

The Distribution of Risk and the Great Recession: Old Problems, New Crises

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1 Intro

This paper explores the central institutional and regulatory changes in U.S. mortgage finance that contributed to the historic loss of wealth during the Great Recession and aftermath. To do so, I will trace the developments which transformed mortgages from financial instruments which shielded borrowers and savers from risk, to concentrating risk on those least able to bear it. In exploring these changes, we will find that a consistent theme of the history of mortgage finance in the United States is that the risk-bearing capacity for private financial intermediaries is both costly and limited. When this capacity becomes stressed due to rapid growth, competitive pressures, or other economic conditions, there is a persistent tendency to redistribute risk towards end users of the system – borrowers and savers – often with severe consequences.

The central argument that I will develop in this paper is that stable mortgage finance on a widespread basis in the United States has always depended on direct public intervention, rather than occurring as the result of the unregulated market equilibrium. This stable form of lending was supported by a particular regulatory structure dating to the New Deal era, and

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heavily relied on the active participation of public institutions in the market. Indeed, we will see through international and historical comparison that, absent this regulatory structure, the unregulated equilibrium tends to towards risky mortgages in primary market, and a boom-bust cycle in the secondary market driven by agency problems. In this light, I will argue that the 2007-2008 financial crisis and Great Recession can be reinterpreted as being caused by the old persistent problems which plagued 19th century mortgage finance, which re-emerged after deregulation and privatization eroded the New Deal institutional structure. Due to this historical continuity, the 2007-2008 financial crisis was both predictable, and predicted.

The remainder of this paper will be organized into four sections. Section two discusses the distribution of risk inherent in mortgage lending, the rarity of mortgage contracts that shield households from risk in international and historical comparison, and agency problems in early secondary markets. Section three discusses the emergence of stable mortgage finance in the U.S., as well as the successes and limitations of the postwar structure for housing finance. Section four will describe how the erosion of this system allowed persistent problems in mortgage finance to re-emerge, and contribute to historic loss of wealth. Section five concludes with a warning of the difficulty of maintaining robust regulatory infrastructure, drawn from the experience of 2007-2009.

2 The Distribution of Risk in Mortgages: International and Historical Comparison

The “American” Mortgage and the Distribution of Risk

Like all debt contracts, mortgages are inherently distributional because the terms of the contract specify the distribution of risks between borrower and lender. The major type of risks inherent in debt contracts can be organized into five types, which include credit, collateral, liquidity, interest rate, and pre-payment risks. Credit risk is the risk that the borrower will default on the loan. Collateral risk is the risk that the value of the underlying collateral

securing the loan will decline. Liquidity risk is the risk that the borrower will require external finance at the end of the loan term. Interest rate risk is the risk that the interest rate will change during the life of the loan. Finally, pre-payment risk is the risk that the borrower will pay off the loan in full earlier than scheduled, and therefore the lender will not make the expected amount of interest on the loan (Mian and Sufi, 2014; Snowden, 1995).

The dominant form of mortgage in the United States during the post-war period was the long-term, fixed rate, fully amortizing mortgage, with universal ability to prepay. This mortgage has a high level of consumer financial protection, because each of these features shields households from risk. For example, the fixed interest rate shields households from interest rate risk, because the interest rate on the loan will not change if the market rate changes. Therefore the borrower's monthly payment won't change with the market interest rate, which is particularly desirable for households because it gives them stable monthly payments they can budget around. The long-term, fully amortizing structure protects borrowers from liquidity risk because the loan is fully paid off at the end of the loan term, and so does not require the extension of a new mortgage or refinancing. The ability to pre-pay is also consumer friendly, because it gives households the ability to refinance when interest rates lower.

While this form of mortgage was the dominant form for the American market in postwar period, mortgages with this high a level of consumer protection are actually quite rare in international comparison, as well as rare in US history outside of the postwar period. Indeed, the rareness of this form of mortgage outside of the U.S. led historians of mortgage finance Green and Wachter (2005) to name this form of mortgage the "American" mortgage. Mortgages with this high a level of consumer protection are rare because, if the terms of mortgages are set to shield borrowers from risks, private intermediaries must bear these risks. However, risk-bearing capacity is costly and limited, so private intermediaries are often not willing to bear these risks. For example, in countries like the U.K. and Canada where mortgages are originated and held by depository institutions, fixed rate mortgages are typically unavailable because these institutions are not willing to assume

the interest rate risk. In countries where mortgages are largely funded in secondary markets through securitization, such as Germany or Denmark, there are restrictions on the ability of borrowers to refinance and prepay as interest rates fall due to concerns that exercising these options will push intermediaries into insolvency. In addition, in countries where mortgages are funded through securitization, solvency concerns also lead to lower limits on loan-to-value (LTV) ratios, so mortgage financing is significantly less available due to higher required down payments (Green and Wachter, 2005)

Stable mortgage structures were also rare prior to the New Deal era. Before this period, mortgage finance was unstable in the United States because the terms of mortgage contracts concentrated liquidity, interest rate, and collateral risk on households. The most common mortgage structure prior to the New Deal era typically had a term of 3-5 years, but was not fully-amortizing. These mortgages were named “bullet mortgages” because they required a large “bullet” payment, or what is now referred to as a balloon payment, at the end the loan term. These mortgages concentrated liquidity risk on households because borrowers typically depended on the extension of a new mortgage at the end of the loan to prevent foreclosure, and hence had to bear the risk that a new mortgage would not be available at the end of the loan term (Levitin and Wachter, 2013). In addition, households bore interest rate risk because if interest rates increased during the loan term, households would only be able to obtain a new mortgage at the higher interest rate. Finally, households also had to bear collateral risk, because they would bear the first losses if the value of their home declined.¹

Bullet loans are also consistent with what Hyman Minsky described as financially fragile ponzi or speculative structures (Minsky, 2008). These structures are fragile because of the dependence on external finance for solvency. Minsky provided a three-part taxonomy of hedge, speculative, and ponzi financial positions. This taxonomy is based on the relation between the operating income and debt service payments of borrowers. A firm or house-

¹To be sure, as documented in Rose and Snowden (2013), some fully amortizing mortgages were available through the building and loans association. However, non-amortizing mortgages were much more common during this time period (Levitin and Wachter, 2013).

hold is in a hedge financial position when the anticipated operating income is sufficient to cover both interest payments and scheduled reductions in indebtedness. A firm or household is in a speculative position when anticipated operating income is sufficient to cover interest payments, but not sufficient to cover the amounts due on maturing loans. This is more fragile than a hedge position because the agent must rely on external financing, for example in the form of new loans, to repay part or all of the amount due on maturing loans. Finally, a firm or household is in a ponzi position when anticipated operating income is insufficient to even cover interest payments. This is the most fragile position because the firm must rely on external financing to even meet interest commitments (Kindleberger, 1978).

The financial fragility of this mortgage structure was demonstrated by the Great Depression, when bullet mortgages defaulted en masse. From 1931-1935, there were roughly 250,000 foreclosures per year (Green and Wachter, 2005). At the height of the Depression in 1933, roughly half of homes were in default, and 10 percent of homes in foreclosure (Levitin and Wachter, 2013). These defaults were particularly onerous for savings and loans (S&Ls) institutions, because their portfolio was highly concentrated in mortgages. From 1930-1934, the foreclosure rate on mortgages, measured as a share of the total dollar value of loans outstanding, was approximately 14 percent. This caused the failure of a large portion of S&Ls. From 1931-1933, the size of the S&L industry contracted by 25 percent. The industry contracted another 15 percent between 1933-1939 (FHLBB, 1983).

Agency Problems in Early Secondary Markets

Another significant problem with mortgage finance in the U.S. prior to the New Deal were frequent boom-bust cycles in the secondary market for securitized mortgages, which were driven by agency problems. There were six separate early attempts at mortgage securitization in the U.S. between 1870-1930, all of which were unsuccessful. The common pattern in these attempts were that all grew rapidly, but then collapsed in spectacular fashion due to overlending and the deterioration of underwriting standards. All

of these attempts except for one were nearly completely unregulated, and investigations into the failure of mortgage companies uncovered substantial misrepresentation and fraud (Snowden, 1995).

For example, consider the case of western mortgage companies which attempted to organize mortgage securitization to finance farm settlement along the frontier beginning in the 1880s. These companies assigned mortgages to eastern trust accounts and issued securities against these pools. Between 1890-1897, 74 institutions were licensed to sell MBS, and together issued roughly \$800 million in securities. However, by 1897 only seven of the companies remained while the others had collapsed. Subsequent reports documented immense fraud and scandals. In one case, mortgage companies claimed that only mortgages for farmland with LTVs no greater than 50% would back the securities. However, Massachusetts regulators found that some mortgages used bridges, large buildings, or real-estate development projects as collateral instead. Even when farmland was used, the appraisal value was regularly inflated which understated the true LTV. The companies also appeared to select the poorest quality mortgages for the collateral pools. Particularly egregious examples of this were when securities were issued against already delinquent mortgages, or for property obtained through foreclosure (Snowden, 1995).

Moreover, owners of many of these securitization companies engaged in outright looting. Looting is bankruptcy for profit,² and occurs when an insolvent institution engages in high risk activities that generate large short-term cash flows, but also large losses in the future. The executives of this institution find whatever method necessary to extract the short-term cash flows, while leaving the creditors with larger losses in bankruptcy than they otherwise would have had to bear (Akerlof and Romer, 1993). Faced with insolvency, owners of 19th century American mortgage securitization companies often issued high-risk, high-interest rate loans or expanded their business along other unsound lines to increase short-term revenue for payouts before

²Looting doesn't necessarily have to occur through bankruptcy. Looting can occur whenever those responsible for an institution have limited liability, and opportunities to extract large short-term cash flows at the expense of the long-term health of the company.

the whole structure collapsed. In the year before one mortgage company failed, it paid out a 40% dividend to its shareholders (Snowden, 1995).

In contrast to the American experience, mortgages had been securitized much earlier, and with much more success, in Europe by 1870. European attempts were successful because they were able to design an institutional and regulatory structure capable of mitigating the severe informational problems associated with mortgage securitization. To analyze these information problems, it is useful to divide the stream of payments from a pool of mortgages into a portion that can be thought of as a loan that is free of risk of default, and a portion that can be thought of as a contract which insures the portion of the payments which contains some risk of default, also known as credit risk. This is because it is typically easy to market securities based on the portion of the cash flow that is free of credit risk, but quite difficult to securitize the portion which contains credit risk. Historically, securities based on the portion of these payments which is free of credit risk, and only exposes investors to interest rate and prepayment risk, are frequently traded in thick markets at rates similar to high quality government debt. In contrast, markets for securities where the credit risk is not completely detached tend to be much thinner, or even non-existent in the extreme (Snowden, 1995).

Uninformed outside investors are generally not interested in securities based on the portion of payments with any credit risk, because they are not well-positioned to have the information to assess this risk. Similar to other property insurance contracts, mortgages are subject to severe informational problems because the borrower has access to information concerning the true risk of the decline in the value of their property. Additionally, they can take actions to affect the probability and severity of loss. Since these actions are not easily verified by an outside investor, they are typically unwilling to insure any of this risk. In contrast, lenders that originate, service, and hold these mortgages are willing to insure this risk because they are able to take actions and structure contracts which reduce the chance that the borrower will exploit this information. For example, lenders have appraisers verify the true value of the property, and require borrowers to post down payments that will give borrowers an incentive to maintain the value of the property

because they must absorb first losses (Snowden, 1995).

In performing these informational activities, intermediaries observe the private information and actions of borrowers. They therefore have both incentive and opportunity to use this informational advantage to exploit uninformed outsiders. As such, uninformed investors typically require the intermediary to absorb the default risk themselves, and will only fund mortgages through instruments which almost always pay off, such as deposits, mutual shares, or life insurance policies. For securitization agencies, the informational problems related to credit risk are even more salient, because these securities are meant to be traded anonymously in thick markets. This is why private mortgage securities require elaborate mechanisms to shield investors from credit risk, such as mortgage insurance, representations and warranties in offering documents, overcollateralization of mortgage pools, or any of a number of other mechanisms.

However, all of these private risk-bearing mechanisms are costly and limited in the amount of risk they can absorb. A consistent theme of 19th century securitization attempts is that rapid growth in the demand for credit risk-free securities would lead to a deterioration in underwriting standards and overlending. As this overlending strains or breaches the intermediary's credit risk bearing capacity, insiders regularly redistributed credit risk to investors by fraudulently concealing the breakdown in underwriting from them. The consistency of these agency problems also led economic historian Kenneth Snowden to conclude his history of mortgage securitization with a clear warning of the dangers of the severe informational asymmetries associated with mortgage securitization structures. He argued that each of the early failures in private mortgage securitization in the U.S. before the 1930s, "provided evidence that private securitization structures rest on a razor's edge. There is always some limit to the amount of default risk that can be absorbed in a privately financed securitization structure, and whenever that threshold is broken the severe informational problems that are inherent in mortgage securitization appear in full force. We have seen that insiders regularly exploited their informational advantage in these situations before 1930 and, by doing so, imposed much larger losses on investors than would have resulted

from default risk alone.” (Snowden, 1995).

In comparing early American and European attempts at securitization, Snowden (1995) argues that there were two key institutional features which allowed Europeans to successfully mitigate the informational problems related to securitizing mortgages. First, European attempts they were based on a single, central securitization platform. For example, a single, central securitization platform had already emerged in France and Germany by 1870, which monitored and prevented overlending or the deterioration of underwriting standards of the smaller regional affiliates which originated the loans to be securitized. Second, European attempts were subject to rigorous oversight and regulation because they were all either directly created by the state, such as the Credit Foncier in France,³ or private but closely associated with the state, such as the Bavarian or Prussian private joint-stock banks. The stringent regulation and oversight prevented the misrepresentation and concealment of credit risk, shielding investors from the agency problems which undermined American securitization attempts. In contrast, American attempts to introduce European style mortgage securitization were based on a misreading of the European attempts. American attempts were almost all completely unregulated, and lacked a single, centralized platform to monitor lending standards.

3 The New Deal and the Creation of Stable Mortgage Finance

A Stable Structure for Mortgages: The Homeowner Loan Corporation

The institutional structure that allowed the stable terms of the American mortgage to be provided on a widespread basis was actually created by government intervention during the Great Depression, aimed at addressing the large number of foreclosures caused by the existing unstable bullet loans.

³In 1852, Napoleon III gave the Land Bank of Paris an exclusive monopoly over mortgage securitization, which was then renamed the Credit Foncier.

As described above, at the height of the Great Depression in 1933, roughly one-half of the mortgages in the country were in default, and 10 percent were in foreclosure. To address this crisis, the federal government directly entered into the mortgage market through the creation of the Homeowner Loan Corporation (HOLC). The HOLC bought up defaulted mortgages and restructured them into more stable mortgages, and so introduced this form of lending on a large scale for the first time. In its first year, the HOLC received applications from 40 percent of all mortgage holders, and refinanced half of them. After the HOLC's first year, the federal government was the country's largest single mortgagor, holding and servicing slightly over 10 percent of all residential mortgages in the country. The program was also quite successful at crisis mitigation, preventing default and foreclosure by significantly lowering monthly payments for borrowers. Additionally, lenders were happy to receive much needed liquidity and to remove non-performing loans from their balance sheets (Levitin and Wachter, 2013).

The new stable mortgage terms pioneered by the HOLC included fixed-interest rates, long payment terms, and full amortization. As discussed in footnote 1 above, many of these stable features had existed in some form prior to the New Deal, and were not solely invented by the HOLC or other New Deal institutions. However, the HOLC helped to pioneer the new stable form of lending by identifying and incorporating existing best practices, and then streamlining their widespread provision by developing standardized underwriting templates. These templates greatly facilitated adoption of the new mortgage form by intermediaries wary of new forms of lending due to the Depression. In addition, in restructuring a large amount of existing mortgages, the HOLC introduced this structure far beyond the building and loan associations (Levitin and Wachter, 2013).

While the new form for mortgages shielded households from risk, private intermediaries would now have to bear this risk. However, policymakers understood that it was in the public interest for the financial sector to bear these risks, rather than households. Similar to the argument for making producers of consumer goods bear liability for risk(s) associated for their products (Moss, 2004), it is in the public interest for private intermediaries to

bear the most risk for two reasons. First, financial intermediaries are better situated to monitor and reduce total risk, and making them bear this risk gives them an incentive to do so. For example, intermediaries are much better suited to monitor the determinants of defaults across their products than households are because they have access to the loan-level data, underwriting models, and information processing capabilities needed to do so. If they find features of their services that contribute to a higher default rate, they can directly eliminate those features. Alternatively, if the features were highly desirable and added an acceptable amount of risk, private intermediaries could price this risk into the service and distribute the risk evenly across the risk pool. Financial intermediaries also have detailed information on total risk or the concentration of risk in their pool, and so they could act to reduce total risk or pockets of risk in real time.

Second, financial intermediaries are better suited to bear risk because they have a far wider variety of tools to manage risk than households. Indeed, managing risk is a *raison d'être* of a financial sector in a capitalist economy. As such, financial institutions have far more capabilities such as deeper sources of internal and external finance, as well as greater information and information processing power. However, during the Great Depression the capacity of intermediaries was severely strained and was simply insufficient to bear these new risks. To this end, the New Deal reforms also created a large number of new public institutions that provided a financial infrastructure for private intermediaries to help them successfully manage these risks, as well as a regulatory framework to reduce any moral hazard from the provision of support.

Private-Risk Bearing Capacity, Public Institutions, and Regulatory Structure

The creation of public institutions was initially intended to serve as temporary stop-gap measures until private financial markets could be revived. However, these institutions ended up operating far longer than was anticipated, increasing private risk bearing capacity, and serving as a point of

leverage for public regulation. The creation of these public institutions occurred in two waves. First, the government created the Federal Home Loan Bank (FHLB) system, the Federal Savings and Loans Insurance Corporation (FSLIC), and the Federal Deposit Insurance Corporation (FDIC). When these proved insufficient to revive the market on their own, the government then created the second group of institutions. These included the HOLC described above, as well as Federal Housing Administration (FHA) insurance, and the Federal National Mortgage Association (Fannie Mae) (Levitin and Wachter, 2013).

The first set of institutions were created to stabilize funding for private intermediaries, by providing liquidity and deposit insurance, which was a necessary to enable intermediaries to sustainably originate long-term, fully amortizing mortgages. This first wave of institutions included the FHLBs, FDIC, and FSLIC. The FHLBs were modeled off the Federal Reserve system, governed by the Federal Home Loan Bank Board (FHLBB), and provided thrift institutions liquidity by discounting mortgages. In addition, the FDIC and FSLIC helped intermediaries manage liquidity risk by providing deposit insurance. Deposit insurance eliminated the risk of bank runs, and so stabilized funding for mortgages (Levitin and Wachter, 2013; Rose and Snowden, 2013).

The second wave of public institutions helped intermediaries manage risk by directly insuring credit risk, as well as providing liquidity in the secondary market. FHA insurance guaranteed the timely payment of principal and interest payments if a loan defaulted, and so directly insured private intermediaries against credit risk. This was important, because the American mortgage was a new and radically different form for mortgages, and so intermediaries were wary about underwriting. In addition, the government also needed to assume credit risk to create the secondary market, because investors were not interested in securities bearing credit risk (Levitin and Wachter, 2013).

Once the federal government had assumed credit risk through mortgage insurance, the loans could then be sold back to private institutions through the secondary market. However, the government needed an institution to

manage the sales of loans and securities on the secondary market. The government accomplished this by creating Fannie Mae to purchase FHA insured loans, and sell long-term bonds based on the underlying cash flows. Moreover, Fannie Mae was willing to purchase any government insured loan at par, and so increased market liquidity for insured loans even when it did not directly buy them. While the secondary mortgage market did not experience rapid growth until the 1980s, it was still important in this time period because it increased market liquidity. Moreover, the creation of the secondary market helped to further cement the trend of the mortgage structure pioneered by the HOLC as the dominant U.S. mortgage structure (Levitin and Wachter, 2013).

In addition to providing a public financial infrastructure to help private intermediaries manage risk, the public institutions during the New Deal used their direct participation in financial markets to provide regulatory leverage. For example, the FHLBB was given the power to charter federal savings and loans associations. These charters granted S&Ls access to services that stabilized their funding, such as liquidity provided by the FHLB system through discounting mortgages, and deposit insurance through the FSLIC. However, these charters also served a regulatory function by restructuring existing S&Ls into a specialized intermediary for providing mortgage credit through imposing substantial restrictions on permissible activities and portfolio strategies. These included restrictions on lines of business, branching, types of assets that could be held and in what amounts, lending beyond a specified distance from the thrift institution, the amount of loan that could be lent to a single entity, and prohibited adjustable rate lending. Essentially, these restrictions created a narrow business model where thrifts would originate mortgages and hold them in their portfolio (Levitin and Wachter, 2013; D’Arista, 1994).

The New Deal reforms essentially envisioned the role of thrifts as similar to a heavily regulated public utility whose “public mission” was to provide access to affordable mortgage credit for the communities in which they were located. These public utilities were also designed to provide fair access to affordable credit for all communities, at all income levels. The branching

restrictions, geographic restrictions on lending, and restrictions on interstate banking can be understood in this context. These restrictions were put in place due to fears that interstate branch banking would undermine fair access to credit by channeling deposits out of low-income rural communities and into financial centers such as New York (D'Arista, 1994).

The FDIC also provided commercial banks deposit insurance which helped stabilize their funding. However, deposit insurance was also used as a regulatory tool for monitoring risk at banks. For example, access to deposit insurance required commercial banks to submit to direct monitoring through bank examinations. This was necessary to prevent moral hazard due to deposit insurance. While depository insurance stabilized deposits, it also removed the market incentive for depositors to monitor the risk activities of insured institutions. Therefore, the FDIC needed to directly monitor risk (Levitin and Wachter, 2013; D'Arista, 1994).

FHA insurance also served as a tool to regulate the primary market. FHA insurance was able to indirectly set the terms of the primary market by limiting access to mortgage insurance to loans that conformed to the new structure created by the HOLC. Initially, the FHA required mortgages to have fixed interest rates up to 5 percent, long terms up to 20 years, and LTVs up to 80 percent. However, in 1937 this was increased to 30 year terms with LTVs as high as 97 percent (Levitin and Wachter, 2013).

Limiting access to insurance to mortgages that met these stable terms served as a tool to regulate mortgage terms in the primary market by making stable mortgages more competitive. From the perspective of the intermediary, insured loans were more desirable because they could be sold in the secondary market and hence had greater liquidity. Insurance also indirectly regulated uninsured loans through competition by creating a quality floor. Uninsured loans needed to have comparable terms to insured loans in order to be desirable to borrowers. Indirectly regulating the primary market by limiting access to FHA insurance and the secondary market became one of the main regulatory mechanisms of housing finance in the latter half of the twentieth century (Levitin and Wachter, 2013).

Successes and Limitations

While dating institutional systems is necessarily arbitrary to some degree, the regulatory structure put in place by the New Deal reforms only fully solidified after World War II with the Treasury-Fed Accord of 1951. Before this, public efforts were either concentrated on direct crisis intervention in the depression, or on financing the war.⁴ The public institutions that regulated intermediaries through providing them services, such as liquidity and insurance, proved to be long-lasting. However, direct public participation in the primary market was always seen as temporary. As the HOLC wound down operations in 1951, so too did the government's participation in the primary market. As the government retreated from direct provision of credit in the primary market, it left the private intermediaries with stable mortgage products to provide to households, as well as the robust secondary market infrastructure to support these mortgages.

The regulatory structure for housing finance during this period was remarkably successful at increasing homeownership and preventing financial crises. The institutions specialized to solely provide mortgage credit, thrift institutions, grew rapidly following World War II, with assets increasing 900 percent between 1945-1960. Thrifts provided roughly half of mortgage credit during this time period, and commercial banks also provided roughly one-third. Homeownership increased dramatically in the postwar period. The homeownership rate was roughly 40 percent at the turn of the century, and remained relatively constant until declining slightly during the Great Depression. However, following the New Deal reforms and the end of World War II, the homeownership rate increased from 44 percent in 1940 to over 65 percent in 1970. Considering the previous unstable structure of housing finance, it is an impressive accomplishment that this structure successfully provided stable household credit en masse for the first time in U.S. history (Gale, Gruber and Stephens-Davidowitz, 2007; Markham, 2002; FHLBB, 1983; Goldsmith, 1968).

⁴Minsky (2008) remarks that during the second world war, depository institutions were essentially turned into government bond holding companies. However, this also had the effect of filling the financial system with safe, liquid assets which reduced financial fragility.

However, the accomplishment of increasing homeownership during this period was also incomplete and highly unequal due to pervasive racial discrimination. Most notably, FHA housing policies such as redlining systematically prevented African-Americans from receiving mortgage credit. This discrimination excluded African-Americans from homeownership which was the primary channel for building wealth. Moreover, African-Americans who did own homes were concentrated in neighborhoods where home values were affected by the “self-fulfilling prophecies” of the FHA appraisers. These areas were cut off from sources of new investment, which caused their house prices to lose value compared to white neighborhoods which FHA appraisers deemed desirable. This systematic exclusion of African-Americans from the primary wealth building channel for the middle class has featured prominently in recent calls for reparations, such as that from Ta Nahisi-Coates (Coates, 2014; Gordon, 2005; Oliver and Shapiro, 1995).

The exclusion of African-Americans from stable mortgage credit also foreshadows a problem that contributed to the financial crisis of 2007-2009. Credit constrained borrowers, such as African-Americans during the mid-century, are most vulnerable to mortgage contracts which concentrate risk on borrowers. For example, the dominant form of housing finance for African-Americans during this period was buying on contract. The terms of this financial arrangement would be that the buyer would make monthly payments directly to the seller, with the promise that they would receive the deed only once the home was entirely paid off. However, this financial arrangement gave African-Americans all the risks of owning the home, with none of the benefits. African-Americans would be responsible for all repairs to the home, similar to an owner. However, they would not build equity in their home as they made payments, similar to a renter. Therefore, if they fell behind on payments they would be evicted, with the seller keeping all the equity in the home. This provided an incentive for sellers to design these contracts to be unaffordable. To this end, sellers typically inflated home prices two to three times the market rate, and included high interest rates to make monthly payments unaffordable (Coates, 2014; Satter, 2010).

4 Things Fall Apart: Deregulation and the Distribution of Risk

4.1 Interest Rate Risk, Insolvency, and the Re-establishment of the American Mortgage

The Volcker shock effectively ended the viability of the originate and hold business model for providing long-term fixed rate mortgages. This exposed the limits of depository institution's ability to manage interest rate risk, leading to widespread insolvency in the thrift industry. The resolution of this crisis could have occurred through either allowing adjustable rate mortgages (ARMs), or through securitization through the government sponsored enterprises (GSEs), Fannie Mae and Freddie Mac. Both methods were experimented with and the eventual resolution of the crisis occurred through securitization, which renewed the viability of long-term fixed-rate mortgages by enabling the originate to distribute business model (Levitin and Wachter, 2013).

Deregulation occurred with the Depository Institution Deregulation and Monetary Control Act (DIDMCA) of 1980 and Garn-St. Germain Act of 1982. In addition to allowing adjustable-rate lending, these acts also abolished an entire range of restrictions including those on interest rates, underwriting standards, lines of business, concentration of ownership, size of loans that can be given to a single borrower, and conflicts of interest. Deregulation allowed the rapid reemergence of mortgage structures that were unstable because they redistributed risk back towards households. For example, immediately following deregulation ARMs with initial teaser rates became available. These loans contained a lower interest rate, and hence lower monthly payments, for an initial teaser period. At the end of this period, the interest rate would reset at a higher rate, resulting in higher payments. In addition to redistributing interest rate risk back to households, this loan also redistributed liquidity towards households. Households bore liquidity risk because these mortgages often required refinancing at the expiration of the teaser period because the increased payments were unaffordable. Additionally, collateral

risk was already concentrated on households under the terms of the traditional fixed-rate mortgage. However, collateral risk also amplified liquidity risk because if the value of the home declined sufficiently to cause negative equity for the borrower, the borrower would not be able to refinance the loan. The concentration of interest, liquidity, and collateral risk on households was functionally similar to the pre-New Deal bullet loans described in section 1 (Taub, 2014; Levitin and Wachter, 2013; Peek, 1990).

To be sure, Congress attempted to reimpose restrictions through the Home Ownership and Equity Protection Act (HOEPA) in 1994. This act aimed to regulate certain lending practices which concentrated risk on borrowers, such as balloon payments and negative-amortizing mortgages. The act additionally directed the Federal Reserve to prohibit acts which were deceptive, not in the interest of the borrower, or designed to evade the act. However, under Chairman Greenspan the Federal Reserve refused to engage in HOEPA rulemakings despite pressure from consumer groups. Even worse, when states enacted their own HOEPA like regulation, federal banking regulators such as the OCC pre-empted these laws making them no longer binding. While the DIDMCA and Garn-St. Germain Act dismantled the federal regulatory structure, this preemption dismantled the remaining state regulatory structure, leaving an essentially unregulated market (Taub, 2014; Levitin and Wachter, 2013).

While depository institutions experimented with the use of ARM mortgages to manage interest rate risk during the 1980s, households still strongly preferred fixed rate mortgages because they gave them stable payments to budget around. The rapid growth of public mortgage securitization through the GSE's reestablished the viability long-term fixed rate lending, by allowing investors to bear interest rate risk, rather than depositories. The share of outstanding balances held by the GSE's grew rapidly from 20% in 1982, to 45% in 1992. Public securitization during this period was successful because the GSE's were able to credibly overcome the informational problems inherent in securitization. A key factor in this was that the GSE's were able to separate interest rate from credit risk, so that investors would only be exposed to interest rate risk, while the government guaranteed credit risk. In

addition, the underwriting templates helped to standardize mortgage origination, and create a standardized form for MBS. Standardization and the separation of credit risk allowed thick markets for agency MBS to develop, by mitigating asymmetric information (Levitin and Wachter, 2013; Green and Wachter, 2005; Snowden, 1995).

During this period, GSE underwriting templates set the terms of the primary market to shield households from risk, in a manner similar to that performed by FHA insurance during the mid-century. However, this only occurred after deregulation removed restrictions on depository institutions to allow them to experiment with adjustable-rate lending. As we will see in the next sections, the removal of these restrictions would have wide-ranging effects that limited the ability of Fannie and Freddie to perform a similar regulatory role to FHA insurance during the mid-century, by setting the terms of the primary market by setting controlling access to the secondary market. In addition, the private interests of the privatized GSE's created perverse incentives which undermined their public regulatory function. However, it was not until the rapid growth of the PLS market from 2002-2006 that the severe consequences of these issues became clear (Levitin and Wachter, 2013).

4.2 The PLS Market and the Great Recession

Once deregulation had removed restrictions on the permissible types of mortgages, the rapid growth of the PLS market amplified their destructive power. The private label market grew rapidly from 2002 to 2007, almost tripling in value. After peaking at an outstanding balance of \$2.7 trillion in 2007, the market experienced severe losses and declined rapidly (SIFMA, 2015). Losses in these securities were at the epicenter of the financial crisis, causing the failure of financial institutions directly invested in these securities or derivatives based on them.

The rapid increase in the supply of credit during the growth of the market helped to facilitate the widespread issuance of loans with risky structures similar to those that emerged immediately following deregulation in the 1980s described in the previous section. The PLS market renewed the viability of

these loans by providing a large source of demand, and by removing some of the credit risk associated with them from the originator's balance sheet. At the time, proponents of mortgage innovations argued that they were welfare increasing because they eased credit constraints and increased choice (Krainer, 2006). However, these loans also had the effect of concentrating risk on precisely those least able to bear it, because they were marketed towards credit constrained borrowers.

When mortgage innovations redistribute risk towards borrowers, the implicit assumption is that the borrower will be able to self-insure for these risks. However, credit constrained borrowers are almost by definition those that have the least resources to self-insure against these risks. Indeed, even proponents of these new innovations acknowledged they redistributed risk towards borrowers. For example, after arguing that these innovations were likely welfare enhancing, one proponent also admitted that, "there is also little question that these products convey more risk onto the borrowing household. In the near term, if the housing market or the economy were to slow, an important question will be whether borrowers and lenders have fully factored in these risks," (Krainer, 2006).

In addition to increasing demand for risky mortgage structures, the rapid increase in the supply of credit in the PLS market also led to overlending and a deterioration in underwriting standards, which was then concealed from investors, in a pattern reminiscent of the persistent agency problems during the 19th century. Currently all major intermediaries involved in the sale of private MBS have had numerous lawsuits filed against them, as well as have been subject to Department of Justice (DOJ) settlements totalling at least \$40 billion. For example, J.P. Morgan Chase reached a DOJ settlement of \$13 billion in 2013, Bank of America reached a DOJ settlement of \$16.6 billion in 2014, and most recently Goldman Sachs reached a DOJ settlement of \$5 billion dollars in 2016.⁵ However, to date no top executives have received

⁵See Goldstein, Matthew, "Goldman to Pay Up to \$5 Billion to Settle Claims of Faulty Mortgages," Jan 14, 2016, from Dealbook, New York Times. Accessed 4-15-2015 from <http://www.nytimes.com/2016/01/15/business/dealbook/goldman-to-pay-5-billion-to-settle-claims-of-faulty-mortgages.html>.

jail sentences.

The basic issue underlying misrepresentation of MBS quality in the distribution portion of the supply chain was succinctly summarized in a recent ruling by District Judge Denise Cote,

“This case is complex from almost any angle, but at its core there is a single, simple question. Did the defendants accurately describe the home mortgages in the Offering Documents for the securities they sold that were backed by those mortgages? Following trial, the answer to that question is clear. The offering documents did not correctly describe the mortgage loans. *The magnitude of falsity, conservatively measured, is enormous.*”⁶ [emphasis added].

What sellers of MBS concealed from investors was the rapid deterioration of underwriting standards at origination, which included outright falsification of borrower financial information. However, the sale of loans that were originated with fraudulent practices, or simply negligent underwriting, typically violated market regulations and contractual obligations. These rules require the accurate disclosure of loan quality; however, if these practices were disclosed, the securities would obviously not have been marketable. Loan officers and underwriters who originated loans to be privately securitized used a variety of techniques to falsify borrower financial information such as appraisal value inflation, unreported second liens, income overstatement, and misreported owner occupancy status. This was done to qualify borrowers for larger loans than they would otherwise be able to obtain absent falsification, and had the effect of making loans more risky by increasing borrower leverage.

The direct falsification of borrower financial information was largely committed by loan officers and underwriters within the industry, who coached borrowers on the specific ways to falsify their information, rather than by

⁶From ruling in *Federal Housing Finance Agency v. Nomura Holding America*, May 11th, 2015. Accessed on June 26th, 2015 from: <https://s3.amazonaws.com/s3.documentcloud.org/documents/2077713/ruling-on-mortgage-fraud-in-2008-crisis.pdf>

borrower’s who defrauded otherwise honest lenders. For example, based on investigations and fraud reports, the FBI found that 80% of fraud cases involved collusion or collaboration with industry insiders (FBI, 2007). For example, a loan officer from Ameriquest explicitly described deceiving borrowers who were not comfortable with falsifying their information. He stated that, “Every closing was a bait and switch, because you could never get them to the table if you were honest,” and further elaborated, “There were instances where the borrower felt uncomfortable about signing the stated income letter, because they didn’t want to lie, and the stated income letter would be filled out later on by the processing staff.”⁷ Perhaps most infamously, workers at another Ameriquest branch dubbed their break room the “Art Department” because it contained all the tools needed to falsify documents (Hudson, 2010).

A recent body of empirical research has also confirmed that misrepresentation in private MBS was a widespread, systematic problem, rather than solely isolated incidents. For example, using conservative measures Griffin and Maturana (2016) find that 48% of loans that were privately securitized contain at least one of three relatively easy to quantify forms of fraud: appraisal inflation, unreported second liens, and misreported owner occupancy status. They find that loans with one of these forms of fraud were 51% more likely to become delinquent. When these problems came to light and resulted in a large number of defaults, there was a collapse of funding for private MBS. Almost a decade later, the private market has still not recovered to a point where it would be able to provide the funding needed to support the housing market. Following the financial crisis, it is not a gross exaggeration to say that the government has essentially become the housing market, because it has government has guaranteed roughly 80% of mortgages.⁸ Had the government not provided historic support for the secondary market, mortgage finance for households would simply not be available (Levitin, 2014; Frame

⁷ *National Credit Union Administration Board v. Wells Fargo Bank, National Association*, 2014.

⁸ Fannie Mae and Freddie Mac have guaranteed or directly held 60% of mortgages, while the FHA/VA insures 20% (Frame et al., 2015).

et al., 2015).

The problem that led to the collapse of this market can be described as an advanced Gresham's dynamic, which arises in a "market for lemons." The term "lemon" refers to a car which is poor quality, or more generally to any product that is poor quality. A market for lemons is a market where good and bad quality products are sold, but where there is asymmetric information so that buyers cannot know beforehand whether they are buying a good or bad product.

In these markets emerges a Gresham's dynamic, where bad products tend to push out good products because good and bad products must sell at the same price (Akerlof, 1970). To put it slightly differently, it is very difficult to be an honest player in a crooked game. Over the course of the housing bubble, empirical research has clearly documented that bad practices in this market had largely pushed out good practices, because a "significant degree of misrepresentation exists *across all* reputable intermediaries involved in the sale of mortgages," [emphasis in original] (Piskorski, Seru and Witkin, 2015). As we saw from the failure of the PLS market in 2008, the Gresham's dynamic is one of the most dangerous market pathologies, because the market will collapse when bad practices sufficiently push out good practices.

The PLS Market and the GSEs

In addition to facilitating the rapid growth of unstable mortgage structures, the rapid growth of the PLS market from 2002-2006 compromised the ability of the government to set the terms of the primary market through limiting access to the secondary market, in two ways. First, and most simply, the growth of the PLS market ended government dominance of the secondary market, and provided a private outlet for risky mortgages. Second, competition public-private competition for secondary market share revealed weaknesses in the incentives facing the GSEs, due to their hybrid public-private structure. This is because the implicit public guarantee created moral hazard when combined with the profit maximizing private interest of GSE investors. For example, public guarantees of GSE debt made it in the shareholder's

interest to increase leverage wherever possible, even as high as 75-1. Moreover, it was also in the shareholders interest to maximize the size of their portfolio to take advantage of the differential between the rate of return on agency MBS and the GSE's low funding cost due to guarantees (Taub, 2014; Bernanke, 2008).

The result of this moral hazard was that the GSEs ended up supporting the worst of the practices in the PLS market after their market share was threatened. As the GSEs lost market share to PLS in the early 2000s, they used extremely high leverage to expand their portfolios by purchasing large quantities of private label MBS, as well as smaller quantities of risky loans. In 2001 the GSEs purchased roughly 10 percent of all private label subprime MBS; however, by 2004 the GSEs purchased 40 percent. Additionally, the GSEs began to directly purchase extremely risky subprime mortgages during this period, such as no documentation loans and option-ARMs. To be sure, the source of the problems leading to the financial crisis were certainly located in the primary and private secondary markets, with the GSE's playing the role of follower rather than leader. However, the inherent tension between public regulatory mission and private profits of the GSEs worked to amplify the problems in the private market, rather than effectively regulate them in a similar manner to the role performed by FHA insurance during the mid century (Taub, 2014; Bernanke, 2008).

In stark contrast, MBS produced by the fully public Ginnie Mae fared quite well during the financial crisis, providing a safe haven for investors. These securities were attractive because they were safe due to public guarantees and still paid a higher rate than treasuries.⁹ Moreover, once Fannie Mae and Freddie Mac were taken into government conservatorship, and hence became public entities, they were able to help restart the mortgage market through securitization once again (Bernanke, 2008).

⁹See Belson, Ken, July 10, 2010, "Finding Refuge in Ginnie Mae Funds," *New York Times*. Accessed May 3, 2016 from <http://www.nytimes.com/2010/07/11/business/mutfund/11gnma.html>.

Persistent Losses from Foreclosure and the Failure of Loss Mitigation

My research contributes to this broad literature by analyzing the role of agency problems in private RMBS in contributing to loss along two dimensions: 1) misrepresentation and losses from foreclosure, 2) the failure of loss mitigation. In a recent working paper (Herndon, 2017), I estimate the extent to which losses from foreclosure in no/low documentation “Liar’s Loans” were higher than expected, compared with a full documentation loan control group. This comparison is relevant for estimating loss associated with misrepresentation, because offering documents for RMBS explicitly represented that no/low documentation loans would have less than or equal risk of loss to full documentation loans. Overall, I find that no/low documentation loans account for \$350 billion of the \$500 billion lost from 2007-2012. My preferred specification implies that no/low documentation loans lost an additional \$4600 per loan, implying \$85 billion of total no/low documentation losses were higher than expected.

In addition, my estimates show prolonged and persistent exposure to severe losses from foreclosure in economically fragile areas, which helps to explain why the recovery from the Great Recession was so tepid in many areas, even several years after the crisis. While the financial panic had largely subsided by 2009, I find that losses from foreclosure in private label RMBS were much more prolonged and persistent. Total losses from foreclosure peaked in 2009, however total losses per year were actually higher after 2009 than during the crisis year of 2008. Indeed, I find that total losses from foreclosure in the PLS market was over \$85 billion per year from 2010-2012. Moreover, I find that a large portion of these losses were concentrated in economically fragile areas that never recovered (Herndon, 2017).

My second recent paper analyzes the role of agency problems in preventing loss mitigation. Loan modifications which forgive debt in delinquent mortgages were widely discussed as a tool for mitigating losses for investors by preventing costly foreclosures, as well as providing economic stimulus by deleveraging borrowers. However, delinquent mortgages can also be modified

to increase debt through capitalizing either missed interest payments or fees. Increasing debt reduces the effectiveness of modifications at loss mitigation and providing stimulus (Herndon, 2018).

I estimate the extent to which modifications of privately securitized mortgages increased or forgave debt during the Great Recession and aftermath, from 2008-2014. I find that loan modifications weakened household balance sheets by adding \$20 billion to household debt, with the net amount of debt added per modification doubling from 2010-2014. Using a decomposition analysis, I also find that the increase in debt is consistent with capitalization of fees, but not consistent with capitalization of missed interest payments (Herndon, 2018).

Capitalization of fees is significant because it has been associated with a principal-agent problem between investors and mortgage servicers which prevented efficient loss mitigation, as well as consumer financial protection abuses. Several papers in this literature have argued that a significant cause of the failure of loss mitigation in this market was a principal agent-problem between mortgage servicers, who are responsible for processing payments and managing defaults, and investors in securities based on these loans (Levitin and Twomey, 2011; Thompson, 2011; COP, 2009). Once a loan enters default, the compensation structure for mortgage servicers contains perverse incentives to increase the costliness of default, rather than mitigate losses for investors. Servicers are able to receive income from a diverse array of fees for delinquent loans, including but not limited to late fees, title search fees, property maintenance fees, appraisal fees, and other fees related to the foreclosure. These fees create a principal-agent problem between investors and servicers because they incentivize foreclosure over modification even when modification is in the investors' interest, increase the chance of re-default when they are capitalized in modifications, and can be recovered through the proceeds of foreclosure sales prior to investors receiving any revenue. Congressional reports state that the ability to arbitrarily assess these fees effectively creates "a cost-plus contract arrangement with no oversight of either the costs or the plus components," COP (2009).

The lack of loss mitigation due to the principal-agent problem is also

significant for literature on consumer financial protection (Campbell et al., 2011), because foreclosing instead of modifying and capitalization of fees have both been associated with substantial abuses. For example, one of the largest recent Consumer Financial Protection Bureau (CFPB) enforcement actions levied a \$2 billion fine against one of the largest mortgage servicers, Ocwen. Among other violations, Ocwen charged “unauthorized fees for default related services,” “deceived consumers about foreclosure alternatives and improperly denied loan modifications,” and “engaged in illegal foreclosure practices.”¹⁰ Previous reports and CFPB actions have documented the existence of these perverse incentives, and contain case studies of individual servicers who have acted on these incentives. However, this research has not yet documented how systematic or widespread this problem was in the PLS market. My findings extend this literature by using a comprehensive loan-level dataset to provide systematic evidence that the increase in debt is consistent with capitalization of fees, but not consistent with capitalization of missed interest payments.

5 Conclusion: Agency Problems, Regulation, and the Future of the Secondary Market

I have chosen to focus on the role of agency problems in private RMBS during the crisis in part because conceptualizing the causes of the financial crisis as the re-emergence of old problems helps show how these failures were both predictable and, as we saw earlier in our discussion of the history of mortgage securitization, predicted. However, prior to the crisis, a common position among economists was that prohibitions against fraud were simply not necessary, because asymmetric information structures were not thought to be widespread or serious enough to compromise economic activity. Moreover, even if asymmetric information was widespread, markets

¹⁰A description of the consent order can be found at: <https://www.consumerfinance.gov/about-us/newsroom/cfpb-state-authorities-order-ocwen-to-provide-2-billion-in-relief-to-homeowners-for-servicing-wrongs/>. Accessed September 1, 2017.

provided powerful incentives to prevent fraud, such as reputation. In a now infamous example from the years leading up to the financial crisis, when Brooksley Born, then head of the Commodities Futures Trading Commission, warned Alan Greenspan about the need to prevent fraud, he replied that there wasn't a need for a law against fraud, because if someone was committing fraud, "the customer would figure it out and stop doing business with him." As a lawyer with considerable experience defending defrauded financial clients, she thought that, "this made no sense," and that, "the existence of fraud prohibitions was critically important."¹¹ Indeed, Greenspan should not have been surprised by misrepresentation of MBS quality, for the simple reason that it also occurred in all six previous attempts at introducing private mortgage securitization in U.S. history.

The consistent agency problems in private RMBS, combined with the possibility of regulatory capture, are particularly relevant for current discussions of reform of the secondary market. Indeed, they caution against an overly large private role in the secondary market, as commonly proposed.¹² Instead, historic best practices suggest a single, centralized platform, which is publicly financed and heavily regulated. This has the potential of not only stabilizing the secondary market, but serving as a powerful tool for setting the terms of origination in the primary market to shield households from risk. The regulatory power of the public securitization platform will be even more important if the restrictions on risky mortgage lending imposed by Dodd-Frank are removed or not robustly enforced. This possibility has become more likely as well, due to the appointment of Mick Mulvaney to lead the Consumer Financial Protection Bureau, despite the fact that Mulvaney has stated that the agency was a, "sick, sad joke," and that, "some of us would like to get rid of it."¹³

¹¹Accessed August 7th, 2018 from: http://www.washingtonpost.com/wp-dyn/content/article/2009/05/25/AR2009052502108_2.html?sid=ST2009052502127

¹²For example, see the proposal from former House Financial Services Committee Chairman Jeb Hensarling. Accessed 10-2-2018 from: <https://financialservices.house.gov/news/documentsingle.aspx?DocumentID=402755>

¹³Accessed 10-2-2018 from: <https://www.vox.com/policy-and-politics/2017/11/16/16667266/mick-mulvaney-cfpb-cordray-omb-joke>

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