

# How Do Predatory Lending Laws Influence Mortgage Lending in Urban Areas? A Tale of Two Cities

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## Abstract

This paper examines the effects of predatory lending laws in the cities of Chicago and Philadelphia. The level of mortgage activity in each of the cities is compared during the pre- and post-legislative periods relative to other parts of the state to assess the impact of localized legislation. In Chicago, where the predatory lending law focused on banks, a subprime origination in the city was found to be more likely to be made by a non-bank after the passage of the law. In Philadelphia, however, where the predatory legislation was aimed at all financial service providers, a decline was observed in the likelihood of a subprime loan being originated in the city during the post-legislation period, with the minority and low-income market segments experiencing the largest reduction.

## Introduction

Over the past decade the subprime mortgage market grew dramatically, increasing from \$34 billion in 1994 to over \$160 billion in 1999.<sup>1</sup> Concurrent with this expansion, there is a growing body of anecdotal evidence suggesting that a subset of lenders involved in the subprime market are engaging in abusive or “predatory” lending practices. To deal with these abuses, regulators recently implemented revisions to Regulation Z, a disclosure law that increased the number of loans covered by the Home Equity Protection Act (HOEPA).<sup>2</sup> These revisions to HOEPA, however, did not prohibit any lending practices. In recent months, however, several states and cities have gone beyond increased disclosure and implemented legislation that prohibits or penalizes certain “predatory practices.”<sup>3</sup> Federal policymakers have also proposed legislation on predatory lending that would preempt state laws and prohibit certain predatory practices on a nationwide basis.<sup>4</sup>

This study examines the impact of predatory lending legislation in two cities, Chicago and Philadelphia, which were the first to enact predatory lending laws. Because subprime lenders tend to focus their activity in low-income and minority

applicant areas, examining the impact of predatory legislation in these two cities is extremely important.<sup>5</sup> In Chicago, the impact of the predatory lending law on both borrowers and lenders in that city is examined relative to other borrowers in the state from the pre- to post-legislation period. The impact of the city of Philadelphia's predatory lending ordinance on subprime lending in the city is also examined, although the law was later rescinded by state-level legislation. Philadelphia is included because according to popular press reports the passage of the law led several lenders to exit the city.<sup>6</sup>

The study focuses on several important questions. First, did the restrictions imposed in Chicago and Philadelphia affect the availability of credit to subprime borrowers? Second, if so, what types of borrowers and lenders felt the greatest impact? Finally, given that the laws have different restrictions and penalties, how did they affect different types of lenders? It should be noted from the outset, however, that the data do not permit us to ascertain what part of any decline in mortgage lending was predatory in nature. The data employed in the study do not have information on pricing or other terms of the loans, and even if they did it would have required a value judgment to decide whether these terms were onerous enough to consider the loans to be predatory.<sup>7</sup> Although it is very likely the predatory lending laws reduced or eliminated some predatory practices, policymakers need also be concerned about their impact on legitimate subprime lending.

The article is organized as follows. First there is a review of the literature on subprime and predatory lending. Second, there is a brief overview of the Chicago and Philadelphia predatory legislation. Third, there is a description of the data and descriptive statistics on mortgage lending activity in Chicago and Philadelphia compared to the rest of Illinois and Pennsylvania, respectively. Fourth, empirical tests examine the changes in mortgage flows following the implementation of the city-level predatory lending laws. Specifically, the impact of the legislation on denial probabilities and changes in the likelihood of a loan being originated by a subprime versus a traditional lender, or a bank (depository) versus a non-bank lender are examined. Fifth, the results of the multivariate analysis are discussed. Finally, there is a summary conclusion with policy implications and areas of future research.

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## Literature Review

The term predatory lending, while commonly used, does not have a unique or agreed upon definition. Engel and McCoy (2001), however, broadly define a predatory loan as one that meets one or more of the following conditions: loans with no net benefit to the borrower, loans designed to earn supranormal profits, loans involving fraud or deceptive practices, loans involving other misleading nondisclosures that are nevertheless legal and loans that require the borrower to waive meaningful redress. Some of these practices include high points, high interest rates, high or duplicative closing costs and fees, loan-to-value ratios (LTV)

in excess of 100% of the underlying collateral, loan flippings, loan steering, excessive prepayment penalties, abusive collection and foreclosure practices and loan features such as negative amortization, balloon payments and unnecessary credit insurance.<sup>8</sup>

Loans with high interest rates, however, are not all necessarily predatory in nature. The higher interest rates charged on these loans may simply reflect higher risks and costs associated with “subprime” lending. Subprime loans are higher rate loans designed for borrowers with impaired or limited credit histories that make it difficult for them to secure credit from the prime market or traditional lenders.<sup>9</sup> Lenders argue that these higher rates are justified by the need to be compensated for the greater risk that these borrowers pose.<sup>10</sup> They also argue that the higher rates charged reflect a lack of standardization in underwriting that makes it more costly to originate and service loans to borrowers with blemished credit histories, limited discretionary income and cash-flow concerns.<sup>11</sup> Predatory lenders, however, may be defined as those that go beyond risk-based pricing and set loan terms high above what is necessary to offset costs and earn a return that compensates them for their risk. Given the lack of publicly available information on loan terms and practices, however, it is very difficult to distinguish between the two. It is generally agreed, however, that predatory lenders constitute a segment of the subprime market.

A significant amount of research on subprime lending activity has been conducted at the Department of Housing and Urban Development (HUD) where for the past several years researchers have compiled a list of subprime lenders.<sup>12</sup> Using this list, HUD and other researchers have documented the high rates of subprime lending in low-income and minority communities. For example, in 2000, HUD issued a report entitled “Unequal Burden: Income and Racial Disparities in Subprime Lending in America” documenting the concentration of these lenders in low-income and minority communities in five cities including Atlanta, Los Angeles, Baltimore, New York and Chicago. They found that subprime loans were three times more likely in low-income neighborhoods than in high-income neighborhoods and five times more likely in black neighborhoods than in white neighborhoods. More recently, the Bradford (2002) study on subprime lending patterns in all of the nation’s 331 metropolitan areas found that there are “widespread” racial disparities in subprime lending activity nationwide, and the top six areas with the most widespread disparities are all in California.<sup>13</sup>

Several other researchers have examined subprime lending. Immergluck (1999) focused on the growth rate of subprime lending in Chicago’s minority and low-income community. He found that prime lenders active in white and upper-income communities tended to be less active in minority and lower-income neighborhoods and that subprime lenders have filled this vacuum. Marsico (2001) examined 1999 Home Mortgage Disclosure Act (HMDA) data for New York and found similar patterns with subprime lenders having a greater presence in low-income and minority communities. Finally, Canner, Passmore and Laderman (1999) demonstrated that subprime lenders are oriented more toward low-income and

minority applicants and that changes in denial rates over the 1993 to 1998 time period can be partially attributed to the increase in the number of subprime lenders.

Two more recent papers, Elliehausen and Staten (2002) and Harvey and Nigro (2002), examined the impact of the North Carolina predatory lending law on access to credit. The North Carolina legislation was the first state-level predatory lending law in the United States. Although the authors employed different data sources, they arrived at similar conclusions. Using 1998-2000 HMDA data, Harvey and Nigro found that the North Carolina law reduced the overall level of subprime mortgage lending activity and that the impact of the legislation was different by both the type of financial service provider and borrower. Specifically, they found that non-bank subprime lending contracted faster in North Carolina when compared to the control group, while minority applicants were also less likely to get loans following the legislation. Also, Elliehausen and Staten found that the North Carolina law significantly reduced the supply of subprime credit.

This study extends Elliehausen and Staten (2002) and Harvey and Nigro (2002) by examining the impact of local legislation passed in the cities of Chicago and Philadelphia. This is the first study to examine city-level predatory lending legislation. Second, given the focus of the laws in each of the two cities, several unique hypotheses are presented that are specific to the city legislation.

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### Predatory Lending Laws in Chicago and Philadelphia

Chicago became the first city in the nation to impose sanctions on predatory lending when the City Council's finance committee passed an ordinance in August 2000.<sup>14</sup> Chicago's ordinance defines predatory loans as mortgages that have interest rates five percentage points or more higher than the yield on U.S. Treasury securities of comparable maturities.<sup>15</sup> The council blamed these types of loans for a rise in foreclosures and, by extension, in crime in and around vacant lots that can result from foreclosures.<sup>16</sup> Unlike other proposed federal and implemented state predatory initiatives, however, the focus of the Chicago law was on bank lenders, their mortgage subsidiaries, as well as banks buying "predatory" loans from a third party.<sup>17</sup> Specifically, the predatory ordinance bars the city of Chicago from investing any of its \$1 billion of municipal funds at banks with predatory loans on their books and from doing other business with such banks. Furthermore, the ordinance requires that banks acting as depositories for municipal funds certify that they do not fund predatory loans. It also requires a similar certification from banks that have other city contracts.<sup>18</sup> The Chicago Department of Housing and Mayors office believed that this leverage would promote good practices and responsible lending.

The Philadelphia predatory lending ordinance was passed in April 2001 and many believe that it was one of the toughest efforts aimed at eliminating predatory practices. The Philadelphia ordinance subjects "threshold" loans, defined as those

with rates 4.5 to 6.5 percentage points above Treasury securities of comparable maturity, to stringent restrictions and imposes even harsher penalties on “high-cost” loans, those with rates 6.5 percentage points over comparable Treasuries. These penalties include cash fines or loss of the city’s investment business depending on the terms and conditions. Furthermore, the Philadelphia ordinance also forces all lenders, even banks and credit unions that are exempt from some other provisions, to file disclosures with the city outlining the annual percentage rate and the points charged on each loan. Lenders in the city argued that the ordinance would make it harder for people with poor credit histories to get a loan and may force lenders to leave the market.<sup>19</sup> Lobbying by mortgage financial service providers in Philadelphia was eventually successful. On June 21, 2001, the Pennsylvania industry supported bill HB 1703 and provisions were enacted, including those preempting the Philadelphia predatory ordinance, but not before several lenders exited the city. Thus, this study attempts to determine if the passage and later repeal of the Philadelphia law had any impact on subprime lending.

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## The Data and Descriptive Statistics

### The Data

Quarterly HMDA data was collected for Illinois and Pennsylvania. In Pennsylvania, observations for the third and fourth quarters of 2000 and 2001 constitute the pre-law and post-law samples, respectively. Similarly, the Illinois pre-law sample includes the fourth quarter of 1999 and first quarter of 2000, and the post-law sample includes these identical quarters for the following year.<sup>20</sup> Matching the quarterly periods in each year controls for seasonal trends in mortgage application volume. The action date on the application is used to place observations in the quarterly groupings. For both samples the observations for the cities where laws were enacted, Philadelphia and Chicago, are compared with a control group of observations for the rest of the state.

The HUD subprime lender list was used to identify lenders whose principal business is subprime lending.<sup>21</sup> Low-income applicants are defined as those with annual incomes of less than \$25,000 as reported in HMDA data, while the minority grouping includes Black and Hispanic applicants. The race analysis includes only Caucasian, Black or Hispanic applications. Withdrawn applications are not included in the denial rate calculations, but are included in all other areas of the analysis.

### Chicago Loan Originations

Panels A1 and A2 of Exhibit 1 detail the number of loan originations in Illinois and Pennsylvania, respectively. The panels provide a breakdown of the originations and percentage shares in each market segment in the pre- and post-

**Exhibit 1** | Loan Originations by Market Segment in the Pre- and Post-Legislation Periods

	Total Orig.	Subprime	Percentage Subprime (%)	Prime	Percentage Prime (%)	Low Income	Percentage Low Income (%) <sup>a</sup>	Minority	Percentage Minority (%) <sup>b</sup>
<b>Panel A1: Illinois Total</b>									
Originations									
Chicago									
Pre-law	34,417	7,399	21.50	27,018	78.50	2,477	7.56	14,653	51.16
Post-law	42,808	6,026	14.08	36,782	85.92	1,665	4.21	15,698	44.13
Change	8,391	-1,373	-7.42	9,764	7.42	-812	-3.35	1,045	-7.03
Control Group									
Pre-law	115,790	13,675	11.81	102,115	88.19	6,447	5.76	15,912	16.33
Post-law	161,280	11,607	7.20	149,673	92.80	5,643	3.75	20,163	15.00
Change	45,490	-2,068	-4.61	47,558	4.61	-804	-2.01	4,251	-1.33
Growth Rates:									
Chicago	24.38%	-18.56%		36.14%		-32.78%		7.13%	
Control Group	39.29%	-15.12%		46.57%		-12.47%		26.72%	
Difference	-14.91%	-3.43%		-10.43%		-20.31%		-19.58%	
<b>Panel A2: Pennsylvania Total</b>									
Originations									
Philadelphia	51,359	7,488	14.58	43,871	85.42	4,617	9.33	6,592	17.21
Pre-law	85,317	6,857	78,460	91.96	3,732	4.76	6,489	10.29	
Post-law	33,958	-631	-6.54	34,589	6.54	-885	-4.57	-103	-6.92
Change									
Control Group									
Pre-law	90,549	12,478	13.78	78,071	86.22	10,023	11.34	3,560	5.11
Post-law	147,076	13,714	9.32	133,362	90.68	10,428	7.50	4,030	3.59
Change	56,527	1,236	-4.46	55,291			-3.84	470	-1.52

**Exhibit 1** | (continued)

Loan Originations by Market Segment in the Pre- and Post-Legislation Periods

	Total Orig.	Subprime	Percentage Subprime (%)	Prime	Percentage Prime (%)	Low Income	Percentage Low Income (%) <sup>a</sup>	Minority	Percentage Minority (%) <sup>b</sup>
Panel A2: Pennsylvania Total (continued)									
Growth Rates:									
Philadelphia	66.12%	-8.43%		78.84%		-19.17%		-1.56%	
Control Group	62.43%	9.91%		70.82%		4.04%		13.20%	
Difference	3.69%	-18.33%		8.02%		-23.21%		-14.76%	
Panel B1: Illinois Subprime Market									
Originations									
Chicago						1,080	15.21	4,543	80.87
Pre-law						505	9.05	3,584	76.94
Post-law						-575	-6.16	-959	-3.93
Change									
Control Group									
Pre-law						1,574	11.94	3,436	34.46
Post-law						974	8.98	2,918	35.47
Change						-600	-2.96	-518	1.01
Growth Rates									
Chicago							-53.24%		-21.11%
Control Group							-38.12%		-15.08%
Difference							-15.12%		-6.03%

**Exhibit 1** | (continued)

Loan Originations by Market Segment in the Pre- and Post-Legislation Periods

Total Orig.	Subprime	Percentage Subprime (%)	Prime	Percentage Prime (%)	Low Income	Percentage Low Income (%) <sup>a</sup>	Minority	Percentage Minority (%) <sup>b</sup>
Panel B2: Pennsylvania Subprime Market								
Originations								
Philadelphia					1,500	20.71	1,817	40.79
Pre-law					628	9.82	883	23.45
Post-law					-872	-10.89	-934	-17.34
Change								
Control Group								
Pre-law					2,541	20.85	752	11.11
Post-law					1,749	13.18	566	8.65
Change					-792	-7.67	-186	-2.46
Growth Rates								
Philadelphia					-58.13%		-51.40%	
Control Group					-31.17%		-24.73%	
Difference					-26.96%		-26.67%	
Panel C1: Illinois Prime Market								
Originations								
Chicago					1,397	5.44	10,110	43.91
Pre-law					1,160	3.42	12,114	39.18
Post-law					-237	-2.02	2,004	-4.73
Change								
Control Group								
Pre-law					4,873	4.94	12,476	14.26
Post-law					4,669	3.35	17,245	13.67
Change					-204	-1.59	4,769	-0.59



**Exhibit 1** | (continued)

Loan Originations by Market Segment in the Pre- and Post-Legislation Periods

Total Orig.	Subprime	Percentage Subprime (%)	Prime	Percentage Prime (%)	Low Income	Percentage Low Income (%) <sup>a</sup>	Minority	Percentage Minority (%) <sup>b</sup>
<b>Panel C1: Prime Market</b>								
Growth Rates								
Chicago					-16.96%		19.82%	
Control Group					-4.19%		38.23%	
Difference					-12.78%		-18.40%	
<b>Panel C2: Pennsylvania Prime Market</b>								
Originations								
Philadelphia					3,117	7.38	4,775	14.11
Pre-law					3,104	4.31	5,606	9.46
Post-law					-13	-3.07	831	-4.65
Change								
Control Group								
Pre-law					7,482	9.82	2,808	4.46
Post-law					8,697	6.90	3,464	3.28
Change					1,215	-2.92	656	-1.18
Growth Rates								
Philadelphia					-0.42%		17.40%	
Control Group					16.24%		23.36%	
Difference					-16.66%		-5.96%	
<i>Notes:</i>								
<sup>a</sup> Applications with missing income information are excluded in calculating the low-income share, but are included in the Total Originations column.								
<sup>b</sup> Only black, Hispanic and white applicants are included in the calculation of minority shares. All applicant races are included in the Total Originations column.								

legislation periods. The data in Panel A show that subprime lending declined significantly in Illinois in the post-legislation period as compared to the prior year, and that this lending declined slightly faster in Chicago than in the rest of the state. Chicago subprime originations declined by 18.6% compared with a 15.1% decline in the control group, or a 3.4% difference in growth rates. These subprime growth rates were compared with those that occurred in the prime market to put the subprime changes in context. This comparison reveals that Chicago experienced a larger relative contraction in the prime market than in the subprime market. Prime market lending expanded in both groups in the post-legislation period. In this market, Chicago lending grew slower than in the control group, with a 10.4% difference in growth rates. This compares with the smaller 3.4% difference in the subprime market, and suggests that the Chicago predatory lending law did not reduce the total volume of subprime lending in the city in 2001 compared with the control group. Since the law's provisions are expected to have a unique impact on bank (depository) lenders, the lending volumes for these lenders are examined separately in a later section.

Panel A1 of Exhibit 1 shows that both low-income and minority lending shares declined in Chicago compared with the control group. Panels B1 and C1 provide the results for the subprime and prime markets, respectively, which puts the changes in the subprime market into context. The results for minority lending are consistent with the overall sample, with subprime lending contracting less slowly than prime lending. In the prime market, minority lending expanded more slowly in Chicago than in the control group, with a difference in growth rates of 18.4%. In the subprime market, however, this gap was only 6.0%. Low-income applicants in the Chicago subprime market did not benefit from the relatively slower decline in overall subprime as compared to prime lending. For the low-income group, the relative declines in lending occurred in both the prime and subprime markets in similar magnitudes, with negative growth rate differentials in the Chicago markets of 15.1% and 12.8%, respectively. These comparisons suggest low-income applicants fared worse than minority applicants in the Chicago subprime market. This difference in relative lending declines is explored in the empirical models developed later.

### *Philadelphia Loan Originations*

Unlike the Chicago results, the data in Panel A2 in Exhibit 1 show a large decline in subprime lending in Philadelphia compared to the control group in the post-legislation period. Philadelphia subprime originations declined by 8.4% compared to an increase of 9.9% in the rest of the state, or an 18.3% difference in growth rates. Conversely, in the prime market Philadelphia lending grew 8.0% faster than in the rest of the state.

Not surprisingly, since low-income and minority applicants are over-represented in the subprime market, the shift in subprime lending had an especially large impact on these market segments. Panel A2 in Exhibit 1 shows that total lending

to low-income applicants in Philadelphia declined by 19.2% while low-income lending increased by 4.0% in the rest of the state. Similarly, minority lending in Philadelphia declined by 1.6% compared to an increase of 13.2% in the rest of the state.

Panels B2 and C2 in Exhibit 1 confirm that these relative declines in low-income and minority lending were most severe in the subprime market segment. Subprime low-income lending declined by 58.1% in Philadelphia compared to a 31.2% decline in the control group, for a 26.9% difference in growth rates. Subprime minority lending declined by 51.4% in Philadelphia compared to a 24.7% decline in the control group, for a 26.7% difference in growth rates. These growth rate differentials are much higher than those that occurred in the prime market, which were 16.7% and 6.0% respectively. Overall the data suggest that the Philadelphia predatory lending law may have reduced subprime lending volumes in the city compared to the rest of the state, and that this decline had an especially large impact on low-income and minority loan applicants.

### Denial Rates

Exhibit 2 provides loan denial rates in each market in the pre- and post-legislation periods. Panel A shows the Illinois results while Panel B provides these data for the Pennsylvania market.

Panel A in Exhibit 2 shows that for the total market the changes in denial rates were nearly identical in Chicago and the control group. The data also show that the denial rate changes that occurred in Chicago and the control group were very similar in both the subprime and prime markets.

Panel B in Exhibit 2 shows that in Pennsylvania denial rates declined overall. The denial rate decline in the total market in Philadelphia of 5.12% was greater than that in the rest of the state (3.18%). Examining the prime and subprime markets separately reveals that this relative decline was driven by the prime market results. In the subprime market, however, denial rates in Philadelphia increased slightly more than in the rest of the state (6.7% vs. 6.3%).

### Number of Lenders and Loans by Type of Lender

The changes in the number of lenders active in each market were examined, as well as loan originations by type of lender. Panels A and B of Exhibit 3 provide data on the number of lenders in the Illinois and Pennsylvania markets, respectively. Panels A and B of Exhibit 4 provide a breakdown of loan origination volume by lender type in the subprime markets for each geography, and Panels C and D of Exhibit 4 provide these data for the prime markets.

Panel A in Exhibit 3 shows that there was no significant post-legislation change in the total number of lenders or number of subprime lenders active in the Chicago

**Exhibit 2** | Denial Rates by Market Segment in the Pre- and Post-Legislation Periods

Market	Total Applications (%)	Subprime (%)	Prime (%)	Low Income (%)	Minority (%)
<b>Panel A: Illinois</b>					
Chicago					
Pre-law	33.86	51.99	22.95	48.90	36.90
Post-law	28.77	53.47	19.99	52.61	33.74
Change	-5.09	1.48	-2.96	3.71	-3.16
Control Group					
Pre-law	25.62	52.22	17.43	43.78	33.21
Post-law	20.31	53.67	14.16	42.24	27.52
Change	-5.31	1.45	-3.27	-1.54	-5.69
<b>Panel B: Pennsylvania</b>					
Philadelphia					
Pre-law	29.65	53.90	20.91	46.42	32.48
Post-law	24.53	60.57	15.27	53.18	27.00
Change	-5.12	6.67	-5.64	6.76	-5.48
Control Group					
Pre-law	30.06	52.26	22.63	44.22	32.88
Post-law	26.88	58.53	17.63	46.70	31.25
Change	-3.18	6.27	-5.00	2.48	-1.63

market compared with the rest of the state. There also was no significant change in the fraction of lenders that were bank-affiliated in each market. Turning to loan origination volume, however, the data for subprime volume in Panel A of Exhibit 4 demonstrate a shift away from bank lending in Chicago as compared with the rest of the state. The share of subprime loans originated by bank-affiliated lenders in Chicago declined to 45.4% from 49.0%, or 3.6%. In the control group, the bank-affiliated share increased by 1.1%. Panel A3 shows that the opposite shift occurred in the prime market, where the Chicago bank-affiliated share contracted only 0.7% compared to a 2.4% reduction in the control group. These data are consistent with the Chicago law having a unique impact on bank-affiliated lenders.

Similar to the Chicago results, Panel B of Exhibit 3 shows no significant change in the number of lenders by market and type in the Philadelphia market compared with the rest of the state. The fraction of lenders in the subprime and non-bank categories declined by similar amounts in Philadelphia and the control group over the pre- and post-law periods. Unlike the Chicago results, the Philadelphia loan origination data show a slower decline in bank lending than in the control group. Panel C of Exhibit 4 shows that the bank-affiliated share of origination volume in the Philadelphia subprime market declined by 18.3%, compared with a larger 21.7% decline in the control group subprime market. In the prime markets, as

**Exhibit 3** | Lenders and Originations by Lender Type in the Pre- and Post-Legislation Periods

Market	Pre-Law					Post-Law				
	Number of Lenders	Number of Subprime Lenders	Percentage Subprime Lenders (%)	Number of Non-bank Subprime Lenders	Percentage Non-bank Subprime Lenders (%)	Number of Lenders	Number of Subprime Lenders	Percentage Subprime Lenders (%)	Number of Non-bank Subprime Lenders	Percentage Non-bank Subprime Lenders (%)
<b>Panel A1: Illinois Number of Lenders by Lender Type</b>										
Number of Lenders										
Chicago	641	106	16.54	75	11.70	643	95	14.77	68	10.58
Control Group	1,049	119	11.34	86	8.20	1,028	105	10.21	75	7.30
Growth Rates										
Chicago						0.31%	-10.38%		-9.33%	
Control Group						-2.00%	-11.76%		-12.79%	
<b>Panel B1: Pennsylvania Number of Lenders by Lender Type</b>										
Philadelphia	536	76	14.18	48	8.96	556	70	12.59	46	8.27
Control Group	690	80	11.59	49	7.10	750	79	10.53	51	6.80
Growth Rates										
Philadelphia										
Control Group						3.73%	-7.89%	-11.21%	-4.17%	-7.61%

**Exhibit 4** | Subprime and Prime Market Originations

Market	Subprime Orig.	Bank Orig.	Percentage Bank (%)	Non-bank Orig.	Percentage Non-bank (%)
<b>Panel A: Chicago Subprime Market Originations</b>					
Originations					
Pre-law	7,399	3,627	49.02	3,772	50.98
Post-law	6,026	2,739	45.45	3,287	54.55
Change	-1,373	-888	-3.57	-485	3.57
Control Group					
Pre-law	13,675	6,275	45.89	7,400	54.11
Post-law	11,607	5,450	46.95	6,157	53.05
Change	-2,068	-825	1.07	-1,243	-1.07
Growth Rates					
Chicago	-18.56%	-24.48%		-12.86%	
Control Group	-15.12%	-13.15%		-16.80%	
Difference	-3.43%	-11.34%		3.94%	
<b>Panel B: Philadelphia Subprime Market Originations</b>					
Originations					
Pre-law	7,488	5,081	67.86	2,407	32.14
Post-law	6,857	3,399	49.57	3,458	50.43
Change	-631	-1,682	-18.29	1,051	18.29
Control Group					
Pre-law	12,478	8,197	65.69	4,281	34.31
Post-law	13,714	6,031	43.98	7,683	56.02
Change	1,236	-2,166	-21.71	3,402	21.71
Growth Rates					
Chicago	-8.43%	-33.10%		43.66%	
Control Group	9.91%	-26.42%		79.47%	
Difference	-18.33%	-6.68%		-35.80%	

shown in Panel D, these declines in bank share were roughly equal at 2.8% and 3.3%, respectively. These results show that after comparing the Philadelphia subprime experience with the rest of the state and with the prime market, the city's subprime market did not experience the relative contraction in bank-affiliated lending share that was observed in the Chicago subprime market.

## Empirical Methods

Applicant-level logistic regression models were used to examine the impact of the Chicago and Philadelphia predatory lending laws on: (1) the probability of a subprime loan approval; (2) the likelihood of a loan being originated by a

**Exhibit 4** | (continued)  
 Subprime and Prime Market Originations

Market	Subprime Orig.	Bank Orig.	Percentage Bank (%)	Non-bank Orig.	Percentage Non-bank (%)
<b>Panel C: Chicago Prime Market Originations</b>					
Originations					
Pre-law	27,018	22,782	84.32	4,236	15.68
Post-law	36,782	30,763	83.64	6,019	16.36
Change	9,764	7,981	-0.69	1,783	0.69
Control Group					
Pre-law	102,115	85,090	83.33	17,025	16.67
Post-law	149,673	121,104	80.91	28,569	19.09
Change	47,558	36,014	-2.42	11,544	2.42
Growth Rates					
Chicago	36.14%	35.03%		42.09%	
Control Group	46.57%	42.32%		67.81%	
Difference	-10.43%	-7.29%		-25.71%	
<b>Panel D: Philadelphia Prime Market Originations</b>					
Originations					
Pre-law	43,871	33,703	76.82	10,168	23.18
Post-law	78,460	58,043	73.98	20,417	26.02
Change	34,589	24,340	-2.85	10,249	2.85
Control Group					
Pre-law	78,071	66,327	84.96	11,744	15.04
Post-law	133,362	108,832	81.61	24,530	18.39
Change	55,291	42,505	-3.35	12,786	3.35
Growth Rates					
Philadelphia	78.84%	72.22%		100.80%	
Control Group	70.82%	64.08%		108.87%	
Difference	8.02%	8.14%		-8.08%	

subprime versus a prime lender; and (3) the likelihood of a loan being originated by a bank versus a non-bank affiliated lender. The models control for characteristics of the applicants and their neighborhoods, and include geographic and time binary variables to test for changes occurring in each market post-legislation.

Denial Probabilities

The applicant-level logit models for denial probabilities in the subprime market in Illinois and Pennsylvania are specified as Equations 1 and 2, respectively:

$$\begin{aligned}
 DENY = & \alpha + \beta_1 CHICAGO + \beta_2 POSTLAW \\
 & + \beta_3 CHICPOST + \beta_4 INCOME + \beta_5 LOAN2INC \\
 & + \beta_6 \overline{CENSUS}. \quad (1)
 \end{aligned}$$

$$\begin{aligned}
 DENY = & \alpha + \beta_1 PHIL + \beta_2 POSTLAW + \beta_3 PHILPOST \\
 & + \beta_4 INCOME + \beta_5 LOAN2INC + \beta_6 \overline{CENSUS}. \quad (2)
 \end{aligned}$$

The dependent variable is a binary coded 1 for a rejection and 0 for an approval. The explanatory variables in the model control for characteristics of the applicants and their neighborhoods. These are applicant income as reported on the loan application (*INCOME*), the applicant's loan-to-income ratio (*LOAN2INC*) and several features of the applicant's census tract (*CENSUS*), as detailed in the variable definitions in Exhibit 5. A negative coefficient is expected on *INCOME*, since higher incomes lower the likelihood of denial, while a positive sign is expected on the debt burden ratio *LOAN2INC*. Applicants from census tracts with less favorable characteristics are more likely to be denied loans. Finally, the model includes time and geographic market binary and interactive variables. The binary variable *CHICAGO* (*PHIL*) is coded 1 for Chicago (Philadelphia) applications and zero for applications taken from the rest of the state. *POSTLAW* is coded 1 for all applications taken during the post-legislation period and 0 otherwise, to test whether the probability of a loan approval is different across the two periods. The most important test variable is *CHICPOST* (*PHILPOST*), which interacts with the *CHICAGO* (*PHIL*) and *POSTLAW* variables to test for a shift in denial probabilities in Chicago (Philadelphia) post-legislation compared with the control group. The latter three variables are included in each of the models that follow as well. All variable definitions are contained in Exhibit 4.

### Subprime Origination Probabilities

The second model tests whether a loan is likely to be made at a subprime versus a traditional lender after controlling for characteristics of the applicant and census tract. The Illinois and Pennsylvania models are given by Equations 3 and 4, respectively:

$$\begin{aligned}
 SUBPRIME = & \alpha + \beta_1 CHICAGO + \beta_2 POSTLAW \\
 & + \beta_3 CHICPOST + \beta_4 INCOME \\
 & + \beta_5 LOAN2INC + \beta_6 \overline{CENSUS}. \quad (3)
 \end{aligned}$$



**Exhibit 5** | Variable Definitions

Variables	Definition
<b>HMDA Variables</b>	
<i>DENIAL</i>	Indicator variable = 1 if denied; 0 otherwise
<i>INCOME</i>	Applicant income reported on HMDA
<i>LOAN2INC</i>	Ratio of requested loan amount to applicant income
<i>NON-BANK</i>	Indicator variable = 1 if non-regulated institution; 0 if regulated, <i>i.e.</i> , bank, thrift and credit union
<b>Census Variables</b>	
<i>MEDINC</i>	Median income in the applicant MSA
% <i>MINORITY</i>	Percentage of Minorities in the applicant MSA
% <i>PUBLIC</i>	Percentage of Families on Public Assistance in the applicant MSA
% <i>RENTAL</i>	In the applicant MSA
% <i>VACANT</i>	In the applicant MSA
% <i>FEMALEHH</i>	Percentage of female head of households in the applicant MSA
<i>AGEHOUSE</i>	Average age of the housing stock
<b>Variables Isolating Chicago / Philadelphia and Effects of Legislation</b>	
<i>CHICAGO</i>	Indicator variable: Chicago = 1; 0 otherwise
<i>PHIL</i>	Indicator variable: Philadelphia = 1; 0 otherwise
<i>POSTLAW</i>	Indicator variable: Time period post Chicago (Philadelphia) legislation = 1; 0 otherwise
<i>CHICPOST</i>	Indicator variable: post legislation in Chicago = 1; 0 otherwise
<i>PHILPOST</i>	Indicator variable: post legislation in Philadelphia = 1; 0 otherwise
<i>Note:</i> 1990 Census information was used for the Census variables due to the lack of availability of 2000 Census information at the MSA level.	

$$\begin{aligned}
 \text{SUBPRIME} = & \alpha + \beta_1\text{PHIL} + \beta_2\text{POSTLAW} + \beta_3\text{PHILPOST} \\
 & + \beta_4\text{INCOME} + \beta_5\text{LOAN2INC} \\
 & + \beta_6\overline{\text{CENSUS}}.
 \end{aligned}
 \tag{4}$$

The dependent variable is coded 1 for subprime originations and zero for non-subprime loan originations. Applicants with weaker incomes and higher loan-to-income ratios are considered more likely to seek a loan from a subprime lender,

as are applicants from census tracts with less favorable characteristics. The models also include the same binary and interactive variables that control for timing (*POSTLAW*) and geographic market (*CHICAGO* and *PHIL*) effects. As in the first model, the most important variable is the interaction of *POSTLAW* with the geographic variables (Chicago and Phil) to test for a shift in subprime lending post-legislation in each geographic market.

### Bank Affiliation Effects

The third model tests whether loan applicants are more likely to get their loan from a bank versus a non-bank lender in each geographic market pre- and post-legislation. Results of the tests are provided for both the subprime and prime markets in each geography. The Illinois and Pennsylvania models are given by Equations 5 and 6, respectively:

$$\begin{aligned} \text{NON-BANK} = & \alpha + \beta_1 \text{CHICAGO} + \beta_2 \text{POSTLAW} \\ & + \beta_3 \text{CHICPOST} + \beta_4 \text{INCOME} \\ & + \beta_5 \text{LOAN2INC} + \beta_6 \overline{\text{CENSUS}}. \end{aligned} \quad (5)$$

$$\begin{aligned} \text{NON-BANK} = & \alpha + \beta_1 \text{PHIL} + \beta_2 \text{POSTLAW} \\ & + \beta_3 \text{PHILPOST} + \beta_4 \text{INCOME} \\ & + \beta_5 \text{LOAN2INC} + \beta_6 \overline{\text{CENSUS}}. \end{aligned} \quad (6)$$

The dependent variable is coded 1 for loan originations at non-bank lenders and 0 for bank-affiliated lenders.<sup>22</sup> *INCOME* is expected to be inversely related to *NON-BANK* since lower income applicants may be more likely to rely on non-traditional providers of credit.<sup>23</sup> A positive sign is expected for the *LOAN2INC* variable for the same reason, while applicants from neighborhoods with less favorable census tract characteristics may also rely more heavily on non-traditional credit sources. The model includes the same binary and interactive variables as the first two models to test for a shift in bank versus non-bank lending post-legislation.

## Multivariate Analysis Results

The results of each of the multivariate models outlined in the last section are presented in Exhibit 6. The results for the Illinois and Pennsylvania samples are contained in Panels A and B, respectively. This section discusses the results of each model in detail.

Exhibit 6 | Multivariate Analysis

Dependent Variable	Denial of Subprime Loan		Subprime vs. Prime Origination		Non-bank vs. Bank Origination Subprime Market		Non-bank vs. Bank Origination Prime Market	
	Model #	(1)	(2)	(3)	(4)			
Explanatory Variable	Estimate	p-value	Estimate	p-value	Estimate	p-value	Estimate	p-value
Panel A: Illinois								
INTERCEPT	0.1297***	0.0154	-1.7916***	0.0001	0.1004	0.1342	-1.8908***	0.0001
CHICAGO	-0.0355*	0.0990	-0.2293***	0.0001	-0.1267**	0.0346	-0.1614***	0.0001
POSTLAW	0.0584***	0.0002	-0.4692***	0.0001	0.3404***	0.0001	0.0882***	0.0001
CHICPOST	0.0133	0.6079	0.1047***	0.0001	0.1854***	0.0001	-0.0353	0.1694
INCOME	-0.0022***	0.0001	-0.0050***	0.0001	-0.0018***	0.0001	-0.0009***	0.0001
LOAN2INC	0.0254***	0.0001	0.0176***	0.0001	0.0030	0.1284	0.2263***	0.0001
MEDINC	-0.0001***	0.0001	-0.0001***	0.0001	0.0001	0.6486	0.0001***	0.0062
% MINORITY	0.0012***	0.0001	0.0113***	0.0001	0.0019***	0.0001	0.0069***	0.0001
% PUBLIC	-0.0030**	0.0318	-0.0018	0.2221	-0.0096***	0.0001	-0.0201***	0.0001
% RENTAL	-0.0016	0.7338	-0.0108***	0.0001	0.0016***	0.0063	-0.0018***	0.0001
% VACANT	-0.0023	0.1924	-0.0013	0.4216	-0.0099***	0.0001	-0.0089***	0.0001
% FEMALEHH	0.0056***	0.0002	0.0421***	0.0001	0.0012	0.5656	0.0200***	0.0001
AGEHOUSE	-0.0032***	0.0001	0.0075***	0.0001	0.0027***	0.0016	-0.0078***	0.0001
-2 LOG LIKELIHOOD	147491	0.0001	229402***	0.0001	50288***	0.0001	270921***	0.0001

**Exhibit 6** | (continued)

Multivariate Analysis

Dependent Variable	Denial of Subprime Loan		Subprime vs. Prime Origination		Non-bank vs. Bank Origination Subprime Market		Non-bank vs. Bank Origination Prime Market	
	Model #	(1)	(2)	(3)	(4)			
Explanatory Variable	Estimate	p-value	Estimate	p-value	Estimate	p-value	Estimate	p-value
Panel B: Pennsylvania								
INTERCEPT	-0.0138	0.7927	-1.9444***	0.0001	-0.6244***	0.0001	-2.8214***	0.0001
PHIL	-0.0029	0.8912	-0.0209	0.2692	-0.0597	0.1005	0.3756***	0.0001
POSTLAW	0.3829***	0.0001	-0.3404***	0.0001	0.9176***	0.0001	0.1847***	0.0001
PHILPOST	0.0842***	0.0007	-0.0982***	0.0001	-0.0832*	0.0616	-0.0697***	0.0004
INCOME	-0.0013***	0.0001	-0.0049***	0.0001	-0.0009***	0.0001	0.0002***	0.0001
LOAN2INC	0.1082***	0.0001	0.0214***	0.0001	0.0514***	0.0001	0.3864***	0.0001
MEDINC	-0.0001***	0.0001	-0.0001***	0.0001	-0.0001***	0.0001	0.0001***	0.0001
% MINORITY	0.0021***	0.0001	0.0088***	0.0001	-0.0004	0.5529	0.0036***	0.0001
% PUBLIC	-0.0004	0.8290	0.0032*	0.0537	-0.0108***	0.0004	-0.0230***	0.0001
% RENTAL	-0.0004	0.4406	-0.0041***	0.0001	0.0005	0.5517	0.0050***	0.0001
% VACANT	0.0013	0.2952	0.0037***	0.0018	-0.0011	0.6456	-0.0062***	0.0001
% FEMALEHH	0.0030*	0.0957	0.0253***	0.0001	0.0077**	0.0238	0.0211***	0.0001
AGEHOUSE	0.0006	0.3121	0.0132***	0.0001	0.0032***	0.0047	0.0043***	0.0001
-2 LOG LIKELIHOOD	168009***		1567284***		1060512***		309107***	

Notes: Logistic regression analysis where the dependent binary variables are coded 1 for: (1) denial of a subprime loan (versus approval); (2) subprime loan originations (versus prime origination); (3) non-bank subprime origination (versus bank); and (4) non-bank prime origination (versus bank).

- \*Indicates significance at the 10% level.
- \*\* Indicates significance at the 5% level.
- \*\*\* Indicates significance at the 1% level.

### Denial Probabilities

The results of the model predicting the likelihood of denial in the subprime market are provided in column 1 of Exhibit 6. Panel A shows that for the Illinois market denial probabilities were lower in Chicago overall, as indicated by the negative coefficient on *CHICAGO*. The coefficient on *POSTLAW* is positive and significant at the 1% level, indicating an increase in denial probabilities in the post-legislation period for the entire sample. The key test variable, *CHICPOST*, is not significant, which confirms that there was no significant shift in denial rates in Chicago relative to the control group following enactment of the predatory lending law.

The Pennsylvania results in Panel B of Exhibit 6 show that the variable *PHIL* is not significant, indicating there was no significant difference in subprime denial probabilities in Philadelphia as compared with the control group across the entire period. The variable *POSTLAW* is positive and significant at the 1% level, indicating an increase in subprime denial rates across both geographies post-legislation, consistent with the increases described in the Exhibit 2 descriptive statistics. The data in Exhibit 2 indicate that denial rates increased slightly in the Philadelphia subprime market relative to the control group post-legislation, while they decreased in the prime market. The coefficient on the test variable *PHILPOST* in Exhibit 6 is positive and significant at the 1% level, which confirms the relative increase in Philadelphia subprime denial rates post-legislation found in Exhibit 2, after controlling for applicant and census tract characteristics.

### Subprime Origination Probabilities

Column 2 in Exhibit 6 provides the results of the model predicting the likelihood of a loan being originated by a subprime versus a prime lender (Equations 5 and 6). Panel A contains the results for the Illinois market. The control variables *INCOME* and *LOAN2INC* are significant and have the expected signs, as do four of the five significant census variables. The coefficient on *CHICAGO* is negative and significant after controlling for these factors, despite the higher subprime shares in Chicago compared with the control group shown in Exhibit 1. The variable *POSTLAW* is negative and significant, consistent with the decline in subprime lending in both geographies post-legislation. The coefficient on the test variable *CHICPOST* is positive and significant at the 1% level, confirming that the likelihood of a loan being subprime declined less in Chicago compared with the control group post-legislation. This is consistent with the difference in growth rates found in the Exhibit 2 data, which show that the relative contraction in the Chicago subprime market (-3.4%) was less than that in the prime market (-10.4%). These results are explored in greater detail below in the section dealing with bank-affiliation effects.

The Panel B results in Exhibit 6 show that the variable *PHIL* is not significant, indicating no significant difference in subprime shares across the Pennsylvania geographical groupings. The variable *POSTLAW* is negative and significant,

consistent with the overall decline in subprime shares found in Exhibit 1. The key test variable *PHILPOST* is negative and significant at the 1% level. This finding indicates a decline in the likelihood of a loan being originated by a subprime lender in Philadelphia post-legislation, compared with the control group. This result, combined with the relative increase in denial rates, suggests that the proposed legislation in Philadelphia may have impacted the marketing and underwriting of subprime loans in the city.

### Bank versus Non-bank Effects

Columns 3 and 4 of Exhibit 6 contain the results for the model predicting the likelihood of a loan being originated by a non-bank versus a bank (depository) lender. Column 3 provides the results for the subprime market, while column 4 provides those for the prime market as a basis of comparison. These results are especially important for the Illinois market, since the impact of the legislation in that state was felt by depository institutions only. Column 3 in Panel A shows that *CHICAGO* is negative and significant, indicating that in the subprime market a loan was less likely to be originated by a non-bank lender in Chicago as compared with the control group across both time periods. The variable *POSTLAW* is positive and significant, indicating an increase in non-bank subprime lending post-legislation for the entire sample. The coefficient on the key test variable, *CHICPOST*, is positive and significant. This finding is consistent with the Exhibit 3 data, which shows a shift away from bank subprime lending in Chicago as compared with the rest of the state post-legislation. The results for the prime market in Column 4 are used to put this change in context. Here the coefficient on *CHICPOST* is negative and insignificant. This result is opposite that in the subprime market and is also consistent with the Exhibit 3 data. Taken together, these findings show that the Chicago law had a unique impact on bank-affiliated lenders in the subprime market.

To test the robustness of these findings and further investigate the results of Equation 3, which predicts the likelihood of a loan being subprime, the equation for the bank and non-bank samples were re-estimated separately. Columns 1 and 2 of Exhibit 7 provide the results for the bank and non-bank samples, respectively. In the bank market results in column 1, the coefficient on *CHICPOST* is negative and insignificant. In the column 2 results for the non-bank market, this coefficient is positive and significant at the 1% level. These findings indicate that the smaller relative contraction in the Chicago subprime market, which resulted in a positive coefficient on the variable *CHICPOST* in the original Equation 1, was due to increased lending by non-bank lenders that were not affected by the new legislation. This finding provides further support for the hypothesis that banks were uniquely affected by the Chicago legislation.

Turning to the Philadelphia market, although the provisions of the Philadelphia law affected banks and non-banks equally, as discussed earlier, non-bank lenders

**Exhibit 7** | Illinois Subprime Likelihood by Lender Type

Explanatory Variable	Bank		Origination by Non-Bank	
	Estimate	p-value	Estimate	p-value
INTERCEPT	-2.3317***	0.0001	-0.3315***	0.0001
CHICAGO	-0.1505***	0.0001	-0.1859***	0.0001
POSTLAW	-0.4547***	0.0001	-0.5198***	0.0001
CHICPOST	-0.0176	0.6249	0.2528***	0.0001
INCOME	-0.0052***	0.0001	-0.0041***	0.0001
LOAN2INC	0.0135***	0.0001	-0.1382***	0.0001
MEDINC	-0.0001***	0.0001	-0.0001***	0.0001
% MINORITY	0.0111***	0.0001	0.0084***	0.0001
% PUBLIC	-0.0003	0.8935	0.0041*	0.0914
% RENTAL	-0.0113***	0.0001	-0.0104***	0.0001
% VACANT	0.0013	0.5655	0.0043	0.1040
% FEMALEHH	0.0445***	0.0001	0.0282***	0.0001
AGEHOUSE	0.0049***	0.0001	0.0142***	0.0001

Notes: Logistic regression analysis where the dependent binary variables are coded 1 for a subprime origination (versus prime). The dependent variable is subprime vs. prime origination. Column 1 contains observations for loans made by depository institutions while column 2 contains those for loans made by non-banks.  
 \* Indicates significance at the 10% level.  
 \*\* Indicates significance at the 5% level.  
 \*\*\* Indicates significance at the 1% level.

may be more likely to underwrite loans that could be subject to the new criteria. The results in column 3 of Panel B in Exhibit 6 do show a reduction in the likelihood of a subprime loan being originated by a non-bank in Philadelphia compared with the control group, as indicated by the negative coefficient on *PHILPOST*, which is significant at the 10% level. This variable is also negative and significant in the column 4 results for the prime market. Thus, there was no apparent unique impact on non-bank lending in the subprime market in Philadelphia.

### Income and Racial Classification Effects

The examination of growth rate differentials in the Pennsylvania market in Exhibit 1 revealed that both low-income and minority loan applicants experienced

contractions in subprime lending volume compared with the rest of the state after enactment of the legislation. By contrast, in Chicago low-income applicants appeared to have fared worse in the subprime market than minority applicants. Equations 3 and 4 were re-estimated to examine the effects of the legislation in both cities on the likelihood of low-income and minority applicants receiving a subprime versus a prime loan origination. Binary indicator variables were added for applicant income (*LOWINC*) and race (*MINORITY*) classifications, where the criteria used to place applications in these groups are the same as those for the Exhibit 1 data. These variables were interacted with the *CHICPOST* (*PHILPOST*) variable to test for a unique impact on these groups in the post-legislation period. The continuous variables measuring applicant income and neighborhood minority representation are removed from the earlier equations due to their high correlation with *LOWINC* and *MINORITY*. Thus, Equations 3 and 4 become:

$$\begin{aligned}
 SUBPRIME = & \alpha + \beta_1 CHICAGO + \beta_2 POSTLAW \\
 & + \beta_3 CHICPOST + \beta_4 LOWINC + \beta_5 MINORITY \\
 & + \beta_6 CHICPOST * LOWINC \\
 & + \beta_7 CHICPOST * MINORITY \\
 & + \beta_8 LOAN2INC + \beta_9 \overline{CENSUS}. \quad (7)
 \end{aligned}$$

$$\begin{aligned}
 SUBPRIME = & \alpha + \beta_1 PHIL + \beta_2 POSTLAW + \beta_3 PHILPOST \\
 & + \beta_4 LOWINC + \beta_5 MINORITY \\
 & + \beta_6 PHILPOST * LOWINC \\
 & + \beta_7 PHILPOST * MINORITY \\
 & + \beta_8 LOAN2INC + \beta_9 \overline{CENSUS}. \quad (8)
 \end{aligned}$$

Exhibit 8 contains the results of the estimation of Equations 7 and 8 for the Illinois and Pennsylvania markets, respectively. For both equations the signs on the intercept terms *LOWINC* and *MINORITY* are positive and significant, as expected, since these groups are more heavily represented in the subprime market than upper-income and white applicants. In the Illinois market, the interaction of *CHICPOST* with *MINORITY* is positive and significant. The interaction for the variable *LOWINC* is also significant, but with the opposite negative sign, indicating a contraction in low-income subprime lending. These findings are consistent with the Exhibit 1 results, which show that low-income applicants fared worse than minority applicants in the Chicago subprime market post-legislation. A possible explanation for this result lies in the differential effects of the legislation in the



**Exhibit 8** | Income and Racial Classification Effects on Subprime Likelihood

Explanatory Variable	Illinois		Pennsylvania	
	Estimate	p-value	Estimate	p-value
INTERCEPT	-3.0237***	0.0001	-3.2325***	0.0001
CHICAGO	-0.1993***	0.0001		
PHIL			-0.0119	0.6031
POSTLAW	-0.5050***	0.0001	-0.4606***	0.0001
CHICPOST	0.1132***	0.0083		
PHILPOST			0.0089	0.7894
LOWINC	0.5251***	0.0001	0.4309***	0.0001
MINORITY	0.8730***	0.0001	0.6111***	0.0001
CHICPOST*LOWINC	-0.3005***	0.0001		
PHILPOST*LOWINC			-0.4533***	0.0001
CHICPOST*MINORITY	0.1096**	0.0111		
PHILPOST*MINORITY			-0.1112**	0.0316
LOAN2INC	0.0168***	0.0001	0.0223***	0.0001
% PUBLIC	-0.0008	0.6463	0.0016	0.4665
% RENTAL	-0.0068***	0.0001	-0.0010*	0.0936
% VACANT	0.0026	0.1614	0.0028*	0.0813
% FEMALEHH	0.0573***	0.0001	0.0424***	0.0001
AGEHOUSE	0.0066***	0.0006	0.0129***	0.0001
-2 LOG LIKELIHOOD	175396***	0.0001	144064***	0.0001

Notes: Logistic regression analysis where the dependent variable is a binary coded 1 for subprime loan originations (versus prime originations). The columns contain the results for Illinois and Pennsylvania, respectively. The models include indicator variables for low-income (*LOWINC*) and minority applicants, and their interactions with the city post-law indicator variables (*CHICPOST* and *PHILPOST*). The dependent variable is subprime vs. prime origination.

\*Indicates significance at the 10% level.  
 \*\*Indicates significance at the 5% level.  
 \*\*\*Indicates significance at the 1% level.

bank versus non-bank markets. To explore this finding further, the same approach as in the models shown in Table 6 was used to re-estimate the equations for the bank and non-bank samples separately. The results, not shown here, indicate the low-income interaction is negative and significant for the bank sample only, where the Chicago law is expected to have had its impact in reducing subprime lending. For the non-bank sample, this interaction variable is not nearly significant.<sup>24</sup> Thus,

a contraction in bank subprime lending in Chicago was not sufficiently offset by non-bank lending for low-income borrowers.

The results for Pennsylvania indicate that both low-income and minority borrowers were negatively impacted in the subprime market. The coefficients on both interaction terms, *LOWINC* and *MINORITY*, are negative and significant. *PHILPOST*, which now measures the effect on applicants who are neither low-income or minority, is no longer significant, showing that the contraction in subprime lending was felt most by the low-income and minority groups.

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## Conclusion

This study examined the impact of two city-level predatory lending laws passed in Chicago and Philadelphia. The impact of the localized legislation on denial rates, subprime originations and the impact on different types of lenders in the two cities relative to other parts of the states from the pre- to post-legislation periods were evaluated. This study is the first to examine how city-level predatory lending laws impact mortgage activity. The findings are consistent with results from previous studies on predatory lending laws.

In Chicago, where the predatory lending law focused on banks, the findings indicate that a subprime origination in the city was less likely to be made by a bank after the passage of the law when compared to the rest of the state. Thus, the legislation did have an impact on its stated target. Non-banks in Chicago, however, appeared to fill the vacuum left by their bank counterparts, as the overall likelihood of a loan being originated by a subprime lender increased in the city relative to the rest of the state during the post-legislation period. This impact of the legislation was felt only in the subprime market. The Chicago law did not impact the likelihood of a prime loan being originated by a non-bank lender.

The Philadelphia predatory lending law, unlike their Chicago counterpart, was aimed at all financial service providers, and its provisions were generally considered to be more severe. In Philadelphia, the volume of subprime mortgage lending declined significantly when compared to the rest of the state following the enactment of the predatory lending law. An examination of the results by race and income classes indicates that minority and low-income applicants were affected to a greater degree than majority applicants.

The results from both cities show significant declines in subprime mortgage activity, of which a portion is likely predatory in nature. Given the magnitude of these declines, however, it is very possible that the city-level predatory laws also have had an adverse impact on legitimate subprime lending. These results suggest that policymakers need to ensure that any future predatory legislation be more narrowly focused to deter only those lenders actually engaging in predatory practices. As predatory lending laws become more effective, it is likely that predatory lenders will seek to relocate to areas where they are less likely to be targets for predatory legislation. Thus, city-level and even state-level predatory

lending legislation enacted in the U.S. during the past few years may actually redistribute where predatory lending occurs, as opposed to eliminating it. This suggests that policymakers should consider a national predatory lending law to preclude these lenders from targeting geographies that lack effective deterrents. Much more thought, however, has to be given to how such legislation could more narrowly target predatory lenders.<sup>25</sup>

Future research should attempt to disentangle how much of the subprime lending in the two cities is predatory in nature. This would require a data set that includes more information on pricing and applicant credit-worthiness or more detailed information on the lenders operating in the area. Finally, future research could also examine the impact of more recent predatory lending statutes in other cities, such as Los Angeles and Detroit, to determine the robustness of the results and whether different provisions lead to smaller or larger declines in subprime lending.

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## Endnotes

- <sup>1</sup> See the HUD/Treasury (2000) joint study on subprime lending.
- <sup>2</sup> The Federal Reserve broadened the scope of HOEPA in December 2001. The goal of the expansion was to curb some of the most flagrant predatory lending abuses without impairing the growth of legitimate subprime lending. See Remarks by Governor Edward M. Gramlich, at the Housing Bureau for Seniors Conference, January 2002.
- <sup>3</sup> For example, in 2000 North Carolina was the first state to implement a predatory lending law. See Harvey and Nigro (2002) and Elliehausen and Staten (2002) for more details. More recently, Georgia passed what many consider the most stringent predatory lending law. See *American Banker*, October 1, 2002 “Georgia Predator Law Drives Out Some Lenders,” for more details on the Georgia predatory lending law.
- <sup>4</sup> The Predatory Lending Consumer Protection Act of 2002, introduced by Senator Sarbanes, Chairman of the Senate Banking, Housing and Urban Affairs, would implement a national predatory lending law, while Representative Ney (R-OH) anticipates introducing on January 7, 2003, the first day of the 108th Congress the Responsible Lending Act, which would be a vehicle for consideration of federal preemption of state and local predatory lending laws.
- <sup>5</sup> For example, several HUD studies (2000) show the predominance of subprime lenders role in inner cities such as Atlanta, Baltimore, Los Angeles and New York.
- <sup>6</sup> For a discussion of lenders who left the Philadelphia market during the time period of the imposition of the predatory lending law, see “Stiff Predator Laws Lead Lenders to Exit,” *American Banker*, June 11, 2001.
- <sup>7</sup> For example, if a borrower cannot obtain a loan from any other source other than a subprime lender charging 300 basis points above other lenders in the area, but desires and has the ability to repay the loan—is this a predatory loan?
- <sup>8</sup> Stein (2001) estimates the costs to consumers of these predatory practices at over \$9.1 billion annually.
- <sup>9</sup> The banking regulators designate a “subprime” borrower as having one of the following characteristics: two or more 30-day delinquencies; one or more 60-day delinquencies in the last 24 months; judgment, foreclosure, repossession or charge-off in the prior 24

- months; bankruptcy in the last 5 years; a high default probability as measured by a credit score of 660 or below; or a debt-to-income ratio of 50% or greater. See OCC Bulletin 2001-6.
- <sup>10</sup> Zorn (2000) finds that up to 100 basis points of the rates charged by subprime lenders could not be explained by credit risk of the borrowers.
  - <sup>11</sup> Subprime loans are also typically smaller in size, which make the associated fees not only greater in absolute amounts but also as a percentage of the loan amount.
  - <sup>12</sup> The names, identification numbers and methodology to identify subprime home lenders compiled are outlined in Scheessele (1998). See <http://www.huduser.org/datasets/manu.html> for lenders on the annual list.
  - <sup>13</sup> Specifically, the study found that African Americans and Latinos are disproportionately represented in the subprime lending market and that these patterns persist across all income levels and throughout the nation.
  - <sup>14</sup> The Chicago predatory lending law was the footprint for the state law passed in mid-April 2001. See the Mortgage Bankers Association site on predatory at <http://www.mbaa.org/resources/predlend> for more information on the status of predatory lending laws in Illinois and the rest of the U.S.
  - <sup>15</sup> This currently equals roughly an 11% mortgage rate or total fees and points exceeding more than 4% of the loan amount.
  - <sup>16</sup> The city says that more than 40% of repossessions last year were the result of subprime loans, up from 15% in 1993 (see *American Banker*, April 24, 2000).
  - <sup>17</sup> The passage of the Chicago ordinance came after five months of negotiations with the banking industry that wanted to narrow the predatory lending guidelines defined by the council (see *American Banker*, August 31, 2000).
  - <sup>18</sup> The institutions impacted range in size from \$651 billion-asset Bank of America Corp. to \$48 million-asset Community Bank of Lawndale (see *American Banker*, April 20, 2000).
  - <sup>19</sup> See *American Banker*, June 15, 2001, “Stiff Predator Laws Lead Lenders to Exit,” that states that “. . . ten different lenders who have already left the market” prior to implementation and that numerous more planned to pull out of the city.
  - <sup>20</sup> The remainder of 2001 is excluded from the Illinois data, since a state-level predatory law passed in the second quarter of 2001.
  - <sup>21</sup> The subprime lender list is comprised of all subprime lenders who primarily engage in this activity. Thus, the list omits some prime lenders who may have a small subprime portfolio, as well as some identified subprime lenders who are active on the prime market.
  - <sup>22</sup> The HMDA data includes “agency” codes that permits us to separate out banks from non-banks.
  - <sup>23</sup> See Vermilyea and Wilcox (2002) for a discussion of “banked and unbanked” consumers.
  - <sup>24</sup> In the bank sample, the  $p$ -value for the low-income interaction variable is .0005, while in the non-bank sample it is .6932.
  - <sup>25</sup> The Office of the Comptroller of the Currency recently proposed guidance for flexible national guidelines on predatory lending, as opposed to regulation, arguing that strict rules might inadvertently outlaw useful loan features and that any framework to reduce

predatory practices needs to be done on a national level (see Washington Post, February 22, 2003, p. E01).

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*The authors thank David Nebhut for very useful comments. The opinions expressed are those of the authors and do not necessarily represent those of the Office of the Comptroller of the Currency or the Treasury Department.*