The Impact of Local Predatory Laws on the Flow of Subprime Credit

North Carolina and Beyond

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Abstract

Local authorities in North Carolina, and subsequently in at least 23 other states, have enacted laws intended to reduce predatory and abusive lending. While there is substantial variation in the laws, they typically extend the coverage of the federal Home Ownership and Equity Protection Act by including home purchase and open-end mortgage credit, by lowering triggers on the annual percentage rate and points and fees, and by prohibiting or restricting the use of balloon payments and prepayment penalties.

Empirical results show that the typical local predatory lending law tends to reduce application and rejection rates of subprime loans, but has little impact on the net flow (originations) of credit. However, depending on the extent of market coverage and strength of the restrictions, the flow of subprime credit can be more strongly affected.

JEL Classifications: G21, C25

Keywords: mortgages, predatory, laws, subprime

Introduction

The current mortgage market consists primarily of two segments—the prime market and the sub-prime market. The prime market extends credit to the majority of households. The subprime market extends more expensive credit to households that are less financially secure. Subprime mortgage lending tends to occur in low-income areas and in those with minority populations.

The subprime market consists of a large menu of product and risk classifications. Each classification charges a different risk-based price (interest rate and fees) that is substantially higher than those charged in the prime market, typically varying from one to four percentage points above the prime mortgage interest rate. As a result, those households for whom home ownership is most difficult incur higher costs. This combination of higher costs and higher failure rates has led to public policy concerns over fairness and accessibility of credit.

As reflected in regulations generated under the Home Ownership and Equity Protection Act (HOEPA), Congress has determined that it is socially preferable to restrict some types of high-cost and high-risk lending. In addition, many states, cities and counties have extended the restrictions on credit to an even broader class of mortgages. These restrictions include limits on allowable prepayment penalties and balloon payments, prohibitions of joint financing of various insurance products (such as credit, life and unemployment) and requirements that borrowers participate in loan counseling.

By introducing geographically defined predatory lending laws, policy-makers have conducted a natural experiment with well-defined control and treatment groups. Since state boundaries reflect political and not economic regions, we can compare mortgage market conditions in states with a law in effect (the treatment group) to those in neighboring states without a predatory lending law (the control group).[1] However, instead of examining whole states, we focused on households that are geographically close to each other (border counties) and in similar labor markets (multistate metropolitan and micropolitan areas). Specifically, using the treatment and control group framework, we tested to see whether local predatory lending laws affect subprime applications, originations and rejection rates.

In addition, we created an index to measure to what extent the predatory laws provide broad or narrow coverage of the mortgage market and to measure how restrictive the laws are in terms of limiting prepayment penalties, balloon payments and other factors. This index was used to test for systematic relationships between the flow of credit and the strength of the law.

Since predatory lending has been associated primarily with subprime lending, the next section will discuss the growth of subprime lending and help to distinguish it from prime lending. In addition, a range of predatory lending laws will be described, including HOEPA and local (state, county and city) laws that were in effect at the end of 2004.

The Growth of Subprime Lending

Subprime lending represents an opportunity for the mortgage market to extend the possibility of home ownership beyond traditional barriers. These barriers exist because the prime segment of the mortgage market uses lending standards (credit scores and documented employment history, income and wealth, among other factors) to evaluate applicants. Applicants who are rejected or who expect to be rejected can look to the more expensive subprime market. In this fashion, the subprime market completes the mortgage market and can be welfare-enhancing (Chinloy and MacDonald, 2005) because it provides the opportunity of home ownership to a larger portion of the population.

Although there is only anecdotal evidence to support this generally accepted view, predatory lending is predominantly associated with sub-prime lending and not prime lending.[2] Therefore, the welfare benefit associated with increased access to credit is believed to have been reduced by some unscrupulous lending.

Table 1 shows the substantial growth of the subprime market that has set the stage for predatory lending laws. (See Page 6.) Inside Mortgage Finance reports in its 2004 *Mortgage Market Statistics Annual* that subprime lending grew from $65 billion to $332 billion from 1995 through 2003.[3] In addition, during this period of rapid growth, the subprime market has been consolidating. For example, from 1995 through 2003, the top 25 originators grew from a market share of 39 percent to 93 percent of the subprime market. This rapid growth is at least part of the impetus behind the broadening of the HOEPA standards in 2002 and the introduction of local predatory lending laws.

Table 1: Subprime Origination Growth

Year	Total B&C Originations (billions)	Top 25 B&C Originations (billions)
1995	$65.0	$25.5
1996	$96.8	$45.3
1997	$124.5	$75.1
1998	$150.0	$94.3
1999	$160.0	$105.6
2000	$138.0	$102.2
2001	$173.3	$126.8
2002	$213.0	$187.6
2003	$332.0	$310.1

Source: Inside Mortgage Finance 2004 Annual Data Book. B & C is defined as including loans with less than A quality nonagency paper secured by real estate. Individual firm data are from Inside B & C Lending, which is another publication of Inside Mortgage Finance, and are generally based on security issuance or previously reported data.

Table 2: The Cost of Credit: Fixed-Rate Origination Interest Rate

Year	Subprime	Prime
1995	9.77	7.65
1996	9.78	7.64
1997	9.73	7.38
1998	9.26	6.83
1999	10.05	7.31
2000	10.92	7.95
2001	9.50	6.84
2002	8.38	6.35
2003	7.25	5.69
2004	7.13	5.79

Source: Freddie Mac's Primary Mortgage Market Survey for prime loans and the author's calculations using the LoanPerformance asset-backed securities data set for subprime loans (adjustable and fixed-rate loans only).

Figure 1: Foreclosures In-Progress Rate
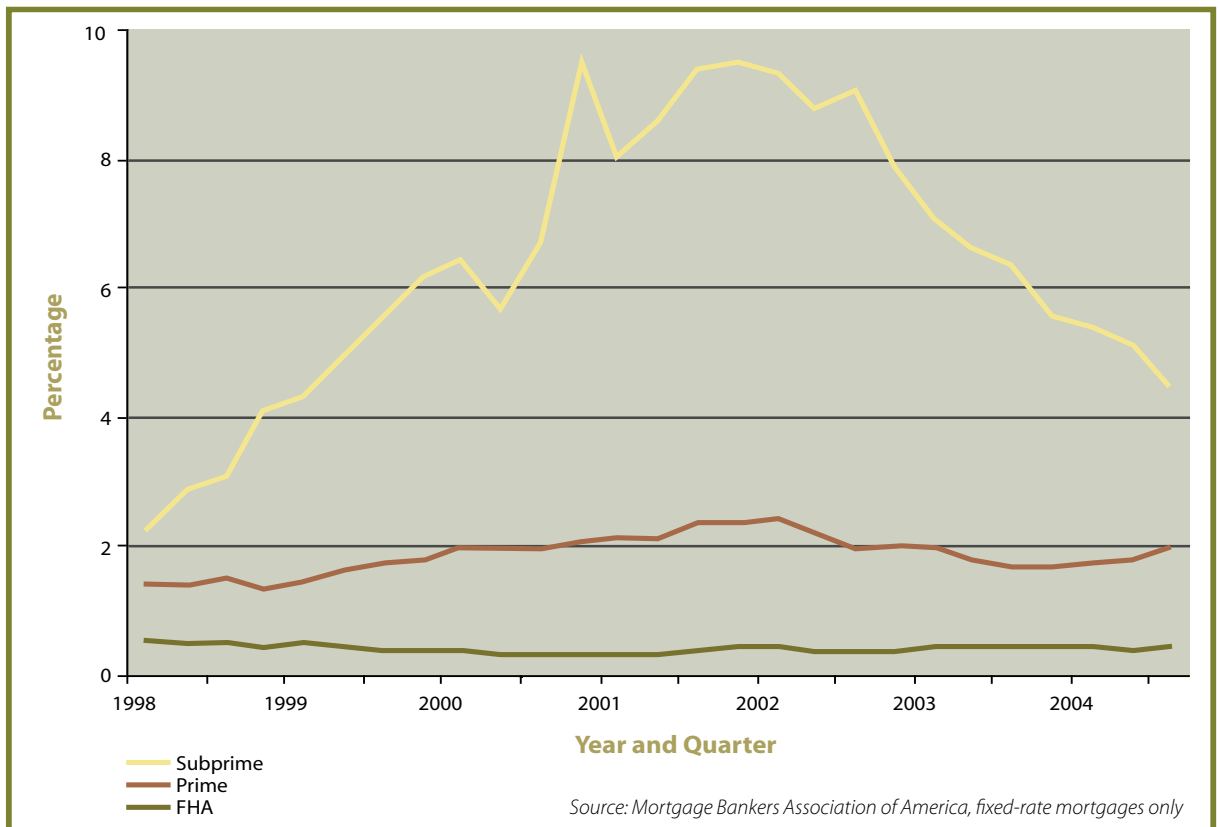
Source: Mortgage Bankers Association of America, fixed-rate mortgages only

Another facet of the subprime market, beyond its recent growth, is that these mortgages cost more than prime mortgages. Table 2 shows the average interest charged at origination for fixed-rate loans in the prime and subprime markets. (See Page 6.) The interest rate shown does not include any estimated fees and points paid or other upfront costs wrapped into the mortgage. However, the price differential is substantial. For example, the spread between prime and subprime was on average as high as 2.98 percentage points in 2000.

To justify such high interest rates for subprime borrowers, lenders must experience much larger rates of termination—particularly foreclosures—than in the prime market. Figure 1 provides evidence, using data from the Mortgage Bankers Association of America (MBAA), that subprime loans do in fact result in substantially higher rates of foreclosures than both prime mortgages and loans endorsed by the Federal Housing Authority (FHA). The figure also provides at least indirect evidence that subprime loans did not perform very well during the recession beginning in March 2001. In contrast, FHA loans were only moderately affected, and prime loans seemed almost completely unaffected by the recession. For example, at their peak, less than 1 percent of prime loans were in foreclosure, compared with more than 9 percent of subprime loans.

If these MBAA data are representative of the subprime market, then low-income and high-minority locations, where subprime lending is most dominant, could have almost one out of 10 homes in foreclosure during a recession. This type of performance can help to justify the higher rates on subprime loans.[4] However, such a high level of failure also raises questions about what effect the foreclosures have on the other nine homes in locations heavily financed by subprime mortgages.

Understanding Predatory Lending

In any document discussing predatory lending, one of the first statements is usually similar to that found in the Department of Housing and Urban Development (HUD)-Treasury report, *Curbing Predatory Home Mortgage Lending,* (2000, Page 17): "Defining the practices that make a loan predatory, however, is problematic." This difficulty arises because predatory lending depends on the inability of the borrower to understand the loan terms and the obligations associated with them. For example, some borrowers may be willing to accept a prepayment penalty in exchange for lower interest rates or fees because they do not expect to move in the near future. Or, the borrower may plan to diversify her portfolio away from a home and, therefore, would like an interest-only loan with a balloon payment in 10 years. But interviews conducted by HUD, the Treasury Department and the Federal Reserve Board indicate that some, perhaps many, borrowers using high-cost loans may not have understood that the loan had a prepayment penalty or did not amortize through time, leading to a balloon payment.

The fact that some borrowers lack this information or knowledge for such a significant debt may be hard to comprehend at first blush. However, when a borrower buys a home or refinances a mortgage, a large and intimidating stack of documents is placed in front of him or her with little time to read, let alone digest, all of the text. If borrowers actually read all of the documents required by law at the time of closing, it would take all day. Moreover, many of the documents are written in a manner that is difficult for non-lawyers to understand. For all practical purposes, the seller, buyer and/or refinancer rely on the representations and interpretations of closing agents.

Thus, it may be unreasonable to expect borrowers to actually read all of the documents that define their rights and obligations. This makes it possible for unscrupulous agents to take advantage of that information gap. Such abuses are more likely when the borrower is perceived as vulnerable because of age, economic circumstances, education or disability.

HUD-Treasury Report

The joint report published by HUD and the Treasury in 2000 provides policy suggestions for Congress, the Board of Governors of the Federal Reserve System and the FHA on how to curb predatory lending.

As part of the report, HUD and the Treasury created a task force to solicit information from industry and community representatives in five locations (Atlanta, Los Angeles, New York, Baltimore and Chicago). The task force included academics, local officials, consumer groups and representatives of industry trade associations for lenders, brokers and appraisers. The outreach effort provided substantial evidence through individual testimony that predatory lending does exist in the mortgage market and tends to be concentrated in the subprime market segment.

During a series of open meetings to hear individual testimony, the Board of Governors of the Federal Reserve System also found anecdotal evidence of predatory lending. The Board determined that the testimony was widespread and that there was a need for increasing the coverage of HOEPA.

Many of the changes made to HOEPA and the concepts discussed in the final rule were articulated in the HUD-Treasury report.[5] The report defines predatory lending as involving deception or fraud and aggressive sales tactics that take advantage of the borrower's lack of understanding of basic rights and the terms of the mortgage. The report also concludes that predatory lending tends to occur more frequently in the refinancing of existing mortgages than in home purchase loans and more frequently in locations with low-income and minority households.

Categories of Predatory Lending

Lending abuses or predatory practices can be categorized into four groups: fraud, loan flipping, imposition of excessive fees and "packing," and lending without regard for ability to repay.

Loan flipping is characterized by borrowers repeatedly refinancing a loan in a short period of time. With each refinance, high fees are wrapped into the new loan amount, reducing the equity left in the home. In some instances, fees exceeded $5,000 or as much as 10 percent of the loan amount.

Fees were found to be very large at times. Typically, fees were added to the financed amount (wrapped) instead of being paid upfront. Perhaps most importantly, consumers often were not aware of the fees, which could be charged by many different sources, including the lender, mortgage broker, home improvement contractor or other third parties. In addition to normal closing fees, some borrowers were sold single-premium credit life insurance, which was included in the loan amount and not used in the calculation of the annual percentage rate (APR).[6]

The task force found evidence that some loans were originated under terms that the borrower would never be able to meet. This problem was exacerbated when the lender did not try to verify income, which may have been falsified by a broker. The task force found examples of elderly borrowers on fixed incomes who had new mortgage payments that exceeded their income. Once the borrower failed to make payments, the lender foreclosed on the property. Clearly, this practice is profitable only when the amount of equity in the home exceeds the cost of foreclosure and the borrower does not exercise the option to sell the home and prepay the mortgage before foreclosure.

Examples also included fraudulent inflating of property values through doctored loan applications and settlement documents as well as conspiring by appraisers and brokers to inflate prices above market rates.

Based on these findings, the report recommended improved consumer literacy and disclosures as well as prohibitions on loan flipping, on lending without regard to ability to repay, and on the sale of credit life insurance and other similar products. The task force also recommended that potentially abusive terms and conditions—such as balloon payments, prepayment penalties, excessive fees and points—be restricted.

National Restrictions—Home Ownership and Equity Protection Act

Congress enacted HOEPA by amending the Truth in Lending Act (TILA). In 1994, the Federal Reserve Board of Governors implemented HOEPA through Regulation Z, which articulates specific rules governing lending practices.

HOEPA and the regulations promulgated under it define a class of loans that are given special consideration because they are more likely to have predatory features and require additional disclosures. HOEPA-covered loans (loans where HOEPA applies) include only closed-end home equity loans that meet APR and finance-fee triggers. Home purchase loans and other types of lending backed by a home, such as lines of credit, are not covered by HOEPA.

Under TILA, the lender or creditor must disclose information about the terms and cost of consumer credit. For example, TILA requires that the cost of credit in dollar amounts (finance charge) and the APR be disclosed to the consumer. TILA provides uniformity in disclosures that is intended to make it easier for consumers to compare alternative credit sources. For loans secured by a home, the creditor is also required to provide some additional disclosures, and the consumer has the right to rescind some transactions.

There are two versions of HOEPA. The original 1994 version set the framework and defined triggers and restrictions. The second version, in 2002, adjusted some of the triggers and restricted some additional practices.

Original Triggers, Disclosures and Restrictions

In the 1994 version of Regulation Z, trigger APR and finance charges were used to identify a class of high-cost loans subject to HOEPA protections that went beyond TILA disclosures. HOEPA protections were triggered in one of two ways: (1) if the loan's APR exceeded the rate for Treasury securities of comparable maturity by 10 percentage points or more or (2) if finance charges, including points and fees, were greater than 8 percent of the loan amount or $400, whichever was smaller. The dollar amount was indexed to the consumer price index and rose to $480 by 2002.

A creditor offering a HOEPA-covered loan was required to provide a shortened disclosure statement to the consumer at least three days before the closing date. The creditor was also required to inform consumers that they were not obligated to complete the transaction and that they could lose the home if they failed to make the mortgage payments.

For HOEPA-covered loans, creditors were not allowed to provide short-term balloon notes, impose prepayment penalties beyond the first five years of a loan, use nonamortizing schedules, refinance loans into another HOEPA loan in the first 12 months or impose a higher interest rate upon default. These restrictions implied that regulators considered these loan types and practices to be abusive lending practices when combined with high-cost loans. In addition, creditors were not allowed to habitually engage in lending that did not take into account the ability of the consumer to repay the loan. Again, this restriction implied that such a pattern of lending, based strictly on the value of the property (or asset-based lending), is not conducive to home ownership and inconsistent with public policy promoting home ownership.

2002 Changes in Triggers, Disclosures and Restrictions

Since 1994, subprime lending has grown rapidly, raising concerns that predatory lending was occurring even while lenders complied with the requirements set forth in Regulation Z. Various initiatives were undertaken in the early 2000s to further define and regulate potentially predatory lending. During 2000 and 2001, the Senate Banking Committee, the House Banking Committee and HUD-Treasury held hearings on the topic. Also in 2000, the Fed Board of Governors held hearings on predatory lending to discuss potential changes to Regulation Z, which was amended, effective Oct. 1, 2002.

The 2002 amendments, which are in effect today, adjusted the triggers, restricted some additional lending practices, adjusted the ability-to-pay requirements and increased disclosure requirements. The APR trigger for first-lien loans was reduced to eight percentage points, while the trigger for second-lien loans (subordinate loans) was left at 10 percentage points. The fee trigger was expanded to include dollars paid at closing for optional insurance programs, such as credit life, accident, health, loss of income and other debt-protection programs. Regulations prohibited loans with call provisions and loans where the creditor had not verified or documented the consumer's ability to pay the mortgage.[7] Therefore, no-documentation loans that met these triggers were expressly prohibited. However, HOEPA still covers only refinance and second mortgages, not for-purchase mortgages, lines of credit or other open-end credit.

There is little information available to calculate what fraction of the mortgage market includes loans covered by HOEPA in the 1994 and 2002 regulations. In Regulation Z or the final rule, some information is provided using data from other institutions about the prevalence of HOEPA loans. For example, data analyzed by the Office of Thrift Supervision showed that lowering the APR trigger from 10 to eight percentage points may expand HOEPA coverage by one to five percentage points for first-lien mortgages.

The data used to do the analysis was obtained from the Mortgage Information Corp., which is currently called LoanPerformance. Following the methodology and using the same data source, we tested to see what percentage of subprime loans the 2002 regulations would have covered from 1996 through 2001. We found that by applying the interest rate at origination, as if it were the APR, 1.94 percent of the subprime loans would be covered by 2002 HOEPA.[8] This number should be biased down because it does not include any estimation of fees and points. This data set does provide extensive information about loan types, but does not provide any information about the APR or fees paid by borrowers. This makes any analysis of HOEPA coverage difficult and only a proxy for the true coverage. A trade association representing nine nondepository subprime lenders also provided detailed data, indicating that the 1994 APR trigger had covered approximately 9 percent of first liens and the 2002 APR trigger would cover, if in effect, approximately 26 percent of first liens.

Regional Restrictions—State and Local Predatory Lending Laws

A number of states and local municipalities have imposed restrictions on predatory lending that reach further than HOEPA and Regulation Z. Appendix A summarizes the characteristics for a sample of state and local laws that were in effect at the end of 2004.[9] (See Page 40.)

As shown in Appendix B, which indicates the status of county and city predatory lending bills, local efforts to enact restrictions have met with little success. (See Page 54.) Rather, local laws have been subject to vetoes, pre-emption by state and local laws and ongoing and frequently successful legal challenges. As of the end of 2004, the sample shows only a few local municipalities—including Chicago, Cook County, Cleveland and the District of Columbia—with an ordinance in effect.

Statewide efforts have been far more successful. Beginning with North Carolina in 1999, at least 24 states have passed predatory lending laws that are currently in effect. The other 23 states are Arkansas, California, Colorado, Connecticut, Florida, Georgia, Illinois, Kentucky, Maine, Maryland, Massachusetts, Nevada, New Jersey, New Mexico, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, South Carolina, Texas, Utah and Wisconsin.

Both the original and the 2002 versions of HOEPA defined a class of high-cost refinance mortgages that were subject to special restrictions. State laws tend to follow this lead and expand the definition of covered loans. For example, North Carolina, the first state to enact predatory lending restrictions, included both closed-end and open-end mortgages but not reverse mortgages. It also limited loan size to the conventional conforming limit—loans small enough to be purchased by Fannie Mae and Freddie Mac and, therefore, not considered part of the jumbo market. HOEPA covers only those closed-end loans that are not for home purchase (typically refinance and second mortgages). North Carolina did leave the APR triggers the same as the HOEPA triggers, although the points-and-fees triggers were reduced from the HOEPA trigger of 8 percent of the total loan amount to 5 percent for loans under $20,000. For loans $20,000 or larger, the same 8 percent trigger is used or $1,000, whichever is smaller. The North Carolina law also prohibits prepayment penalties and balloon payments for most covered loans. The law also prohibits the financing of credit life, disability, unemployment or other life

and insurance premiums, while HOEPA included them only as part of the trigger calculation.

Appendix A shows that while most states followed the North Carolina example, there is some variation in laws. For example, Georgia passed a law that became effective in October 2002 (amended in March 2003) that also includes open-end credit but sets slightly different APR trigger levels to define high-cost loans and covered loans. The points-and-fees triggers then differ depending on whether the loan is categorized as high-cost or simply covered. Prepayment penalties are also prohibited during the first 12 months of the loan if they exceed 2 percent of the value of the loan or during the second 12 months if they exceed 1 percent. In this case, Georgia's prepayment safeguards are weaker than North Carolina's.

In an attempt to quantify the differences in the local laws, an index was created. The higher the index, the stronger the law is. In addition, the index can be broken down into two components. The first component reflects how much the law covers the market beyond HOEPA. The second component shows how the law restricts or requires specific practices beyond those required by HOEPA. Table 3 summarizes the construction of the law index. (See Page 12.) The full index is the sum of all the assigned points as defined in Table 3, while the coverage and restrictions indexes are the sum of points assigned in each subcategory.

The coverage category includes measures of loan purpose, APR first lien, APR higher liens, and points and fees. In general, if the law does not increase the coverage, it is assigned zero points. Higher points are assigned if the coverage is broader. The highest point total for extending the loan purpose coverage is when the law covers all loans. The points assigned for extending the APR triggers are defined as the difference between the HOEPA trigger and the law's trigger. In addition, laws with no APR triggers are assigned the maximum observed difference plus one. The points-and-fees trigger points also follow a similar approach. Laws that extend HOEPA in any way are assigned one point; other laws are assigned the difference between the HOEPA percent points-and-fees trigger and the minimum trigger used in the law minus one. Laws with no points-and-fees triggers are assigned four points.

The restrictions index includes measures of prepayment penalty restrictions, balloon restrictions, counseling requirements and restrictions on mandatory arbitration. If the law does not

require any restriction or requirement, then zero points are assigned. Higher points indicate more restrictions. For example, laws that do not restrict prepayment penalties are assigned zero points, while laws that prohibit all prepayment penalties are assigned four points. Laws that prohibit or restrict the practice more quickly are assigned higher points. For balloon restriction, the points vary from zero for no restrictions to four when the law prohibits all balloons.[10] The last two restrictions measure whether the law requires counseling before the loan is originated or restricts fully or partially mandatory arbitration clauses.

Table 4 reports the calculated full or law index, the coverage index and the restrictions index for each law included in the appendix. (See Page 13.) The average law index is 10.16, varying from 4 in Florida, Maine and Nevada to 17 in New Mexico and Cleveland. The coverage index and the restrictions index have a mean just over 5. The coverage and restrictions indexes are only modestly correlated at 0.19. This indicates that while laws that increase coverage also tend to increase restrictions, the relationship is very imprecise. Therefore, there are laws that increase coverage without increasing restrictions (Nevada) and other laws that extend restrictions more than coverage (Florida and Georgia, for example).

However, for empirical estimation, we created scaled indexes (Table 5, see Page 14). This is necessary because the magnitude of each subcomponent of the index implicitly weights the index so that it represents some subcomponents more than others. For example, the first lien trigger goes from 0 to 3, and the higher lien trigger goes from 0 to 4. As a result, the mean first lien subcomponent is 0.36, and the mean higher liens subcomponent is 0.71. As a result, the law index implicitly places greater importance on higher lien coverage than first liens. To rectify this, each subcomponent number was scaled so that the maximum value equals 1 (actual/max). It is then divided by the category mean value ([actual/max]/mean[actual/max]) so that each category has a mean equal to one. Therefore, the scaled index equally reflects each subcomponent in terms of marginal impacts and the level of the index. Since eight categories are used to create the law index, the mean value of the index is by design 8 with a standard deviation of 4.98. Zero also retains the appealing intuition as reflecting no increase in law strength beyond HOEPA. The law index varies

from 17.16 to 1.47. The scaled and original law index is highly correlated (0.87).

In summary, state and local laws tend to expand the coverage of HOEPA by reducing the triggers and/or including home purchase and open-end credit. Prepayment penalties and balloon payments can also be limited in size or prohibited early in the life of a loan. The packing of credit life or other insurance premiums into the mortgage is also typically restricted or prohibited.

Potential Impacts of the Restrictions

HOEPA and state and local laws are designed to eliminate certain classes of loans. These prohibitions implicitly assume that the terms of these loans are inherently abusive or that the fraction of abusive loans is so high that the social benefit of eliminating them outweighs the social cost of restricting access to credit by high-risk applicants.

This section examines the laws' potential impacts, including:
- their influence on the supply of credit in general,
- their impact on the prevalence of the specific types of loans they target,
- whether a reaction occurs in the market by substituting different uncovered loans for covered loans, as opposed to reducing the supply of credit,
- whether the secondary market reacts by reducing liquidity, and
- whether regulatory costs (the cost of complying with the local predatory lending laws) are passed on to consumers through higher interest rates.

Supply of Credit

To our knowledge, no research to date has measured the costs and benefits to society of HOEPA and state and local predatory lending laws. Instead, researchers have measured how the volume of loans has reacted to the introduction of the law. This analysis helps to answer the first question: Do predatory lending laws reduce the supply of credit? There is substantial evidence that the North Carolina predatory lending law is binding (Ernst, Farris and Stein 2002; Quercia, Stegman and Davis 2003 and 2004; Harvey and Nigro 2004; and Elliehausen and Staten 2004) and some initial evidence that the laws passed in Chicago and Philadelphia also had an impact (Harvey and Nigro 2003).

The primary finding of the research to date is that the volume of subprime loans did decrease

Table 3: Law Index Definition	
Category	**Description of Law Index**
Coverage:	
Loan purpose	HOEPA equivalent = 0 all loans except government loans = 1 all loans except reverse or open loans = 2 all loans except reverse, business or construction loans = 3 all loans with no exceptions = 4
APR trigger, 1st lien	HOEPA equivalent = 0 (HOEPA trigger) – trigger no trigger = max+1 = 3
APR trigger, higher liens	HOEPA equivalent = 0 (HOEPA trigger) – trigger no trigger = max+1 = 4
Points-and-fees trigger	HOEPA equivalent = 0 any extension = 1 HOEPA % – min % – 1 no trigger = 4
Restrictions:	
Prepayment penalty prohibitions	No restriction = 0 prohibition or percent limits after 60 months = 1 prohibition or percent limits after 36 months = 2 prohibition or percent limits after 24 months = 3 no penalties allowed = 4
Balloon prohibitions	No restriction = 0 no balloon if term <7 years (all term restrictions) = 1 no balloon in first 10 years of mortgage = 2 no balloon in first 10 years of mortgage and Cleveland = 3 no balloons allowed = 4
Counseling requirements	Not required = 0 Required = 1
Mandatory arbitration limiting judicial relief	Allowed = 0 partially restricted = 1 prohibited = 2

The law index is calculated by summing all categories. The coverage and restrictions indexes are created by summing the subcategories.

Table 4: The Law Index

State	Full Index	Coverage Index	Restrictions Index
Arkansas	8	5	3
California	11	7	4
Chicago, Ill.	15	10	5
Cleveland, Ohio	17	7	10
Colorado	13	8	5
Connecticut	10	5	5
Cook County, Ill.	15	10	5
Florida	4	0	4
Georgia	16	6	10
Illinois	13	6	7
Indiana	11	4	7
Kentucky	9	2	7
Maine	4	4	0
Maryland	8	7	1
Massachusetts	14	6	8
Nevada	4	4	0
New Jersey	10.5	5.5	5
New Mexico	17	7	10
New York	10	6	4
North Carolina	11	3	8
Ohio	6	4	2
Oklahoma	8	2	6
Pennsylvania	7	4	3
South Carolina	9	4	5
Texas	8	2	6
Utah	6	4	2
Washington, D.C.	15	8	7
Wisconsin	5	3	2
Average	**10.16**	**5.13**	**5.04**
Standard deviation	**4.03**	**2.39**	**2.82**

Table 5: The Scaled Law Index

State	Full Index	Coverage Index	Restrictions Index
Arkansas	10.06	2.73	7.33
California	7.07	5.09	1.98
Chicago, Ill.	12.64	10.20	2.43
Cleveland, Ohio	15.19	4.35	10.84
Colorado	16.19	12.87	3.31
Connecticut	6.92	2.73	4.20
Cook County, Ill.	12.64	10.20	2.43
Florida	1.98	0.00	1.98
Georgia	14.88	4.13	10.76
Illinois	17.16	8.73	8.43
Indiana	7.55	2.36	5.19
Kentucky	4.95	0.74	4.22
Maine	1.47	1.47	0.00
Maryland	10.51	5.84	4.67
Massachusetts	9.68	4.13	5.55
Nevada	1.47	1.47	0.00
New Jersey	6.27	3.13	3.14
New Mexico	12.91	6.28	6.63
New York	6.82	4.13	2.69
North Carolina	5.07	1.11	3.96
Ohio	2.38	1.47	0.90
Oklahoma	4.59	0.74	3.85
Pennsylvania	2.92	1.47	1.44
South Carolina	8.83	2.36	6.47
Texas	3.79	0.74	3.06
Utah	2.55	1.47	1.08
Washington, D.C.	14.89	10.50	4.39
Wisconsin	2.63	1.55	1.08
Average	**8.00**	**4.00**	**4.00**
Standard deviation	**4.98**	**3.52**	**2.87**

in North Carolina. The impact seems to be larger for low-income borrowers and minority borrowers. There is also some evidence that the decline in volume came from reduced applications, not increases in rejection rates. Given that predatory lending laws have spread to many other localities, it remains to be seen whether this result will continue to hold.

Targeted Loan Types

A second question is to determine whether the types of loans targeted by these laws, or loan-related characteristics such as balloon payments and prepayment penalties, are affected. Quercia, Stegman and Davis (2003) show that balloon payment loans and prepayment penalties tended to become a smaller portion of the market after the law in North Carolina was introduced. Quercia, Stegman and Davis (2004) find that the decline in volume in North Carolina was largely associated with refinancing loans.

Substitution

The finding that the predatory lending law in North Carolina resulted in fewer subprime loans and fewer of the targeted loan types suggests that lenders are not able to find perfect substitutes for the prohibited loan types. For example, if the prohibited loans were predatory because they charged excessive fees and interest rates, one response of predatory lenders would be to simply charge lower fees and interest rates. In essence, the lenders would become less predatory. On the other hand, if the market is perfectly competitive, then the laws should simply restrict the flow of credit.[11]

In perfect risk-based pricing, each borrower is charged a unique price associated with his or her estimated risk profile. In a perfectly competitive market, each loan is priced at the break-even rate. Therefore, lenders cannot reduce the price charged to the high-risk borrowers because the loan would lose money. As a result, loans with risk characteristics that require a break-even price above the legal limit will no longer be originated. This outcome is consistent with the findings in North Carolina that the volume of loans decreased when the law became effective.

By contrast, if lenders operate in an environment where perfect competition is not achieved, such as a case in which the borrower does not understand the terms of the loan, the price charged to the consumer for these loans could be higher than the cost. In these circumstances, it is possible for lenders to charge above the break-even

price and impose abusive or predatory lending rates. As a result, lenders will be able to reduce the price and still break even on at least some of the prohibited loans. This would be the simplest form of substitution available to lenders in response to legal restrictions and would be consistent with the notion that abusive and predatory lending has been occurring.

Other forms of substitution are also possible. Lenders may also try to move potential borrowers away from covered loans and toward loans with similar payment characteristics that are not covered by the law. For example, the laws do not distinguish between adjustable-rate and fixed-rate loans. Adjustable-rate loans typically have lower interest rates at origination than fixed-rate loans; over time, the interest rate will adjust to a fixed spread above predetermined interest rate instruments such as the London Interbank Offered Rate (LIBOR) or Treasury bill rates. Therefore, lenders could be expected to shift some borrowers away from fixed-rate loans and into adjustable-rate loans to avoid violating the predatory laws or having the loan covered by the law. Such substitution from one product type to another does not necessarily mean abusive loans are being made. It can also be consistent with break-even pricing.

Liquidity

The regulations may make it more difficult to sell loans in the secondary market. Firms such as Standard & Poor's and Fitch, which rate private label securities, have refused to rate securities covered by some of the local lending laws. For example, Standard & Poor's required that loans covered by the original Georgia law (October 2002) not be included in any securities. They interpreted the law as imposing potentially uncapped and unlimited liability on holders of securities that contain predatory loans. Georgia later amended the law so that the exposure was limited to all remaining indebtedness of the borrower plus attorney fees and costs. Standard & Poor's also reports an indicator of loss severity associated with the securities. This number is reported in Appendix A for each law for which it is available. For example, the loss severity number for Georgia is 110 percent. This is the estimate of the total possible damages, which is required to extinguish the liability under the loan, assuming a 9 percent coupon rate on a 30-year loan of $100,000. This includes attorney fees and costs, which are assumed to be 10 percent of the unpaid balance.[12]

Univariate Evidence: Predatory Lending Laws and the Flow of Credit

The first empirical test examines the laws' impact (if any) on the volume of lending. If volume is unaffected, then the flow of and the supply of credit to potential consumers has not been affected in the aggregate. This method generally follows Harvey and Nigro's (2004) research on the North Carolina predatory lending law. In particular, this section extends prior research by examining the impacts in a variety of locations and seeing if the North Carolina experience is representative or typical for other states.

In each state, we examine the change in originations for subprime loans under the prescribed loan limits in the year before the predatory lending law was introduced and the year after the law was introduced, using the publicly available Home Mortgage Disclosure Act (HMDA) data.[13] Growth rates are calculated for loans associated with a list of subprime lenders identified by the HUD subprime lender list.[14] Any loan application or origination associated with a lender on the list is identified as a subprime loan. All other loans are treated as prime or as conventional loans.

In an attempt to create as similar comparison groups as possible, only counties that border other states without a local predatory lending law are used for the treatment group. The control group only includes counties in neighboring states that border the treatment state and do not have a predatory lending law in effect during the observed time period (the year before and after the introduction of the predatory lending law). This contrasts with other studies (Harvey and Nigro 2004; Elliehausen and Staten 2004) that have used whole neighboring states or regions to define both control and treatment groups. Our approach should help to increase the comparability of the treatment group and the control group because they are geographically closer and, as a result, likely to be more economically similar than full state and region comparisons.

This approach and HMDA availability reduces the sample to 10 state local predatory lending laws (California, Connecticut, Florida, Georgia, Maryland, Massachusetts, North Carolina, Ohio, Pennsylvania and Texas).

Table 6 reports the percent change in originated loans. (See Page 17.) Using North Carolina as an example, the results show that subprime originations decreased by 35.8 percent in the treatment

counties from 1999 through 2001, while subprime originations decreased by 18.9 percent in the control counties. In other words, consistent with prior research on the North Carolina predatory lending law, subprime originations decreased substantially more than would be expected given the performance of the control counties. This finding is also found in four other states: Florida, Georgia, Massachusetts and Ohio. However, in five states—California, Connecticut, Maryland, Pennsylvania and Texas—the results indicate that subprime originations increased more in the treatment locations.[15] These results indicate that the experience in North Carolina may not extend to all other predatory lending laws. There may be sufficient variation in the laws that some increase and some decrease the flow of credit.

The second and third columns examine the relative growth rates in originations for minority and low-income applicants.[16] Again, the results are mixed, as some locations experienced a relative increase and others a relative decrease in subprime originations.

Table 7 (see Page 18) examines the relative growth in applications for subprime credit and Table 8 (see Page 19) examines the relative change in subprime rejection rates. Again, the application results are mixed and very similar to the origination results. For example, four state laws experienced a relative increase in applications and six state laws experienced a relative decrease in applications. However, the rejection rates tell a much more consistent story. In most states, rejection rates declined more in the treatment locations than in the control locations, indicating that the introduction of predatory lending laws was associated with a disproportionate reduction in the rate that subprime applications were rejected.

Multivariate Evidence: Predatory Lending Laws and the Flow of Credit

The previous section provided a univariate analysis showing that the predatory lending laws are associated with reductions in rejection rates of subprime applications, but have no consistent impact on the volume of subprime credit. This section extends this analysis by estimating the probability of originating a subprime versus prime loan, the probability of applying for a subprime loan versus a prime loan and the probability of being rejected in a subprime application in probit model specifications. The main additional benefit of conducting a multivariate analysis is the ability

Table 6: Pre/Post Law Percent Change in Originations

State	All Loans	Minority	Low-Income
California 2001-2003			
California	177.3	344.7	148.7
Control group	53.1	71.1	17.8
Difference	124.2	273.6	130.9
Connecticut 2000-2002			
Connecticut	87.8	127.7	67.9
Control group	80.6	107.3	28.2
Difference	7.2	20.3	39.7
Florida 2001-2003			
Florida	55.5	101.0	8.8
Control group	59.9	125.2	2.3
Difference	-4.3	-24.3	6.5
Georgia 2001-2003			
Georgia	18.9	87.5	-14.0
Control group	46.2	108.1	29.6
Difference	-27.3	-20.6	-43.6
Maryland 2001-2003			
Maryland	129.4	256.5	140.6
Control group	57.6	165.4	84.6
Difference	71.8	91.0	55.9
Massachusetts 2000-2002			
Massachusetts	56.4	134.8	17.1
Control group	69.6	107.4	8.2
Difference	-13.2	27.4	8.9
North Carolina 1999-2001			
North Carolina	-35.8	-35.7	-50.2
Control group	-18.9	-30.1	-31.6
Difference	-16.9	-5.6	-18.5
Ohio 2001-2003			
Ohio	3.2	4.2	-23.3
Control group	8.4	47.0	4.0
Difference	-5.3	-42.8	-27.3
Pennsylvania 2000-2002			
Pennsylvania	-5.8	-48.4	-38.0
Control group	-30.7	-59.1	-45.9
Difference	24.9	10.7	7.9
Texas 2000-2002			
Texas	3069.2	---	---
Control group	-12.6	-53.0	-46.3
Difference	3,081.8	---	---

Table 7: Pre/Post Law Percent Change in Applications

State	All Loans	Minority	Low-Income
California 2001-2003			
California	110.0	268.1	81.3
Control group	43.3	123.4	31.5
Difference	66.7	144.6	49.8
Connecticut 2000-2002			
Connecticut	43.4	51.9	29.1
Control group	59.8	34.7	35.4
Difference	-16.4	17.2	-6.3
Florida 2001-2003			
Florida	21.0	137.4	3.3
Control group	76.0	156.3	23.4
Difference	-55.0	-18.9	-20.1
Georgia 2001-2003			
Georgia	-16.2	72.1	-29.8
Control group	27.7	116.4	7.4
Difference	-43.9	-44.3	-37.2
Maryland 2001-2003			
Maryland	77.2	258.7	71.0
Control group	33.3	238.5	32.7
Difference	44.0	20.1	38.4
Massachusetts 2000-2002			
Massachusetts	45.4	84.1	24.1
Control group	60.2	42.7	36.2
Difference	-14.8	41.4	-12.1
North Carolina 1999-2001			
North Carolina	-25.9	-37.9	-35.7
Control group	16.1	-28.3	3.3
Difference	-42.0	-9.6	-39.0
Ohio 2001-2003			
Ohio	-9.5	7.0	-27.5
Control group	-2.8	52.8	-15.1
Difference	-6.6	-45.7	-12.5
Pennsylvania 2000-2002			
Pennsylvania	11.0	-42.8	-1.2
Control group	-12.5	-57.3	-11.3
Difference	23.5	14.5	10.1
Texas 2000-2002			
Texas	5,480.0	---	6014.3
Control group	-12.2	-53.6	-31.8
Difference	5,492.2	---	6,046.1

Table 8: Pre/Post Law Percent Change in Rejection Rates

State	All Loans	Minority	Low-Income
California 2001-2003			
California	-33.4	-26.1	-25.0
Control group	-13.3	10.9	-2.3
Difference	-20.0	-37.0	-22.7
Connecticut 2000-2002			
Connecticut	-19.5	-17.0	-13.6
Control group	-19.7	-23.7	2.2
Difference	0.2	6.7	-15.9
Florida 2001-2003			
Florida	-12.2	2.3	-3.5
Control group	2.8	1.9	-1.0
Difference	-15.0	0.4	-2.6
Georgia 2001-2003			
Georgia	-23.2	-13.0	-15.1
Control group	-8.3	1.1	-10.8
Difference	-14.9	-14.0	-4.3
Maryland 2001-2003			
Maryland	-25.7	-6.9	-21.9
Control group	-15.7	24.6	-20.5
Difference	-9.9	-31.5	-1.3
Massachusetts 2000-2002			
Massachusetts	-19.4	-25.5	-8.0
Control group	-13.6	-18.8	9.7
Difference	-5.7	-6.6	-17.7
North Carolina 1999-2001			
North Carolina	20.0	9.7	24.4
Control group	37.0	6.2	28.0
Difference	-17.0	3.5	-3.6
Ohio 2001-2003			
Ohio	-6.6	-1.2	-4.3
Control group	-2.0	-4.5	-5.8
Difference	-4.6	3.3	1.5
Pennsylvania 2000-2002			
Pennsylvania	2.4	7.0	18.6
Control group	3.4	1.6	16.8
Difference	-1.1	5.4	1.8
Texas 2000-2002			
Texas	72.7	---	4.8
Control group	-9.8	-7.9	-2.2
Difference	82.5	---	7.0

to control for multiple characteristics at once. The previous univariate tables control only for time and location through the construction of the data set. The regression will be able to simultaneously control for law characteristics, borrower characteristics, location and economic conditions on both the control group (no law introduced) and the treatment group (law introduced).

The basic data design is the same as in the univariate analysis and includes only counties in treatment states that border other states without any treatment (control group) and subprime loans under the loan limits indicated by the law.

Identification and Probit Estimation

Identification Strategy

To identify the impact of a local predatory lending law, the location and timing of the law becoming effective along with borrower and location characteristics are included. Table 9 describes the variables and data sources. (See Page 22.) Similar to Harvey and Nigro (2003 and 2004), three separate dependent variables will be tested for impacts of local predatory lending laws: the probability of applying for a subprime loan, the probability of originating a subprime loan and the probability of being rejected on a subprime application.

The key variable of interest is *Ineffect*. This variable indicates that a loan is in a location when and where a predatory lending law is effective. It is defined as zero before the law is effective, even in the treatment location, and is always zero in the control location. *Ineffect* is constructed by interacting the variable *Law*, which indicates locations where the law will eventually be in effect, and *Postlaw*, which indicates the time period after a law has become effective. Therefore, *Law* identifies the treatment location and *Postlaw* identifies the time period the treatment is in effect. The reference group is derived as locations where the law will never be in effect in the time period before the law is in effect. There are no priors regarding the coefficients on *Law* or *Postlaw*, because they will capture prevailing probabilities associated with location and time that are not controlled for by other variables. Given the results from prior research, we would expect *Ineffect* to be negative for the application and origination outcome and potentially insignificant for the rejection outcome.

Both Harvey and Nigro (2003 and 2004) and Elliehausen and Staten (2004) include a series of control variables associated with the location of the loan or loan application and the borrower

because they may impact the demand or supply of subprime credit. In general, we expect that borrowers will be more likely to use/apply for subprime loans and perhaps be rejected by subprime lenders in locations with difficult economic conditions and when borrowers have lower income or are in minority areas (Calem, Gillen and Wachter 2004 and Pennington-Cross 2002).

Economic conditions are proxied by the county level unemployment rate, housing vacancy rate and population growth rate. Borrower characteristics are proxied by the percent of minority population in the census tract and borrower income. In general, we expect that applicants with more income relative to their loan amount will have an easier time meeting prime underwriting requirements. Underwriting requirements are proxied by the loan-to-borrower income ratio.

One important caveat to this analysis is that the borrower's credit history or credit score, which has been shown to be a very important determinant of mortgage performance for both subprime and prime loans (Pennington-Cross 2003), is not reported in the HMDA data and, therefore, cannot be included in this analysis. Lastly, perhaps due to minimum scale requirements, prime lending may be more available in locations with more households. As a result, subprime may be more prevalent in locations with a smaller population.

Probit Estimation

A probit model is estimated for each outcome and for each law sample (treatment and control location loans). Therefore, for each law, three probit models are estimated and a total of 30 model estimates are generated, including 10 explanatory variables each for a total of 300 estimated coefficients, excluding intercepts.

The probit specification is given by:

(1) $\Pr(Y = 1 \mid x) = \Phi(x'\beta)$

Y is the outcome (application, origination or rejection), *x* is a vector of explanatory variables, β is a vector of parameters and Φ denotes the standard normal distribution. The log-likelihood for the probit model is:

(2) $L = \sum_{y_i=0} \ln[1 - \Phi(x_i'\beta)] + \sum_{y_i=1} \ln \Phi(x_i'\beta)$

y_i and x_i are, respectively, the observed values of outcome *Y* and explanatory variables *x* for observation *i*.

Due to the large number of coefficient estimates, instead of reporting all coefficients, summary

information is provided.[17] To provide context for the marginal effects, Table 10 (see Page 23) reports the mean of the dependent variables for each of the law samples (control and treatment loans). It shows that there is a wide variety in subprime application, origination and rejection rates. For example, subprime applications ranged from almost 25 percent in California to just over 15 percent in Maryland. The relative magnitude of application and origination rates provides indirect support for the high rates of rejection on subprime applications. In fact, in some of the law samples, over 50 percent of subprime applications were rejected.

Table 11 reports the marginal impact of a local predatory lending law becoming effective for each state. (See Page 23.) Consistent with prior literature, the results indicate that the North Carolina law did reduce the flow of subprime credit through a reduction in both application and origination probabilities. However, the experience in terms of originations and applications in North Carolina is replicated in only one half of the laws examined. In the other half, the introduction of the law was associated with an increase in the flow (originations) of subprime credit. The results are also mixed in terms of applications, with some laws being associated with higher and other laws associated with lower probabilities of application. The impacts of the local laws on the probability of being rejected are a little more consistent, with seven of the 10 laws being associated with lower rejection rates.

Table 12 provides a summary of coefficient estimates for the remaining control variables for the probit application, origination and rejection models. (See Page 24.) The first four columns report the minimum, maximum, mean and standard deviation of the estimated coefficients across the 10 laws. The last column reports the mean t-statistic associated with the coefficients. There is no expected sign or even significance associated with the *Law* and *Postlaw* dummy variables since they control for unobserved impacts of location and time in each law sample. There are three measures of income included in the model: borrower income, the ratio of the requested loan amount to borrower income and the ratio of tract to MSA median family income.

As anticipated, on average, borrowers with higher income are less likely to apply for or get a subprime loan and are less likely to be rejected on a subprime application. However, as with most of the control variables, there is substantial variation in the sign and magnitude of the coefficient estimates. Consistent with the borrower income, originations and applications are more likely in locations with relatively lower incomes and more likely to be rejected when applications come from locations with relatively lower incomes. Lastly, as anticipated, applicants requesting larger loans relative to their income are more likely to be rejected on their applications

Higher unemployment rates are also associated on average with higher probabilities of application, origination and rejection, but the coefficient estimates vary from being negative to positive. In addition, weaker housing markets, proxied by the vacancy rate and county population growth, are inconsistently associated with application, origination and rejection probabilities. However, consistent with prior research, locations with more minorities are associated with higher application, origination and rejection probabilities.

These results do not provide any indication that predatory lending laws systematically reduce the flow of subprime credit. However, the results do show that predatory lending laws may be associated with lower rejection rates of subprime mortgage applications. It can be expensive just to apply for a mortgage: The nonrefundable application fee usually runs from $200 to $300, not to mention other hidden or nonpecuniary costs. Thus, while reducing rejection rates may not have been the primary purpose of the laws, a reduction in rejections can represent substantial savings to consumers.

Understanding the Heterogeneity of Market Responses

The previous section followed prior literature and estimated the impact of a local lending law one law at a time. While the findings for the North Carolina law sample were largely replicated, the results showed that other laws did not always have the same impact. In fact, some laws were associated with relative increases in the flow of credit. This section tests to see if the heterogeneity in market responses is related to the nature or strength of the local law.

This section provides a more complete analysis by pooling all the law samples together and including the scaled law indexes as explanatory variables.[18] To maintain the identification strategy, law sample (each law's treatment and control loans) dummies are included and the variables *Law* and *Postlaw* are interacted with each law sample, with the North Carolina law sample as the excluded group. The impact of the average law can then be

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Table 9: Identification Strategy and Control Variable Definitions

Variable	Definition	Source
Outcome		
Application	Indicator variable = 1 for subprime application, 0 for prime	HMDA and HUD subprime lender list
Origination	Indicator variable = 1 for subprime origination, 0 for prime	HMDA and HUD subprime lender list
Rejection	Indicator variable = 1 if subprime loan is denied, 0 if accepted	HMDA and HUD subprime lender list
Identification		
Law	Indicator variable = 1 if borrower is from a location with a law at some point, 0 otherwise	Appendix A
Postlaw	Indicator variable = 1 for post-legislation time period, 0 otherwise	Appendix A
Ineffect	Interaction of Law and Postlaw indicators indicating that the borrower is from a location with a law currently effective	Appendix A
Control Variables		
Income	Borrower's gross annual income ($ in thousands)	HMDA
Loan2inc	Ratio of requested loan amount to borrower's income	Calculated from HMDA
Relinc	Ratio of tract median family income to MSA median family income	HMDA
Minority	Tract's minority population percentage	HMDA
Vacant	County's percentage of vacant housing units	Census 2000
Population	County's population growth from the calendar year before and after the law became effective	Census Bureau
Unemployment	County's unemployment rate	Bureau of Labor Statistics

Table 10: Mean of Dependent (Outcome) Variables

Law sample (treatment and control loans)	Application	Origination	Rejection
California	0.249	0.153	0.354
Connecticut	0.245	0.119	0.397
Florida	0.177	0.063	0.574
Georgia	0.224	0.097	0.505
Massachusetts	0.174	0.080	0.357
Maryland	0.153	0.064	0.439
North Carolina	0.233	0.111	0.484
Ohio	0.241	0.092	0.551
Pennsylvania	0.261	0.109	0.476
Texas	0.242	0.104	0.550

Table 11: Marginal Effects of Ineffect Variable

Law sample	Application	Origination	Rejection
California	0.032***	0.067***	-0.258***
Connecticut	0.014**	0.023***	0.013
Florida	-0.030***	0.008*	-0.057***
Georgia	-0.056***	-0.007**	-0.110***
Massachusetts	-0.074***	-0.032***	-0.030***
Maryland	0.029***	0.018***	-0.066***
North Carolina	-0.069***	-0.042***	-0.048***
Ohio	-0.005	-0.004	-0.022**
Pennsylvania	0.037***	0.032***	0.032***
Texas	0.189***	0.107***	0.148*

*, **, *** indicate that the marginal effect is significantly different from zero at the 90 percent, 95 percent and 99 percent levels, respectively.

Table 12: Summary of Control Variable Coefficient Estimates

| Variable | Coefficient | | | | T-stats |
	Minimum	Maxium	Mean	Std. Dev.	Mean
Application Results					
Law	-1.191	0.500	-0.032	0.447	2.621
Postlaw	-0.254	0.156	-0.078	0.120	-8.530
Ineffect	-0.288	0.765	0.031	0.299	-1.639
Income	-0.319	-0.058	-0.176	0.083	-34.463
Loan2inc	-0.001	0.032	0.012	0.012	9.622
Relinc	-0.617	-0.215	-0.431	0.165	-41.554
Minority	0.274	0.819	0.550	0.153	35.074
Vacant	-10.514	15.820	-0.207	6.704	-3.124
Population	-0.119	0.059	-0.018	0.053	-5.243
Unemployment	-5.393	16.539	7.503	6.453	13.972
Origination Results					
Law	-0.807	0.230	-0.079	0.293	-1.223
Postlaw	-0.509	0.067	-0.158	0.170	-8.510
Ineffect	-0.229	0.759	0.103	0.279	1.999
Income	-0.497	-0.039	-0.213	0.159	-19.529
Loan2inc	-0.033	0.031	-0.002	0.018	-2.871
Relinc	-0.615	-0.141	-0.388	0.156	-22.270
Minority	0.384	0.820	0.605	0.141	24.624
Vacant	-9.833	4.701	-1.604	3.791	-4.108
Population	-0.128	0.026	-0.022	0.055	-2.545
Unemployment	-5.246	18.093	6.891	6.623	9.131
Rejection Results					
Law	-0.377	1.837	0.197	0.599	3.088
Postlaw	-0.263	0.321	-0.006	0.168	-0.194
Ineffect	-0.469	0.373	-0.084	0.223	-3.927
Income	-0.082	0.051	-0.031	0.043	-4.660
Loan2inc	0.001	0.055	0.022	0.017	7.779
Relinc	-0.395	-0.018	-0.190	0.108	-9.553
Minority	-0.038	0.242	0.125	0.087	3.447
Vacant	-18.268	6.909	0.736	7.194	3.552
Population	-0.033	0.098	0.016	0.040	0.407
Unemployment	-7.209	26.239	1.147	9.270	-0.646

interpreted directly from the *Ineffect* variable.

If the outcome (subprime application, subprime origination or subprime rejection) and the treatment are jointly determined, we must also be concerned with factors that could impact the probability of a location choosing to enact a predatory lending law. The HUD-Treasury report indicated that predatory lending primarily is found in subprime lending and not prime lending. Therefore, we would expect states with higher rates of subprime lending to receive more requests for legislative remedies from victims of predation and from consumer advocacy groups. In addition, predatory lending also has been associated with urban and minority populations. Therefore, again we should expect that locations with more urban populations and nonwhite populations would be more likely to seek legislative restrictions on subprime lending. Lastly, since the predatory lending laws are crafted by state legislatures, either Republicans or Democrats may be more or less likely to respond to predatory lending concerns through legislation. Table 13 provides a description of the variables used to identify whether the state where the property is located will enact a local predatory lending law. (See Page 26.)

Tables 14a and 14b provide descriptive statistics of the variables by outcome. (See pages 26, 27.) The application sample includes over 590,000 prime and subprime loan applications; the origination sample includes over 390,000 prime and subprime originations; and the rejection sample includes over 89,000 subprime applications, which are either accepted or rejected.[19]

As shown in Table 14, just over 20 percent of the applications were subprime, while only 9.7 percent of the originations were subprime. Consistent with the relative magnitude of applications and originations, the rejection rate is very high for our sample of subprime loans—at 42.9 percent.

The states in the sample are best described as urban, majority white and predominately Democratic in the state legislature. The borrowers and applicants typically have loans approximately twice the size of their income. In addition, as expected, the income of subprime applicants (the rejection sample includes rejections and acceptances) is substantially lower than for the overall sample.[20] Subprime applications also come from census tracts with a higher concentration of minority households. The law sample dummy variables indicate that the Maryland sample is the largest proportion of the sample and that the Texas

proportion is the smallest. In addition, the number of loans either before or after a law becomes effective varies by location, and approximately 40 percent of the sample has a law in effect.

Estimation Strategy

For each of the outcomes, the dependent variable is binary. We use the probit model specification, which limits the estimated probabilities between zero and one and assumes a standard normal probability distribution. However, we must also consider the possibility that the probability of the outcome occurring is jointly determined with the probability of the state enacting a law. As noted by Greene (1998), one approach is to estimate a bivariate probit model and allow the error terms to correlate between the two equations. Specifically, we jointly model the probability of enacting law and the probability of subprime application/origination/rejection. The model specification is given by

$$(3a) \quad \begin{aligned} \pi_i^{*1} &= X_i^1\beta^1 + \varepsilon_i^1, \\ \pi_i^1 &= 1 \text{ if } \pi_i^{*1} > 0,\ 0 \text{ otherwise} \end{aligned}$$

$$(3b) \quad \begin{aligned} \pi_i^{*2} &= X_i^2\beta^2 + \pi_i^1\gamma + \varepsilon_i^2 \\ \pi_i^2 &= 1 \text{ if } \pi_i^{*2} > 0,\ 0 \text{ otherwise} \end{aligned}$$

and

$$(4) \quad \begin{aligned} E\left[\varepsilon_i^1\right] &= E\left[\varepsilon_i^2\right] = 0 \\ Var\left[\varepsilon_i^1\right] &= Var\left[\varepsilon_i^2\right] = 1 \\ Cov\left[\varepsilon_i^1, \varepsilon_i^2\right] &= \rho \end{aligned}$$

Equation (3a) models the probability of loan i being in a state that enacts a predatory lending law (π_i^{*1}) as a function of state characteristics X_i^1. Equation (3b) models the probability of the outcome (application, origination or rejection) for loan i (π_i^{*2}) as a function of loan and borrower characteristics X_i^2 and the endogenous law indicator variable π_i^1. The error terms ε_i^1 and ε_i^2 are correlated with correlation coefficient ρ.

Maddala (1983) and Greene (2003) showed that in the bivariate probit model, if the two dependent variables are jointly determined, the inclusion of an endogenous variable on the right-hand side of the second equation can be ignored when constructing the log-likelihood. The log-likelihood function for our seemingly unrelated bivariate probit is given by:

Table 13: Variable Definitions – Treatment Equation

Variable	Definition	Source
Law	Indicator variable = 1 if borrower is from a location with a law at some point; 0 otherwise	Appendix A
Market share	State's market share of subprime loans, lagged one year	Calculated from HMDA and HUD's subprime lender list
Urban	State's urban population percentage	Census 2000
Nonwhite	State's nonwhite population percentage	Census 2000
Politics	Ratio of Democrats to Republicans in state legislatures, 2000	2002 Statistical Abstract of the U.S.

Table 14a: Descriptive Statistics – Dependent and Control Variables

Variable	Application Sample Mean	Application Sample Std. Dev.	Origination Sample Mean	Origination Sample Std. Dev.	Rejection Sample Mean	Rejection Sample Std. Dev.
Application	0.205	0.404	---	---	---	---
Origination	---	---	0.097	0.296	---	---
Rejection	---	---	---	---	0.429	0.495
Market share	10.0%	2.8%	9.7%	2.7%	10.5%	2.7%
Urban	81.7%	12.4%	82.0%	12.1%	82.2%	12.6%
Nonwhite	26.6%	10.8%	26.6%	10.7%	27.4%	11.1%
Politics	2.370	1.790	2.415	1.818	2.232	1.673
Income (thousands $)	80.8	109.5	87.4	108.5	64.0	65.4
Loan2inc	2.054	3.993	2.043	2.057	2.062	2.548
Relinc	1.106	0.321	1.134	0.326	1.019	0.287
Minority	24.5%	24.1%	23.5%	23.1%	30.3%	27.4%
Vacant	8.5%	7.0%	8.2%	7.1%	9.1%	6.2%
Population	1.9%	2.0%	1.9%	2.0%	2.0%	1.9%
Unemployment	4.7%	2.3%	4.6%	2.3%	5.0%	2.3%

Table 14b: Descriptive Statistics – Identification Variables

Variable	Application Sample Mean	Std. Dev.	Origination Sample Mean	Std. Dev.	Rejection Sample Mean	Std. Dev.
Law	0.631	0.482	0.627	0.484	0.666	0.472
Postlaw	0.623	0.485	0.646	0.478	0.597	0.490
lneffect	0.397	0.489	0.410	0.492	0.407	0.491
ca	0.215	0.411	0.208	0.406	0.277	0.447
ct	0.039	0.193	0.037	0.188	0.041	0.199
fl	0.040	0.196	0.039	0.192	0.036	0.186
ga	0.052	0.221	0.049	0.216	0.060	0.238
ma	0.186	0.389	0.199	0.399	0.143	0.350
md	0.289	0.453	0.318	0.466	0.214	0.410
nc	0.070	0.254	0.059	0.235	0.085	0.279
oh	0.060	0.238	0.054	0.226	0.071	0.258
pa	0.039	0.193	0.030	0.171	0.059	0.236
tx	0.011	0.105	0.008	0.090	0.014	0.116
lawca	0.197	0.398	0.190	0.392	0.261	0.439
lawct	0.010	0.100	0.009	0.097	0.010	0.099
lawfl	0.029	0.166	0.027	0.163	0.026	0.159
lawga	0.024	0.154	0.024	0.152	0.026	0.160
lawma	0.135	0.342	0.148	0.356	0.094	0.292
lawmd	0.144	0.351	0.152	0.359	0.122	0.327
lawnc	0.029	0.168	0.023	0.150	0.038	0.192
lawoh	0.036	0.186	0.031	0.174	0.047	0.212
lawpa	0.026	0.160	0.021	0.143	0.040	0.196
lawtx	0.002	0.040	0.001	0.035	0.001	0.038
postlawca	0.136	0.343	0.133	0.340	0.188	0.391
postlawct	0.025	0.157	0.025	0.157	0.025	0.155
postlawfl	0.024	0.153	0.024	0.153	0.021	0.143
postlawga	0.029	0.167	0.029	0.167	0.031	0.175
postlawma	0.128	0.334	0.143	0.350	0.085	0.278
postlawmd	0.185	0.389	0.207	0.405	0.133	0.339
postlawnc	0.036	0.186	0.032	0.177	0.041	0.198
postlawoh	0.032	0.176	0.029	0.169	0.037	0.189
postlawpa	0.021	0.143	0.017	0.129	0.029	0.169
postlawtx	0.007	0.081	0.005	0.073	0.007	0.086
Sample size	**590,543**		**394,198**		**89,536**	

(5) $\quad L = \sum_i \ln \Phi_2 \left(w_i^1, w_i^2, \rho \right)$

(Φ_2(.)denotes the standard bivariate normal cumulative density function, $w_i^1 = \left(2\pi_i^1 - 1 \right) X_i^1 \beta^1$,

and $w_i^2 = \left(2\pi_i^2 - 1 \right) (X_i^2 \beta^2 + \pi_i^1 \gamma)$ The function is maximized by choosing the parameters β^1, β^2, γ and ρ in SAS version 9.1 for Windows.

Results

We estimate the model specified in equations (3), (4) and (5) using maximum likelihood. Table 15 provides the estimated coefficients, the standard error of the estimate, and the marginal impact of each variable at a specified interval and evaluated at the mean of all other variables.[21] (See Page 29.) Table 15 contains four panels (a-d). To aid comparison across outcomes, each panel provides the results for all three outcomes (application, origination and rejection). Panel (a) provides the results for the treatment equation. Panel (b) provides the results for the control variables in the outcome equations. Panel (c) and (d) provide the results for the identification variables used in the outcome equations.

In panel (a), consistent with the HUD-Treasury report, the results show that states are more likely to introduce and pass legislation in locations with more urban and nonwhite households. State legislatures with more Republicans are more likely to have predatory lending laws. Locations with more subprime lending are also associated with a higher probability of enacting a law. In addition, results are consistent across the three samples associated with each outcome.

The results in panel (b) largely meet expectations that location, borrower and mortgage information indicating economic stress are positively associated with the probability of applying for a subprime loan. For instance, subprime applications are positively associated with lower borrower income, higher loan-to-income ratios, lower income census tracts, higher concentrations of minority populations, lower population growth rates and higher unemployment rates. However, subprime applications are negatively associated with higher vacancy rates. This may partly reflect the need of many subprime applicants to have substantial equity in their home to compensate for weak credit history.

The results for originations are very similar to the application results. Again, in general,

indicators of economic stress (borrower income, lower-income census tracts, minority status and unemployment rates) are associated with higher probabilities of originating a subprime loan. However, higher vacancy rates, lower population growth rates and higher loan-to-income ratios are all negatively associated with subprime origination probabilities. Again, the vacancy results may indicate the need for housing equity in the underwriting of subprime loans to compensate for other weaknesses in the loan application. In addition, consistent with the population growth results, Pennington-Cross (2002) found that subprime loans were the largest part of the mortgage market in locations where economic conditions were stressful but improving.

The results for the rejection equations also show that, in general, more adverse economic conditions (lower borrower income, higher loan-to-income ratio, lower-income census tracts, higher property vacancy, declining population growth and higher unemployment rates) are all associated with a higher probability of rejection. In addition, the results cannot find a statistically significant relationship between minority presence and the probability of being rejected.

Panel (c) includes control variables for the time period before and after the law is in effect as well as indicators of each law sample (control and treatment loans or applications). The excluded law sample is North Carolina, so that coefficients should be interpreted as relative to the North Carolina law sample. However, there is no expected sign, magnitude or statistical significance of these variables. The coefficients on law sample dummy variables (e.g., *ca, ct, fl, ga*, etc.) are additive with the intercept, which represents the intercept for the North Carolina law sample. In addition, all the interactions of each state's law sample with the variables *Law* and *Postlaw* (e.g., *lawca, postlawca, lawct, postlawct, lawfl, post-lawfl*, etc.) are additive relative to the variables *Law* and *Postlaw*, which represents the North Carolina law sample. While all the variables included in panel (b) do control for many factors, the variables in panel (c) control for all unobserved characteristics associated with the time period (pre-law versus post-law), law sample (law sample dummy variables) and the endogenously determined location (control locations versus treatment locations).

The main variable of interest is the *Ineffect* variable. This coefficient indicates whether the introduction of the law has had any impact on the application, origination or rejection of subprime

Table 15: Bivariate Probit Results – Base Model
Panel (a): Treatment (Law) Equation

Variable	Coeff.	Std. Err.	Marg. Eff.	Unit
Application Results				
Intercept	-12.300***	0.043	---	---
Market share	3.467***	0.101	0.0463	10%
Urban	14.744***	0.055	0.1450	10%
Nonwhite	2.670***	0.035	0.0359	10%
Politics	-0.197***	0.002	-0.0266	1
Origination Model				
Intercept	-13.533***	0.059	---	---
Market share	3.701***	0.131	0.0241	10%
Urban	16.039***	0.075	0.0734	10%
Nonwhite	3.128***	0.046	0.0205	10%
Politics	-0.188***	0.003	-0.0125	1
Rejection Model				
Intercept	-10.290***	0.098	---	---
Market share	1.073***	0.254	0.0176	10%
Urban	12.964***	0.126	0.1369	10%
Nonwhite	2.158***	0.083	0.0344	10%
Politics	-0.258***	0.005	-0.0449	1

*** indicates that the marginal effect is significantly different from zero at the 99 percent level. Marginal effects are estimated as the discrete change in probability as a variable deviates from its sample mean by an appropriate unit. The chosen units are reported in the last column.

loans on average. The coefficient estimates are negative and significant at the 99 percent level in the application equation and rejection equation and insignificantly different from zero in the origination equation.

To aid in economic interpretation, panel (d) provides estimates of the marginal impact of each of the identification variables. The marginal impacts can be interpreted as percentage point changes from the mean. Therefore, the impact of the variable *Law* is a 12.4 percentage point (coefficient = 0.124) increase in the probability of applying for a subprime loan relative to the average application rate of 20.5 percent. The average impact of a local predatory lending law, using the variable *Ineffect*, is a reduction of 4.9 percentage points in the probability of being rejected (mean = 42.2 percent), a decrease of 1.7 percentage points in applying (mean = 20.3 percent). These results indicate that the average local predatory lending law is associated with only a small or statistically insignificant change in the probability of applying for or originating a subprime loan, while at the same time a substantial reduction in the probability of being rejected on a subprime loan. Therefore, the previously observed substantial reduction in the flow of credit found in North Carolina is not typical.

Table 15: Bivariate Probit Results – Base Model (continued)
Panel (b): Outcome Equation – Control Variables

Variable	Coeff.	Std. Err.	Marg. Eff.	Unit
Application Results				
Intercept	-0.409***	0.021	---	---
Income	-0.165***	0.004	-0.0047	$10,000
Loan2inc	0.001**	0.000	0.0000	10%
Relinc	-0.420***	0.008	-0.0120	10%
Minority	0.431***	0.012	0.0127	10%
Vacant	-0.346***	0.101	-0.0099	10%
Population	-0.012***	0.002	-0.0034	1%
Unemployment	1.740***	0.243	0.0051	1%
Corr. Coeff. (_)	-0.329***	0.014	---	---
Log likelihood		-368,685		
Origination Model				
Intercept	-0.895***	0.033	---	---
Income	-0.131***	0.007	-0.0022	$10,000
Loan2inc	-0.016***	0.002	-0.0003	10%
Relinc	-0.335***	0.013	-0.0056	10%
Minority	0.546***	0.019	0.0096	10%
Vacant	-0.707***	0.166	-0.0115	10%
Population	0.004*	0.002	0.0007	1%
Unemployment	1.450***	0.389	0.0025	1%
Corr. Coeff. (_)	-0.236***	0.021	---	---
Log likelihood		-183,048		
Rejection Model				
Intercept	-0.011	0.048	---	---
Income	-0.048***	0.008	-0.0019	$10,000
Loan2inc	0.020***	0.003	0.0008	10%
Relinc	-0.256***	0.020	-0.0101	10%
Minority	0.007	0.026	0.0003	10%
Vacant	0.855***	0.246	0.0340	10%
Population	-0.017***	0.004	-0.0068	1%
Unemployment	1.189**	0.579	0.0047	1%
Corr. Coeff. (_)	-0.134***	0.030	---	---
Log likelihood		-68,018		

*, **, *** indicate that the marginal effect is significantly different from zero at the 90 percent, 95 percent and 99 percent levels. Marginal effects are estimated as the discrete change in probability as a variable deviates from its sample mean by an appropriate unit. The chosen units are reported in the last column.

Table 15: Bivariate Probit Results – Base Model (continued)
Panel (c): Outcome Equation – Identification Variables

Variable	Application Sample		Origination Sample		Rejection Sample	
	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.
Law	0.973***	0.058	0.941***	0.098	0.091	0.120
Postlaw	-0.051**	0.021	-0.267***	0.035	0.279***	0.048
lneffect	-0.034***	0.011	0.000	0.017	-0.119***	0.026
ca	-0.686***	0.033	-0.665***	0.052	-0.065	0.074
ct	-0.073***	0.028	-0.133***	0.045	-0.079	0.060
fl	-0.089***	0.033	-0.204***	0.055	0.067	0.078
ga	0.155***	0.026	-0.049	0.042	0.309***	0.057
ma	0.069***	0.022	0.063*	0.035	-0.093*	0.049
md	-0.380***	0.019	-0.443***	0.031	-0.009	0.045
oh	-0.167***	0.024	-0.309***	0.040	0.234***	0.054
pa	0.038	0.028	0.141***	0.045	-0.093	0.057
tx	0.047	0.034	0.131**	0.060	0.104	0.073
lawca	-0.157***	0.056	-0.230**	0.095	0.089	0.111
lawct	-0.574***	0.050	-0.685***	0.084	0.254**	0.112
lawfl	-0.861***	0.065	-0.855***	0.110	0.181	0.140
lawga	-0.533***	0.050	-0.572***	0.084	0.135	0.113
lawma	-0.781***	0.049	-0.864***	0.084	-0.050	0.107
lawmd	-0.502***	0.051	-0.679***	0.087	0.249**	0.103
lawoh	-0.325***	0.049	-0.400***	0.083	0.012	0.109
lawpa	-0.343***	0.047	-0.465***	0.080	0.129	0.104
lawtx	-0.883***	0.080	-0.748***	0.134	0.135	0.181
postlawca	0.175***	0.025	0.459***	0.040	-0.579***	0.056
postlawct	-0.067**	0.031	0.244***	0.050	-0.564***	0.072
postlawfl	0.157***	0.032	0.246***	0.054	-0.107	0.074
postlawga	-0.020	0.031	0.261***	0.052	-0.487***	0.069
postlawma	-0.157***	0.026	0.060	0.042	-0.393***	0.059
postlawmd	0.045*	0.024	0.317***	0.039	-0.461***	0.054
postlawoh	0.078***	0.028	0.306***	0.047	-0.252***	0.063
postlawpa	0.051*	0.029	-0.053	0.049	0.001	0.064
postlawtx	-0.015	0.047	-0.024	0.082	-0.311***	0.102

*, **, *** indicate that the marginal effect is significantly different from zero at the 90 percent, 95 percent and 99 percent levels.

Table 15: Bivariate Probit Results – Base Model
Panel (d): Outcome Equation – Marginal Effect for Identification Variables

Variable	Application	Origination	Rejection
Law	0.124	0.084	-0.052
Postlaw	-0.015	-0.048	0.110
Ineffect	-0.017	-0.032	-0.049
ca	-0.166	-0.088	-0.026
ct	-0.021	-0.021	-0.031
fl	-0.025	-0.031	0.026
ga	0.047	-0.008	0.123
ma	0.020	0.011	-0.037
md	-0.103	-0.068	-0.003
oh	-0.045	-0.044	0.093
pa	0.011	0.026	-0.036
tx	0.014	0.024	0.041
lawca	-0.104	-0.089	0.036
lawct	-0.148	-0.094	0.101
lawfl	-0.191	-0.103	0.072
lawga	-0.145	-0.087	0.053
lawma	-0.207	-0.128	-0.018
lawmd	-0.152	-0.122	0.099
lawoh	-0.102	-0.077	0.004
lawpa	-0.099	-0.072	0.051
lawtx	-0.201	-0.103	0.054
postlawca	0.038	0.073	-0.221
postlawct	-0.017	0.044	-0.209
postlawfl	0.046	0.044	-0.042
postlawga	-0.008	0.046	-0.192
postlawma	-0.046	0.006	-0.152
postlawmd	0.015	0.059	-0.179
postlawoh	0.022	0.054	-0.099
postlawpa	0.015	-0.018	-0.002
postlawtx	-0.005	-0.012	-0.122

Marginal effects are estimated as the discrete change in probability as the variable is increased from 0 to 1, while holding all other variables at their mean.

Table 16: Bivariate Probit Results – Augmented Models with Scaled Local Law Index

Variable	Model II			Model III		
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Application Results						
Law index	-0.005***	0.001	-0.0067	---	---	---
Coverage index	---	---	---	0.054***	0.005	0.0584
Restriction index	---	---	---	-0.059***	0.005	-0.0454
Origination Results						
Law index	-0.001	0.002	-0.0006	---	---	---
Coverage index	---	---	---	0.050***	0.009	0.0337
Restriction index	---	---	---	-0.049***	0.008	-0.0218
Rejection Results						
Law index	-0.016***	0.003	-0.0318	---	---	---
Coverage index	---	---	---	-0.016	0.013	-0.0215
Restriction index	---	---	---	-0.017	0.011	-0.0191

*** indicates that the marginal effect is significantly different from zero at the 99 percent level. Note: Marginal effects for the indexes are estimated as change in probability as an index deviates from its mean by one standard deviation. Standard deviations are as reported in Table 5.

Results—Strength of the Law

While the average law may only have modest impacts on the flow of credit, it may be that relatively more stringent laws have a larger impact. In general, it is expected that stronger laws should be associated with larger reductions in applications and originations. In addition, stronger laws may reduce rejections by deterring marginal applications or through increased screening by lenders to ensure compliance with the predatory lending law.
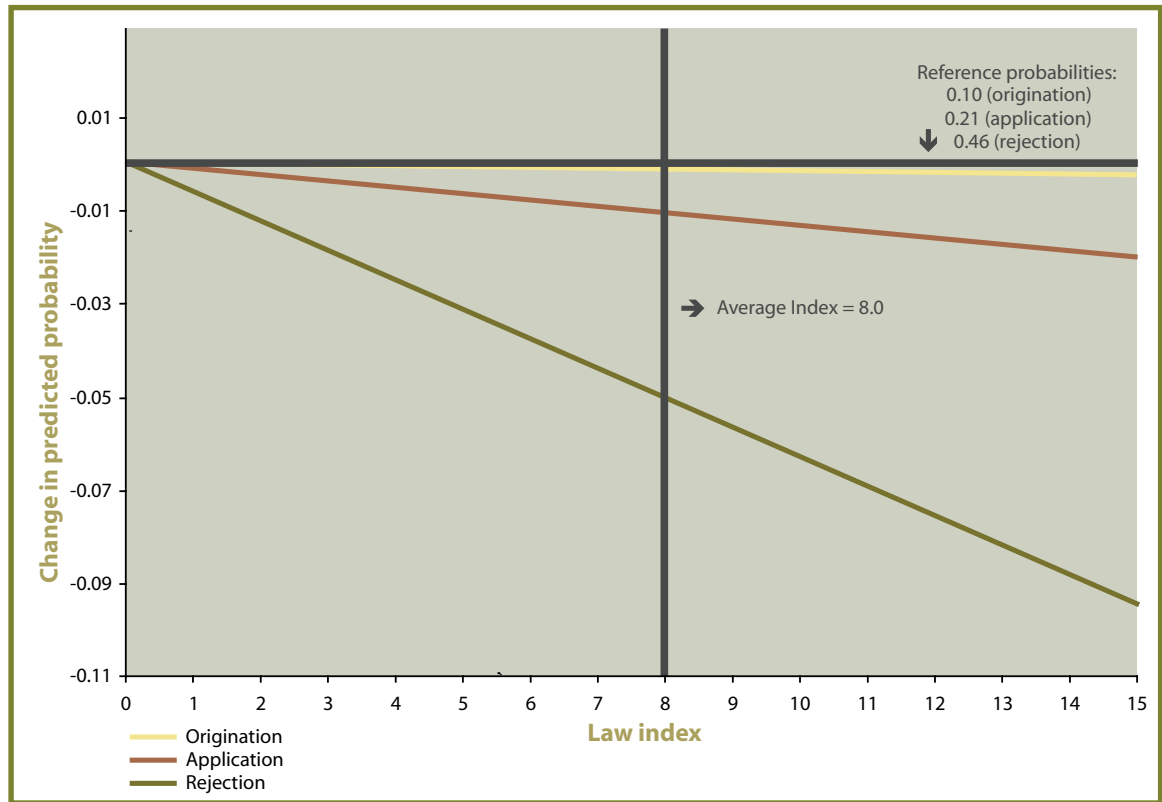
To gauge the potential relevance of a law's strength, we estimated two additional models. Model II replaces the *Ineffect* variable with the scaled law index in the outcome equation, and Model III replaces the full law index with the disaggregated law index along the dimensions of coverage and restrictions. The results (coefficient, standard error and marginal effects) are reported in Table 16.[22]

In Model II, the coefficient estimates indicate that stronger laws are associated with lower probabilities of applying for a subprime loan and being rejected on a subprime application. However, law strength had no impact on the probability of originating a subprime loan. Again, the magnitude of the impact is very small on the probability of applying. For example, the marginal impact, measured by a one standard deviation increase in the index from the mean, is only -0.67 percentage points in the application equation. In contrast, the marginal impact is much larger for rejection (-3.18 percentage points). This is highlighted in Figure 2, which plots the change in the probability of the outcome (apply, originate and reject) relative to the strength of the law. (See Page 34.)

The strength of the law can also be measured along the dimensions of coverage and restrictions. The impact of restrictions should be unambiguous. Assuming appropriate substitutes cannot be found, more restrictions on allowable lending should lead to less lending because lenders are required to tighten lending standards, thus reducing the number of eligible applicants. Therefore, originations should be lower for stronger laws, and likely applications

Figure 2: Impact of Local Law Index on the Flow of Credit

Reference probabilities:
0.10 (origination)
0.21 (application)
0.46 (rejection)

Average Index = 8.0

Origination
Application
Rejection

Note: All other variables are set to their mean, and the law index is increased from 0 to the maximum observed value using Model II. Probabilities are indicated by fractions so that 0.05 is a 5 percent probability.

will be deterred due to the reduced availability of loan types. As shown in Figure 3 and using the coefficients from Model III, laws with more restrictions are associated with reduced probabilities of applying and originating subprime loans. For example, a one standard deviation increase in the scaled restrictions index reduces the probability of applying by 5.9 percentage points, the probability of originating by 4.9 percentage points.

The impact of increased coverage of a law, after controlling for restrictions, is largely an empirical question. Figure 4 and Model III in Table 16 report that laws with broader coverage tend to be associated with increased originations and applications. In fact, the coefficient estimates are very similar in magnitude, although of opposite signs, to the impact of stronger restrictions. For example, the marginal impact of a one standard deviation increase in coverage increases the probability of applying for a subprime loan by 5.4 percentage points and the probability of originating a subprime loan by 5.0 percentage points. One interpretation of these results is that negative press on predatory lending in the subprime market has suppressed de-

mand for the product. Individuals are more willing to apply for a loan that is covered by a predatory lending law, even if it has few restrictions. In other words, the demand for subprime credit can actually increase when a predatory lending law is enacted.
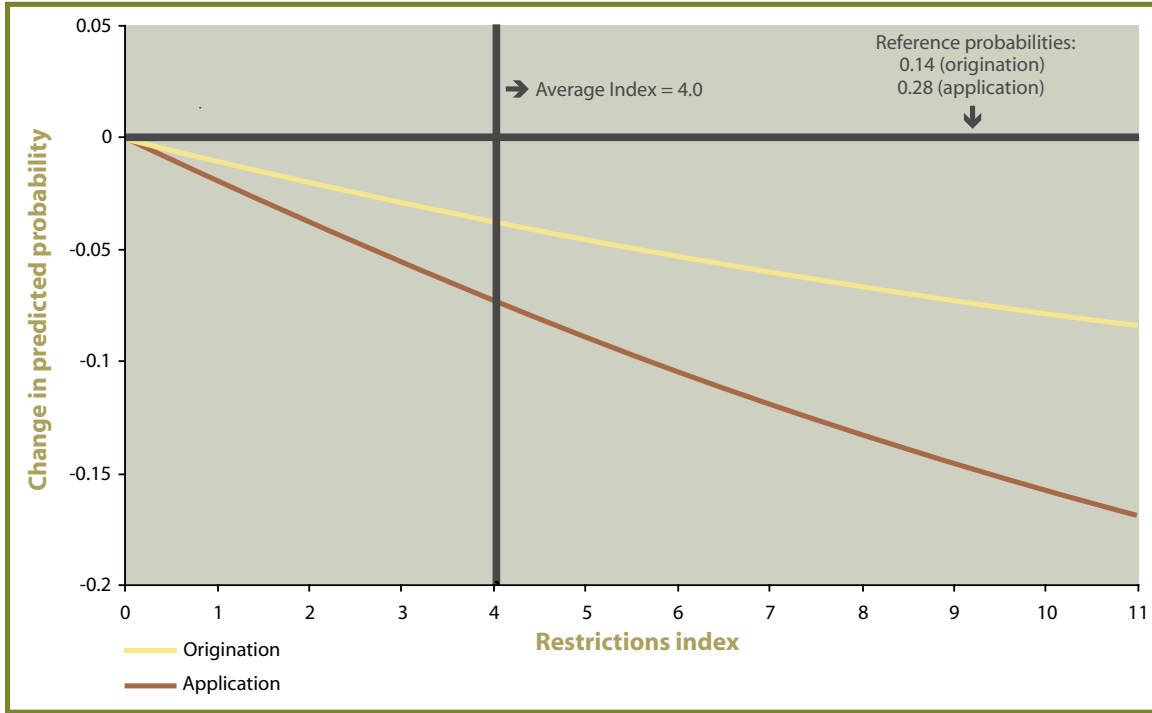
However, there is no statistically significant evidence that the makeup of the law has any impact on the probability of being rejected. Instead, it is the overall strength that is associated with lower rejection probabilities.

Conclusion

Starting with North Carolina in 1999, states and other localities across the United States have introduced legislation intended to curb predatory and abusive lending in the subprime mortgage market. These laws usually extend the reach of HOEPA by including home purchase and open-end mortgage credit, lowering the APR and fees-and-points triggers, and prohibiting and/or restricting the use of balloon payments and prepayment penalties on covered loans.
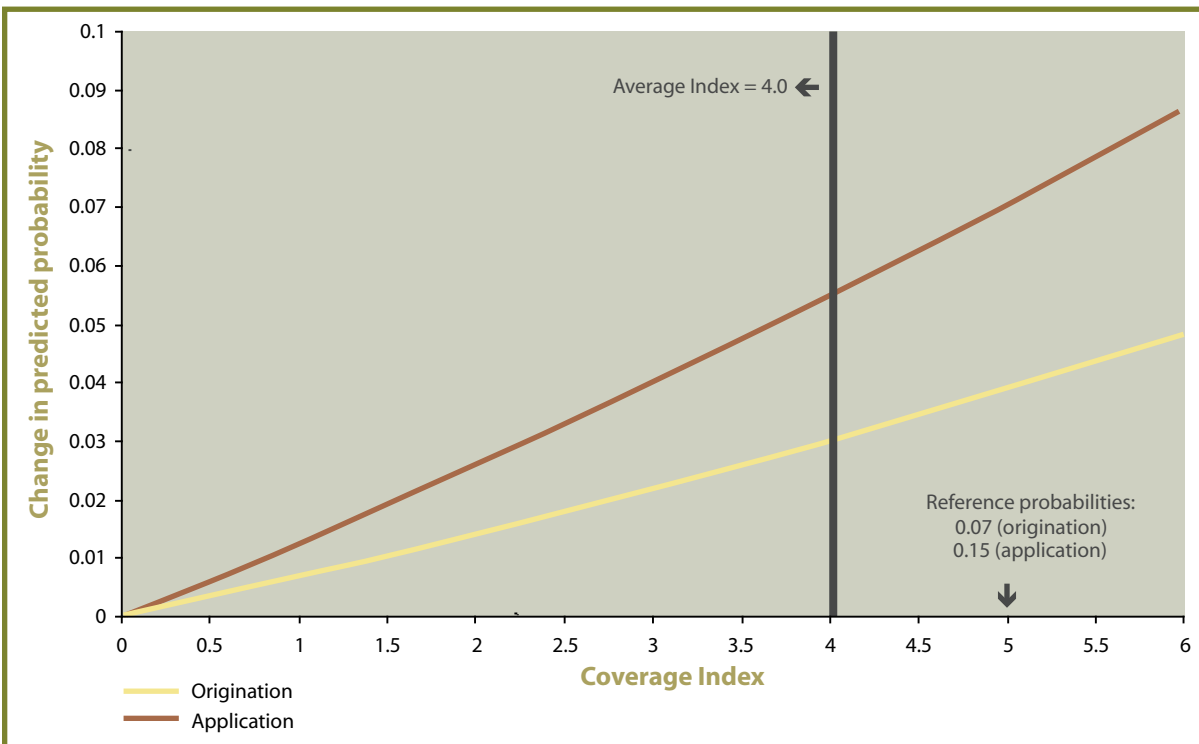
While prior literature found evidence that the North Carolina law did reduce the flow of credit, the results in this paper indicate that the typical

Figure 3: Impact of Restrictions Index on the Flow of Credit

Reference probabilities:
0.14 (origination)
0.28 (application)

➜ Average Index = 4.0

Change in predicted probability

Restrictions index

—— Origination
—— Application

Note: All other variables are set to their mean, and the coverage index is increased from 0 to the maximum observed value using Model III. Probabilities are indicated by fractions so that 0.05 is a 5 percent probability.

Figure 4: Impact of Coverage Index on the Flow of Credit

Average Index = 4.0 ⬅

Change in predicted probability

Reference probabilities:
0.07 (origination)
0.15 (application)

Coverage Index

—— Origination
—— Application

Note: All other variables are set to their mean, and the restrictions index is increased from 0 to the maximum observed value using Model III. Probabilities are indicated by fractions so that 0.05 is a 5 percent probability.

law has little impact on the flow of subprime credit as measured by loan origination and application. However, rejections do decline by over 10 percent for the typical law. The reduction in rejections may reflect less aggressive marketing, additional prescreening by lenders, increased self-selection by borrowers or other factors. While a reduction in rejection rates may not have been the intent of the predatory lending law, it does indicate that borrowers are benefiting by saving nonrefundable application costs when rejected for a subprime loan.

However, not all local predatory lending laws are created equal. The results indicate that the heterogeneity in law strength can help further explain the mechanisms that make one law decrease the flow of credit and another actually increase the flow of credit. The strength of law is measured along two dimensions: coverage and restrictions. Some laws provide broad coverage of the subprime market (Colorado) and others very little coverage (Texas). Some have substantial restrictions (Georgia) on allowable lending, while others have few restrictions (Maine). The results indicate that coverage and restrictions tend to have opposite impacts. In general, laws with more extensive restrictions are associated with larger decreases in the flow of credit. In fact, laws with the strongest restrictions can decrease applications by over 50 percent. In contrast, laws with broad coverage can increase applications by even more than 50 percent. Therefore, although on the surface local predatory lending laws seem to have little impact, the design of the law can stimulate the subprime market, depress the subprime market or leave volumes relatively steady but with lower rejection rates. As a result, the design of the law can have economically important impacts on flow and makeup of the mortgage market.

In future research, it would be helpful to determine how product mix adjusts to the introduction of these laws. For example, the laws make no distinction between initial interest rates on fixed-rate and adjustable-rate loans. But adjustable-rate loans tend to have lower initial rates, resulting in substitution rather than fewer loans, and can include teaser terms that temporarily reduce the rate below the benchmark. Therefore, adjustable-rate loans may be one way to avoid the trigger APR levels in predatory lending laws and shift a borrower out from under the protective coverage of the regulations. There also may be a regulatory burden associated with these laws that needs to be passed on to consumers through higher interest rates and upfront fees. Lastly, these laws may reduce the availability of the secondary market, leading to liquidity issues in the subprime market, which may also increase the cost of credit. ■

Endnotes

1. Laws are first enacted by the local legislature and become effective typically at a later date. It is not until the law becomes effective that lenders are required to follow the new rules and restrictions.

2. See HUD-Treasury report and Federal Reserve HOEPA Final Rule (Federal Reserve, 2002).

3. These numbers are derived from type B&C loans. B&C loans are loans with less than A or prime-quality loans. See the *Mortgage Markets Statistics Annual* published by Inside Mortgage Finance for more details on loan classification schemes.

4. In addition, these loans may be unaffordable and subject to high rates of foreclosure because of predatory interest rates and fees and not borrower or property characteristics.

5. Federal Reserve System, 12 CFR Part 226, Regulation Z; Docket No. R-1090, Truth in Lending.

6. Typical closing fees include transfer taxes, appraisal fees, recording fees, title search fees and other processing fees.

7. A call provision is a provision in the mortgage that allows the lender to require the borrower to repay all of the remaining balance on the loan prior to the scheduled final payment.

8. The estimated 1.94 percent coverage rate was calculated for all loans in the LoanPerformance ABS database without local (state, county or city) predatory lending laws in effect. To help account for any reactions leading up to the date of the law's enactment, the analysis does not include loans made in the six-month period before the 2002 regulations went into effect. Using the same methodology, we also calculated the percent of loans covered by HOEPA after the regulation was in effect until the end of 2004. These results indicate that, after the law went into effect, only 0.01 percent of loans were covered.

9. Every attempt was made to include all laws in effect by the end of 2004 that, similarly to HOEPA, use triggers to define a class of loans eligible for restrictions and disclosures. Because other laws are likely to exist, those discussed here should be viewed as a sample of all state and local predatory lending laws. Appendix C lists lending laws that are not focused on high-cost or subprime lending and do not have any triggers. (See Page 55.)

10. The law in Cleveland was determined to be restrictive and was assigned four points despite not neatly falling into any of the categories.

11. Another option is that the reduced flow of credit in the subprime market is matched by an increased flow of credit in the prime market, that is, prime loans are being substituted for subprime loans. Research in North Carolina has found no evidence of this type of substitution (Ernst, Farris and Stein 2002; Quercia, Stegman and Davis 2003; Harvey and Nigro 2004; and Elliehausen and Staten 2004).

12. Details provided by the May 14, 2004, presentation by Frank Raiter, managing director, Standard & Poor's "Evaluating Anti-Predatory Lending Laws: S&P's Approach." The Mortgage Bankers Association of America also reprints the S&P reports on each local lending law for its association members, available at www.mbaa.org.

13. The results are very similar if the loan limits are not applied to reduce the sample.

14. www.huduser.org/datasets/manu.html, accessed on 2/1/05. HUD generates a list of subprime lenders from industry trade publications and HMDA data analysis, and phone calls to the lender confirmed the extent of subprime lending. Since this list is defined at the lender level, loans made by the subprime lender may include both prime and subprime loans. In addition, subprime loans made by predominately prime lenders will also be incorrectly identified as prime lending. Therefore, an alternative interpretation of the loans identified using the HUD subprime lender list is that it identifies the extent of specialized subprime lending, not full-service lending.

15. The Texas sample consists of counties on the Texas-Louisiana border. Since all sampled Texan counties (Harrison, Marion, Newton, Orange, Panola, Sabine, Shelby) are rural, few subprime lenders were identified in the data and, hence, the number of subprime loans might be deceptively small, especially in 2000. This might explain the unusually large percentage increases in application and origination for Texas.

16. *Low-income* is defined to include household income less than or equal to 80 percent of the county median household income as reported in the 2000 census. The minority category includes black and Hispanic applicants as reported in HMDA.

[17] Detailed results are available upon request.

[18] We only include a 10 percent random sample of each location to enhance computational feasibility. We also estimate using 25 and 50 percent random samples and find that results are robust across sample sizes.

[19] The rejection sample excludes loans that were withdrawn by the applicant and loan files that were closed for incompleteness.

[20] The application and origination samples include both subprime and prime loans.

[21] See Appendix D for details on the calculation of marginal effects in the bivariate probit model.

[22] To conserve space, all the control variables are not reported, but are available on request. In addition, specification tests were conducted, including both the variable *Ineffect* and the law indexes. In all cases, the *Ineffect* variable was insignificant and is not reported.

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Appendix A: Predatory Lending Laws—Provision Chart

	Arkansas	California	Chicago, Ill.	Cleveland, Ohio
Title of bill	HB 2598	AB 489	Predatory Lending Ordinance	Ordinance No. 737-02
Effective date	7/16/2003	7/1/2002	8/30/2000	7/29/2002
Coverage	A high-cost home loan includes an open-end credit plan but not a reverse mortgage, bridge or construction loan, where the total loan amount does not exceed $150,000.	A covered loan includes a consumer credit transaction in which the loan amount does not exceed $250,000 (to be adjusted every five years).	Loans secured by residential real property. Does not include loans with total loan amount over $250,000.	Loans secured by residential real property in Cleveland. Loans for business purposes are not included.
APR trigger (HOEPA: APR>T-bill + 8% for first lien; + 10% for second lien) *	Like HOEPA	APR > T-bill + 8%	APR > T-bill + 6% (first lien) or 8% (second lien)	APR>T-bill + 4.5% up to 8% for first lien or + 6.5% up to 10% for junior lien
Points-and-fees (P&F) trigger (HOEPA: P&F greater of 8% of total loan amount or $499 [for 2004]—the set dollar amount is adjusted annually according to CPI)	P&F > 5% of the total loan amount for loans =/> $75,000; or 6% of the total loan amount for loans < $75,000 but > $20,000; or 8% of the total loan amount for loans =/< $20,000	P&F >6% of the total loan amount	P&F > (1) 5% of the total loan amount if amount >=$16,000, or (2) $800 if loan amount < $16,000	None defined
Points-and-fees definition	All compensation paid directly or indirectly to a mortgage broker and the maximum prepayment penalties that may be charged or collected, but only if the prepayment penalties exceed 3% within the first 12 months, 2% within the second 12 months, or 1% if within the third 12 months.	All upfront lender and broker compensation	All compensation paid directly or indirectly to a mortgage broker, the premium of any life or health insurance	All compensation paid directly or indirectly to mortgage broker
Prepayment penalties	Fees incorporated in the loan balance are prohibited.	No prepayment penalty after the first 36 months; penalty allowed within the first 36 months only if: the consumer has been offered a choice of another product without prepayment penalty; the terms are disclosed at least three days before closing; prepayment penalty is limited to six months' advance interest on the amount prepaid in any 12-month period in excess of 20% of original principal balance; no penalty if in default; no financing of penalty on a new loan.	Prohibits prepayment penalties that apply 36 months after loan origination or that are more than 3% of total loan amount (first 12 months) or 2% (second 12 months) or 1% (third 12- month period).	Prohibited
Loan counseling	Required	Availability of counseling must be disclosed.	No provision	Required
Ability to repay	No lending without due regard to ability to pay	Total monthly debt payments should not exceed 55% of monthly gross income.	Monthly debts should not exceed 50% of gross income. This applies only to borrowers whose income is no greater than 120% of the Chicago MSA median family income.	Total monthly debt payments should not exceed 55% of monthly gross income.
Balloon payments	No provision	No balloons allowed in the first five years.	No balloons allowed in the first five years.	No balloon that is more than twice as large as the average of earlier scheduled payments. Does not apply to loans less than one year.

	Arkansas	California	Chicago, Ill.	Cleveland, Ohio
Assignee liability	S&P indicative loss severity of 196%	No liability for an assignee that is a holder in due course, but violations of major protections render those terms unenforceable.	Not available	S&P indicative loss severity of 37%
Financing of fees	Prohibited	Prohibits financing of points and fees in excess of 6% of the original principal balance less points and fees or $1,000, whichever is greater.	Prohibits financing of points and fees in excess of 6% of the loan amount	Prohibits financing of points and fees in excess of 4% of the total loan amount if the loan is >=$16,000, or $800 if the loan is <$16,000
Mandatory arbitration limiting judicial relief	Prohibited	No provision	No provision	Prohibited
Financing of credit life, disability, unemployment, or other life or health insurance premiums (except monthly premium)	Prohibits financing of single-premium credit insurance and cancellation agreements	Prohibits financing of single-premium credit insurance	Prohibits financing of single-premium credit life, credit disability, credit unemployment or any other life or health insurance	Prohibits financing of single-premium credit life, credit disability, credit unemployment, or any other life or health insurance, directly or indirectly into one or more loans

	Colorado	Connecticut	Cook County, Ill.	Florida
Title of bill	HB 1259	HB 6131	Cook County Predatory Lending Ordinance	SB 2262
Effective date	1/1/2003	10/1/2001	6/17/2001	10/2/2002
Coverage	Like HOEPA	Any loan or extension of credit, including an open-end line of credit but excluding a reverse mortgage transaction	Loan made secured by residential real property. Does not include loans with total loan amount over $250,000.	Like HOEPA
APR trigger (HOEPA: APR>T-bill + 8% for first lien; + 10% for second lien) *	Like HOEPA	Like HOEPA	APR > T-bill + 6% (first lien) or 8% (second lien)	Like HOEPA
Points-and-fees (P&F) trigger (HOEPA: P&F> greater of 8% of total loan amount or $499 (for 2004) - the set dollar amount is adjusted annually according to CPI)	P&F > 6% of the total loan amount	Prepaid finance charges cannot exceed the greater of 5% of the principal amount or $2,000.	P&F > (1) 5% of the total loan amount if amount >=$16,000, or (2) $800 if loan amount < $16,000	Like HOEPA
Points-and-fees definition	Not mentioned	Fees, points, commissions, broker's fees or commissions, transaction fees or similar finance charges, any fees or commissions paid to the lender associated with insurance products or unrelated goods or services	All compensation paid directly or indirectly to a mortgage broker, the premium of any life or health insurance. Does not include taxes, filing fees, charges paid to public officials or government agencies, bona fide and reasonable fees paid to third party	Not mentioned
Prepayment penalties	Permitted during the first 36 months of the loan. Should not exceed six months' interest for prepayment within the first three years. No prepayment fees or penalties can be charged for prepayment: (1) after the third year of the loan; (2) when refinancing with the same lender; or (3) a partial prepayment. The lender must offer the option of choosing a loan product without a prepayment fee.	Penalty cannot exceed 3% of prepaid balance within one year; 2% between one and two years, and 1% between two and three years. Prepayment penalty not allowed if debts >/= 50% of monthly gross income. Payment of the fee cannot be through a refinancing by the lender or its affiliate (no wrapping of fees into the new loan amount).	Penalties not allowed in the first 36 months or, when more than 3% of the total loan amount (first 12 months) or 2% (second 12 months) or 1% (third 12-month period).	Penalties are permitted only during the first 36 months of the loan if (1) the borrower has been offered a choice of another product without a prepayment penalty, and (2) the borrower has been given a written disclosure at least three business days prior to origination.
Loan counseling	No lending without cautionary notice	No lending without cautionary notice	No provision	No provision
Ability to repay	No lending without due regard to ability to pay. Violation is presumed if the creditor engages in a pattern or practice of making loans without verifying and documenting consumers' repayment ability. The lender may consider stated income.	No lending without due regard to ability to pay.	Monthly debts should not exceed 50% of the borrower's gross income. Applies to borrowers whose income is no greater than 120% of the Chicago MSA median family income.	No lending without due regard to ability to pay
Balloon payments	No balloons payable less than 120 months or 10 years after consummation.	No balloons for 7-year or less term loans (does not apply to bridge loans with maturities of less than one year or to loans connected with the acquisition or construction of a dwelling)	No balloons payable less than 180 months after consummation	Balloon payments for a loan with a term of less than 10 years prohibited.

	Colorado	Connecticut	Cook County, Ill.	Florida
Assignee liability	S&P indicative loss severity 119%	Not available at this time	Not available	S&P indicative loss severity 119%
Financing of fees	No provision	No provision	Prohibits financing of points and fees in excess of 6% of the loan amount.	No provision
Mandatory arbitration limiting judicial relief	No mandatory arbitration	No mandatory arbitration or waiver of participation in a class action	No provision	No provision
Financing of credit life, disability, unemployment, or other life or health insurance premiums (except monthly premium)	No financing of credit insurance	May not offer single-premium credit insurance without also offering it on a monthly basis, and the right to cancel.	Prohibits the financing of single-premium credit life, credit disability, credit unemployment, or any other life or health insurance	No provision

Continued—Appendix A: Predatory Lending Laws—Provision Chart

	Georgia	Illinois	Indiana	Kentucky
Title of bill	HB 1361 as amended by SB 53	SB 1784	HB 1229 (Public law 73)	HB 287
Effective date	Pre-amendment: 10/1/2002; post-amendment: 3/7/2003	1/1/2004	3/24/2004	6/24/2003
Coverage	A high-cost home loan includes an open-end credit plan but not a reverse mortgage.	A high-risk home loan is a home equity loan (i.e., not a purchase money loan) other than an open-end loan. *Home equity loan* means any loan secured by the borrower's primary residence where the proceeds are not used as purchase money for the residence.	A high-cost home loan is a home loan excluding an open-end credit plan and a reverse mortgage.	A high-cost home loan includes a loan other than an open-end credit plan or a reverse mortgage, where the principal amount of the loan is greater than $15,000 and does not exceed $200,000.
APR trigger (HOEPA: APR>T-bill + 8% for first lien; + 10% for second lien) *	Covered loan: APR> higher of 4% (5.5% for second lien) above prime rate or 2% (3% for second lien) above 90-day standard delivery commitment with comparable term. High-cost loan: Like HOEPA. "Net benefit to borrower" protection kicks in on first liens at higher of Fannie/Freddie plus 2% or prime plus 4%, on second liens at higher of Fannie/Freddie plus 3% or prime plus 5.5%.	APR > T-bill + 6% for first lien; + 8% for junior lien	Like HOEPA	Like HOEPA
Points-and-fees (P&F) trigger (HOEPA: P&F> greater of 8% of total loan amount or $499 (for 2004) - the set dollar amount is adjusted annually according to CPI)	Covered loan: P&F>3% of total loan amount. High-cost loan: P&F > 5% of the total loan amount for loans =/> $20,000, or the lesser of 8% of the total loan amount or $1,000 for loans < $20,000) (up to two bona fide discount points may be excluded).	P&F > the greater of 5% of the total loan amount or $800 (to be adjusted annually)	P&F > 5% of the loan principal for loans >=$40,000; or 6% of the loan principal for loans <=$40,000	Like HOEPA
Points-and-fees definition	All compensation paid directly or indirectly to a mortgage broker (includes yield spread premiums); premiums for credit life, credit accident, credit health, loss of income, debt cancellation; the maximum prepayment penalties two discount points if loan rate is within 1% of 90-day Fannie/Freddie rate.	All compensation paid directly or indirectly to a mortgage broker; premiums for credit life, credit disability, credit unemployment, or any other life or health insurance that is financed directly or indirectly into the loan.	All compensation paid directly or indirectly to a mortgage broker. Excludable: up to 1.5 discount points in indirect broker compensation, if the terms of the loan do not include prepayment penalties>2% of the home loan principal; reasonable fees paid to an affiliate of the creditor.	Not mentioned in the bill
Prepayment penalties	No prepayment penalties after the last day of the 24th month of the loan or penalties in excess of: (1) 2% during the first 12 months or (2) 1% during the second 12 months.	No prepayment penalties after the first 36 months. Prepayment penalty cannot exceed 3% of the total loan amount if the prepayment is made within the first 12 months; 2% within the second 12 months; and 1% within the third 12 months.	Prohibits prepayment penalty exceeding 2% of the HCL amount prepaid during the first 24 months after closing. No prepayment penalty after the second year. No prepayment penalty without an option of choosing a loan product without a prepayment penalty.	Prepayment penalty prohibited if charged more than 36 months after the loan closing or whichever exceeds 3% of the amount prepaid during the first year, 2% during the second year and 1% during the third year.
Loan counseling	Required	Prohibits lending without a counseling notice and disclosure	Required	Prohibits lending without making an educational video, approved by the Department of Financial Institutions available to the borrower .

	Georgia	Illinois	Indiana	Kentucky
Ability to repay	Total monthly debt payments do not exceed 50% of monthly gross income.	Prohibits lending without regard to repayment ability	Prohibits lending without due regard to repayment ability	Prohibits lending without regard to repayment ability
Balloon payments	Prohibited	No balloon payments for loans under 15 years	No balloon payments within 10 years	Prohibited
Assignee liability	Assignee is liable for all claims and defenses related to a home loan S&P indicative loss severity 110% (post amendment March 2003)	S&P indicative loss severity 110%	Not available	S&P indicative loss severity 275%
Financing of fees	No provision	No financing of points and fees in excess of 6% of the total loan amount	Prohibits financing of points and fees	No financing of any prepayment fees or penalties and points and fees (some are excluded) in excess of 4% of the total amount financed if the proceeds of the high-cost home loan are used to refi-nance an existing high-cost home loan held by the same lender
Mandatory arbitration limiting judicial relief	Prohibited	Prohibits "mandatory arbitration provision that is oppressive, unfair, or substantially in derogation of the rights of the borrower"	Prohibits mandatory arbitration	Prohibited unless the clause complies with rules set forth by AAA.
Financing of credit life, disability, unemployment, or other life or health insurance premiums (except monthly premium)	Applies to any home loan: No financing of various insurance payments and payments for debt cancellation agreements that pro-vide for cancellation of borrower's liability	Prohibits financing of single-premium credit insurance	Prohibits financing of any life or health insurance	Prohibits financing of single-premium credit insurance

Continued—Appendix A: Predatory Lending Laws—Provision Chart

	Maine	Maryland	Massachusetts	Nevada
Title of bill	LD 494 (Public law 49)	HB 649	Chapter 268 of 2004 and Regulation 209 CMR 53.00	AB 284 (chapter 465 of 2003)
Effective date	4/17/2003	5/16/2002	3/22/2001	10/1/2003
Coverage	A high-rate, high-fee mortgage threshold is reached by either the APR trigger or the P&F trigger.	A covered loan's threshold is reached by either the APR trigger or the P&F trigger.	A high-cost home mortgage loan is consumer credit transaction secured by the borrower's principal dwelling, excluding a reverse mortgage. Its threshold is reached by either the APR trigger or the P&F trigger.	A home loan's threshold is reached by either the APR trigger or the P&F trigger.
APR trigger (HOEPA: APR>T-bill + 8% for first lien; + 10% for second lien) *	Like HOEPA	APR > T-bill + 7% (first lien) or 9% (junior lien)	APR>T-bill+8% (1st lien); +9% (2nd lien)	Like HOEPA
Points-and-fees (P&F) trigger (HOEPA: P&F> greater of 8% of total loan amount or $499 [for 2004] - the set dollar amount is adjusted annually according to CPI)	Like HOEPA	P&F > 7% of the total loan mount or $499 (for 2004)	P&F>max(5% total loan amount); $400 (adjusted annually)	Like HOEPA
Points-and-fees definition	Not mentioned	Not mentioned	All prepayment penalties incurred in a refinance by the same lender, all compensation paid directly or indirectly to a mortgage broker, the cost of all premiums financed directly or indirectly by the creditor for SPCI.	Not mentioned/found
Prepayment penalties	No provision	No provision	Prohibited after 36 months from the date of the note. Otherwise, the penalty cannot exceed the balance of the first year's interest or three months interest (whichever is less). If prepayment is due to refinancing of a loan in another financial institution, an additional payment up to three months interest may be required.	Prohibits financing of a prepayment fee or penalty in connection with a refinancing
Loan counseling	No provision	Prohibits lending without providing the borrower with a written recommendation that the borrower seek home-buyer education or housing counseling	Prohibits lending without home ownership counseling	No provision
Ability to repay	No provision	Prohibits lending without due regard to repayment ability (does not apply if the borrower's gross monthly income exceeds 120% of the median family income)	Prohibits lending without due regard to repayment ability	Prohibits lending without due regard to repayment ability
Balloon payments	No provision	No provision	Prohibited	No provision

	Maine	Maryland	Massachusetts	Nevada
Assignee liability	Not available	Not available	S&P indicative loss severity 116%	S&P indicative loss severity 268%
Financing of fees	No points and fees may be charged during refinancing of an existing high-rate loan, high-fee mortgage owned by the same creditor and the last financing was within 18 months of the current refinancing	No provision	Prohibits financing of points and fees in excess of the greater than 5% of the total loan amount or $800	No provision
Mandatory arbitration limiting judicial relief	No provision	No provision	Prohibited	No provision
Financing of credit life, disability, unemployment, or other life or health insurance premiums (except monthly premium)	Prohibits selling of single-premium credit insurance without also offering its sale on a monthly basis	Prohibits the financing of single-premium credit insurance. Also, the lender cannot require a borrower to purchase property insurance coverage against risk to any improvement in an amount exceeding the replacement value of improvements.	Prohibits financing of single-premium credit insurance (applies to a home mortgage loan)	Prohibits financing of credit insurance

	New Jersey	New Mexico	New York	North Carolina
Title of bill	AB 75	SB 449	AB 11856	HB 1149 as amended by HB 1182 (Oct. 1, 2003)
Effective date	11/27/2003	1/1/2004	4/1/2003	7/21/2000 (high-cost loan); 10/1/1999 (consumer home loans)
Coverage	A high-cost home loan includes an open-end credit plan, but not a reverse mortgage, in which the principal amount of the loan does not exceed $350,000 (adjusted annually).	A high-cost home loan includes an open-end credit plan but not a reverse mortgage or a bridge loan.	A high-cost home loan includes an open-end credit plan but not a reverse mortgage, in which the principal amount does not exceed the lesser of: (1) conforming loan size limit for a comparable dwelling as established by Fannie Mae, or (2) $300,000.	High-cost home loans, including open-end lines of credit transactions but excluding reverse mortgages, where principal amount (or the borrower's initial maximum credit limit, in case of open-end lines of credit) does not exceed lesser of: (1) conforming loan size limit for single-family dwelling as established by Fannie Mae, or (2) $300,000. Note: HB1149 excluded open-end lines of credit (as well as reverse mortgages) from the definition of high-cost loan.
APR trigger (HOEPA: APR>T-bill + 8% for first lien; + 10% for second lien) *	Like HOEPA	Interest rate > T-bill + 7% for first lien; T-bill + 9% for subordinate lien	APR > T-bill +8% for a first lien and +9% for a second lien	Like HOEPA
Points-and-fees (P&F) trigger (HOEPA: P&F> greater of 8% of total loan amount or $499 [for 2004] - the set dollar amount is adjusted annually according to CPI)	P&F > 4.5% of the total loan amount for loans =/> $40,000, the lesser of 6% of the total loan amount or $1,000 for loans <$20,000, and 6% of the total loan amount for loans =/>$20,000 but <$40,000	P&F > 5% of the principal loan amount for loans =/> $20,000; the lesser of $1,000 or 8% of the principal loan amount for loans < $20,000	P&F > 5% of total loan amount for loans in the amount of $50,000 or more; 6% of total loan amount for loans in the amount of $50,000 that are purchase-money loans guaranteed by FHA or VA; or the greater of 6% of total loan amount or $1,500 for loans up to $50,000.	P&F> 5% of total loan amount if loan =/> $20,000; or lesser of 8% of total loan amount of $1,000 if loan < $20,000. Certain items may be excluded from the calculation of P&F.
Points-and-fees definition	All compensation paid directly or indirectly to a mortgage broker; premiums financed directly or indirectly for credit or other insurance or suspension agreement; all prepayment fees or penalties that are incurred by the borrower if the loan refinances a previous loan made or currently held by the same creditor or its affiliate. Excludable: the sum of the conventional prepayment penalties.	All compensation paid directly or indirectly to a mortgage broker; premiums financed directly or indirectly for credit or other insurance or suspension agreement; all prepayment fees or penalties that are incurred by the borrower if the loan refinances a previous loan made or currently held by the same creditor or its affiliate. Excludable: the sum of the conventional prepayment penalties.	All compensation paid directly or indirectly to a mortgage broker; premiums financed directly or indirectly for credit or other insurance or suspension agreement	Compensation paid directly by borrower to mortgage broker, cost of all premiums for credit and other insurance financed by lender, maximum prepayment penalties allowed under loan document, finance charges except interest or the time-price differential, certain real estate related fees
Prepayment penalties	There used to be a "prepayment penalty trigger" (after 30 months or >2% amount prepaid) in the old bill but it was either removed or not passed. "Conventional prepayment penalty" may be charged under some conditions, but not clear what "conventional" means.	Prohibited	Prohibits financing of points and fees (and prepayment fees or penalties) when the current high-cost loan is refinanced by the same creditor or its affiliate's high-cost loan	Prohibited on all loans below $150,000 (not only high-cost loans).
Loan counseling	Required	Required	Required	Required

	New Jersey	New Mexico	New York	North Carolina
Ability to repay	Total monthly debts do not exceed 50% of monthly gross income	No provision	Total monthly debts do not exceed 50% of monthly gross income	Total monthly debt payments do not exceed 50% of monthly gross income.
Balloon payments	Prohibited	Prohibited	Prohibits balloon payments during the first 15 years after origination..	Prohibited
Assignee liability	S&P indicative loss severity 196% (home loan, covered home loan), 110% (refinancing only)	S&P indicative loss severity 110% (high-cost loan)	S&P indicative loss severity 163%	S&P indicative loss severity 275%.
Financing of fees	Financing of points and fees in amount > 2% of the total loan amount is prohibited.	Prohibits financing of points and fees in excess of 2% of the principal loan amount.	No financing of points and fees in amount > 3% of the principal amount of the loan (or, for refinancing, 3% of the additional proceeds received). No financing of points and fees (and prepayment fees or penalties) when the current HCL is refinanced by the same creditor or its affiliate's high-cost loan.	No financing of points and fees or any charges payable to third parties. Also, no financing of prepayment fees or penalties in a refinancing by the same creditor or its affiliate.
Mandatory arbitration limiting judicial relief	Any provision that allows a party to require a borrower to assert any claim or defense in a forum that is less convenient, more costly or more dilatory for the resolution of a dispute than a juridical forum established in this state is unconscionable and void.	Prohibited	Prohibits mandatory arbitration	No provision
Financing of credit life, disability, unemployment, or other life or health insurance premiums (except monthly premium)	Prohibits financing of single-premium credit insurance. No financing of payments for debt cancellation or suspension agreements.	Prohibits financing of single-premium credit insurance	No financing of single-premium credit insurance, debt cancellation or suspension agreement payments. Also, no packing (selling credit life, accident and health, disability, or unemployment insurance products or unrelated goods in conjunction with HCL without a borrower's informed consent).	Prohibits financing of single-premium credit insurance (applies to consumer home loans)

Continued—Appendix A: Predatory Lending Laws—Provision Chart

	Ohio	Oklahoma	Pennsylvania	South Carolina
Title of bill	HB 386	SB 1481 as amended by HB 1574	SB 377	SB 438 (Act No. 42 of 2003)
Effective date	2/22/2002	1/1/2004	6/21/2001	1/1/2004
Coverage	A covered loan's threshold is reached by either the APR trigger or the points-and-fees trigger.	A "subsection 10 mortgage" excludes an open-end credit plan and a reverse mortgage.	A covered loan's original principal balance must be less than $100,000.	High-cost home loans exclude an open-end credit plan or a reverse mortgage, in which the principal amount does not exceed the conforming loan size limit for a comparable dwelling as established by Fannie Mae.
APR trigger (HOEPA: APR>T-bill + 8% for first lien; + 10% for second lien) *	Like HOEPA	Like HOEPA	Like HOEPA	Like HOEPA
Points-and-fees (P&F) trigger (HOEPA: P&F> greater of 8% of total loan amount or $499 [for 2004] - the set dollar amount is adjusted annually according to CPI)	Like HOEPA	Like HOEPA	Like HOEPA	P&F>5% of total loan amount for loans >= $20,000; minimum of 8% total loan amount; $1000 for loans <$20,000, or 3% of total loan amount for non-real estate secured manufactured housing transaction if the total loan amount is >= $20,000
Points-and-fees definition	Like HOEPA	All compensation paid to a mortgage broker; premium for credit life, accident, health or other insurance or debt cancellation coverage	Not mentioned	All compensation paid directly or indirectly to a mortgage broker; premium or other charges for credit life, accident and other insurance and debt-cancellation coverage (does not apply to premiums paid on a monthly basis)
Prepayment penalties	Prohibited, unless imposed in accordance with HOEPA	Prepayment penalty allowed if: (1) monthly debt payments <= 50% of the consumer's monthly gross income; (2) the penalty does not apply to funds from refinancing; (3) the penalty does not exceed 2% of the loan amount prepaid in the first 12 months or 1% of the loan amount prepaid in the second 12 months; (4) the penalty does not apply after two years.	Prepayment penalty allowed within the first 60 months. The loan product must also be available without a prepayment penalty; no prepayment penalty if refinanced loan owned by same lender.	Prohibited if the loan amount <= $150,000 (applies to consumer home loans) and prohibits financing of prepayment fees or penalties in a refinancing by the same creditor or its affiliate
Loan counseling	No provision	No provision	No provision	Prohibits lending without home ownership counseling
Ability to repay	Prohibits lending without due regard to repayment ability	Prohibits lending without due regard to repayment ability	Prohibits lending without due regard to repayment ability	Prohibits lending without due regard to repayment ability
Balloon payments	Prohibits balloon payments for loans with a term of less than five years (does not apply to bridge loans with a maturity of less than one year)	No balloon payments for loans with a term less than five years	No balloon payments unless such balloon payment becomes payable not less than 120 months after the date of the loan	Prohibited
Assignee liability	Not available	Not available	Not available	S&P indicative loss severity 196%
Financing of fees	No provision	No provision	Prohibits charging of points and fees in connection with refinancing of covered loans	Financing of points and fees exceeding 2.5% of total loan amount is prohibited.

Continued—Appendix A: Predatory Lending Laws—Provision Chart

	Ohio	Oklahoma	Pennsylvania	South Carolina
Mandatory arbitration limiting judicial relief	No provision	Prohibited	No provision	No provision
Financing of credit life, disability, unemployment, or other life or health insurance premiums (except monthly premium)	Prohibits financing of single-premium credit insurance within 30 days	Prohibits selling of single-premium credit insurance, unless insurance on a monthly basis is also offered and the borrower is provided a special notice	Prohibits selling of single-premium credit insurance, unless insurance on a monthly basis is also offered and the borrower is provided a special notice	Prohibits financing of single-premium credit insurance (applies to consumer home loans)

Continued—Appendix A: Predatory Lending Laws—Provision Chart

	Texas	Utah	Washington, D.C.	Wisconsin
Title of bill	SB (Chapter 622 of 2001)	HB 160	DC Bill B14-0515	AB 792
Effective date	9/1/2001	1/30/2004	01/28/03	4/15/2004
Coverage	A high-cost home loan is a loan, excluding an open-end account or a reverse mortgage, but including residential mortgage transactions if the total loan amount is >= $20,000, in which the principal amount does not exceed half of the maximum conventional loan limit established by Fannie Mae.	A high-cost mortgage is reached by either the APR trigger or the points-and-fees trigger.	A mortgage loan, secured by property located in the District of Columbia (including an open-end line of credit, but not including a mortgage loan insured or guaranteed by a state or local authority, the District of Columbia Housing Finance Agency, the Federal Housing Administration, or the Department of Veteran Affairs, or a reverse mortgage transaction)	A consumer transaction excluding an open-end credit plan and a reverse mortgage
APR trigger (HOEPA: APR>T-bill + 8% for first lien; + 10% for second lien) *	Like HOEPA	Like HOEPA	APR > T-bill + 6% (first lien) or 7% (second lien)	Like HOEPA
Points-and-fees (P&F) trigger (HOEPA: P&F> greater of 8% of total loan amount or $499 [for 2004]. The set dollar amount is adjusted annually according to CPI.)	Like HOEPA	Like HOEPA	P&F > 5% of the total loan mount	P&F > 6% of total loan amount
Points-and-fees definition	Like HOEPA	Like HOEPA	Like HOEPA	Does not include reasonable fees paid to affiliates and nonaffiliates of the lender for bona fide services listed in 12 CFR 226.4c(7)
Prepayment penalties (PP)	Prohibited	Prohibits PP more than 36 months after origination. No PP exceeding the total amount of interest paid at 80% of the immediately preceding six scheduled payments; no PP if the loan is paid with the proceeds of a new loan by the same lender or affiliate	Prohibited	No PP after 36 months and without the option of choosing a loan product without a PP. PP may not exceed 60 days' interest at the contract rate on the amount prepaid on fixed-rate loans over $25,000 if the borrower prepays more than 20% of the original loan amount within 36 months. No PP on loans of $25,000 or less and on adjustable loans
Loan counseling	No provision	No provision	Borrowers must be informed of their right to obtain counseling.	No provision
Ability to repay	Prohibits lending without due regard to repayment ability	No provision	Borrower's income must be no greater than 120% of median family income.	Prohibits lending without due regard to repayment ability
Balloon payments	Prohibited after the first 60 months	No provision	Prohibits balloons where a scheduled payment is more than twice as large as the average of earlier scheduled monthly payments unless the balloon payment becomes due and payable not less than seven years after the date of the loan closing.	Prohibited

	Texas	Utah	Washington, D.C.	Wisconsin
Assignee liability	Not available	Not available	S&P indicative loss severity 137%	Not available
Financing of fees	No provision	Prohibits financing of points and fees in an amount exceeding 8% of the total loan amount unless the specific disclosures are made no later than three business days prior to consummation	Refinances within the first 18 months with the same lender cannot finance, directly or indirectly, any portion of the loan's origination/discount points and fees or other fees payable to the lender or any third party in excess of the greatest of 3% of the new covered loan principal amount actually funded, $400, or such amount as the mayor may establish by regulation.	No provision
Mandatory arbitration limiting judicial relief	No provision	Prohibited unless they comply with the Utah Uniform Arbitration Act	No oppressive mandatory arbitration clause	No provision
Financing of credit life, disability, unemployment, or other life or health insurance premiums (except monthly premium)	Prohibits offering single-premium credit insurance without a special notice (applies to home loans).	Prohibits single-premium credit insurance, debt cancellations and suspension agreements	A lender shall not sell any individual or group credit life, accident, health, or unemployment insurance product on a prepaid single-premium basis.	Prohibits direct or indirect financing of single-premium credit insurance products

Notes: APR is compared with the yield on Treasury securities with comparable periods of maturity to the loan term. For comparison purposes, the lender must reference yields from the Federal Reserve's H.15 release as of the 15th day of the month immediately preceding the month in which the application is received. Kansas also has a law (SB 301, Chapter 107 of 1999), which became effective on 4/14/1999. Due to difficulties including the law in the current framework, it is not included in the chart. Sources: www.butera-andrews.com/state-local/b-index.htm; www.mbaa.org/resources/predlend/; Standard & Poor's Anti-predatory lending update (Sept. 20, 2004). Italics indicate that the provisions were difficult to ascertain.

Appendix B: City and County Predatory Lending Bills

City/County	Bill Title	Status
Atlanta	Predatory Lending Ordinance	Approved September 2001 Enjoined from enforcing November 2001
Baltimore		Known to have once proposed predatory lending ordinance. Current status unknown.
Chicago	Predatory Lending Ordinance	Passed Aug. 30, 2000
Cleveland Heights, Ohio	Ordinance 72-2003	Passed June 2, 2003
Cleveland, Ohio	Ordinance 737-02	Passed April 23, 2002 Effective July 29, 2002 Note: Ordinance passed after state already passed pre-emption law and upheld by court. Revised ordinance 45-03 effective Jan. 15, 2003
Cook County, Ill.	Cook County Predatory Lending Ordinance	Passed April 17, 2001 Effective 60 days after
Dayton, Ohio	Ordinance 29990-01	Passed July 11, 2001 Challenged by lawsuit Seems to have been ruled to be pre-empted
DeKalb County, Ga.	Predatory Lending Ordinance	Passed June 2001 Ruled unconstitutional November 2001
Denver		Known to have once proposed predatory lending ordinance. Current status unknown.
Detroit		Passed December 2002 Vetoed January 2003
Los Angeles	Ordinance 01-1476	Passed Nov. 22, 2002 Final approval December 2002 Pending due to unspecified legal dispute
New York	IN67-A	Passed Sept. 25, 2002 Vetoed by mayor Veto overridden Nov. 20, 2002 Pre-empted by state and federal law January 2004
Oakland, Calif.	Ordinance 12361	Passed Oct. 2, 2001 Challenged by American Financial Services Association (AFSA) lawsuit Oct. 15, 2001 Upheld by court June 2002 Appealed by AFSA, pending Supreme Court decision
Philadelphia	Bill 715	Passed April 2001 Pre-empted by state law June 2001
Pittsburgh	Ordinance 1676	Current status unknown
Sacramento, Calif.		Proposed August 2001 Status unknown. Some sources say the controversial ordinance was altered into an education program against predatory lending.
Toledo, Ohio	Ordinance 271-03	Originally, ordinance 291-02 was passed Nov. 5, 2002, then held up by court stays. Ord. 271-03 (revision of 291-02) was passed July 22, 2003. Stayed due to pending lawsuit by AFSA.
Washington, D.C.	Predatory Lending Bill	First passed in April 2001 and was to go into effect in June 2001 Underwent four-month suspension Seems to have eventually passed in 2002

Appendix C: Laws that Apply to the Prime and Subprime Mortgage Market

	Idaho	Michigan	Minnesota	Mississippi
Bill's title	SB 1389	HB 6121	SF 2988	HB 1522 as amended by HB 788
Effective date	7/1/2004	12/23/2002	1/1/2003	HB 1522 on 7/1/2002 and amended on 4/20/2004

	New Hampshire	Tennessee	Washington	West Virginia
Bill's title	SB 99	SB 3455	HB 1205 as amended by HB 6338 and HB 1150	SB 418 as amended by HB 4379
Effective date	1/1/2005	1/1/2005	2001 and last amended on 4/15/2003.	SB 418 in July, 2001 and amended 2/4/2002

Appendix D: Marginal Effects Calculations

As Greene (1996) documented, the calculation of marginal effects in the general bivariate probit model is quite involved. It is further complicated by the presence of an endogenous variable on the right-hand side of the second equation as well as interaction terms. We consider marginal effects for various types of variables in the model.

First, consider the treatment equation (3a). In our model, all the variables in X^1 are continuous. Marginal effects are estimated by the discrete change in expected probability as a variable deviates from its mean by an appropriate unit. The bivariate probability is:

(6) $P(\pi^1 = 1, \pi^2 = 1 \mid X^1, X^2) = \Phi_2(X^1\beta^1, X^2\beta^2 + \gamma, \rho)$

Second, consider the outcome equation (3b). The conditional mean function is:

(7)
$$E[\pi^2 \mid X^1, X^2] = P(\pi^1 = 1)E[\pi^2 \mid \pi^1 = 1, X^1, X^2] + P(\pi^1 = 0)E[\pi^2 \mid \pi^1 = 0, X^1, X^2]$$
$$= \Phi_2(X^1\beta^1, X^2\beta^2 + \gamma, \rho) + \Phi_2(-X^1\beta^1, X^2\beta^2, -\rho)$$

For a binary variable q in X^2, the marginal effect of q on π^1 is the discrete change in predicted values of π^2 as q switches from 0 to 1:

(8)
$$Meff = E[\pi^2 \mid X^1, X^2, q = 1] - E[\pi^2 \mid X^1, X^2, q = 0]$$
$$= [\Phi_2(X^1\beta^1, X^2\beta^2 + \gamma, \rho) + \Phi_2(-X^1\beta^1, X^2\beta^2, -\rho)] \mid q = 1$$
$$- [\Phi_2(X^1\beta^1, X^2\beta^2 + \gamma, \rho) + \Phi_2(-X^1\beta^1, X^2\beta^2, -\rho)] \mid q = 0$$

For a continuous variable z in X^2, again, marginal effects are calculated as discrete change in probability, using the formula for expected probability specified in (7).

For the endogenous binary variable π^1, the marginal effect on π^1 is the difference between two conditional probabilities.

(9)
$$Meff = E[\pi^2 \mid X^1, X^2, \pi^1 = 1] - E[\pi^2 \mid X^1, X^2, \pi^1 = 0]$$
$$= \frac{P(\pi^1 = 1, \pi^2 = 1 \mid X^1, X^2)}{P(\pi^1 = 1 \mid X^1)} - \frac{P(\pi^1 = 0, \pi^2 = 1 \mid X^1, X^2)}{P(\pi^1 = 0 \mid X^1)}$$
$$= \frac{\Phi_2(X^1\beta^1, X^2\beta^2 + \gamma, \rho)}{\Phi(X^1\beta^1)} - \frac{\Phi2(-X^1\beta^1, X^2\beta^2, -\rho)}{\Phi(-X^1\beta^1)}$$

Now we consider interaction terms of the form π^1*q, where q is a binary variable in π^2. According to Norton, Wang and Ai (2004), the full interaction effect is the double difference.

(10)
$$Meff = [E[\pi^2 \mid \pi^1 = 1, X^1, X^2, q = 1, \pi^1 * q = 1] - E[\pi^2 \mid \pi^1 = 1, X^1, X^2, q = 0, \pi^1 * q = 0]]$$
$$- [E[\pi^2 \mid \pi^1 = 0, X^1, X^2, q = 1, \pi^1 * q = 0] - E[\pi^2 \mid \pi^1 = 0, X^1, X^2, q = 0, \pi^1 * q = 0]]$$
$$= [\frac{\Phi_2(X^1\beta^1, X^2\beta^2 + \gamma, \rho)}{\Phi(X^1\beta^1)} \mid q = 1, \pi^1 * q = 1 - \frac{\Phi2(X^1\beta^1, X^2\beta^2 + \gamma, \rho)}{\Phi(X^1\beta^1)} \mid q = 0, \pi^1 * q = 0]$$
$$- [\frac{\Phi2(-X^1\beta^1, X^2\beta^2, -\rho)}{\Phi(-X^1\beta^1)} \mid q = 1, \pi^1 * q = 0 - \frac{\Phi2(-X^1\beta^1, X^2\beta^2, -\rho)}{\Phi(-X^1\beta^1)} \mid q = 0, \pi^1 * q = 0]$$

Intuitively, we first set π^1 to zero and calculate the change in probability as q changes its value from zero to one. We then do the same with π^1 set to one. The full interaction effect is the difference between these two quantities.

Lastly, for the interaction terms of the form q^1*q^2, where q^1 and q^2 are both binary variables in X^2, the full interaction effect is the double difference:

$$
\begin{aligned}
(11) \quad Meff = & [E[\pi^2 \mid X^1, X^2, q^1 = 1, q^2 = 1, q^1 * q^2 = 1] - E[\pi^2 \mid X^1, X^2, q^1 = 1, q^2 = 0, q^1 * q^2 = 0]] \\
& - [E[\pi^2 \mid X^1, X^2, q^1 = 0, q^2 = 1, q^1 * q^2 = 0] - E[\pi^2 \mid X^1, X^2, q^1 = 0, q^2 = 0, q^1 * q^2 = 0]]
\end{aligned}
$$

$E[\pi^2 | X^1, X^2]$ is the conditional mean function specified in (7).