lender. This is quite different from the programs of today. The inducement for these modifications was that 40% of American homeowners were over 15 months delinquent. Had they not done this, almost half the homeowners would be homeless. However, with a government as a direct lender modifying loans, this data cannot be used to support or refute Agency Theory. Yet, even in this program, foreclosures due to re-defaulted loans reached 20%, causing further significant losses, making initial foreclosure the better option in those cases.⁹⁸

Still, it is known that commercial banks also modified loans during the Great Depression. Almost 40% of loans originated in a given year would be modified, and almost 50% of those were re-modified. Keep in mind, these were not "concessionary modifications" designed to make the best of a bad situation, with principal write-downs, as promoted today. These were simply modifications to extend loan terms and to decrease interest rates until good quality borrowers could pay, increasing principle balances and using forbearance as methods to keep losses low. The reason for this is because interest rates were significantly lower in the 30's than the 20's, making interest rate reductions sensible, since a borrower could refinance at a lower rate anyway. Also, during the 30's short term loans were the norm. Therefore, extending the term lengths also made sense to the lender, since they would recoup their money over a longer term with little or no ultimate loss, rather than having the borrower serially refinance or foreclose.⁹⁹

Therefore, using the Great Depression is difficult to support or refute Agency Theory, since the circumstances were so different. Clearly, the incentives for modifications in the Great Depression were dissimilar to incentives today. Modifications in Great Depression were non-concessionary, and foreclosing occurred far more often than now, when loses could not be

mitigated through modifications. Lenders expected to recoup their entire loan principle with interest from good borrowers over the long term, when times would become better, thereby expecting those losses to be minimal. However, when foreclosure was imminent, the banks could sell the loans to the government at a deep discount, at a loss admittedly, but it yielded ready cash. Conversely, lenders today have to wait for the foreclosed houses to sell to the public further depressing the market and increasing their losses, if they sell at all. Also, during the Great Depression 40% of homeowners were 15 months or more delinquent, and therefore, the potential loss to lenders of modifying loans to borrowers that would have paid anyway was extremely small. In addition, liar loans and No-Job-No-Income-No-Asset (NINJA) loans did not exist then.

Section V: Strategic Considerations

After analyzing the inability of Agency Theory to explain the lack of significant loan modifications, we now consider an alternative explanation for the lack of lender renegotiations of loans. The deeper reason is that the value of completing a foreclosure is greater than the value of a loan modification for lenders. Several theories draw on the use of collateral. The two most strategic considerations are the moral hazard of collateral as a screening mechanism, as well as the deterrence effect of realizing this collateral.

V.1 Screening Practices based on Collateral

V.1.1 Theory

The purpose of collateral is to reduce bank risk. When a borrower defaults, the bank retrieves the collateral. Thus, collateral is a positive instrument in banking. J. P. Ninimaki, an expert in the banking screening process and moral hazard, challenges the positive effects of collateral use. He compares lending with and without collateral to identify negative effects. Collateral can either be outside or inside. Outside collateral is offered by the borrower, but not purchased with the funds from the loan—it is outside the loan. Inside collateral is offered by the borrower and bought directly with the loan, such as a mortgage for a house as collateral. Ninimaki states,

"The collateral's future value is uncertain, which tempts banks to gamble with the collateral. Banks refrain from the costly efforts of borrower evaluation, but lending decisions are based on collateral. If the collateral value is high at a later date, the bank makes a profit. If the collateral value depreciates, the bank fails and the bank regulator,

who runs the deposit insurance scheme, has to pay the costs of excessive risk taking....The moral hazard effect is shown to be strengthened when outside collateral is replaced with inside collateral."¹⁰⁰

He compares three scenarios: "(1) bank returns with monitoring [neglecting collateral]; (2) bank returns without collateral and without monitoring; and (3) bank returns with collateral and without monitoring."¹⁰¹ In Scenario 1, Ninimaki shows a monitoring bank is risk free and subsequently earns zero excess returns. In Scenario 2, Banks that do not monitor borrowers that post no collateral, fail and avoid the moral hazard problem.¹⁰² Most importantly, he illustrates that banks who would not monitor would normally fail, but can earn positive expected returns with collateral. Thus, Scenarios 3 can be more lucrative than Scenario 1, giving rise to a moral hazard.

Ninimaki proves that for Scenario 3 "when the upcoming share of successful loans is certain, but the upcoming value of collateral is uncertain, the introduction of collateral may generate the moral hazard problem. The larger the volatility of the upcoming value of collateral, the worse the moral hazard problem."¹⁰³ When discussing this moral hazard problem, he says that there exists a certain minimum and maximum screen level of collateral where no moralhazard exists. Below the minimum level, trivial proceeds are received from foreclosure. Above the maximum level, bad borrowers will not have enough collateral to participate. On the other hand, there is the possibility that the value of the collateral can be in some middle level at which a moral hazard does appear. At the middle level, proceeds from foreclosing on this future value of collateral can be high enough to yield high proceeds to a bank, so banks do not monitor. Additionally, at this level, bad borrowers have enough collateral to take out loans. If middlelevel collateral value appreciates, the moral hazard exists. If the future value of collateral is high, the bank enjoys a profit. If the future value depreciates, the bank takes a loss and fails, leaving the bank regulator with deposit insurance claims. Ninimaki offers ways to alleviate this moral hazard, but concludes "it is possible that moral hazard cannot be eliminated."¹⁰⁴ A quagmire exists because the risk to existing bank regulators prohibits new banks from obtaining licenses. Thus, the existing banks become larger and larger.

Examining the same case for inside collateral, he shows the "the moral hazard problem is [even] more likely to appear with inside collateral than with outside collateral."¹⁰⁵ Obviously, if borrowers use bank funds to purchase collateral, then borrowers participate in large numbers,

and exacerbate the problem. Ninimaki concludes by showing that lenders are "willing to finance unproductive projects based on the assumption that collateral values would later appreciate."¹⁰⁶ These conclusions substantiate why in the last two decades lenders have diversified loan pools to include mortgages across the entire US. This was undoubtedly to take advantage of the fact that nominal housing prices for the entire nation have always appreciated (Figure 4). With appreciation, lenders could expect large proceeds from foreclosure, or at minimum homeowner loan refinancing. Therefore, Ninimaki's theory aligns with both of Foote et. al's conclusions: subprime mortgages experience foreclosure six times greater than prime mortgages, and that "analysts on the whole understood that a fall in prices would have disastrous consequences for the market…[but they] assigned a low probability to such an outcome".^{107,108} Additionally, the theory that banks try to be "too big to fail" is proven here in the lack of bank licensing that occurs within this situation. This gives these banks even more power to gamble without consequences.

Michael Manove, A. Jorge Padilla, and Marco Pagano take Ninimaki's theory even further, explaining that collateral not only gives lenders a threat to ensure repayment, but high levels of collateral weaken the banks' incentives to monitor their borrowers. Borrowers now have an incentive to post collateral, because it removes monitoring costs, and thus lowers their interest rate. Additionally, lenders are able to widen their margins and compete more effectively with competitors. This incentive to post collateral is hazardous to both parties– especially if the loan utilizes inside collateral—since the borrower may not have an accurate outlook of their ability to succeed. By examining the difference between high-risk borrowers and high quality projects, Manove et al. still show that collateral is posted by the best entrepreneurs, not the low quality ones. Nevertheless, they state:

"At first sight, this may appear to run against the grain of much empirical work that finds collateral to be required from high-risk borrowers. In fact, our model is consistent with this empirical regularity, in our inefficient equilibrium, low-quality entrepreneurs are screened, so only those with good projects are funded, whereas high-quality entrepreneurs are not screened, so all their projects are funded – including some bad ones. As a result if one were to use borrower's *ex post* performances to partition them into two classes – low risk and high risk – one would conclude that collateral is posted by the

high-risk borrowers, which in fact are the high-quality, unscreened entrepreneurs [and projects.]"¹⁰⁹

Thus, lender moral hazard is fueled and lenders are left with high-risk borrowers and possibly highly profitable projects.

Despite borrower's inability to pay banks if their projects fail, the paper argues as long as lender's rights are enforced and protected, there is no reason to abandon the use of collateral as a screening mechanism. According to Manove et al., this has several added negative effects. With social security or other social "safety nets," entrepreneurs, especially those that think their projects are better than they really are, can take excessive risks. Banks should be monitoring these projects, and tempering their funding, but fail to do so. This incentivizes bad loans and exacerbates the problem. Moreover, Allen Berger and Gregory Udell prove that banks that finance riskier collateralized projects become less secure.¹¹⁰ If the market depreciates and these loans become worthless, aware depositors may become fearful and request their money back. This leads banks into a liquidity crisis, liquidating their assets, including mortgages, to boost cash in the near future to alleviate the problem. This would then become a vicious cycle depressing the market further as supply increasingly surpasses demand causing unnecessary foreclosures.¹¹¹

V.1.2 Results

Once the moral hazard of non-monitoring has been established, it becomes relevant for our purposes, because it is shown that if the lenders' gamble goes awry, banks either fail or receive a bail out from bank regulators. Though Scenario 1 theoretically would have been a no risk system with a pool of only good borrowers, utilizing Scenario 3 has led to loans given out to a pool of both good and bad borrowers. A pool of good and bad borrowers has the further effect of reducing the profitability of renegotiation with the entire pool, as government officials are requesting.

Therefore, there is another way to explain the small amount of renegotiation, which is consistent with the Coase Theorem. Essentially, as Mauskopf explained, most renegotiations are negative NPV transactions from the lender's perspective. NPV takes into account current market value of the asset, costs to foreclose, costs to repair and maintain the asset, lost income from arrearages during the time from the default to the sale, lost income when the asset cannot be sold to a third party and must be maintained, costs to advertise and sell the asset, and expected net

sales proceeds. In the current falling market the value of the assets fell precipitously, impacting NPV negatively. However, as the market reaches bottom or begins toward recovery, the current market value of the asset may remain stagnate or move positively depending on the speed of recovery. Therefore, the NPV largely remains negative even after the bubble has burst as determined by "Liquidation Proceeds NPV." This is caused by two effects: either the borrowers are bad, and thus renegotiation will not lead to repayment and will simply postpone foreclosure increasing expenses and lost income along the way, or the borrowers are good, and a high level of renegotiation will simply reduce payment on mortgages that borrowers are paying.¹¹²

In either case, banks and servicers are suffering from a lack of information regarding their mortgage pools. First, the unprofitability of renegotiating relative to foreclosure due to both of these cases can and has been proven. In the first case, if a borrower has lost his job and is obligated to pay mortgage arrears with interest, loan forbearance may not be the best option for lender, since they are unsure when the debtor will find new employment, and at what salary. If the value of the inside collateral falls, and the house has become unaffordable to the borrower, then renegotiation simply postpones foreclosure. Thus, Foote et. al takes Mauskopf's observations and further concludes that if the expected loss from foreclosure is 57% (as White claims) and default is 50% likely – as is currently stated by the US Congressional Oversight Panel—then the lender will only reduce the loan by 28.5% regardless of the borrowers DTI. Therefore, Third Party Servicers and lenders may choose to foreclose today rather than risk an even bigger loss later on. Second, analysts typically ignore the loss of a loan modification to a borrower who would have repaid their loan anyway. Foote et. al depicts a scenario where a lender faces a troubled borrower requesting a loan modification.

"If the lender fails to modify and the borrower defaults, the lender will lose because...the cost of modifying the loan falls far short of the cost of foreclosing. We will call this loss 'Type I error.' However, Type I error is only part of the story, as the lender faces another problem. If unbeknownst to the lender the borrower requesting the modified loan will not default in the absence of a modification, then the lender will lose the money he would have received according to the original terms of the loan. We call this situation 'Type II error.' For a modification to make economic sense from the lender's perspective, Type I error must exceed Type II error."¹¹³

Using the Massachusetts case study to apply this theory, one finds that Type II error is large relative to Type I error. ¹¹⁴ Consequently, despite the backdrop of economic turmoil, most homeowners in that study are of the Type II group, and will find a way to pay back their loan absent any concessionary modifications or will be able to cure the loan before a foreclosure is completed. Therefore, in the Type II situation, a lender will lose money on any modification that reduces principle balance and interest, since these borrowers would not have defaulted. This makes modification less profitable than foreclosure, and concessionary negotiations do not make sense. Clearly from either the unaffordability of the mortgage, Type I error, or the prevalence of Type II error, coupled with the lender's lack of information due to the moral hazard of collateral, foreclosure is the most profitable choice. This explains why no lawsuits have been filed from mezzanine and equity tranches for too few modifications.¹¹⁵

V.2 Deterrence Effect of Collateral

Leonard Nakamura, of the Federal Reserve Bank of Philadelphia, argues that the threat of foreclosure is "a blunt instrument that often harms the lender as much as the borrower. After all, the value of the borrower's collateral, particularly during a recession, may be insufficient to repay the loan."¹¹⁶ A foreclosure causes costly inefficiency in the economy through the debtors' time spent on legal proceedings and less on business in their struggle with creditors. Nakamura explains that when lenders carry out their threats of foreclosure, they kill their "golden goose," or cash flow. Nevertheless, the strategic reasoning for foreclosure is simple. If the borrower is given a choice of an amount of principle to repay, the logical borrower will choose the smallest amount. Thus, in order to force the borrower to pay off the loan, the threat of foreclosure is necessary.

Nakamura substantiates this claim with two theories: Robert Townsend's and the second by Oliver Hart and John Moore.^{117,118} Townsend's theory stresses the costs involved with monitoring and a lack of information. He explains that after the investment is made, auditing the borrower may be extremely difficult, if not impossible. The key consequence to the borrower in this model is a penalty – a loss of asset value. Nakamura explains that lenders must threaten to destroy the firm or foreclose in order to "learn the owners' true assessment of [their own] worth...the threat must be made to learn information...The lender may discover that the firm cannot repay and that the threat will have to be carried out....when the lender cannot verify that the borrower's problems are indeed temporary."¹¹⁹ Thus, the threat of foreclosure must be carried out in order to deter other borrowers and to find out whether this is Type II or Type I error.

Hart and Moore assume in their model that lender and borrower information is symmetric; the problem is contractual control. The theory rests on the idea that contracts are inherently too simple to control the complex events that could happen to a borrower during a recession. Although the threat of foreclosure usually enforces payment, in a deep recession where the collateral falls below the loan value, the borrower may actively default to divert cash flows to start up a new firm or buy a new house. For example, in the negative equity situation of a home, where the LTV ratio is greater than 1, even if the borrower could afford to pay the loan, it may make better business sense to walk away, leaving the lender with the property and the loss. In Hart and Moore's model, collateral is key to renegotiation. ^{120,121} Nakamura states,

"In a renegotiation, lenders may allow payments to be stretched out or even reduced so as to avoid the losses from seizing collateral. But since only collateral can enforce repayment, the lender will be willing to do this only if the borrower can offer immediate cash and future collateral that are at least as good as what the lender can gain through immediate seizure. If future collateral is inadequate, the lender will foreclose."¹²²

Therefore, in a mortgage situation with inside collateral, if a borrower has just lost his job or is defaulting on the loan, in most cases, they lack the immediate cash and additional collateral necessary to renegotiate with the lender. Consequently, the lender must foreclose and not renegotiate the loan.

Lenders must receive something in a renegotiation to make their position more profitable than if they foreclosed, especially if re-default is likely. In the current housing crisis, borrowers in trouble lack the additional collateral and cash. In both Townsend's and Hart and Moore's models, the threat of foreclosure is carried out. In the first case, this is to deter the borrower and other borrowers from refusing to repay. In the second case, this is because additional collateral and concessions are necessary and not forthcoming. In both cases, collateral is necessary to ensure repayment. Consequently, in both cases, the incentive to complete the foreclosure is more than the incentive to renegotiate.¹²³

Additionally, the fact that all government and private programs include a condition that homes must be owner-occupied may be an important point. Government and private programs are refusing to help investor-owned properties, even though theoretically renegotiation of these loans would produce a better result, reduce foreclosure on the whole, and help stabilize falling home prices. The fact that investors are not being helped, regardless of the harm it does to the entire industry, is a deterrence effect in and of itself. The industry is trying to deter bad investor borrowers now and in the future from taking out risky mortgages, regardless of the harmful effects this has on the entire industry. This type of deterrence is another reason for the continuing decrease in home prices and increase in foreclosures.

V.3 Asset Liquidity and Moral Hazard Deterrence Effect of Collateral

Michael Anderson's article in the Review of Quantitative Finance and Accounting is relatively simple. His research proposes a scenario in which the liquidity of the asset in question decides whether the lender forecloses or renegotiates. Anderson divides the best policy regarding a piece of collateral into 5 groups or types of loans. The collateral can be identified as part of certain group with knowledge of the asset liquidity and the borrower's propensity or moral hazard to consume the loan and then default (Figure 12). Through a set of rules and conditions regarding these two variables, Anderson finds that the optimal lender decision for a Type I, II, and III loan is to foreclose. He finds that the best option for a Type IV loan is renegotiation. Lastly, he finds that a Type V loan is neutral and the optimal decision is uncertain. Because the entire loan has been spent, we assume that borrower moral hazard is sufficiently small. In addition, we assume that the housing market is fairly liquid, relative, for example, to inventory from a bottling company. The housing market is considered to be the most liquid market after the stock market by several accounts. From Figure 12, the housing market is either a Type II, Type III, or Type V industry. The best estimate is Type II. Regardless, Anderson's research shows that each of these three types, even Type V, explain the significant amount and strategic profitability of foreclosure over renegotiation.¹²⁴

Section VI: Israeli Comparison

Upon further review, the strategic considerations discussed in the previous section can be applied to any market. It is widely agreed that the Israeli lending market is not suffering from a housing crisis. Moreover, a great deal more monitoring and renegotiation occurs in Israel. This is due to several factors that have resulted in a more comprehensive screening practice.¹²⁵

VI.1: Borrower Protections

Regarding the deterrence effect of collateral, sufficient Israeli borrower protections counteract the threat of foreclosure. Israeli lenders realize that the threat of foreclosure as a motivating factor for borrower repayment of loans may not be realized. This encourages lenders to be responsible for a diligent review of loan applications to ensure borrowers' solvency.

VI.1.1: Social Attitudes

The Israeli social attitudes favoring borrower protections makes their citizens more irate with foreclosure as an unrestricted lender right of remedy than in the US. For example, a legislative bill was introduced into the Knesset, Israel's legislative body, stating that if a lender forecloses and effectively evicts the borrower from their home, the lender must pay one year's rent for the evicted borrower to move into a new home of the borrower's choosing. Although never enacted, this Bill's gravity exemplifies the potential backlash that could ensue should the public revolt against banks during a housing crisis caused by massive foreclosures. This sentiment forces banks to exercise more caution in their lending practices at the inception of the loan. Therefore, they perform higher due diligence in reviewing loan applications to be certain the borrower is eligible for the loan, capable of repaying it, and is solvent. This reduces the possibility of foreclosure and the risk. This strict procedure inevitably makes it more difficult for borrowers to obtain loans and decreases investor speculation.

Clause 33 of the lodger protection law is another example of the strict social attitude against foreclosure in Israel. It states that the defaulted borrower becomes a "protected lodger" in the event of a successful completed foreclosure, if the borrower did not waive this legal right in the initial loan contract. This borrower protection would reduce the value of the foreclosed house and thus its price, which clearly deters lenders from engaging in risky or predatory lending practices that could lead to foreclosures. Nevertheless, it is seldom invoked, since most or all banks in Israel ask borrowers to give up this legal right in their contracts at the inception of the loan, in order to obtain the funding.¹²⁶

Modification in such situations, with strict social attitudes, mitigates the possibility of more onerous laws that would dramatically increase lenders' costs for foreclosure.¹²⁷ Therefore, the political incentives to modify loans in Israel appear to be higher than in the US.

VI.1.2: Foreclosing Lenders Receive Bad Press

When foreclosures occur, news stories about the individual borrowers and their plight appear in the press. Israel, a relatively small nation, is in a constant state of adversity from external and violent forces causing Israelis to feel connected in a common desire to survive. Therefore, foreclosure stories about borrowers who lose their homes are more personal and emotional, as opposed to the dispassionate viewing of them as a national economic indicator common in the US. In Israel, editorials appear, newspapers publish letters to the editor, and blog posts all add to the vilification of the bank involved.

This can and does harm the public image of the lender. As a result, new customers are encouraged to put their funds into competing institutions causing further financial harm to the foreclosing lender's ability to do business. A good faith effort on the part of the lender to renegotiate rather than reflexively foreclose is a good affirmative defense in court and in the public eye, when faced with a recalcitrant or deadbeat borrower. ¹²⁸

VI.2: Lenders Rights

VI.2.1: Legal Dilemmas

The Israeli legal system makes foreclosures a lengthy undertaking difficult to conclude, adding to the expense of the process. Still, if lenders file for foreclosure, it will eventually complete. However, if the expenses of a long and possibly inefficient legal process are not recouped from a foreclosure sale or the borrower's other assets, they become actual losses, impacting the bank's bottom line. In addition, judges have various methods of postponing the foreclosure process, making it harder for lenders to collect timely from borrowers. In a falling market, this can be catastrophic for the lender. Modification precludes the need for the borrower to try to use the sympathetic court system to postpone foreclosure, which would put the lender at a distinct disadvantage. These added barriers of time, expense, and lack of definite repossession make it more profitable for the lenders to monitor and renegotiate.

VI.2.2: Lender Protections

To reduce risk and the need to renegotiate, the Bank of Israel, Israel's central bank, mandates that LTV ratios be kept low. LTV ratios in Israel range between 65% and 75%, significantly lower than in the US, which can be 100% or higher. These low Israeli LTV ratios make the Israeli borrower a stakeholder in the risk, having significant equity to lose should foreclosure become necessary. Also, in Israel, unlike in the US, housing loans are recourse loans causing bad borrowers to face a significant participation constraint. These recourse loans allow lenders to claim the collateral and any other property or assets the borrowers and co-signers possess in order to ensure zero loss. This is a powerful default deterrent for borrowers, since they could lose all their assets in order to repay the lender, not only their home. This participation constraint keeps the rate of default low. It causes borrowers to do their own due diligence about their own situation to be sure they can repay the loan before they enter into a contract.¹²⁹

Therefore, borrowers avoid foreclosure due to the deterrent effect that recourse loans intrinsically have, and will do everything possible to repay their loan. Additionally, the fact that loans are recourse allows lenders to trust borrowers, and they can renegotiate when necessary, knowing that they will almost always get their return on investment. Thus, the system, embedded with its own foreclosure deterrence, remains fair and stable.

VI.3: Loan Liquidity

Israel has not created complex financial systems to increase asset liquidity, such as securitization. According to Figure 11, this limits borrowers to either Sector I or IV. Sector I is unlikely, especially in a mortgage situation, because there is an inability of the borrower to divert funds, due to the recourse nature of the loans. Therefore, most Israeli loans fall into Sector IV, which, according to the model, suggests that lenders should renegotiate rather than foreclose, as modification is more profitable to the banks in the long term. Consequently, this model is correct in determining that in Israel, unlike in the US, modifications are more profitable that foreclosures due to the inherent differences within the process of foreclosure and financial system.

VI.4: Results

Buyer protections, fewer lenders' rights, lack of loan liquidity, and fewer risky loans within the region, both on a commercial and private basis, distinguishes the Israeli market from that of the US. Israeli laws and attitudes that ensure borrower protections make foreclosing tumultuous and expensive. Significant lender incentives to increase monitoring are created by the real threat of additional lender losses due to negative media coverage of foreclosures, a sympathetic court system to borrowers, and lack of loan liquidity. The fact that all loans are recourse loans prompts both the lenders and the borrowers to thoroughly evaluate the situation before entering into a contract, making foreclosure less likely. Therefore, in Israel, renegotiation, when required, is more profitable for lenders than foreclosure. Should the situation in Israel change, the response in the housing market based on strategic considerations would change accordingly.

The aforementioned holds for the Israeli mortgage market, which is not experiencing difficulties. On the other hand, Israel is experiencing some difficulties in the corporate credit arena, especially as regards corporate bonds where a few issues already show significant possibilities of arrears with negotiations for restructuring currently underway. While any analysis of this area of finance is well beyond the scope of the present study, due to idiosyncratic complications and overall complexity, it should be noted that a number of issues raised here, both in the area of agency theory and strategic issues, may be relevant and are worth examining in some detail in future research.

Section VII: Conclusion

In this paper, a description of the extent of the housing and related financial crisis and the mechanisms that led to the failure within the housing market has been provided. Some have attributed the demise of the global economy to the failure of the US housing market due to the large number of foreclosures. As a result, a number of US government programs designed to aid in renegotiation and reduce foreclosures were created. These programs have been overwhelmingly failures. Agency Theory as a reason for this failure was discussed, but upon further review, evidence was given that seriously undermined its claims. On the other hand, three strategic reasons were discussed that explain why foreclosure is more desirable than renegotiation. First, the use of collateral as a screening mechanism has led to a lack of information and a great deal of risk within the pool of borrowers. Therefore, lenders estimate that any mass renegotiation will be unprofitable. Second, several papers discuss the added value of deterrence, and that in many cases, foreclosure is necessary in order to create this deterrence effect. Third, depending on the moral hazard of the borrower and asset liquidity, foreclosure appears to be the most logical choice for most of the US housing market.

After an analysis of the Israeli culture and market, we conclude that each of these strategic considerations also holds true for the Israeli economy, but the outcome is different. Upon application of these principles, given the differences discussed between the US market and the Israeli market, it is more profitable to renegotiate than to foreclose for similar strategic reasons in Israel. First, collateral as the only screening mechanism is seldom used, given the difficult, expensive, and politically unpopularity of foreclosures. Second, all loans are recourse with an intrinsic deterrence embedded, so foreclosure is not as necessary. Consequently, borrower moral hazard is reduced because loans are recourse providing lenders assurances that loans will be repaid even in a falling market. In addition, much lower LTV ratios reduce the need for foreclosure deterrence, since the borrower shares significantly in the risk. Lastly, add to that the limited or lack of loan liquidity, and lender moral hazard is also reduced. Thus in Israel, modifications of loans are more profitable than foreclosures.

Section VIII: Works Cited

<u>Market Trends</u> . 2008. OECD. 15 June 2009 http://www.oecd.org/dataoecd/36/27/40451721.pdf >.
² Christie, Les. "First half foreclosures break records." <u>CNNMoney.com</u> . 16 July 2009. 20 July 2009
http://money.cnn.com/2009/07/16/real_estate/RealtyTrac_foreclosure_report/ .
³ "OECD Economic Surveys: United States." Economic Survey of the United States Vol. 2008/16. Dec. 2008.
Organization for Economic Co-operation and Development (OECD). 20 June 2009
http://www.oecd.org/document/32/0.3343.en 2649 34569 41803296 1 1 1 1.00 html#Add inform
ation>
⁴ Ibid
⁵ Ibid
foru. 6 th: d
1010. ⁷ United States, Cana, Conservational Operational Foundations, Caisia, Washing Terranda & Solution, March
United States. Cong. Congressional Oversignt Panel. Foreclosure Crisis: working Towards a Solution. March
Oversight Report. 111 Cong., 1 sess. Cong. Rept. 110-343. 6 Mar. 2009. June-July 2009
http://cop.senate.gov/documents/cop-030609-report.pdf >.
^o "OECD Economic Surveys: United States." <u>Economic Survey of the United States Vol. 2008/16</u> . Dec. 2008.
Organization for Economic Co-operation and Development (OECD). 20 June 2009
http://www.oecd.org/document/32/0,3343,en_2649_34569_41803296_1_1_1_1,00.html#Add_informatio
n>.
⁹ United States. Cong. Congressional Oversight Panel. Foreclosure Crisis: Working Towards a Solution. March
Oversight Report, 111 Cong., 1 sess, Cong, Rept, 110-343, 6 Mar, 2009, June-July 2009
http://con.senate.gov/documents/con-030609-report.pdf
¹⁰ "OECD Economic Surveys: United States " Economic Survey of the United States Vol. 2008/16. Dec. 2008
Organization for Economic Co-operation and Development (OECD) 20 June 2009
chttp://www.oocd.org/document/22/0.3242.on_2640_34560_41803206_1_1_1_1_00.html#Add_informatio
<pre></pre>
II».
United States. Cong. Congressional Oversignt Panel. Foreclosure Crisis: working Towards a Solution. March
Oversight Report. 111 Cong., 1 sess. Cong. Rept. 110-343. 6 Mar. 2009. June-July 2009
http://cop.senate.gov/documents/cop-030609-report.pdf
¹² "Agency vs. Private Label." <i>Investing In Bonds</i> . Web. 18 Oct. 2009.
http://www.investinginbonds.com/learnmore.asp?catid=11&subcatid=56&id=134 >.
¹³ "OECD Economic Surveys: United States." <u>Economic Survey of the United States Vol. 2008/16</u> . Dec. 2008.
Organization for Economic Co-operation and Development (OECD). 20 June 2009
http://www.oecd.org/document/32/0,3343,en_2649_34569_41803296_1_1_1_1,00.html#Add_informatio
n>.
¹⁴ Ibid.
¹⁵ United States, Cong. Congressional Oversight Panel, Foreclosure Crisis; Working Towards a Solution, March
Oversight Report 111 Cong. 1 sess. Cong. Rept. 110-343. 6 Mar. 2009. June-July 2009
<u>oversigne report</u> , in cong., i sess. cong. rept. in 5 is. o war. 2007. suite sury 2007
¹⁶ "Agency vs. Private Label." Investing In Bonds. Web. 18 Oct. 2009
Agency vs. 111vate Laber. Investing in Donus. web. 18 Oct. 2009.
¹⁷ "OECD Economic Summer Heited States "Economic Summer of the Heited States Vol. 2008/16 Dec. 2008
"OECD Economic Surveys: United States." <u>Economic Survey of the United States Vol. 2008/16</u> . Dec. 2008.
Organization for Economic Co-operation and Development (OECD). 20 June 2009
http://www.oecd.org/document/32/0,3343 ,en_2649_34569_41803296_1_1_1_1_00.html#Add_informatio
n>.
^{1°} United States. Cong. Congressional Oversight Panel. <u>Foreclosure Crisis: Working Towards a Solution. March</u>
Oversight Report. 111 Cong., 1 sess. Cong. Rept. 110-343. 6 Mar. 2009. June-July 2009
http://cop.senate.gov/documents/cop-030609-report.pdf >.
¹⁹ "OECD Economic Surveys: United States." <u>Economic Survey of the United States Vol. 2008/16</u> . Dec. 2008.
Organization for Economic Co-operation and Development (OECD). 20 June 2009
http://www.oecd.org/document/32/0,3343.en 2649 34569 41803296 1 1 1 1.00.html#Add informatio
n>.
²⁰ "Lenox Financial - No Closing Cost Loans and Mortgages - The Biggest No Brainer in the History of Earth –
In closing cost hours and hou

¹ Blundell-Wignall, Adrian. "The Subprime Crisis: Size, Deleveraging and Some Policy Options." <u>Financial</u>

Video: CNN Interviews Jon Shibley." *Lenox Financial*. Web. 18 July 2009. http://www.lenoxfinancial.com/>.

- ²¹ Arnold, Chris. "Lender Lures Homebuyers by Attacking Industry." *Find a Station*. NPR: National Public Radio, 13 Nov. 2007. Web. 15 June 2009. http://www.npr.org/templates/story/story.php?storyId=16245039>.
- ²² "Market Analysis Indicates Mortgage Fraud to Worsen Originator Times." Originator Times Mortgage \ Industry News. Web. 28 July 2009.
 - <http://originatortimes.com/content/templates/standard.aspx?articleid=1730&zoneid=5>.
- ²³ "Subprime Fiasco Exposes Manipulation by Mortgage Brokerages -." *Bloomberg.com*. Web. 18 July 2009. http://www.bloomberg.com/apps/news?pid=20601109&sid=a8VFwgtdQ9FM>.
- ²⁴ "True Gotham: Incredible Mortgage Offers in This Market?" Manhattan Real Estate : True Gotham Blog : Lower East Side, Upper West Side, Tribeca, West Village, Financial District, Battery Park, New York City Condominiums : NYC. Web. 18 July 2009. http://www.truegotham.com/archives/market-insight-incredible-mortgage-offers-in-this-market.html>.
- ²⁵ "What's behind the continuing bombardment of too-good-to-be-true mortgage solicitations?" San Francisco Bay Area; SFGate. Web. 18 July 2009. http://www.sfgate.com/cgibin/article.cgi?f=/g/a/2007/10/05/carolllovd.DTL&feed=rss.surrealestate>.
- ²⁶ "OECD Economic Surveys: United States." <u>Economic Survey of the United States Vol. 2008/16</u>. Dec. 2008. Organization for Economic Co-operation and Development (OECD). 20 June 2009
 http://www.oecd.org/document/32/0,3343,en_2649_34569_41803296_1_1_1_0.0.html#Add_information
- ²⁷ Segal, David. "Financial Fraud Is Focus of Attack by Prosecutors." *Business*. New York Times, 11 Mar. 2009. Web. 10 July 2009. http://www.nytimes.com/2009/03/12/business/12crime.html?_r=1. 32/0,3343,en_2649_34569_41803296_1_1_1_1,00.html#Add_information>.
- ²⁹ Ibid.
- ³⁰ Reddy, Sudeep. "Bernanke Feared a Second Great Depression WSJ.com." *Economy*. The Wall Street Journal, 27 July 2009. Web. 29 July 2009. http://online.wsj.com/article/SB124865498517982625.html.
- ³¹ "OECD Economic Surveys: United States." <u>Economic Survey of the United States Vol. 2008/16</u>. Dec. 2008. Organization for Economic Co-operation and Development (OECD). 20 June 2009 http://www.oecd.org/document/32/0,3343,en_2649_34569_41803296_1_1_1,00.html#Add_information n>.
- ³² Kiff, John, and Vladimir Klyuev. "Foreclosure Mitigation Efforts in the United States: Approaches and Challenges." <u>IMF Staff Position Note. Monetary and Capital Markets and Western Hemisphere</u> <u>Departments</u>. 18 Feb. 2009. International Monetary Fund. 7 June 2009. 4-6. http://www.imf.org/external/pubs/ft/spn/2009/spn0902.pdf>.
- ³³ Blackwell, Rob, and Steven Sloan. "Talf, Tarp, Hope for Homeowners Underwhelm." <u>On Wall Street</u>. 9 Apr. 2009. 22 June 2009 http://www.onwallstreet.com/news/tarp-homeowners-2661513-1.html.
- ³⁴ Kiff, John, and Vladimir Klyuev. "Foreclosure Mitigation Efforts in the United States: Approaches and Challenges." <u>IMF Staff Position Note. Monetary and Capital Markets and Western Hemisphere</u> <u>Departments</u>. 18 Feb. 2009. International Monetary Fund. 7 June 2009. 18. http://www.imf.org/external/pubs/ft/spn/2009/spn0902.pdf>.
- ³⁵ United States. Cong. Congressional Oversight Panel. Foreclosure Crisis: Working Towards a Solution. March Oversight Report. 111 Cong., 1 sess. Cong. Rept. 110-343. 6 Mar. 2009. June-July 2009 http://cop.senate.gov/documents/cop-030609-report.pdf>.
- ³⁶ Kiff, John, and Vladimir Klyuev. "Foreclosure Mitigation Efforts in the United States: Approaches and Challenges." <u>IMF Staff Position Note. Monetary and Capital Markets and Western Hemisphere</u> <u>Departments</u>. 18 Feb. 2009. International Monetary Fund. 7 June 2009. 18. http://www.imf.org/external/pubs/ft/spn/2009/spn0902.pdf>.
- ³⁷ United States. Cong. Congressional Oversight Panel. Foreclosure Crisis: Working Towards a Solution. March Oversight Report. 111 Cong., 1 sess. Cong. Rept. 110-343. 6 Mar. 2009. June-July 2009 http://cop.senate.gov/documents/cop-030609-report.pdf>.
- ³⁸ Kiff, John, and Vladimir Klyuev. "Foreclosure Mitigation Efforts in the United States: Approaches and Challenges." <u>IMF Staff Position Note. Monetary and Capital Markets and Western Hemisphere</u> <u>Departments</u>. 18 Feb. 2009. International Monetary Fund. 7 June 2009. 19. http://www.imf.org/external/pubs/ft/spn/2009/spn0902.pdf>.
- ³⁹ United States. Cong. Congressional Oversight Panel. Foreclosure Crisis: Working Towards a Solution. March

Oversight Report. 111 Cong., 1 sess. Cong. Rept. 110-343. 6 Mar. 2009. June-July 2009 http://cop.senate.gov/documents/cop-030609-report.pdf>.

- ⁴⁰ United States. Cong. Congressional Oversight Panel. <u>Foreclosure Crisis: Working Towards a Solution. March Oversight Report.</u> 111 Cong., 1 sess. Cong. Rept. 110-343. 6 Mar. 2009. June-July 2009 http://cop.senate.gov/documents/cop-030609-report.pdf>.
- ⁴¹ Kiff, John, and Vladimir Klyuev. "Foreclosure Mitigation Efforts in the United States: Approaches and Challenges." <u>IMF Staff Position Note. Monetary and Capital Markets and Western Hemisphere</u> <u>Departments</u>. 18 Feb. 2009. International Monetary Fund. 7 June 2009. 15. http://www.imf.org/external/pubs/ft/spn/2009/spn0902.pdf>.
- ⁴² United States. Cong. Congressional Oversight Panel. <u>Foreclosure Crisis: Working Towards a Solution. March Oversight Report.</u> 111 Cong., 1 sess. Cong. Rept. 110-343. 6 Mar. 2009. June-July 2009 http://cop.senate.gov/documents/cop-030609-report.pdf>.
- ⁴³ Kiff, John, and Vladimir Klyuev. "Foreclosure Mitigation Efforts in the United States: Approaches and Challenges." <u>IMF Staff Position Note. Monetary and Capital Markets and Western Hemisphere</u> <u>Departments</u>. 18 Feb. 2009. International Monetary Fund. 7 June 2009. 16. http://www.imf.org/external/pubs/ft/spn/2009/spn0902.pdf>.

- ⁴⁶ Ibid. pg 20
- ⁴⁷ United States. Cong. Congressional Oversight Panel. <u>Foreclosure Crisis: Working Towards a Solution. March Oversight Report.</u> 111 Cong., 1 sess. Cong. Rept. 110-343. 6 Mar. 2009. June-July 2009 http://cop.senate.gov/documents/cop-030609-report.pdf>.
- ⁴⁸ ElBoghdady, Dina. "HUD Chief Calls Aid on Mortgages A Failure washingtonpost.com." <u>Washingtonpost.com</u>. 17 Dec. 2008. 1 July 2009 < http://www.washingtonpost.com/wpdyn/content/article/2008/12/16/AR2008121603177.html?sid=ST2008121700014>.
- ⁴⁹ House of Representatives. House Financial Services Committee. "Summary of S. 896, the Helping Families Save Their Homes Act of 2009." Press release. <u>RealEstateRama</u>. 19 May 2009. 17 June 2009 http://www.realestaterama.com/2009/05/19/summary-of-s-896-the-helping-families-save-their-homes-act-of-2009-ID05382.html.
- ⁵⁰ Kiff, John, and Vladimir Klyuev. "Foreclosure Mitigation Efforts in the United States: Approaches and Challenges." <u>IMF Staff Position Note. Monetary and Capital Markets and Western Hemisphere</u> <u>Departments</u>. 18 Feb. 2009. International Monetary Fund. 7 June 2009. 16-17. http://www.imf.org/external/pubs/ft/spn/2009/spn0902.pdf>.

⁵¹ Ibid.

- ⁵² Stippich, Ryan. "FDIC Announces Loan "Mod In A Box" Program." Weblog post. <u>Mortgage Meltdown:</u> <u>News and Comment on Credit Crisis Litigation, Legislation, and Regulation</u>. 21 Nov. 2008. 28 June 2009 http://mortgagemeltdown.typepad.com/my_weblog/2008/11/fdic-announces-loan-mod-in-a-box-program.html.
- ⁵³ Ibid.
- ⁵³ United States. Cong. Congressional Oversight Panel. <u>Foreclosure Crisis: Working Towards a Solution. March</u> <u>Oversight Report.</u> 111 Cong., 1 sess. Cong. Rept. 110-343. 6 Mar. 2009. June-July 2009 http://cop.senate.gov/documents/cop-030609-report.pdf>.
- ⁵⁴ "GSE Loan Mods Up By More Than 50% In Q1." <u>Mortgage Orb.</u> 24 June 2009. 1 July 2009 http://www.mortgageorb.com/e107_plugins/content/content.3758>.
- ⁵⁵ "Easy Resolution." Advertisement. <u>CSC'S BANKING SOLUTIONS</u>. 26 June 2009 http://assets1.csc.com/banking/downloads/Banking_EarlyResolution_SMP.pdf>.
- ⁵⁶ Kiff, John, and Vladimir Klyuev. "Foreclosure Mitigation Efforts in the United States: Approaches and Challenges." <u>IMF Staff Position Note. Monetary and Capital Markets and Western Hemisphere</u> <u>Departments</u>. 18 Feb. 2009. International Monetary Fund. 7 June 2009. 19. http://www.imf.org/external/pubs/ft/spn/2009/spn0902.pdf>.
- ⁵⁷ "Making Home Affordable Program: Key Components." Mar. 2009. National Association of Realtors. 25 June 2009
- http://www.realtor.org/government_affairs/gapublic/home_afford_stability_plan_key_components.

 ⁵⁸ United States Government. Treasury Department. "Making Home Affordable: Update: Foreclosure"

⁴⁴ Ibid.

⁴⁵ Ibid.

Alternatives and Home Price Decline Protection Incentives." Press release. 14 May 2009. 20 June 2009 http://www.treas.gov/press/releases/docs/05142009FactSheet-MakingHomesAffordable.pdf>.

⁵⁹ United States Federal Government. Treasury Department. "Making Home Affordable: Program Update." Press release. 28 Apr. 2009. 10 June 2009

http://www.treasury.gov/press/releases/reports/042809secondlienfactsheet.pdf>.

⁶⁰ Press Room. "FHFA Authorizes Fannie Mae and Freddie Mac to Expand Home Affordable Refinance Program to 125 Percent Loan-to-Value." <u>Real Estate Channel</u>. 1 July 2009. 4 July 2009 http://www.realestatechannel.com/us-markets/residential-real-estate-1/freddie-mac-relief-refinance-mortgage-125-loan-to-value-ratios-higher-ltv-james-lockhart-8000-home-buyer-tax-credit-1028.php">http://www.realestatechannel.com/us-markets/residential-real-estate-1/freddie-mac-relief-refinance-mortgage-125-loan-to-value-ratios-higher-ltv-james-lockhart-8000-home-buyer-tax-credit-1028.php">http://www.realestatechannel.com/us-markets/residential-real-estate-1/freddie-mac-relief-refinance-mortgage-125-loan-to-value-ratios-higher-ltv-james-lockhart-8000-home-buyer-tax-credit-1028.php>.

⁶¹ Armour, Stephanie. "Foreclosure help will reach more homeowners." 2 July 2009. USA Today. 4 July 2009 http://www.usatoday.com/money/economy/housing/2009-07-01-govnt-foreclosures N.htm?csp=YahooModule Money>.

⁶² "Making Home Affordable - Obama Administration to Launch National Outreach Campaign in Support of Making Home Affordable Program." *Making Home Affordable - Home*. Web. 20 July 2009. http://www.makinghomeaffordable.gov/pr_07012009.html>.

⁶³ U.S. Federal Government. U.S. Department of the Treasury. "Making Home Affordable: Summary Guidelines." Press release. 4 Mar. 2009. 8 June 2009 http://www.treas.gov/press/releases/reports/guidelines_summary.pdf>.

⁶⁴ Zibel, Alan. "Obama administration launches effort to aid troubled borrowers with second mortgages." <u>The Examiner</u>. 20 June 2009. Washingtonexaminer.com. 27 June 2009 http://www.washingtonexaminer.com/economy/ap/48688972.html.

⁶⁵ "Re: touching base." E-mail from Eileen Mauskopf. 24 July 2009.

⁶⁶ White, Alan M., Deleveraging the American Homeowner: The Failure of 2008 Voluntary Mortgage Contract Modifications(January 9, 2009). Connecticut Law Review, Forthcoming. Available at SSRN: http://ssrn.com/abstract=1325534

- ⁶⁷ Kiff, John, and Vladimir Klyuev. "Foreclosure Mitigation Efforts in the United States: Approaches and Challenges." <u>IMF Staff Position Note. Monetary and Capital Markets and Western Hemisphere</u> <u>Departments</u>. 18 Feb. 2009. International Monetary Fund. 7 June 2009. 11. http://www.imf.org/external/pubs/ft/spn/2009/spn0902.pdf>.
- ⁶⁸ United States. Cong. Congressional Oversight Panel. Foreclosure Crisis: Working Towards a Solution. March Oversight Report. 111 Cong., 1 sess. Cong. Rept. 110-343. 6 Mar. 2009. June-July 2009. 42 http://cop.senate.gov/documents/cop-030609-report.pdf>.
- ⁶⁹ United States. Cong. Congressional Oversight Panel. Foreclosure Crisis: Working Towards a Solution. March Oversight Report. 111 Cong., 1 sess. Cong. Rept. 110-343. 6 Mar. 2009. June-July 2009. 44-47 http://cop.senate.gov/documents/cop-030609-report.pdf>.

⁷⁰ Ibid. pg 39

⁷² United States. Cong. Congressional Oversight Panel. <u>Foreclosure Crisis: Working Towards a Solution. March Oversight Report.</u> 111 Cong., 1 sess. Cong. Rept. 110-343. 6 Mar. 2009. June-July 2009. 40. http://cop.senate.gov/documents/cop-030609-report.pdf>.

⁷³ Willen, Paul. "Re: Bank of Israel, Monetary and Finance Division." E-mail to the author. 24 June 2009.

⁷⁴ Foote, Christopher, Kristopher Gerardi, Lorenz Goette, and Paul Willen. "Reducing Foreclosures: No Easy Answers." <u>Working Paper 15063, NBER Macro Annual 2009, Forthcoming</u>. June 2009. 24 June 2009. 23-24.

⁷⁵ Maskin, Eric. "Re "Matters of Principal" (Op-Ed, March 5):." Letter to Editor. 5 Mar. 2009. Letters: The Economy: It's on Everyone's Mind. New York Times, 6 Mar. 2009. Web. 20 June 2009. http://www.nytimes.com/2009/03/07/opinion/l07econ.html.

⁷⁶Foote, Christopher, Kristopher Gerardi, Lorenz Goette, and Paul Willen. "Reducing Foreclosures: No Easy Answers." <u>Working Paper 15063, NBER Macro Annual 2009, Forthcoming</u>. June 2009. 24 June 2009. 23.

⁷⁷ Maskin, Eric. "Re "Matters of Principal" (Op-Ed, March 5):." Letter to Editor. 5 Mar. 2009. Letters: The Economy: It's on Everyone's Mind. New York Times, 6 Mar. 2009. Web. 20 June 2009. http://www.nytimes.com/2009/03/07/opinion/l07econ.html.

⁷⁸ Foote, Christopher, Kristopher Gerardi, Lorenz Goette, and Paul Willen. "Reducing Foreclosures: No Easy Answers." <u>Working Paper 15063, NBER Macro Annual 2009, Forthcoming</u>. June 2009. 24 June 2009. 23-24.

⁷¹ Ibid.pg 44-46

- ⁷⁹ Foote, Christopher, Kristopher Gerardi, Lorenz Goette, and Paul Willen. "Reducing Foreclosures: No Easy Answers." <u>Working Paper 15063, NBER Macro Annual 2009, Forthcoming</u>. June 2009. 24 June 2009. 23-24.
- ⁸⁰ United States. Cong. Congressional Oversight Panel. Foreclosure Crisis: Working Towards a Solution. March Oversight Report. 111 Cong., 1 sess. Cong. Rept. 110-343. 6 Mar. 2009. June-July 2009. 44-47 http://cop.senate.gov/documents/cop-030609-report.pdf>.
- ⁸¹ Foote, Christopher, Kristopher Gerardi, Lorenz Goette, and Paul Willen. "Reducing Foreclosures: No Easy Answers." <u>Working Paper 15063, NBER Macro Annual 2009, Forthcoming</u>. June 2009. 24 June 2009. 23-24.
- ⁸² Hunt, John. "What Do Subprime Securitization Contracts Actually Say About Loan Modification?" *The Berkeley Center for Law, Business and the Economy*. 25 Mar. 2009. Web. 26 June 2009. http://www.law.berkeley.edu/files/Subprime_Securitization_Contracts_3.25.09.pdf>.
- ⁸³ Foote, Christopher, Kristopher Gerardi, Lorenz Goette, and Paul Willen. "Reducing Foreclosures: No Easy Answers." <u>Working Paper 15063, NBER Macro Annual 2009, Forthcoming</u>. June 2009. 24 June 2009. 23-24.
- ⁸⁴ Ibid.
- ⁸⁵ "RE:." E-mail from Eileen Mauskopf. 20 May 2009.
- ⁸⁶ Dorchuck, Jordan D. "NET PRESENT VALUE ANALYSIS AND LOAN MODIFICATIONS -AN OBJECTIVE METHODOLOGY TO ASCERTAIN WHAT IS IN THE BEST INTEREST OF INVESTORS." Proc. of MBA Regulatory Compliance Conference, Washington, D.C. Mortgage Bankers Association, 15 Sept. 2008. Web. 18 Oct. 2009.

< http://www.mortgagebankers.org/files/Conferences/2008/RegulatoryComplianceConference08/RC08SEPT24ServicingJordanDorchuck.pdf>.

⁸⁷ Foote, Christopher, Kristopher Gerardi, Lorenz Goette, and Paul Willen. "Reducing Foreclosures: No Easy Answers." <u>Working Paper 15063, NBER Macro Annual 2009, Forthcoming</u>. June 2009. 24 June 2009. 31.

⁸⁸ Ibid.

- ⁸⁹ Ibid.
- ⁹⁰ Piskorski, Tomasz, Seru, Amit and Vig, Vikrant, Securitization and Distressed Loan Renegotiation: Evidence from the Subprime Mortgage Crisis(December 30, 2008). Chicago Booth School of Business Research Paper No. 09-02. Available at SSRN: http://ssrn.com/abstract=1321646
- ⁹¹ Adelino, Manuel, Kristopher Gerardi, and Paul Willen. "Renegotiating Home Mortgages: Evidence from the Subprime Crisis." *Seminar*. Uconn.edu, 31 Mar. 2009. Web. 28 June 2009. http://www.econ.uconn.edu/Seminar%20Series/willen09.pdf>.
- ⁹² Foote, Christopher, Kristopher Gerardi, Lorenz Goette, and Paul Willen. "Reducing Foreclosures: No Easy Answers." <u>Working Paper 15063, NBER Macro Annual 2009, Forthcoming</u>. June 2009. 24 June 2009. 32-33.
- ⁹³ United States. Cong. Congressional Oversight Panel. <u>Foreclosure Crisis: Working Towards a Solution. March Oversight Report.</u> 111 Cong., 1 sess. Cong. Rept. 110-343. 6 Mar. 2009. June-July 2009 http://cop.senate.gov/documents/cop-030609-report.pdf>.
- ⁹⁴ Zingales, Luigi (2008) "Plan B," The Economists' Voice: Vol. 5: Iss. 6, Article 4.
- ⁹⁵ Geanakoplos, John D. "The Best Way to Help Homeowners and the Economy." Yale. Web. 27 June 2009. http://cowles.econ.yale.edu/~gean/crisis/help-homeowners-economy.pdf>.
- ⁹⁶ Foote, Christopher, Kristopher Gerardi, Lorenz Goette, and Paul Willen. "Reducing Foreclosures: No Easy Answers." <u>Working Paper 15063, NBER Macro Annual 2009, Forthcoming</u>. June 2009. 24 June 2009. 33-34.

- ⁹⁸ Harriss, C. Lowell. *History and Policies of the Home Owners' Loan Corporation*. New York: National Bureau of Economic Re-search, 1951.
- ⁹⁹ Gerardi, Kristopher S., Adam H. Shapiro, and Paul S. Willen. "Subprime Outcomes: Risky Mortgages, Homeownership Experiences, and Foreclosures." <u>Working Paper 07-15</u>. May 2008. Federal Reserve Bank of Boston. 28 June 2009 http://www.bos.frb.org/economic/wp/wp2007/wp0715.htm>.
- ¹⁰⁰ Ninimaki, J.P. "Does collateral fuel moral hazard in banking?" Journal of Banking & Finance, Elsevier 33 (2009): 514-21.
- ¹⁰¹ Ibid. pg 516

⁹⁷ Ibid. pg 35

¹⁰⁵ Ibid. pg 520

- ¹⁰⁷ Gerardi, Kristopher S., Andreas Lehnert, Shane M. Sherland, and Paul S. Willen. "Public Policy Discussion Paper No. 09-1." <u>Public Policy Discussion Paper No. 09-1</u>. 22 Dec. 2008. Federal Reserve Bank of Boston. 28 June 2009 http://www.bos.frb.org/economic/ppdp/2009/ppdp0901.htm>.
- ¹⁰⁸ Gerardi, Kristopher S., Adam H. Shapiro, and Paul S. Willen. "Subprime Outcomes: Risky Mortgages, Homeownership Experiences, and Foreclosures." <u>Working Paper 07-15</u>. May 2008. Federal Reserve Bank of Boston. 28 June 2009 http://www.bos.frb.org/economic/wp/wp2007/wp0715.htm>.
- ¹⁰⁹ Manove, Michael, A. Jorge Padilla, and Marco Pagano. "Collateral versus Project Screening: A Model of Lazy Banks." <u>The RAND Journal of Economics</u> Winter 32 (2001): 726-44. 2001. 16 June 2009 http://www.jstor.org/stable/2696390>.
- ¹¹⁰ Berger, Allen N., and Gregory F. Udell. "Collateral, Loan Quality, and Bank Risk." <u>Journal of Monetary</u> <u>Economics</u> 25 (1990): 21-42.
- ¹¹¹ Holmstrom, Bengt. "Liquidity and Bank Runs." 20th Jerusalem Summer School in Economic Theory. The Institute for Advanced Studies at The Hebrew University (with the support of The Center for the Study of Rationality), Jerusalem. 28 June 2009.
- ¹¹² Dorchuck, Jordan D. "NET PRESENT VALUE ANALYSIS AND LOAN MODIFICATIONS -AN OBJECTIVE METHODOLOGY TO ASCERTAIN WHAT IS IN THE BEST INTEREST OF INVESTORS." Proc. of MBA Regulatory Compliance Conference, Washington, D.C. Mortgage Bankers Association, 15 Sept. 2008. Web. 18 Oct. 2009.

http://www.mortgagebankers.org/files/Conferences/2008/RegulatoryComplianceConference08/RC08SEP T24ServicingJordanDorchuck.pdf>.

- ¹¹³ Foote, Christopher, Kristopher Gerardi, Lorenz Goette, and Paul Willen. "Reducing Foreclosures: No Easy Answers." <u>Working Paper 15063, NBER Macro Annual 2009, Forthcoming</u>. June 2009. 24 June 2009. 25-26.
- ¹¹⁴ Gerardi, Kristopher S., Adam H. Shapiro, and Paul S. Willen. "Subprime Outcomes: Risky Mortgages, Homeownership Experiences, and Foreclosures." <u>Working Paper 07-15</u>. May 2008. Federal Reserve Bank of Boston. 28 June 2009 http://www.bos.frb.org/economic/wp/wp2007/wp0715.htm>.
- ¹¹⁵ Ibid. pg 26-27
- ¹¹⁶ Nakamura, Leonard I. "Lessons on lending and borrowing in hard times." <u>Business Review, Federal Reserve</u> <u>Bank of Philadelphia.</u> July-Aug. 1991: 13-21.
- ¹¹⁷ Robert M. Townsend, "Optimal Contracts and Competitive Markets With Costly State Verification," *Journal of Economic Theory* 2 (1979) pp. 256-93
- ¹¹⁸ Oliver Hart and John Moor, "Default and Renegotiation: A Dynamic Model of Debt," MIT Working Paper (August 1989).
- ¹¹⁹ Nakamura, Leonard I. "Lessons on lending and borrowing in hard times." <u>Business Review, Federal Reserve</u> <u>Bank of Philadelphia.</u> July-Aug. 1991: 17.
- ¹²⁰ Oliver Hart and John Moor, "Default and Renegotiation: A Dynamic Model of Debt," MIT Working Paper (August 1989).
- ¹²¹ Nakamura, Leonard I. "Lessons on lending and borrowing in hard times." <u>Business Review, Federal Reserve</u> <u>Bank of Philadelphia.</u> July-Aug. 1991: 18.
- ¹²² Ibid. pg 18
- ¹²³ Ibid. pg 14-20
- ¹²⁴ Anderson, Michael. "Asset Liquidity, Moral Hazard, and Bank Loan Rescheduling." <u>Review of Quantitative</u> <u>Finance and Accounting</u> November 13 (1999): 227-247.

- ">http://www.lawforums.co.il/objDoc.asp?PID=1252&OID=120430&DivID=1>">http://www.lawforums.co.il/objDoc.asp?PID=1252&OID=120430&DivID=1>">http://www.lawforums.co.il/objDoc.asp?PID=1252&OID=120430&DivID=1>">http://www.lawforums.co.il/objDoc.asp?PID=1252&OID=120430&DivID=1>">http://www.lawforums.co.il/objDoc.asp?PID=1252&OID=120430&DivID=1>">http://www.lawforums.co.il/objDoc.asp?PID=1252&OID=120430&DivID=1>">http://www.lawforums.co.il/objDoc.asp?PID=1252&OID=120430&DivID=1>">http://www.lawforums.co.il/objDoc.asp?PID=1252&OID=120430&DivID=1>">http://www.lawforums.co.il/objDoc.asp?PID=1252&OID=120430&DivID=1>">http://www.lawforums.co.il/objDoc.asp?PID=1252&OID=120430&DivID=1>">http://www.lawforums.co.il/objDoc.asp?PID=1252&OID=120430&DivID=1>">http://www.lawforums.co.il/objDoc.asp?PID=1252&OID=120430&DivID=1>">http://www.lawforums.co.il/objDoc.asp?PID=1252&OID=120430&DivID=1>">http://www.lawforums.co.il/objDoc.asp?PID=1252&OID=120430&DivID=1>">http://www.lawforums.co.il/objDoc.asp?PID=1252&OID=120430&DivID=1>">http://www.lawforums.co.il/objDoc.asp?PID=1252&OID=120430&DivID=1>">http://www.lawforums.co.il/objDoc.asp?PID=1252&OID=120430&DivID=1>">http://www.lawforums.co.il/objDoc.asp?PID=1252&OID=120430&DivID=1>">http://www.lawforums.co.il/objDoc.asp?PID=1252&OID=120430&DivID=1>">http://www.lawforums.co.il/objDoc.asp?PID=120430&DivID=1>">http://www.lawforums.co.il/objDoc.asp?PID=120430&DivID=1>">http://www.lawforums.co.il/objDoc.asp?PID=120430&DivID=1>">http://www.lawforums.co.il/objDoc.asp?PID=120430&DivID=1>">http://www.lawforums.co.il/objDoc.asp?PID=1252&OID=120430&DivID=1>">http://www.lawforums.co.il/objDoc.asp?PID=1252&OID=120430&DivID=1>">http://www.lawforums.co.il/objDoc.asp?PID=1252&OID=120430&DivID=1>">http://www.lawforums.co.il/objDoc.asp?PID=1>">http://www.lawforums.co.il/objDoc.asp?PID=1>">http://www.lawforums.co.il/objDoc.asp?PID=1>">http://www.lawforums.co.il/objDoc.asp?PID=1>">http://www.lawforums.co.il/objDoc.asp?PID=12000&DivID
- ¹²⁶ "Michael Kahn, Head of Financial Stability Unit, Bank of Israel Interview." Telephone interview.

¹²⁷ Ibid.

¹²⁸ Ibid.

¹²⁹ Ibid.

¹⁰² Ibid. pg 517

¹⁰³ Ibid.

¹⁰⁴ Ibid. pg 518

¹⁰⁶ Ibid.

Section IX:

Appendix



Figure 1 US Home Prices, along with Building Costs, Population, and Interest rates, from 1890 until 2008.¹

¹Shiller, Robert J. <u>The Subprime Solution</u>. Princeton: Princeton UP, 2008. 33. http://www.marketoracle.co.uk/images/2009/Apr/population-28.gif





Total mortgage originations by type

1. Agency mortgages include both GSEs and FHA/VA loans.

² OECD Economic Surveys: United States." <u>Economic Survey of the United States Vol. 2008/16</u>. Dec. 2008. Organization for Economic Co-operation and Development (OECD). 20 June 2009. 61. http://www.oecd.org/document/32/0,3343,en_2649_34569_41803296_1_1_1_0.0.html#Add_informatio n>.



³ OECD Economic Surveys: United States." <u>Economic Survey of the United States Vol. 2008/16</u>. Dec. 2008. Organization for Economic Co-operation and Development (OECD). 20 June 2009. 65. http://www.oecd.org/document/32/0,3343,en_2649_34569_41803296_1_1_1_1,00.html#Add_informatio n>.

Figure 4 The bottom left diagram shows national real home prices, the other three photos depict national nominal home prices. National nominal home prices have never had a downward trend until recently.^{4,5,6}



- ⁴ OECD Economic Surveys: United States." <u>Economic Survey of the United States Vol. 2008/16</u>. Dec. 2008. Organization for Economic Co-operation and Development (OECD). 20 June 2009 http://www.oecd.org/document/32/0,3343,en_2649_34569_41803296_1_1_1_1.00.html#Add_informatio n>
- ⁵ Case-Schiller. <u>National Home Price Index since 1900. Image Shack</u>. 29 June 2009 http://img527.imageshack.us/img527/4954/chartusa1900nominal.png>.
- ⁶ <u>United States Housing Prices</u>. <u>The housing bubble is bursting and home prices are falling</u>! 2009. 29 June 2009 http://mysite.verizon.net/vzeqrguz/housingbubble/>.



Figure 5 Different measures of aggregate HOPE NOW alliance statistics.⁷

Workouts to Foreclosures by Type, HOPE NOW Alliance Members

⁷ United States. Cong. Congressional Oversight Panel. <u>Foreclosure Crisis: Working Towards a Solution. March</u> <u>Oversight Report.</u> 111 Cong., 1 sess. Cong. Rept. 110-343. 6 Mar. 2009. June-July 2009 http://cop.senate.gov/documents/cop-030609-report.pdf>.

	Hope for Homeowners	GSE Streamlined Mod	FDIC Mod-in-a-Box			
	(H4H)	Program (SMP)	Proposal			
Eligibility criteria	PTI > 31%	90+ days delinquent	60+ days delinquent			
New loan payment	PTI < 31/38% and	PTI < 31%	PTI < 31/38% n/a			
Principal writedown	D11 < 43/50% LTV $\leq 96.5\%$	n/a				
Payments to servicer	n/a	\$800	\$1,000			
New loan guarantee	100% coverage	n/a	20 to 50% 1/			
Lender pays	Up-front 3.00%	n/a	nil			
Borrower pays	Annual 1.5% 2/	n/a	nil			
HPA sharing	100 to 50% 3/	n/a	nil			

Figure 6⁸

PTI: mortgage-related payments (including insurance and property taxes) as a percentage of gross income. DTI: all debt-related payments (including those captured in the PTI) as a percentage of gross income

LTV: loan balance as a percentage of current assessed home value.

HPA: Home price appreciation.

1/ FDIC would cover 50 percent of default-related losses if the current LTV is less than 100 percent and nothing if the LTV is greater than 150%. A sliding scale from 50% to 20% would apply for LTVs between 100% and 150%. However, redefaults during the first six months and after eight years would not be covered.
2/ H4H's borrower-paid annual premium has to be incorporated into the new loan payment's 38% PTI ceiling.
3/ If the homeowner sells the house or refinances the new mortgage, H4H claws back some of the "instant" equity (100 percent in the first year, declining to 50 percent after five years), plus if the property is sold, 50 percent of any net property value appreciation.

⁸ Kiff, John, and Vladimir Klyuev. "Foreclosure Mitigation Efforts in the United States: Approaches and Challenges." <u>IMF Staff Position Note. Monetary and Capital Markets and Western Hemisphere</u> <u>Departments</u>. 18 Feb. 2009. International Monetary Fund. 7 June 2009 http://www.imf.org/external/pubs/ft/spn/2009/spn0902.pdf>.

Table 1 Making Home Affordable government second lien extinguishment features.⁹

• Table: Extinguishment Price Schedule: Per Dollar of UPB in LTV range (Loans less than 180 days past due)

0	Second-Lien LTV Range										
Back-End DTI	< 110	110 to 140	> 140								
> 55 %	0.09	0.06	0.04								
< 55 %	0.12	0.09	0.06								

⁹ United States Federal Government. Treasury Department. "Making Home Affordable: Program Update." Press release. 28 Apr. 2009. 10 June 2009 http://www.treasury.gov/press/releases/reports/042809secondlienfactsheet.pdf>.



Figure 7¹⁰ Percentage of Mortgage Originations on Properties with a Junior Mortgage by Year¹⁰¹

¹⁰ United States. Cong. Congressional Oversight Panel. <u>Foreclosure Crisis: Working Towards a Solution. March</u> <u>Oversight Report.</u> 111 Cong., 1 sess. Cong. Rept. 110-343. 6 Mar. 2009. June-July 2009 http://cop.senate.gov/documents/cop-030609-report.pdf>.

	# Loans Modified	Inter Red	est Rate uctions	Princij Rec	pal Balance ductions	Princip Inc	al Balance reases	Term Extensions		
		# (% total)		(% total) #		#	(% total)	#	(% total)	
2007:Q1	10,940	600	5.3	700	6.2	8,660	76.4	1,380	12.2	
2007:Q2	14,600	820	5.4	550	3.7	11,630	77.3	2,050	13.6	
2007:Q3	17,720	770	4.1	810	4.3	15,170	81.2	1,940	10.4	
2007:Q4	$27,\!150$	2,990	9.7	700	2.3	22,520	72.8	4,740	15.3	
2008:Q1	36,230	6,010	13.8	900	2.1	32,100	73.8	4,500	10.3	
2008:Q2	44,750	9,050	16.4	1,300	2.4	39,750	72.1	5,030	9.1	
2008:Q3	62,190	16,280	20.3	940	1.2	56,940	70.9	$6,\!110$	7.6	
2008:Q4	74,800	28,630	26.7	1,450	1.4	65,960	61.5	11,230	10.5	

Table 2 ¹¹

Modification Statistics by Type: 2007:Q1-2008:Q4

Notes: These statistics were computed using a 10 percent random sample of the LPS data. Quantities obtained from the data are multiplied by a factor of 10. The percentages are taken with respect to the total number of modifications, and *not* loans modified. Thus, there is double-counting in the sense that some loans received multiple types of modifications in a given quarter.

¹¹ Foote, Christopher, Kristopher Gerardi, Lorenz Goette, and Paul Willen. "Reducing Foreclosures: No Easy Answers." <u>Working Paper 15063, NBER Macro Annual 2009, Forthcoming</u>. June 2009. 24 June 2009. 28.

Figure 8 Below are graphs of Table 2. The first graph is with Foote et. al's double counting; "The percentages are taken with respect to the total number of modifications [types made], and not loans modified. Thus, there is double-counting in the sense that some loans received multiple types of modifications in a given quarter." The double counting dilutes the frequency of a particular loan type relative to total loans modified. To control for double counting, we recalculated the percentages with respect to the total number of loans modified and not total modification types made, as shown in the second graph. Thus the actual trends of each type of modification can be seen. Although it would appear in Foote's calculations, principal balance increases are falling, in actuality, when controlled for double counting, the trend is increasing.



Modifcations Statistics Relative to the total number of modifications made



Year:Quarter

Figure 9¹²

Figure 8: Kaplan-Meier Survival Estimates: Transition from Modification to Default



90-Days Delinquent

¹² Foote, Christopher, Kristopher Gerardi, Lorenz Goette, and Paul Willen. "Reducing Foreclosures: No Easy Answers." <u>Working Paper 15063, NBER Macro Annual 2009, Forthcoming</u>. June 2009. 24 June 2009. 30.

Table 3 shows data by quarter, with the first column showing all loans, the second showing 30day delinquent loans, and the third showing 60-day delinquent loans for different holders of mortgages from private portfolios to GSE securitization to private label securitization. For each quarter of 2008, the percentage of loans modified is calculated. Panel A depicts all types of mortgages. Panel B illustrates the results of only Alt-A and subprime mortgages. The loans are split up into the different denominators used. ¹³

Panel A – All Loan Types												
	Modification % of											
	all loans outstanding				30 days delinquent or worse				60 days delinquent or worse			
	2008:Q1	2008:Q2	2008:Q3	2008:Q4	2008:Q1	2008:Q2	2008:Q3	2008:Q4	2008:Q1	2008:Q2	2008:Q3	2008:Q4
GNMA	0.04	0.04	0.03	0.03	0.39	0.36	0.31	0.27	0.80	0.74	0.64	0.51
FNMA	0.10	0.06	0.05	0.04	2.32	1.30	0.88	0.61	4.87	2.51	1.58	1.03
FHLMC	0.05	0.05	0.16	0.23	1.95	1.75	4.72	5.26	4.56	3.74	9.06	9.30
Private Securitized	0.55	0.84	1.25	1.42	3.45	4.63	6.28	6.23	5.03	6.41	8.49	8.31
Portfolio	0.53	0.65	0.69	1.05	6.31	7.53	6.81	8.55	10.23	11.47	10.32	12.57

Panel B – Subprime/Alt-A Loans (LPS Definition)

	Modification % of											
	all outstanding loans				30 days delinquent or worse				60 days delinquent or worse			
	2008:Q1 2008:Q2 2008:Q3 2008:Q4				2008:Q1	2008:Q2	2008:Q3	2008:Q4	2008:Q1	2008:Q2	2008:Q3	2008:Q4
FNMA	0.80	0.42	0.37	0.19	3.42	1.70	1.32	0.56	6.01	3.05	2.24	0.87
FHLMC	0.23	0.12	2.48	1.70	1.30	0.56	9.59	5.35	2.92	1.18	17.86	8.68
Private Securitized	1.59	2.58	4.39	4.56	4.41	6.65	10.41	9.46	6.28	9.11	14.13	12.55
Portfolio	1.41	2.51	3.97	6.93	3.72	6.23	9.95	15.83	5.21	8.57	13.55	21.75

¹³ Foote, Christopher, Kristopher Gerardi, Lorenz Goette, and Paul Willen. "Reducing Foreclosures: No Easy Answers." <u>Working Paper 15063, NBER Macro Annual 2009, Forthcoming</u>. June 2009. 24 June 2009. 30.

Figure 10 The first plot depicts 30-day delinquency time lag to modification for all loans, while the second depicts time lag specifically for subprime and Alt-A mortgage loans. ¹⁴

Figure 9: Kaplan-Meier Survival Estimates: Transition from Delinquency to Modification



30 Days Delinquent to Modification: All Mortgages

¹⁴ Foote, Christopher, Kristopher Gerardi, Lorenz Goette, and Paul Willen. "Reducing Foreclosures: No Easy Answers." <u>Working Paper 15063, NBER Macro Annual 2009, Forthcoming</u>. June 2009. 24 June 2009. 32.

Figure 11 ¹⁵

Figure 10: Default Probability by Year.

The top panel reports foreclosures on loans originated in that year. Loans may be purchase or refinance. Data comes from Morton (1956). The bottom panel reports foreclosures on homes purchased with mortgages in that year. For these data, we count a loan as foreclosed if there was a foreclosure on that loan or any subsequent mortgage to that owner. Thus the probabilities in the lower panel are an upper bound on the probabilities in the top panel. See Gerardi, Shapiro, and Willen (2007) for details.

Foreclosure probabilities between 1920 and 1947 by origination year



Foreclosure probabilities between 1989 and 2008 by origination year



¹⁵ Foote, Christopher, Kristopher Gerardi, Lorenz Goette, and Paul Willen. "Reducing Foreclosures: No Easy Answers." <u>Working Paper 15063, NBER Macro Annual 2009, Forthcoming</u>. June 2009. 24 June 2009. 34.



Figure 3. Characterization of the t = 1 Equilibria as a Function of θ and ρ . Rescheduling/No Consumption is an equilibrium in regions I and IV. Randomization by both parties is an equilibrium in region V. Foreclosure/ Consumption is an equilibrium in regions I, II and III. The socially preferred policy is for foreclosure in region III but for rescheduling elsewhere. The figure assumes w = 0.2 and $v_b = 1.1$.

¹⁶ Anderson, Michael. "Asset Liquidity, Moral Hazard, and Bank Loan Rescheduling." <u>Review of Quantitative Finance and Accounting</u> November 13 (1999): 236.