The Preemption Effect: The Impact of Federal Preemption of State Anti-Predatory Lending Laws on the foreclosure Crisis

Center for Community Capital
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Executive Summary

Federal preemption of state anti-predatory lending laws (APLs) has received increased attention in recent debates over the subprime crisis. This is because lending by preempted lenders accounts for a significant share of the mortgage market and federal laws regarding mortgage lending were substantially less restrictive than many state laws before the crisis. As policy makers try to deal with mounting foreclosures, it is important to understand the role that federal preemption played in the foreclosure crisis. The goal of this study is to examine, empirically, the impact of federal preemption, namely the 2004 preemption of state laws by the Office of the Comptroller of the Currency on the performance of loans preempted compared to those that remained subject to stronger APLs.

We expect that OCC preemption had some effect on the behavior of lenders during the subprime boom and thus also had an effect on the foreclosure crisis that followed. Our a priori expectation was that after the OCC preemption, the quality of mortgages originated by exempted lenders would become worse in states with strong APLs because preempted institutions were no longer required to abide by more stringent state regulations, and that this deterioration in underwriting standards increased default risk in these states.

In this study, we examine the performance of mortgages originated by lenders subject to different regulators in states with and without APLs, before and after the 2004 OCC preemption. By focusing on a large sample of privately securitized nonprime mortgages, we are able to identify the extent to which the 2004 ruling contributed to the foreclosure crisis that followed. The results suggest that preemption led both to a deterioration in the quality of and an increase in default risk for mortgages originated by OCC-regulated (or OCC-preempted) lenders in states with anti-predatory lending laws. More narrowly, they show that OCC-preempted lenders increased their share of loans originated with risky subprime characteristics. Similarly, they show that loans originated by OCC-preempted lenders in APL states after the OCC preemption were more likely to default than those originated prior. Finally, the results show that in the refinance market the increase in default risk among OCC lenders often outpaced that of independent mortgage companies that remained subject to stronger APLs after 2004.

This study has important policy implications for the current regulatory reform debate. The larger increase in default risks of OCC-regulated lenders after preemption suggests that even during the subprime boom, state APLs did protect consumers from risky mortgage products. It also suggests that the OCC preemption removed those protections for covered lenders who subsequently increased their origination of risky subprime loans. We believe that these results provide compelling support for policy proposals that require the federal law to provide a regulatory floor while allowing states to adopt stronger APLs based on local conditions. Reexamining federal preemption on the basis of these results is likely to better protect consumers and to help ensure against future excesses in the mortgage market.

The Impact of Federal Preemption of State Anti-Predatory Lending Laws on the Foreclosure Crisis

1. Introduction

Federal preemption of state anti-predatory lending laws (APLs) has received increased attention in recent debates over the subprime crisis. This is because federal laws regarding mortgage lending had been substantially less restrictive than many laws put in place by states in the years leading up to the mortgage market collapse and because lending by preempted lenders accounts for a significant share of the mortgage market. As policy makers try to deal with mounting foreclosures, it is important to understand the role that federal preemption may have had in the subprime boom and the resulting foreclosure crisis. The goal of this study is to examine the impact of federal preemption, namely the 2004 preemption of state laws by the Office of the Comptroller of the Currency (OCC), on the recent mortgage foreclosure crisis.

There is ample justification for this examination. As research has shown, many loan features and mortgage underwriting practices addressed by state anti-predatory lending laws have been associated with higher default risks (Calhoun and Deng 2002; Ambrose, LaCour-Little, and Huszar 2005; Quercia, Stegman, and Davis 2007; Immergluck 2008; Pennington-Cross and Ho 2010). These include features such as prepayment penalties, balloon payments, lack of verification of borrowers' repayment capacity, and high interest rates and fees. There is also some preliminary research that demonstrates that an effective APL improves the quality of loans originated by giving lenders an incentive to tighten underwriting standards, thereby reducing default and foreclosure rates (Goodman and Smith 2009). In a preliminary, descriptive analysis, Ding, Quercia, and White (2009) find a lower foreclosure rate in states with stronger mortgage market regulations, but did not control for other factors that might have accounted for this difference. This report and a companion report on the effects of state anti-predatory lending laws were undertaken to empirically investigate the evidence of causal links.

Federal preemption of stronger state laws may lead to looser lending standards for those lenders exempted, and undermine the protections states have put into place. The Office of Thrift Supervision (OTS) exempted federally chartered thrifts and their operating subsidiaries from state anti-predatory lending laws (and broadly from many credit regulations) in 1996. In February 2004, the OCC officially preempted national banks and their operating subsidiaries from most state laws regulating mortgage credit, including state anti-predatory lending laws, arguing that they should only be subject to federal laws regulating mortgage credit. Mortgage lenders regulated by the OCC were thus free to disregard state laws and therefore mortgage loans made by these lenders generally were not subject to state-imposed restrictions on loan terms or requirements to verify a borrower's ability to repay. Considering the growing share of subprime mortgages originated by national banks, thrifts, and their subsidiaries—all preempted by federal laws[1]—there is the possibility that preemption is partly to blame for the current foreclosure crisis

[1] In fact, mortgage lending by preempted lenders accounted for a significant share of the market. The share of high-cost loans that were preempted in APL states increased from 16 percent in 2004 to 46 percent in 2007. Although

(Belsky and Essene 2008; Bostic, Engel, McCoy, Pennington-Cross, and Wachter 2008b). It should be noted that the 1996 OTS preemption came early on in the development of the subprime market, while the OCC preemption seems to have coincided with the beginning of the explosive growth in that industry when underwriting standards overall were declining (Demyanyk and van Hemert 2008). In the present study, we focus on the impacts of the latter.

We contend that federal preemption did affect the behavior of lenders during the subprime boom and thereby had an impact on the foreclosure crisis. There is good evidence that some types of loan features tend to be used less in states with APLs and that restrictive laws can reduce the flow of subprime credit (Pennington-Cross, Chomsisengphet, Bostic, Engel, McCoy, and Wachter 2008). The less restrictive federal regulation would therefore result in more originations of risky loans and changes in the product mix of preempted lenders. In turn, this is likely to lead to changes in patterns in mortgage performance. Our *a priori* expectation was that after the OCC preemption, the quality of mortgages originated by preempted lenders would become worse in states with strong APLs because they were no longer required to abide by more stringent state regulations, and that this deterioration in underwriting standards would increase default risk in these states. We also expected that this "preemption effect" would be strongest in the refinance market where state APLs were generally more stringent.

In this paper, we test this contention by examining the performance of mortgages originated by lenders subject to different regulators in states with and without APLs, before and after the 2004 OCC preemption. By focusing on a large sample of privately securitized nonprime mortgages, we are able to identify the extent to which the 2004 ruling contributed to the foreclosure crisis that followed. We compare the product mix and the probability of default of mortgages originated by preempted lenders before and after the 2004 OCC preemption in states with and without APLs. The results support our expectations and suggest that preemption resulted both in the deterioration in the quality of loans, and in the increased default risk of mortgages originated by OCC lenders in states with strong anti-predatory lending laws.

Notably, the increase in default risk of OCC-regulated lenders in the refinance market outpaced that of independent mortgage companies, which also originated a large share of subprime loans but which remained subject to state laws. We believe that these results provide strong support for policy proposals that would have the federal law provide a regulatory floor while allowing the states to adopt stronger APLs based on local conditions.

The remainder of the study is divided into five sections. In Section 2, we review the recent studies on the impact of state anti-predatory lending laws and the impact of federal preemption. In Section 3, we describe the method used to identify the impact of federal preemption. In Section 4, we describe the dataset used for this study, including the unique dataset created by merging private securitizations and the Home Mortgage Disclosure Act data. Section 5 presents our regression results. In the final section, we summarize the results and derive policy implications.

"high-cost" or "higher-priced" are not strictly analogous to "subprime," many researchers use these three terms interchangeably.

2. Literature Review

Since 1999, when North Carolina passed the first state anti-predatory lending law, researchers have tried to understand how APLs impact the mortgage market, including credit flows, cost of credit, and mortgage product substitution. Recent research has started to examine how APLs affected the use of more exotic loan types and how state laws impacted mortgage foreclosure rates across states and neighborhoods. One area that has received almost no empirical attention is the impact of federal preemption. This is an important omission since addressing the causes of the current crisis may require understanding the role played by federal preemption. To provide the background and context to the present study, in this section, we review the literature on the coding of APLs, the impact of APLs on mortgage foreclosure rates, and the impact of federal preemption.

2.1 Coding of State Anti-Predatory Lending Laws

During the period leading up to the subprime foreclosure crisis, from 2000 through 2007, many states adopted laws regulating subprime mortgage lending. The laws were intended to curb so-called predatory practices while permitting non-abusive subprime lending to develop (Li and Ernst 2007). Most of these state laws were modeled after the federal Homeownership Equity Protection Act (HOEPA) adopted in 1994,[2] although several states took various different approaches. The federal HOEPA statute restricts loan terms for mortgages with high prices, based on either the APR or the total points and fees imposed. The states' mini-HOEPA laws, in turn, can be divided between those that replicated the federal coverage and restrictions, and those that extended HOEPA to either cover more loans, or restrict more contract terms, or both.

Because there is significant variation in the coverage and strength of APLs across different states, researchers have developed a set of indices to quantify this variation. Ho and Pennington-Cross (2006) created a two-component index of state laws. The first component, "coverage," reflects the extent to which a law extends market coverage beyond HOEPA; the second component, "restriction," reflects the extent to which a law restricts or requires specific practices on covered loans. Bostic et al. (2008a) further added the enforcement index, which includes measures of assignee liability and enforcement against originators.

However, it seems the different components of the composite index of state laws may have "slider effects" in which the strength of the coverage component offsets the effects of the restriction component. For example, stronger restrictions are likely to reduce subprime loan volumes while increasing the coverage of a state law may in fact mitigate this effect because potential applicants may feel more comfortable applying for a subprime loan if a lending law covers their application (Bostic et al. 2008a).

In a few other studies, researchers have used a simple dummy to indicate whether a state had adopted the APL at a particular time (e.g. Pennington-Cross et al. 2008). But there is also a fundamental difference between the states that extended restrictions on subprime mortgages

[2] Home Ownership and Equity Protection Act, Pub. L. No. 103-325, subtit. B of tit. I, §§151-158, 108 Stat. 2160 (1994).

beyond federal requirements and states that simply copied federal HOEPA restrictions into their state statutes. Some state laws did not extend coverage beyond mortgages covered by federal law. In several instances, the intent of these laws was to preempt local laws and ordinances that imposed greater restrictions than federal law. So it is important to distinguish between these two types of state laws when comparing results.

Another approach employed in Li and Ernst (2007) ranks state laws according to the type of loans covered, points-and-fees triggers, substantive legal protections, and remedies available to borrowers. The advantage of this approach is that it is easier to derive policy implications based on these measures. But because they finished their study in 2006, many APLs that were adopted in recent years were not considered in their study. In this study, we developed a state law coding system for high-cost or predatory mortgage laws and overcome some limitations in previous coding.

We reviewed the existing studies, including Pennington-Cross et al. (2008), Bostic et al. (2008a), and Li and Ernst (2007). We also reviewed the description of state laws in several treatises, including Renaurt, Keest, Carter, Wu, and Cohen (2009) and Nelson and Whitman (2007), reviewed various rate matrices that reflect mortgage originators' understanding of state laws, particularly for prepayment penalty restrictions, and then reviewed statutory language itself. A summary of states with strong APLs will be discussed in the Data section and more details about the coding system can be found in Ding, et al. (2009).

2.2 Impact of State Anti-Predatory Lending Laws on Foreclosure Rates

One line of research has started to investigate whether differences in regulatory environment, including state anti-predatory lending laws, contribute to differences in the quality of loans originated and subsequent rates of foreclosure. Many of the features covered under APLs, such as the use of prepayment penalties, balloon payments, lack of verification of borrowers' repayment capacity, and very high interest rates and fees, have been associated with higher default risk. Calhoun and Deng (2002) and Quercia, Stegman, and Davis (2007) found that subprime adjustable-rate mortgages (ARMs) have a higher risk of foreclosure because of the interest-rate risk, the underwriting using teaser rates, and other such practices. At the aggregate level, the share of ARMs appears to be positively associated with market risk, as measured by house price declines (Immergluck 2008). Subprime hybrid ARMs, which usually have prepayment penalties, bear particularly high risk of default at the time the interest rate is reset (Ambrose, LaCour-Little, and Huszar 2005; Pennington-Cross and Ho 2010).

As to prepayment penalties and balloons, Quercia et al. (2007) found that compared to loans without these features, refinance loans with prepayment penalties are 20 percent more likely to experience a foreclosure, while loans with balloon payments are about 50 percent more likely to do so. Prepayment penalties also tend to reduce prepayments and increase the likelihood of delinquency and default among subprime loans (Danis and Pennington-Cross 2005). Ding, Quercia, Li, and Ratcliffe (2008) identified that ARMs, prepayment penalties, and broker originations all contribute significantly to subprime loans' increased risk of default.

Although the literature does document a clear link between these product features and foreclosures, given the limited publicly available information on loan performance, very few studies have linked state APLs explicitly to local- or state-level foreclosure rates. After controlling for housing market conditions, we would expect to find lower foreclosure rates in states with stronger mortgage market regulations. In a working paper, Goodman and Smith (2009) suggest that the laws governing mortgage underwriting, mortgage foreclosures, and the potential costs to the lender differ substantially across states. Based on the foreclosure rate data constructed from Lender Processing Services Applied Analytics, Inc. (LPS) and a hierarchical linear model, they found some evidence that mini-HOEPA laws reduce the level of foreclosure. The results suggest that higher lender costs for foreclosure and stringent controls on predatory lending are connected to lower foreclosure rates. However, since Goodman and Smith are only able to use a cross-sectional dataset for one particular month, their paper's applicability may be limited. The presence of seasoned loans in the dataset could introduce significant bias, since loans could have been originated before the enactment of state laws. It is also unclear whether the results can be generalized to other time periods. In addition, Goodman and Smith use the law index from Bostic et al. (2008b), which did not cover years after 2005. As regulations are being proposed and amended to address the current mortgage crisis, further research in the area of laws and regulations and the measurement of their effectiveness is needed (Richter 2008).

2.3 Impact of Federal Preemption

In the United States, residential mortgage lenders have been regulated by a complex web of national and local regulatory bodies. National banks and federal thrifts (those chartered at the national level) are supervised by the OCC or the OTS, respectively. Before federal preemption, they were also subject to many of the laws of the states in which they, and their subsidiaries, operated. In contrast, state banks and thrifts (those chartered at the state level) are supervised by either the Federal Reserve System (FRS) or the Federal Deposit Insurance Corporation (FDIC) and by their chartering state. The National Credit Union Administration (NCUA) supervises credit unions. Finally, non-depository independent mortgage companies are regulated by the Department of Housing and Urban Development (HUD) and the Federal Trade Commission and they are subject to state regulations too.

Federal preemption fundamentally changed the regulatory structure for many lenders. The OTS issued a regulation in 1996 that broadly exempted federally chartered savings and loan institutions and their operating subsidiaries from state laws regulating credit. OTS-regulated institutions were therefore free to disregard the state laws discussed above throughout the study period. On August 5, 2003, the OCC issued a Preemption Determination and Order stating that the Georgia mini-HOEPA statute would not apply to National City Bank, a national bank, or to its operating subsidiaries, including non-bank subprime mortgage lender First Franklin Financial Company. The OCC then issued a broad preemption regulation, effective February 12, 2004, that exempted national banks and their operating subsidiaries from most state laws regulating mortgage credit.[3] The OCC maintained that its regulations override a number of state laws that

[3] 12 C.F.R. 34.4(a)(4), 69 Federal Register 1904 (Jan. 13, 2004).

conflict with a national bank's exercise of its banking powers. Consequently, prior to August 5, 2003, national banks and their subsidiaries were likely subject to state mortgage laws, while after February 12, 2004, they clearly were not.

Federal preemption intensified the regulatory competition in this dual regulatory system. By allowing certain mortgage lenders to be exempted from complying with state mortgage laws, preemption makes national charters more attractive, relative to state charters, to many institutions.[4] There are several possible negative outcomes from preemption. First, it could result in banks abandoning one regulatory system in favor of the other that may seem more favorable. Now subject to a more relaxed regulation environment, these lenders may feel freer to originate riskier loans previously covered by stronger state regulation, leading to relatively more foreclosures. Second, preemption could make the regulators unwilling to impose appropriate standards on the institutions they regulate, since banks or thrifts can let regulators compete against one another. Third, preemption might help push the market towards looser underwriting standards, particularly if the direct consequences of these riskier standards are not immediately obvious (e.g., during a housing boom). Thus, the regulatory arbitrage enabled by preemption could upset the balance of the dual banking system and cause a systematic failure.

There has been almost no empirical research and only minimal discussion on the impact of federal OCC preemption. Harvey and Nigro (2004) suggest that the APL in North Carolina might have a unique impact on non-bank lenders, which are generally not subject to the same federal oversight as their bank competitors and therefore are perceived as being more likely to engage in predatory lending than banks. However, there is evidence that over this time period, many non-bank lenders were acquired by national banks, thereby avoiding anti-predatory lending laws. Burnett, Finkel, and Kaul (2004), for example, found a shift in subprime lending from non-banks to banks in North Carolina after the 1999 passage of the APL, as well as a change to a significantly higher share of originations by subprime bank lenders in North Carolina than in the control states. The authors suggest that consolidation in the financial services industry —in particular, the acquisition of subprime lenders by bank holding companies—during the study period may help to explain this finding. They also surmise that another factor driving the results was that bank lenders expected that state anti-predatory lending laws would eventually be preempted by federal laws for federally regulated institutions. Similarly, Harvey and Nigro (2004) found that, following adoption of the law, subprime lending by bank lenders held steady while subprime lending by non-bank lenders fell in North Carolina, in comparison with the control states.

Because of the collapse of the subprime sector starting late 2006, it is important to understand how mortgage market regulations—and who was covered by what—influenced both the deterioration in lending standards and ultimately loan performance. Due to data availability and the timing of the action relative to the growth of the subprime market, we focus on the impacts of

[4] Federal bank regulators employed other regulatory techniques during the housing bubble to address concerns about lax loan underwriting, but these were less restrictive than strong state APLs. For example, federal regulators addressed the repayment ability issue through non-binding guidelines, bank examinations, supervisory orders, and sanctions. Thus, preemption did not entirely eliminate oversight of loan terms, but it displaced binding state laws with the less stringent and more opaque federal regulatory structure.

the 2004 OCC preemption in the empirical analysis presented below. Did the originations of prime, subprime, and loans with predatory characteristics shift from the non-preempted to preempted institutions? Did the OCC preemption affect the default rates of loans originated by national banks? Did the preemption lead to riskier underwriting standards and higher foreclosures? The existence of federal preemption and APLs creates a natural experiment for an evaluation of the effectiveness of different modes of regulation. The regression analysis in this study extends and confirms the descriptive analysis presented in our earlier descriptive examination (Ding et al. 2009).

3. Data

In this section, we describe the data sources used in the analysis. We first describe our coding system of state laws based on their coverage and strength regulating the subprime market. Then we describe the unique dataset created by merging HMDA with a large sample of private-label securitizations. We also used data from several other sources to control for house price dynamics and neighborhood characteristics.

3.1 State Anti-Predatory Lending Law Data

To develop a state law coding system for high-cost or predatory mortgage laws, we reviewed various rate matrices that reflect mortgage originators' understanding of state laws and then reviewed statutory language itself. We identified that mini-HOEPA laws were adopted in 25 states and the District of Columbia on or before December 31, 2007.[5] In addition, five states (Michigan, Minnesota, Nevada, Texas, and West Virginia) passed significant subprime mortgage regulation statutes that were not HOEPA extension statutes and not based on rate and fee triggers. A number of other states had laws adopted prior to 2000 that restricted prepayment penalties, balloon payments, or negative amortization for all mortgages.

Of the mini-HOEPA laws, eight (Utah, Pennsylvania, Nevada, Oklahoma, Ohio [prior to 2007], Maine [prior to 2007], Kentucky, and Florida) did not extend coverage beyond mortgages covered by federal law. In several instances, the intent of these laws was to preempt local laws and ordinances that imposed greater restrictions than federal law. There is thus a fundamental difference between the states that extended restrictions on subprime mortgages beyond federal requirements, and states that simply copied federal HOEPA restrictions into their state statutes.

We developed and coded a set of law variables to describe state laws that could affect the type of subprime mortgages made and the default and foreclosure rates of mortgages in a given state. The binary variable *ineffect*, modeled on Pennington-Cross et al. (2008) and Bostic et al. (2008b), in combination with the effective date variable for the same state and law, is intended to

[5] Arkansas, California, Connecticut, District of Columbia, Florida, Georgia, Illinois, Indiana, Kentucky, Maine, Maryland, Massachusetts, Nevada, New Jersey, New Mexico, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Utah, and Wisconsin.

identify states with mortgage statutes that could plausibly have an impact on high-cost or subprime mortgage lending (Figure 1 and Table 1). A value of 1 was assigned for the *ineffect* variable to the states with any restrictions on charging or financing points and fees, credit insurance, prepayment penalties, balloon payments, negative amortization, determination or documentation of income or repayment ability, and/or significant counseling requirements, so long as the state law covers any share of the subprime (or the entire) mortgage market below the HOEPA rate and/or fee triggers. A value of zero (0) was assigned to the *ineffect* variable for the eight states with HOEPA copycat statutes, which is a departure from some prior studies.

During the study period, virtually no mortgages were made nationwide that would have been covered by HOEPA's high-cost thresholds (Avery, Brevoort, and Canner 2007). While some of the eight statutes imposed minor additional restrictions not found in federal law on high-cost loans above the HOEPA triggers, it is doubtful that a difference in regulation of a negligible slice of the mortgage market would affect the outcome variables.

Based on our definition, then, states with strong APLs prior to 2007 include Arkansas, California, Connecticut, Georgia, Illinois, Indiana, Maryland, Massachusetts, Michigan, Minnesota, New Jersey, New Mexico, New York, North Carolina, Rhode Island, South Carolina, Tennessee, Texas, West Virginia, and Wisconsin, as well as the District of Columbia. A few states (Maine, Rhode Island, and Minnesota) made significant amendments after December 31 2006 but we are not aware of other post-2004 amendments that would change the coding for any state.[6]

3.2 Columbia Collateral File Data

To study the impact of federal preemption on loan performance, the data must include information about loan originations and the regulatory agency governing the lending institution, loan product characteristics, and mortgage performance. By merging the private-label securitization data from the Columbia Collateral file (CCF) with HMDA, we are able to make these variables available for individual mortgages since the CCF data provides rich information on loan features and mortgage performance, while HMDA provides important lender information and borrower income data.

The CCF dataset provides detailed monthly loan-level mortgage information for a national sample of nonprime loans (White 2009; Quercia and Ding 2009).[7] The data are available through remittance reports produced by the trustee and the various servicers and altogether representing more than four million outstanding mortgages. The CCF dataset includes mortgages with different interest rate structures (fixed rate, adjustable rate, hybrid rate, interest only, balloon,), different purposes (refinance or purchase), different property types (one-to-four family or multifamily), and different lien statuses (first-lien, second-lien, and others). The data contains

[6] Maine made significant amendments in 2007, having enacted a copycat statute previously, so it is treated as *ineffect*=1 for originations after 2008. Minnesota made significant amendments in 2007 but they did not change the value of the *ineffect* variables. Rhode Island's statute was first effective December 31, 2006. We are not aware of other post-2004 amendments that would change the coding for any state.

[7] These investor report files are available at www.ctslink.com, administered by the Corporate Trust Services group of Wells Fargo Bank, N.A.

loan-level data including the loan interest rate, loan-to-value (LTV) ratio, borrower credit score at origination, origination date, loan amount, whether the loan was based on low- or no-documentation, whether there were prepayment penalties, and whether the loan required a balloon payment. The monthly performance reports provide loan-level details on loan characteristics, defaults, foreclosures, bankruptcy, and losses on foreclosed homes.

To study of the impact of federal preemption, all loans originated from January 1, 2002 through December 31, 2006 in the CCF dataset were initially included in the sample, allowing us to follow cohorts before and after the 2004 OCC preemption. We focus on the performance of these loans during the period from December 1, 2006 to December 31, 2008 so we can gauge their loan performance through the height of the subprime foreclosure crisis. After 2008, the combination of the recession, rapid rise in unemployment, and the changing policy environment make it difficult to isolate the impact of APLs and federal preemption on loan performance (Immergluck 2009).

HMDA data provide rich information on the lenders who originated the mortgages, demographic and other information on borrowers, the geographic location of the property securing the loan, and some characteristics of the home mortgages. HMDA's extensive coverage also provides a broadly representative picture of home lending.[8] To obtain the information on the regulatory structure of lenders, we merged the CCF data with HMDA data using variables that are common in both datasets. We matched data using a geographic crosswalk file that sorted CCF and HMDA loans into the census tracts of the purchased property and then matched loan originations on the following variables: origination date, loan amount, lien status (for loans originated in 2004 and later), and loan purpose.

By pooling all the monthly remittance reports together, we started with more than 3.5 million mortgages that were originated from 2002 to 2006 and were still active as of December 2006. After the match, we had a sample of 2.5 million private securitizations originated from 2002 to 2006, representing about 30 percent of subprime and Alt-A mortgages, and about 5 percent of all U.S. mortgages.[9] The dataset included 25 national banks and subsidiaries with at least 1,000 originations. The top five national banks include Bank of America, Wells Fargo Bank, National City Bank, JP Morgan Chase Bank, and Countrywide Bank. Included in the matched dataset are over 400,000 mortgages in foreclosure during the study period (December 2006 to December 2008). This compares with about two million foreclosures as of December 2008, so our sample includes almost 20 percent of all mortgages in foreclosure.

The matched dataset includes all the static loan characteristics at origination as well as added information about the borrower's income and information about which regulator oversaw the lending institution that originated the loan. Specifically, the field for agency code in the HMDA data identifies the regulating agency – whether OCC, OTS, FRS, FDIC, NCUA or HUD -- that supervises the lender in question.

[8] The HMDA data are estimated to represent 80 percent of all home mortgage lending in the United States (Avery and Canner 2008)

[9] Estimations are based on National Delinquency Survey data for the first quarter of 2007 (Mortgage Bankers Association 2008). The National Delinquency Survey data are estimated to cover 85 percent of the residential mortgage market.

Of course, it needs to be noted that the matched sample does not represent a statistically random sample of all mortgage loans or all nonprime mortgage loans. A few caveats about the Columbia Collateral file data need to be mentioned. First, the coverage of the CCF data is limited to securitized subprime and alt-A mortgages, which obviously do not represent the entire mortgage market. The CCF data does not include the portion of nonprime loans that are held in portfolio. Therefore, any systematic difference between loans held in portfolio and those that are securitized may limit the applicability of our results to the portfolio loan market.

Second, only seasoned loans that were still active as of December 2006 are included in this study; thus, we missed the loans that were terminated before December 2006. For example, loans could be dropped out of the pools if they were foreclosed or prepaid, and there could be some inevitable systematic differences between the seasoned loans and those early terminations.

Third, the representativeness of the study sample may be limited for some old cohorts and for some lender types. In particular, the coverage of nonprime loans originated by state banks (regulated by either FRS or FDIC) and by credit unions (regulated by NUCA) was quite limited.[10]

Finally, although our sample is national in scope, loans tended to be geographically concentrated in high-growth states. For example, there is an over-representativeness of loans in California, which had nearly a quarter of all loans.[11]

In other respects, the mortgages in the study sample should be typical of nonprime mortgages originated between 2002 and 2006. Given that nonprime mortgages account for more than half of all foreclosures, and that the vast majority of nonprime loans that led to the crisis were securitized,[12] a study of a sample which covers one fifth of the foreclosures should provide important insights as to the impact of government regulation in the nonprime market.

For simplicity, we focus on conventional, 30-year, first-lien mortgages and mortgages with non-missing value of origination credit scores, occupancy type, property type, or loan amount. Because the focus of the study is the impact of the OCC preemption, loans originated by federal thrifts and their subsidiaries, originations by state banks (regulated by FRS or FDIC) and credit

[10] We found a limited coverage of this matched sample for the FRS and FDIC loans: originations by FRS and FDIC lenders accounted for less than 15 percent of all subprime loans (of course not all the loans in the matched sample were subprime). Compared to the 30 percent to 40 percent coverage for originations by the OCC and OTS lenders, this dataset may not allow us to conduct a meaningful analysis of the FRS and FDIC lenders. In this effort to identify the population of private securitizations, we constructed a sample of subprime originations (based on the subprime list approach for originations before 2004) and high-cost loans (for originations after 2004) that were not sold to government sponsored enterprises (GSEs) using the HMDA data.

[11] The HMDA data show that California's market share in the conventional mortgage market was around 16 percent during the study period (2002-2006).

[12] According to the National Delinquency Survey, the number of subprime mortgages that were in foreclosure accounted for about 47 percent of the two million mortgages in foreclosure in the fourth quarter of 2008 (MBA 2008). About 59 percent of subprime loans were securitized in 2003, a rate that increased to over 80 percent in 2006 (Inside Mortgage Finance 2008). So the securitized subprime loans should account for a significant share of the total foreclosures during the study period.

unions (regulated by NCUA) were also excluded. OTS lenders were not considered because their preemption came early on in the development of the subprime market. The FRS and FDIC lenders were not considered for two primary reasons: 1) the small and likely unrepresentative sample for the pre-preemption cohort (2002-2003 originations); 2) insufficient information about the changes in the regulatory environment for these lenders, especially an unknown portion of state bank loans had been preempted.[13] Loans originated by independent mortgage companies were kept to serve as a benchmark of the performance of OCC originations.

To better isolate the impact of preemption, we focus on the 47 states that either adopted APLs before 2004 and or had not adopted APLs as of December 2007. Three states--Wisconsin, Indiana, and Rhode Island--adopted APLs between 2004 and 2007 and were dropped from the analysis. Loans originated before the adoption of APLs in APL states were dropped from the analysis.

The final sample size was reduced to about 1.1 million loans. The summary statistics were calculated at the loan level in Table 3. The average loan amount was $255,086. The combined LTV ratio at origination for all loans was around 80 percent and the average Fair Isaac or FICO credit score was a little over 668. A little more than half of all loans provided full documentation (54 percent). Almost half of the loans (49 percent) included prepayment penalties; the share for adjustable-rate mortgages and refinance mortgages was even higher. About 30 percent of loans were interest-only mortgages and almost 8 percent of loans had balloon payments.

During the period, the average serious delinquency rate was 23 percent. In other words, almost one quarter of mortgages had at least one 90-day delinquency between December 2006 and December 2008. Fixed-rate mortgages had lower delinquency rates (12.3 percent for purchase loans and 12.0 percent for refinance loans) while adjustable-rate mortgages had much higher delinquency rates (29.4 percent for purchase loans and 25.9 percent for refinance loans).

4. Research Approach

The primary objective of this section is to determine whether loans originated by preempted lenders in APL states become more likely to default. Using a unique loan-level dataset that allows us to identify both regulatory agencies and mortgage performance during the mortgage crisis, we compared the relative performance of loans originated by preempted lenders in APL states before and after federal preemption.

To do so, we ran a set of regression models comparing the performance of mortgages across different lender types, state regulatory regimes, and time periods, while controlling for borrower risk factors and neighborhood characteristics. Using a logit model, we estimated the probability of default for mortgages originated before and after the OCC preemption on February 12, 2004. Because independent mortgage companies remain subject to state APLs, we can isolate the

[13] Some states made provisions in their anti-predatory mortgage laws that permitted state-regulated banks to avoid the laws to the same extent that OCC- and OTS-regulated federal banks could. Thus, loans made by such lenders may have been unaffected by state APLs.

impact of the OCC preemption by comparing the relative default risk (odds ratios) of mortgages originated by OCC and independent mortgage companies in states with and without APLS before and after preemption.

Before the OCC preemption, the regression structure can be more formally written as follows:

$$Log\ (Odds_{\ i}) = \alpha + \beta * X_{\ i} + \sum_{j} \eta_{\ j} * S_{ij} \qquad (1)$$

where $Odds_i$ represents the odds of default for mortgage *i*. X_i represents the control variables mentioned above other than originator types. S_{ij} represents originator types, which is constructed as a set of interaction variables that combine the regulatory structure of the lender with the presence of a state APL. We consider loans originated by OCC lenders and independent mortgage companies only.

The dummy variables are:

- Loans originated by OCC lenders in non-APL states (OCC_nonAPL, reference group)
- Loans originated by OCC lenders in APL states (OCC_APL)
- Loans originated by independent mortgage companies in APL states (IND_APL)
- Loans originated by independent mortgage companies (IND) in non-APL states (IND_nonAPL)

Loans originated by OCC lenders in non-APL states serve as the reference group for the models, since these should not be affected by either federal preemption or state APLs and instead should reflect the baseline of loan performance for OCC lenders over this period in time. Loans originated by OCC lenders in APL states would have been subject to federal regulation and state APLs before preemption. Loans originated by independent mortgage companies in APL states would not have been preempted, and should be subject to state APLs over the entire study period. Loans originated by independent mortgage companies in non-APL states would not have been affected by federal preemption or state APLs.

In addition to these lender variables, we also control for other factors that might influence default risk, including borrower credit risk, local economic conditions, and house price dynamics. Research has shown that these factors also influence subprime lending, loan features, and loan performance from one market to the next. To capture borrower risk, we control for borrower FICO score, estimated current LTV ratio as of December 2006, property type, and owner occupancy status (owner occupied or not). We also calculated a proxy of borrower debt-to-income ratio using borrower household income and loan amount information available in the HMDA dataset. To control for local housing and economic conditions, we include data on house price appreciation after December 2006 (based on Federal Housing Finance Agency House Price Indices complemented by the Case-Shiller House Price Indices) as well as the 2007 unemployment rate. These data were obtained from economy.com, a division of Moody's Analytics that provides economic analysis, data, and forecasting and credit risk services. Borrower race information from HMDA is also considered. Loan features other than loan purpose (home purchase or refinance) and loan types (fixed-rate or adjustable-rate) are not

included in the model since they are endogenous variables.[14] Definitions of all variables are provided in Table 4.

After the OCC preemption, we expect the effect of state laws on underwriting standards to become weaker for preempted lenders in APL states. As a result, it is expected that the loans originated by preempted lenders in APL states are more likely to default and the coefficients for individual lender types will change from η_j to η_j'. The regression can be rewritten as:

$$Log\ (Odds_i) = \alpha + \beta * X_i + \sum_j \eta_j' * S_{ij} \quad (2)$$

We assume the coefficient of the OCC_APL variable (origination by an OCC lender in an APL state) can be decomposed into two components: one component (γ_1) capturing the impact of APL alone and the other component (γ_2) representing unobserved difference (such as uncontrolled market conditions) in APL states. Accordingly, for the coefficient of the IND_APL variable, we assume it has three components: the systematic differences between two groups of lenders (γ_{IND}), the impact of APL (γ_1), and the uncaptured heterogeneity such as differences in market conditions in APL states (γ_2). After the OCC preemption, the coefficient for the OCC_APL variable will change from η_{OCC_APL} to $\eta'_{OCC\_APL'}$ because of the federal preemption (reflected by the change in γ_1) and/or change in market conditions (reflected by the change in γ_2).

So, before the OCC preemption, the odds ratio of OCC_APL (relative to the reference group) captures the impact of state laws and differences in market conditions in APL states:

$$OR_{OCC\_APL} = \exp(\eta_{OCC\_APL}) = \exp(\gamma_1 + \gamma_2) \quad (3)$$

After the OCC preemption, the odds ratio of OCC_APL becomes:

$$OR_{OCC\_APL'} = \exp(\eta'_{OCC\_APL'}) = \exp(\gamma_1' + \gamma_2') \quad (4)$$

A direct comparison of the two odds ratios (relative change presented in Table 6 and discussed below) provides useful information about the change in default risk for OCC lenders after the preemption. But the result is likely biased since such a comparison implies that the overall conditions of the housing and mortgage markets, like differences in the prevalence of different origination channels or differences in underwriting standard, in APL states and non-APL states

[14] Of course, the adjustable-rate feature may also be endogenous since most mini-HOEPA laws had interest rate triggers that could be gamed to some extent through use of an adjustable-rate loan. But the adjustable-rate feature alone is generally not as risky as other loan features addressed by state anti-predatory lending laws like prepayment penalties, balloon payments, lack of verification of borrowers' repayment capacity, and very high interest rates and fees.

remained unchanged during the study period, which is unrealistic. To better capture the impact of OCC preemption, we need to make the following two assumptions:

1) The default risk of loans originated by one group of lenders relative to that of another lender group is assumed to be fixed across time, when the regulatory environment and the market conditions do not change. In other words, the ratio between the default hazards of mortgages originated by two groups of lenders is constant over time (the aggregate hazard functions are strictly parallel), if borrower underwriting criteria have been controlled and the regulatory environment and the market conditions are kept constant. This assumption allows us to compare the relative default risk of mortgages originated by two groups of lenders over time. This seems to be a strong assumption but it is quite similar to the key assumption of the Cox proportional hazard model that has been widely employed in mortgage performance studies (Allison 1995).

2) When the regulatory environment has been unchanged and the borrower underwriting criteria have been controlled, the change in mortgage performance over time reflects the change in unobserved market conditions that influence mortgage performance. Since independent mortgage companies had been subject to APLs but almost no other regulations during the study period, we should be able to assume the change in their mortgage performance, other things equal, reflects the changes in market conditions. In other words, the regulatory environment for independent mortgage companies remained the same during the study period and any change in their relative performance could be attributed to changes in housing and mortgage market conditions or in the macroeconomic environment.

Based on these two assumptions, we can use the relative change in the performance of loans originated by independent mortgage companies after the preemption to proxy the unobserved change in local market conditions, which helps us isolate the preemption effect for OCC lenders. Before the preemption, the odds ratio of loans originated by independent mortgage companies is:

$$OR_{IND\_APL} = \exp(\eta_{IND\_APL}) = \exp(\gamma_{IND} + \gamma_1 + \gamma_2) \quad (5)$$

If we assume the systematic difference between independent mortgage companies and OCC lenders is fixed over time,[15] after the OCC preemption the odds ratio of loans originated by independent mortgage companies will be:

$$OR_{IND\_APL'} = \exp(\eta'_{IND\_APL}) = \exp(\gamma_{IND} + \gamma_1 + \gamma'_2) \quad (6)$$

So the impact of preemption on default rate can possibly be identified by calculating the difference between γ_1 and γ'_1. It can be derived by factoring out the changes in local market conditions and the impact of APL alone:

[15] If there was in fact a narrowed gap in terms of the loan quality between those originated by OCC lenders and those by independent mortgage companies (which is very likely), our results underestimates the effect of preemption on mortgage default.

$$preempt\_effect = \frac{\frac{OR_{OCC\_APL'}}{OR_{OCC\_APL}}}{\frac{OR_{IND\_APL'}}{OR_{IND\_APL}}} =$$

$$\frac{\exp((\gamma_1' - \gamma_1) + (\gamma_2' - \gamma_2))}{\exp((\gamma_{IND} - \gamma_{IND}) + (\gamma_1 - \gamma_1) + (\gamma_2' - \gamma_2))} = \exp(\gamma_1' - \gamma_1) \quad (7)$$

By controlling for borrower risk factors and neighborhood characteristics, we attribute the relative change in odds ratios to the federal preemption. A value greater than one for the preemption effect indicates that preemption increases the default risk of mortgages originated in APL states. In contrast, a value of one or less suggests that preemption does not increase the default risk, all other things being equal.

We stratified our analysis for different loan categories (home purchase fixed-rate, home purchase adjustable-rate, refinance fixed-rate, and refinance adjustable-rate) and different cohorts (before the OCC preemption in 2004, after preemption and originated in 2004, and originations in 2005 and 2006). We limit our analysis to conventional, 30-year, and first-lien mortgages.

Next, we generated a descriptive table based on the serious delinquency rates of different lender types (OCC or IND) and different law status (with and without APLs) for different cohorts and different markets (Table 5). We calculated the odds ratios based on the observed delinquency rates and compared the odds ratios before and after the 2004 preemption. The results suggest, without controlling other factors, that the odds of default increased for both OCC lenders and independent mortgage companies after the preemption (the relative changes were greater than 1for all loan types). But the increase in relative default risk was higher for OCC lenders in the refinance market, while the increase was higher for independent mortgage companies in the purchase market. Of course, changes in borrower credit risk, house price dynamics, or local economic conditions of different groups of mortgages likely influence mortgage performance. We will control for these factors and draw more concrete conclusions in the next section.

5. Empirical Results

Overall, we do find that the post-preemption quality of mortgages originated by the preempted lenders in states with APLs deteriorated, as reflected by the increased risk of default after the OCC preemption. Table 6 provides a summary of the results, presenting the odds ratios, p-values, relative changes, and the preemption effect for mortgages originated by OCC regulated lenders and by independent mortgage companies in APL states. The relative change compares the default risk of mortgages originated by one group of lenders after the preemption (the 2004

or 2005-2006 cohort) to that before the preemption (the 2002-2003 cohort).[16] The preemption effect is calculated by dividing the relative change in default risk of loans originated by OCC lenders by the relative change in default risk of loans originated by independent mortgage companies. For the preemption effect, a value greater than one suggests the relative performance of OCC lending in the particular market became worse after the preemption.

Several important trends stand out from the results in Table 6. First of all, loans originated by national banks and their subsidiaries performed relatively better in APL states than those in non-APL states, even after preemption. The odds ratios of the OCC_APL variable are significant and less than one in most cases with the exception of one insignificance out of 12 models. The most marked evidence is in the refinance market before the 2004 preemption, where pre-preempted loans were significantly less likely to default, measured by the incidence of 90-day delinquency, compared to those made in non-APL states (an odds ratio of 0.653 for fixed-rate loans and 0.728 for adjustable-rate loans). Second, the absolute odds ratios for loans originated by OCC-regulated institutions had been better than for those of independent mortgage lenders for all products and cohorts. This is consistent with prior work that originations by independent mortgage companies usually have higher default risk than depository institutions (such as Laderman and Reid 2009). The popularity of risky loan terms and broker originations among independent mortgage company originations, which are not controlled in the model, help explain the significantly higher default risk of lending by independent mortgage lenders.

However, while loans originated by OCC lenders continued to perform better in the APL states, the performance of OCC loans became relatively worse in APL states post-preemption, compared to those in non-APL states. In other words, though they were generally less likely to default in APL states after the preemption, their default risk increased significantly. For example, a typical fixed-rate refinancing loan originated by an OCC lender in an APL state before preemption was 35 percent less likely to default (an odds ratio of 0.653), but one originated after preemption was only 14 percent less likely, compared to those in non-APL states. With a few exceptions in the case of fixed-rate purchase loans (those least likely to be coupled with riskier loan terms), the relative changes are generally greater than one, suggesting the default risk of loans originated by national banks in general became higher after the preemption.

More importantly, when we compare the changes in mortgage performance of preempted lenders with those of independent mortgage companies that remained subject to state APLs, the results suggest that preemption consistently increased the default risk of originations by OCC lenders in some refinance markets. Even after accounting for market trends, the odds ratios for the refinance fixed-rate mortgages originated by OCC lenders after preemption increased, by 20 percent for both the 2004 cohort and for the 2005-2006 cohort. In the refinance adjustable-rate mortgage market, there was also a slight increase (by about 1.2 percent for refinance adjustable-rate loans originated in 2004). For the 2005-2006 cohort, the increase in default risk was similar for loans originated by OCC lenders and independent mortgage companies (preemption effect is equal to 0.998). Overall, the values of preemption effects are much greater than one for one

[16] Relative change was calculated by dividing the odds ratio of the 2004 or 2005-2006 cohort by that of the 2002-2003 cohort. It can be interpreted as the increase in default risk (90-day) during the study period for a mortgage originated by one group of lenders (OCC or IND) in APL states, relative to the one originated by a national bank in non-APL states.

refinance loan category and close to one for another category for the originations after the preemption. So, the results suggest that, even after accounting for general market trends, preemption tended to increase the default risk of refinance mortgages originated by lenders regulated by the OCC.

There are substantial variations between the preemption effect in the home purchase market and in the refinance market. In the home purchase market, the performance of OCC lenders was generally similar to or slightly better than the market trend, as proxied by the changes in the performance of mortgages originated by independent mortgage companies. One possible explanation for this difference is the fact that most state APLs have broader coverage and more restrictions in the refinance market.[17] For example, during the study period, the North Carolina state anti-predatory lending law only covers the refinance market (Quercia et al. 2007). Since APLs are less restrictive in the home purchase market, we surmise that the lack of a significant increase in the default risk of originations by OCC lenders is likely due to the fact that originations by other non-preempted lenders also worsened, since all lenders were subject to fewer restrictions in this market. In contrast, we find that mortgages originated by OCC lenders had higher default rates in the refinance market, compared to those originated by independent mortgage companies, possibly because OCC lenders were exempt from, while independent mortgage companies were subject to, more restrictive state laws in the refinance market.

The study results for other control variables are generally consistent across different models so the discussion of other control variables is based primarily on the model focusing on refinance adjustable-rate mortgages, as summarized in Table 7. Generally, the results are consistent with our expectations that borrowers with lower credit score, higher LTVs, and higher debt ratios are more likely to default. Properties that are not occupied by owners are more likely to default. Mortgages originated in a market with a lower appreciation rate or with a higher unemployment rate are more likely to default too. Borrowers who are African American have been consistently more likely to default than others, while Hispanic borrowers exhibit mixed results.

We examine the findings on the impact of federal preemption with additional analysis. First, when compared with strong state APLs, the less restrictive regulation for OCC lenders likely resulted in increased lending of risky products, which lead to an increase in default risks of OCC loans in the refinance market. Because of the likely selection bias for this study sample, we cannot compare the share of loans with exotic features directly. Instead, similar to our default analysis, we compare the odds of loans with exotic feature in APL states with that in the non-APL states and track the change of the odds ratios over time (Table 8).[18]

[17] The HOEPA law adopted in 1994 and the 2002 revision did not cover home purchase loans (Federal Reserve System 2001). As a result, many mini-HOEPA laws, built upon HOEPA, have limited coverage and restriction in the home purchase market.

[18] Odds of a loan with an exotic feature is calculated here by dividing the share of loans with exotic features (*p*) by that of loans without such features (*1-p*). For example, the share of loans by OCC lenders with exotic features in the 2002-2003 cohort is 17.45 percent, then the odds is 0.211. Odds ratios can be calculated by dividing the odds of one particular lender type by the odds of the reference group (OCC_nonAPL).

The descriptive table shows an obvious pattern in the refinance market: the relative increase in the odds of high-risk lending of OCC lenders in APL states was greater than that of independent mortgage companies. For example, before preemption, OCC lenders in the APL states were about 66 percent less likely to originate a loan with risky features in the fixed-rate refinance market than those in non-APL states (an odds ratio of 0.329). However, after the preemption, these OCC lenders in APL states were only 58 percent less likely to originate such loans in 2004 and 50 percent less likely in 2005 and 2006. In contrast, the relative increase in the odds of originating risky loans for independent mortgage companies is more modest during that period: the odds ratio increases from 1.585 before preemption to 1.720 in 2004 and to 1.876 in 2005 and 2006. However, in the home purchase market, though the probability of originating loans with risky features increased significantly for OCC lenders, there was a similar, and sometimes even greater, increase for independent mortgage companies. In other words, after the OCC preemption, OCC lenders increased their share of loans with risky features in all the markets, aligning their lending practices to those of the independent mortgage companies. However, likely because state APLs had more restrictions in the refinance market and independent mortgage companies had to follow these rules, the increase in high-risky lending for OCC lenders outpaced that for independent mortgage companies. This sharp increase in risky lending could explain the increased default risk of OCC loans.

Second, the overall composition of the mortgage industry may also explain these results. Lenders whose business model relied on greater volumes of subprime mortgages may have shifted to national charters to take advantage of preemption. In fact, some banks like JP Mortgan Chase and HSBC switched to national charters after the preemption and the market share of out-of-state national banks increased much more in APL states than in non-APL states (Davis and Rice 2006). In addition, Avery, Brevoort, and Canner (2007) documented that national banks expanded their share in the subprime market in part by acquiring existing independent mortgage companies. OCC preemption, then, would have granted these independent mortgage companies a way to become immune from the strong APLs, thereby increasing the volume of risky loans they could make.

Although our results are strongly suggestive of a link between federal preemption and risky lending, we should note that, due to data limitations, the focus of this study is on conventional, 30-year, first-lien, privately securitized mortgages only. Additional research is needed to examine the relationships between anti-predatory lending laws, federal preemption, and loan performance for the overall market; this will require additional data with broader market and geographic coverage and more efforts to make that data transparent and accessible to researchers.

It also needs to be noted that other possible impacts of the OCC preemption were not examined. These include effects on equity stripping, effects on the safety and soundness of the banking or mortgage lending industries, and others. In particular, the loss of equity can occur if borrowers are trapped in high-cost loans or forced into expensive refinancing, even if they do not experience foreclosure. Equity stripping can cause borrowers great financial harm, but reliable data on it is, to our knowledge, unavailable. These important impacts need to be incorporated in a future comprehensive analysis of the total impacts of federal preemption.

6. Conclusion

Prompted by concerns over the growing subprime market, many states enacted state anti-predatory lending laws to expand legal protections for consumers in the mortgage market and deter the origination of loans with characteristics considered detrimental to consumers. By filling a regulatory gap in the residential mortgage lending market, state anti-predatory lending laws were expected to improve the quality and to reduce the default risk of nonprime loans. However certain mortgage lenders were exempted by their federal regulators from complying with the state mortgage laws. In this way, federal preemption fundamentally changed the regulatory structure for national banks (and earlier federal thrifts), weakening consumer protections. Unfortunately, the OCC preemption coincided with the beginning of the explosive growth in subprime lending. Traditional OCC lenders and lenders who migrated to national charters were now able to originate the riskier loans at the core of the current foreclosure crisis. In this study, we examined the relationship between APLs, federal preemption, and the foreclosure crisis. More narrowly, we compared the probability of default of mortgages originated by preempted lenders before and after the 2004 OCC preemption in markets with and without strong state APLs.

We observed that preempted OCC lenders increased their share of loans originated with risky characteristics in states with strong APLs after the preemption. Similarly, we found that preemption consistently increased the default risk of privately securitized mortgages originated by the OCC lenders in APL states. The increase in default risk even outpaced that of independent mortgage companies in the refinance market that remained subject to APLs. The findings suggest that preemption resulted in deterioration in the quality of, and an increase in the default risk for, mortgages originated by OCC lenders in states with strong anti-predatory lending laws.

Though this study sample has some specific characteristics, the empirical results have important implications for the debate surrounding federal preemption and consumer protection. We demonstrated that the 2004 OCC preemption weakened lending restrictions for national banks and their subsidiaries by displacing binding state consumer protection laws with the less stringent federal regulatory structure. Without the OCC preemption, which sent signals to all preempted lenders, the performance of loans originated by national banks would have been better. Finally, the findings are consistent with legislative initiatives that propose having the Federal government provide a regulatory floor while allowing states to enact stronger consumer protections based on local conditions.

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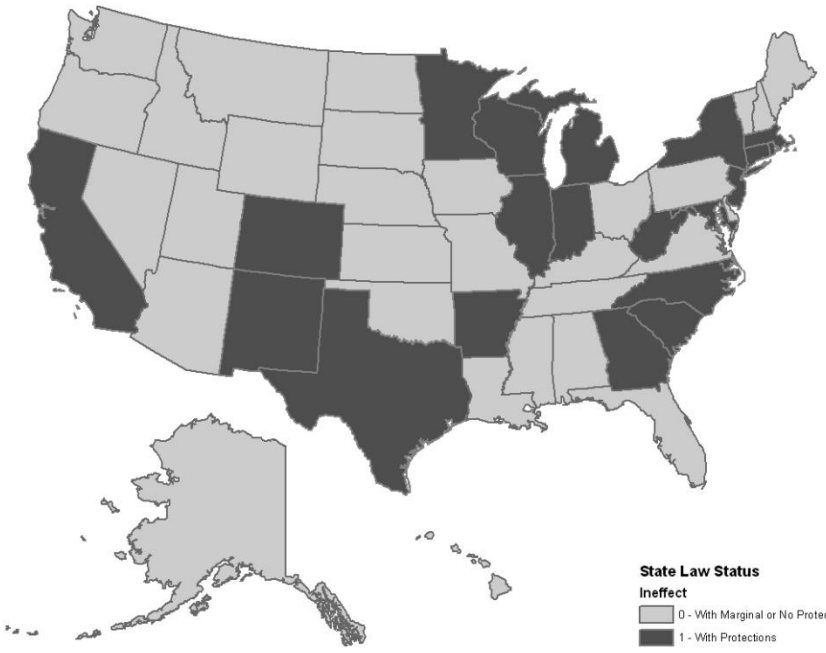
State Law Status
Ineffect
0 - With Marginal or No Protection
1 - With Protections

8

Table 1 Summary of the Coding of Anti-Predatory Lending Laws

State	Effective Date	*Ineffect*	Pennington-Cross et al. (2008)	Li and Ernst (2007)	Bostic et al. (2008b)
Alabama	.	0	0	NA	0
Alaska	.	0	0	8	0
Arizona	.	0	0	NA	0
Arkansas	7/16/2003	1	0	10	6.56
California	7/1/2002	1	1	NA	4.93
Colorado	7/1/2003	1	1	NA	4.18
Connecticut	1/1/2002	1	1	NA	4.88
Delaware	.	0	0	NA	0
D.C.	5/7/2002	1	1	11	7.75
Florida	.	0	1	8	3.75
Georgia	3/7/2003	1	1	12	6.83
Hawaii	.	0	0	NA	
Idaho	.	0	0	7	0
Illinois	1/1/2004	1	1	12	8.11
Indiana	1/1/2005	1	1	NA	6.76
Iowa	.	0	0	8	0
Kansas	.	0	0	7	0
Kentucky	.	0	1	7	5.86
Louisiana	.	0	0	NA	
Maine	.	0	1	8	3.01
Maryland	10/1/2002	1	1	8	3.39
Massachusetts*	11/7/2004	1	1	16	8.44
Michigan	12/23/2002	1	1	8	5.99
Minnesota	1/1/2003	1	1	10	7.01
Mississippi	.	0	0	NA	
Missouri	.	0	0	NA	
Montana	.	0	0	NA	
Nebraska	.	0	0	NA	0
Nevada	.	0	1	NA	2.81
New	.	0	0	NA	0
New Jersey	11/27/2003	1	1	15	7.34
New Mexico	1/1/2004	1	1	18	9.9
New York	4/1/2003	1	1	15	5.82
North Carolina	7/1/2000	1	1	17	6.4
North Dakota	.	0	0	NA	0
Ohio	.	0	1	7	3.47
Oklahoma	.	0	1	NA	4.29
Oregon	.	0	0	NA	0
Pennsylvania	.	0	1	NA	3.47
Rhode Island*	12/31/2006	1	0	NA	0
South Carolina	1/1/2004	1	1	13	4.8
South Dakota	.	0	0	NA	0
Tennessee	.	0	0	NA	0
Texas	9/1/2001	1	1	10	4.34
Utah	.	0	1	NA	3.91
Vermont	.	0	0	8	0
Virginia	6/26/2003	0	0	8	0
Washington	.	0	0	NA	0
West Virginia	6/8/2000	1	1	17	9
Wisconsin*	2/1/2005	1	0	7	0
Wyoming	.	0	0	NA	0

Note: * Three states, Wisconsin, Indiana, and Rhode Island, which adopted the anti-predatory lending laws after February 12, 2004 were excluded from the preemption analysis. Eight states (Utah, Pennsylvania, Nevada, Oklahoma, Ohio, Maine, Kentucky, and Florida) with nominal anti-predatory lending laws are regarded as without

effective APLs in this study.

Table 2 Matching of Columbia Collateral file data and HMDA

Origination year	Original Sample	Matched	Match Rate
2002	78,150	44,930	57.49%
2003	287,211	236,357	82.29%
2004	638,180	466,461	73.09%
2005	1,200,929	899,590	74.91%
2006	1,447,951	889,903	61.46%
Total	3,652,421	2,537,241	69.47%

Note: Loans that were still active as of December 2006 or later in the Columbia Collateral file data (www.ctslink.com) are included. The following variables are used in the match: origination date, loan amount (in thousands), geography, lien status (for originations after 2004), and loan purpose.

Table 3 Descriptive Statistics of the Study Sample

Mortgage Information	All Loans	Purchase_FRM	Purchase_ARM	Refi_FRM	Refi_ARM	2002-2003 Origs	2004 origs	2005-2006 origs
Purchase (%)	51.37%	100.00%	100.00%	0.00%	0.00%	33.88%	48.50%	54.24%
ARM (%)	69.56%	0.00%	100.00%	0.00%	100.00%	45.52%	68.70%	72.65%
Loan Amount ($s)	$255,086	$219,903	$266,189	$229,222	$270,556	$213,627	$216,003	$270,874
Initial Interest Rate	6.74	6.90	6.64	6.99	6.66	6.81	6.43	6.82
FICO @ Origination	668	703	677	668	642	666	661	670
LTV @ Origination (%)	80.46%	85.17%	85.65%	72.37%	76.64%	76.25%	80.93%	80.83%
1-4 Family	86.16%	75.62%	87.13%	84.61%	90.23%	87.28%	85.58%	86.19%
Owner Occupied (%)	85.53%	74.06%	86.36%	83.81%	90.27%	86.11%	84.15%	85.85%
Full Documentation (%)	53.76%	45.62%	53.45%	57.19%	55.61%	67.18%	61.56%	49.99%
Prepay Penalty Flag (%)	49.37%	28.49%	53.53%	44.18%	55.86%	40.61%	50.53%	50.08%
Balloon (%)	7.72%	4.29%	9.20%	4.72%	9.01%	1.34%	2.41%	9.96%
IO (% of loans)	30.49%	12.14%	46.23%	7.13%	31.83%	9.85%	25.36%	34.36%
Negative Amortization (%)	4.34%	0.00%	4.39%	0.00%	8.50%	0.19%	0.65%	5.85%
Del90 (%)	23.06%	12.33%	29.41%	11.96%	25.94%	18.70%	21.35%	24.05%
APL States	59.45%	56.97%	58.45%	59.52%	61.67%	57.63%	61.08%	59.21%
OCC	40.15%	57.65%	38.29%	42.04%	34.08%	37.92%	33.17%	42.36%
IND	59.85%	42.35%	61.71%	57.96%	65.92%	62.08%	66.83%	57.64%
Number of Loans	1,067,471	139,128	409,230	185,793	333,320	90,649	212,575	764,247

Note: Conventional, 30-year, first-lien mortgages only; loans originated in states that adopted APLs after February 12, 2004 and before December 31 2007 were excluded.

Table 4 Variable Definition

Variable	Definition
cred580	credit score <580
cred620	credit score 580-619
cred660	credit score 620-659
cred720	credit score 660-719
cltv60*	current loan-to-value ratio 60-69.9%
cltv70*	current loan-to-value ratio 70-79.9%
cltv80*	current loan-to-value ratio 80-89.9%
cltv90*	current loan-to-value ratio 90-94.9%
cltv95*	current loan-to-value ratio 95-99.9%
debt_ratio	loan amount divided by household income
black	black borrower as identified in HMDA
hisp	Hispanic borrower as identified in HMDA
race_miss	race/ethnicity information missing in HMDA
prop_type1	1-4 family property
owner_occ	owner-occupied property
appre_af07	metropolitan area house price appreciation from the fourth quarter of 2006 to the fourth quarter of 2008, calculated based on FHFA HPI and Case-Shiller HPI
unemployment	average county unemployment rate during the period of Q12007 to Q42008
IND_nonapl	originations by non-OCC lenders (IND) in non-APL states
OCC_APL	originations by the OCC lenders in APL states
IND_APL	originations by independent mortgage companies in APL states

Note: *The current loan-to-value (CLTV) ratio is calculated using the unpaid mortgage balance as of December 2006 and the estimated house price using the Case-Shiller house price index (HPI) and FHFA HPI. If the property is located in the 20 major MSAs, we used the Case-Shiller HPI. Otherwise we used the FHFA's MSA level HPI. If the property is located in an area outside an MSA, we used the state-level HPI. When the property has multiple liens, we estimated the CLTV by assuming the second or higher liens had been paid at the same speed as the first lien.

Table 5 Mortgage Default (90+day) by Lender Type and State Laws in Different Markets (Descriptive)

	Before preemption (2002-2003)			Post-preemption (2004)			Post-preemption (2005-2006)			Relative change		Preemption Effect	
	non_APL	APL	Odds Ratio	non_APL	APL	Odds Ratio	non_APL	APL	Odds Ratio	2004/pre	2005-2006/pre	2004	2005-2006
OCC lenders													
purchase_frm	9.51%	6.25%	0.634	6.85%	6.11%	0.886	10.44%	7.11%	0.657	1.397	1.036	0.744	0.779
purchase_arm	33.55%	25.23%	0.668	17.35%	17.01%	0.976	23.75%	20.86%	0.847	1.460	1.267	0.579	0.527
refi_frm	8.21%	2.79%	0.322	9.32%	6.44%	0.669	11.80%	8.70%	0.712	2.082	2.213	1.561	1.874
refi_arm	29.77%	15.56%	0.435	18.52%	15.34%	0.797	22.09%	17.92%	0.770	1.835	1.773	1.014	1.274
IND lenders													
purchase_frm	14.78%	12.60%	1.372	19.91%	15.92%	2.577	21.22%	17.53%	1.824	1.879	1.330		
purchase_arm	37.04%	28.06%	0.773	28.09%	29.02%	1.948	34.85%	36.66%	1.858	2.521	2.405		
refi_frm	13.64%	8.71%	1.068	17.14%	12.76%	1.423	17.27%	14.44%	1.261	1.333	1.181		
refi_arm	37.37%	30.32%	1.027	30.63%	29.69%	1.858	28.80%	28.82%	1.428	1.810	1.391		

Note: Serious delinquency rate (90+day) is measured by whether the loan had ever experienced any 90 or 90 plus days of delinquency from December 1 2006 to December 31 2008.

The odds ratios are calculated by dividing the serious delinquency rates in APL states (OCC or IND) by the delinquency rates of loans originated by OCC lenders in non-APL states (OCC_nonAPL); relative change=odds ratios for the 2004 or 2005-2006 cohort divided by the odds ratios for the pre-preemption cohort (2002-2003). A value greater than one for the relative change suggests, though not conclusive, the default risk increases.

Conventional, 30-year, first-lien mortgages only; loans originated in states that adopted APLs after February 12, 2004 and before December 31 2007 were excluded.

Table 6 Impact of the OCC Preemption on Mortgage Performance (based on logit regression results)

	Before preemption (2002-2003)		Post-preemption (2004)		Post-preemption (2005-2006)		Relative change		Preemption Effect	
	p_value	Odds Ratio	p_value	Odds Ratio	p_value	Odds Ratio	2004/Pre	2005-2006/pre	2004	2005-2006
OCC lenders										
purchase_frm	0.007	0.753	0.004	0.806	<.0001	0.716	1.070	0.951	1.023	0.901
purchase_arm	0.000	0.797	0.001	0.882	<.0001	0.789	1.107	0.990	0.766	0.691
refi_frm	<.0001	0.653	0.047	0.864	<.0001	0.786	1.323	1.204	1.199	1.201
refi_arm	<.0001	0.728	0.587	1.026	<.0001	0.841	1.409	1.155	1.012	0.998
IND lenders										
purchase_frm	0.001	1.326	<.0001	1.388	<.0001	1.399	1.047	1.055		
purchase_arm	0.283	0.941	<.0001	1.359	<.0001	1.348	1.444	1.433		
refi_frm	0.986	1.001	0.103	1.105	0.921	1.003	1.104	1.002		
refi_arm	0.824	0.988	<.0001	1.376	<.0001	1.144	1.393	1.158		

Note: Odds ratios and p-values are obtained from a set of logit regression models where serious delinquency (90+day) is the outcome variable and the reference lender group is OCC_nonAPL (see Table 8); relative change=odds ratios for the 2004 or 2005-2006 cohort divided by the odds ratios for the pre-preemption cohort (2002-2003); preemption effect=relative change of OCC lenders/relative change of independent mortgage companies (IND_APL). The preemption effect with a value greater than one suggests the default risk for the lender type increases after the preemption after accounting for the change in market conditions. Conventional, 30-year, first-lien mortgages only; loans originated in states that adopted APLs after February 12, 2004 and before December 31 2007 were excluded.

Table 7 Sample Logit Regression Results (Refinance and ARM Loans)

	2002-2003 Origs			2004 Origs			2005-2006 Origs		
Parameter	Estimate	P_value	Odds Ratio	Estimate	P_value	Odds Ratio	Estimate	P_value	Odds Ratio
Intercept	-4.6356	<.0001		-4.5255	<.0001		-2.196	<.0001	
cred580	3.1436	<.0001	23.188	2.4504	<.0001	11.593	1.9131	<.0001	6.774
cred620	2.7202	<.0001	15.183	2.0667	<.0001	7.899	1.6623	<.0001	5.272
cred660	2.392	<.0001	10.935	1.7573	<.0001	5.797	1.4359	<.0001	4.203
cred720	1.5832	<.0001	4.87	1.1826	<.0001	3.263	0.9585	<.0001	2.608
cltv60	0.6434	<.0001	1.903	0.5048	<.0001	1.657	0.5137	<.0001	1.672
cltv70	0.9238	<.0001	2.519	0.8336	<.0001	2.302	1.0904	<.0001	2.976
cltv80	1.2152	<.0001	3.371	1.1045	<.0001	3.018	1.3745	<.0001	3.953
cltv90	1.0841	<.0001	2.957	1.2214	<.0001	3.392	1.4063	<.0001	4.081
cltv95	1.5628	<.0001	4.772	1.3947	<.0001	4.034	1.4665	<.0001	4.334
debt_ratio	0.0793	<.0001	1.082	0.0358	<.0001	1.036	0.00766	0.0212	1.008
black	0.1624	0.1049	1.176	0.1961	<.0001	1.217	0.0155	0.3087	1.016
hisp	-0.1595	0.0201	0.853	-0.0586	0.0607	0.943	0.24	<.0001	1.271
race_miss	-0.054	0.2035	0.947	0.0598	0.0097	1.062	0.0574	<.0001	1.059
prop_type1	0.0623	0.5258	1.064	-0.0917	0.0743	0.912	-0.0666	0.0061	0.936
owner_occ	-0.3278	0.0008	0.721	-0.2402	<.0001	0.786	-0.3725	<.0001	0.689
appre_af07	0.2853	0.0265	1.33	0.5242	<.0001	1.689	-1.5678	<.0001	0.208
unemployment	0.1154	<.0001	1.122	0.106	<.0001	1.112	0.0651	<.0001	1.067
IND_nonapl	0.1831	0.0005	1.201	0.3735	<.0001	1.453	0.1856	<.0001	1.204
OCC_APL	-0.3168	<.0001	0.728	0.0255	0.5874	1.026	-0.1734	<.0001	0.841
IND_APL	-0.0121	0.8235	0.988	0.3193	<.0001	1.376	0.1342	<.0001	1.144
Likelihood Ratio		5545.1 (21)			10826.0(20)			27139.1 (21)	
N		24436			69312			239570	

Note: time dummies for 2002 cohort and 2005 cohort were included in corresponding models but not listed here. Conventional, 30-year, first-lien mortgages only; loans originated in states that adopted APLs after February 12, 2004 and before December 31 2007 were excluded.

Table 8 Mortgages with at Least One Exotic Feature by Lender Type and State Laws in Different Markets (Descriptive)

	Preemption (2002-2003)			Post-preemption (2004)			Post-preemption (2005-2006)			Relative change		Preemption effect	
	non_APL	APL	Odds Ratio	non_APL	APL	Odds Ratio	non_APL	APL	Odds Ratio	2004/pre	2005-2006/pre	2004/pre	2005-2006/pre
OCC lenders													
purchase_frm	24.68%	17.45%	0.645	27.31%	22.31%	0.764	27.71%	22.61%	0.762	1.185	1.182	0.951	0.547
purchase_arm	78.21%	65.36%	0.526	82.13%	76.11%	0.693	88.54%	81.23%	0.560	1.319	1.065	1.215	0.911
refi_frm	27.63%	11.17%	0.329	44.35%	24.98%	0.418	45.34%	29.15%	0.496	1.269	1.507	1.169	1.273
refi_arm	74.06%	50.25%	0.354	83.29%	67.20%	0.411	89.34%	80.34%	0.488	1.162	1.378	1.253	1.213
IND lenders													
purchase_frm	48.33%	39.12%	1.960	53.89%	47.84%	2.442	65.80%	61.87%	4.234	1.246	2.160		
purchase_arm	77.79%	69.41%	0.632	87.77%	75.92%	0.686	92.89%	85.09%	0.739	1.086	1.169		
refi_frm	58.80%	37.70%	1.585	74.91%	57.83%	1.720	79.21%	60.88%	1.876	1.085	1.183		
refi_arm	74.66%	53.11%	0.397	85.77%	64.72%	0.368	91.26%	79.07%	0.451	0.928	1.136		

Note: Exotic loan features include prepayment penalties, balloon payments, interest only, and negative amortization.

Odds ratios are calculated by dividing the odds of one particular lender type by the odds of the reference group (OCC_nonAPL), where odds of a loan with exotic feature is calculated here by dividing the share of loans with exotic features (p) by that of loans without such features (1-p). relative change=odds ratios for the 2004 or 2005-2006 cohort divided by the odds ratios for the pre-preemption cohort (2002-2003). A value greater than one for the relative change suggests, though not conclusive, the probability or originating of risky loans in APL states increases.

Conventional, 30-year, first-lien mortgages only; loans originated in states that adopted APLs after February 12, 2004 and before December 31 2007 were excluded.