A SPATIAL ANALYSIS OF FINANCIAL PREDATION: PAYDAY LENDING IN LOS ANGELES

BACKGROUND

For those without ample savings or steady incomes, payday loans provide easy access to liquidity and cash. Unlike traditional bank loans, payday loans are generally small (up to $300), short-term (2 weeks to 1 month). Because of this, lenders charge exorbitantly high interest rates at up to 300% per loan (per annum). While it may be obvious that their primary customers would be poor and urban, payday lenders have also been criticized for targeting individuals on the basis of more than just their financial characteristics—that is, across demographic features. While discrimination based on income and wealth is already deeply embedded within the framework of these alternative lenders, the existence of spatial racial patterns in lender location would add yet another dimension of inequality to these sources of liquidity.

To analyze the location decisions of firms would require significant government documentation on temporal changes in branch locations (firms close, open, and relocate more quickly than any government agency has been able to thoroughly document) and consumer use of payday loans (which is rarely recorded in economic surveys). Despite these limitations in available data, it is possible to explore lender location with respect to certain community characteristics at the census tract level.

DATA & METHODOLOGY

To investigate the relationship between lender location and community demographics, I obtained data from the California Department of Business Oversight for Los Angeles County on the address of “non-depository credit institutions”—payday lenders. After geocoding these points (about 150 total) with Census TigerLine Streets, I plotted them against various 2013-5 year American Community Survey (ACS) estimates. Below, I’ve included three of the most visibly noticeable examples of lender preference, and the street map (right) displays the city of Los Angeles at street view, depicting lender location at the neighborhood level. The fourth map displays firm clustering.

In addition to describing spatial patterns in payday lender locations, these maps provide motivation for a greater study of how community characteristics influence lender location decisions. Ideally, a survey of branch managers would provide insight into the decision-making process; but this micro-foundational data is unavailable. Instead, I examine the presence of a payday lender by census tract. Since there are 2,400 tracts and only 148 payday lenders, with a maximum lender count of 5 for a tract and average of 0.06 for the county (.154 average count for tracts containing a payday lender), ordinary least squares regression is not appropriate. Most tracts which have a payday lender have just one, so due to this limited variation in the dependent variable (payday count), I instead apply a logistic regression model (“logit”). This maximum likelihood estimate, unlike OLS, is suitable for binary dependent variables, so I re-classify tracts with a dummy to capture whether or not they have a payday lender.

ANALYSIS & RESULTS

To the right, descriptive statistics of Los Angeles County tracts indicate statistically significant differences among racial and income variables, presenting evidence that census tracts with payday lenders are populated differently than tracts without payday lenders.

The regression results present outcomes from the estimation of log income and racial variables and should be interpreted cautiously. I would be a nuanced argument to view these estimates as implying any sort of causality. A framework to model the location decisions of payday lenders would require far more controls, such as location decisions of other types of businesses, community tax structure, and land zoning. Despite a lack of data documentation and availability, I present these results to complement the maps and simple estimates in means test. Logistic regression is particularly useful for capturing minor differences among a variable that takes on few values, and as such, it is a valuable explanatory tool.

In logit models, variable coefficients offer little practical help. Instead, the coefficients can be converted into odds ratios which can be considered through the lens of probabilities. Since I do not offer these estimates as causal estimates but merely as reference, a simple interpretation for the odds ratio would suggest that when it is less than 1, the probability of a tract having a payday lender decreases as the variable increases. For example, the coefficient on log income is less than 1, indicating the probability of a tract hosting a lender decreases as income rises. The coefficients on percent Black and percent Hispanic of tract populations indicate that as these racial or ethnic shares of the population increase, the odds ratio decreases, showing that a payday lender would move to that tract.

The main advantage of this regression model is that it estimates the partial effects of these race variables holding other factors constant, making it possible to untangle the various ways in which demographics and economic indicators interact.

CLUSTERING

To investigate the extent to which payday lenders cluster in certain tracts or neighborhoods, I apply Anselin Local Moran’s I, a measure of spatial autocorrelation to lender location in order to determine whether these businesses tend to be near or far from one another or whether they are clustered. Areas where there are many payday lenders located near other lenders are dark red, indicating high clusters and light blue areas represent a lesser concentration of lenders on the outer variety of high clusters.

SUMMARY STATISTICS & DIFFERENCE IN MEANS

<table>
<thead>
<tr>
<th>Dependent:</th>
<th>Coefficient</th>
<th>Odds Ratio</th>
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<tbody>
<tr>
<td>Payday Tract</td>
<td>1.52***</td>
<td>6.96***</td>
</tr>
<tr>
<td>Overall Mean</td>
<td>(0.262)</td>
<td>(7.632)</td>
</tr>
<tr>
<td>2,326</td>
<td>137</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>1.247</td>
<td>1.050**</td>
</tr>
<tr>
<td>Percent Hispanic</td>
<td>1.107***</td>
<td>(0.057)</td>
</tr>
<tr>
<td>Percent Asian</td>
<td>1.107***</td>
<td>(0.057)</td>
</tr>
<tr>
<td>Median Household Income</td>
<td>1.107***</td>
<td>(0.057)</td>
</tr>
<tr>
<td>**p&lt;0.05 **p&lt;.01 ***p&lt;0.001</td>
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FURTHER RESEARCH

Despite these visual representations as well as spatial and inferential statistics, there is still work to be done in understanding the predatory nature of payday lenders and alternative financial services. This initial analysis suggests that lenders base their location decisions on demographic, and not just economic variables. But, as with traditional banks, payday lenders are now able to offer their services online in some states. Promisingly, however, other states have begun to legislate and regulate these lenders more stringently, demonstrating the policy implications of lender behavior. While more spatial analysis is necessary, it is not enough; lenders may target individuals through their physical branch locations or through targeted advertising campaigns. With government and regulatory bodies becoming more widely available for financial institutions, it may be possible to quantify the degree to which payday lenders prey on vulnerable populations.

REFERENCES

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Data Sources:
California Department of Business Oversight
Los Angeles County Rural Census TigerLine Data
American Community Survey (2013 5-year)