Racial Discrimination in the Auto Loan Market

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The auto loan market is incredibly important, and yet it’s opaque to regulators and researchers.

- Auto loans are the most widely used form of installment credit by U.S. households (>100 million borrowers)

- Market is less regulated and less transparent than other consumer credit markets
  - May reduce the cost of discriminatory practices
  - Generates concern among regulators
    - 2013 – CFPB issued Special Bulletin, and fined Ally Financial $98 million for charging minorities higher interest rates

- We know alarmingly little about the existence/prevalence of discrimination in this market
Academic studies of discrimination in auto lending are lacking.

Charles, Hurst, and Stephens (AER P&P 2008)
- Black borrowers pay higher interest rates than whites – estimated 75\textsuperscript{th} percentile is 1.34 percentage points higher

Caveats:
- Based on Survey of Consumer Finances (2,725 white and 320 Black borrowers)
- Data do not contain credit scores
- Can’t examine loan approval rates or default rates

Why do we know so little?
- Data limitations – auto lenders do not report application/loan level data
We construct a novel dataset to test for lending discrimination.

Credit Bureau Data
- 1% nationally representative panel
- Rich set of financial variables:
  - Hard credit checks (loan applications), new lines of credit, credit scores, delinquencies, etc.

Home Mortgage Disclosure Act (HMDA) Data
- Covers 95% of all mortgage applications and loans (only small rural lenders exempt - details)
- Contains borrower demographics:
  - Race/ethnicity, sex, income, etc.

We link these databases based on 6 detailed characteristics of originated mortgages
- Match works well - uniquely match 69% of mortgages from the credit bureau data
- End result is a credit bureau dataset with demographics added for a panel of 79,000 homeowners from 2005-2017
Defining Lending Discrimination

➢ We strive to isolate discrimination rooted in biased preferences (Becker (1957, 1993)) or biased beliefs like stereotypes (Bordalo et al. (2016)):
   → Lenders forgo some profitable contracts with minorities
   → Loans to marginal minority borrowers are more profitable

Need to distinguish this from:
➢ Omitted variable bias:
   Minority status may be correlated with unobservable factors that lower creditworthiness

➢ Statistical discrimination (Phelps (1972)):
   Lenders maximize profits by using race to proxy for info that is unobservable (even to them) ...
   i.e., use beliefs about minorities on average as a stand-in for info about the individual
Testing for Lending Discrimination

**Approach 1:** Do minorities have lower credit approval rates?
- Lower minority approval rates could reflect OVB or statistical discrimination

**Approach 2:** Do minorities pay higher interest rates?
- Higher rates for minorities could reflect OVB or statistical discrimination

**Approach 3:** Are loans to marginal minority borrowers more profitable?
- Test whether minorities default less, *ceteris paribus*. This “outcome test” (Becker (1957, 1993)) is the most stringent test for discrimination
  - OVB likely works against finding discrimination
  - Statistical discrimination should not generate lower default rates for minorities
We find strong evidence of discrimination in auto lending.

Minorities...
- Face 1.5 percentage point reduction in approval rates... crowds out 80,000 loans/year
- Pay interest rates 70 basis points higher than comparable white borrowers
- Default less, controlling for borrower and loan characteristics

Results are larger...
- In cases where loan officers have more discretion
- In states where racial biases are more prevalent
- In areas with less competition among lenders

Anti-discrimination Enforcement Policy Analysis:
- A CFPB policy initiated in 2013, but halted in 2018, was effective in reducing interest rate discrimination by nearly 60%
Minority auto loan applicants face lower approval rates.

**Table 4**

<table>
<thead>
<tr>
<th></th>
<th>Full Sample</th>
<th>Subprime Borrowers</th>
<th>Prime Borrowers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Credit Approval (Auto)</td>
<td>Credit Approval (Auto)</td>
<td>Credit Approval (Auto)</td>
</tr>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
</tr>
<tr>
<td>Minority</td>
<td>−4.465***</td>
<td>−1.480***</td>
<td>−1.661***</td>
</tr>
<tr>
<td>(0.289)</td>
<td>(0.259)</td>
<td>(0.332)</td>
<td></td>
</tr>
<tr>
<td>Minority X Hispanic</td>
<td>0.328</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(0.410)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R-Squared</td>
<td>0.047</td>
<td>0.085</td>
<td>0.085</td>
</tr>
<tr>
<td>Observations</td>
<td>218,300</td>
<td>214,534</td>
<td>214,534</td>
</tr>
</tbody>
</table>

Sample: All borrower-years containing auto loan applications in our Matched Panel, 2005-2017  
Controls:  
**Demographics:** Sex, Age, Income  
**Financial Health:** Credit Score, Total Debt, Debt to Income Ratio, Past Due Debt  
**ZIP Code Characteristics:** Per Capita Income, Population Density, % Bachelors Degree, % Commute Using Car  
**State-by-Year FE**, and indicators for time relative to the link  
Note: Column 1 omits the financial health controls
Racial disparities are larger where racial biases are more prevalent.

We estimate and plot $State_i \times Minority$ effects.

Correlation between $State_i \times Minority$ effects and the state’s Racial Slur GSV is -0.49 (p-value = 0.001)
Evidence of discrimination is strongest in the Deep South, the Ohio River Valley, and the Southwest.
Race matters more in areas with racial biases and with less competition among lenders.

<table>
<thead>
<tr>
<th></th>
<th>Credit Approval (Auto) (1)</th>
<th>Credit Approval (Auto) (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minority</td>
<td>−0.906***</td>
<td>−1.268***</td>
</tr>
<tr>
<td></td>
<td>(0.254)</td>
<td>(0.255)</td>
</tr>
<tr>
<td>Minority X High Racial Bias State</td>
<td>−1.910***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.443)</td>
<td></td>
</tr>
<tr>
<td>Minority X Low Banking Competition</td>
<td></td>
<td>−0.728*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.424)</td>
</tr>
<tr>
<td>Low Banking Competition</td>
<td>0.214</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.207)</td>
<td></td>
</tr>
<tr>
<td>R-Squared</td>
<td>0.085</td>
<td>0.085</td>
</tr>
<tr>
<td>Observations</td>
<td>214,534</td>
<td>214,534</td>
</tr>
</tbody>
</table>

Table 5

Same sample and controls as previous table.
A falsification test shows that these patterns are absent from credit card lending (which is automated).

Table 6

<table>
<thead>
<tr>
<th></th>
<th>CC Limit Inc. (1)</th>
<th>CC Limit Inc. (2)</th>
<th>CC Limit Inc. (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minority</td>
<td>38.23</td>
<td>-10.44</td>
<td>110.36</td>
</tr>
<tr>
<td></td>
<td>(73.09)</td>
<td>(84.07)</td>
<td>(85.54)</td>
</tr>
<tr>
<td>Minority X High Racial Bias State</td>
<td>181.61</td>
<td></td>
<td>-234.78</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(154.99)</td>
<td>(145.53)</td>
</tr>
<tr>
<td>Minority X Low Banking Competition</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Banking Competition</td>
<td></td>
<td>74.16</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(72.00)</td>
<td></td>
</tr>
<tr>
<td>R-Squared</td>
<td>0.075</td>
<td>0.075</td>
<td>0.075</td>
</tr>
<tr>
<td>Observations</td>
<td>124,601</td>
<td>124,601</td>
<td>124,601</td>
</tr>
</tbody>
</table>

➢ Sample: People applying for credit cards or limit increases, during the same borrower-year as their auto loan application.
➢ Controls: Same as auto credit approval tests.
Minorities pay higher interest rates on auto loans than comparable white borrowers.

<table>
<thead>
<tr>
<th>Demographics and Interaction Terms</th>
<th>APR (1)</th>
<th>APR (2)</th>
<th>APR (3)</th>
<th>APR (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minority</td>
<td>1.600*** (0.169)</td>
<td>0.704*** (0.117)</td>
<td>0.442*** (0.084)</td>
<td>0.614*** (0.110)</td>
</tr>
<tr>
<td>Minority X High Racial Bias State</td>
<td>0.805*** (0.166)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minority X Low Banking Competition</td>
<td>0.293 (0.208)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Banking Competition</td>
<td>0.052 (0.065)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R-Squared</td>
<td>0.255</td>
<td>0.440</td>
<td>0.441</td>
<td>0.441</td>
</tr>
<tr>
<td>Observations</td>
<td>25,531</td>
<td>25,523</td>
<td>25,523</td>
<td>25,523</td>
</tr>
</tbody>
</table>

**Controls:**

**New:** Loan Term Indicators, Loan Amount, Auto Loan to Income Ratio, Auto Debt Share, Origination Month Indicators

**All from Previous Tests:** Demographics, Financial Health, ZIP Code Characteristics, State-by-Year FE, and indicators for time relative to the link

Note: Column 1 omits the financial health controls
Next, we implement the toughest test.

Any concerns about OVB should cut both ways:
➢ If minorities are less creditworthy than the econometric model predicts, they should **default more**.

Becker (1957, 1993) “outcome test”:
➢ Test whether loans to marginal minority borrowers are more profitable than loans to marginal white borrowers.
➢ In practice, researchers test whether minorities **default less, ceteris paribus**.
Ceteris paribus, minorities default less.

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Full Sample (1)</th>
<th>Subprime Borrowers (2)</th>
<th>Prime Borrowers (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minority</td>
<td>$-0.237$</td>
<td>$-2.337^{**}$</td>
<td>$0.288$</td>
</tr>
<tr>
<td></td>
<td>$(0.397)$</td>
<td>$(1.125)$</td>
<td>$(0.345)$</td>
</tr>
<tr>
<td>R-Squared</td>
<td>$0.096$</td>
<td>$0.173$</td>
<td>$0.054$</td>
</tr>
<tr>
<td>Observations</td>
<td>10,509</td>
<td>2,005</td>
<td>8,480</td>
</tr>
</tbody>
</table>

Table 9

Controls:

**New**: Auto Loan Interest Rate

**All from Previous Tests**: Loan Characteristics, Demographics, Financial Health, ZIP Code Characteristics, State-by-Year FE, and indicators for origination month and time relative to the link
Other loan profitability factors cannot explain our results.

➢ Prepayment risk is higher for White borrowers.

➢ What about differences in recovery rates?
  ▪ Assume the recovery rate for White borrowers is 58% (average for prime borrowers)
  ▪ Assume the recovery rate for minorities is 0% (cars can’t be repossessed or are worthless)
    ➔ Calibration shows even this could not explain the magnitude of our interest rate results.

➢ Remember, any other profitability factors would have to be able to explain the cross-sectional variation in our results.
Policy Analysis:
In 2013, the CFPB sharply increased its anti-discrimination enforcement.

**Direct auto lending:** apply for loan at a bank, credit union, etc.

**Indirect auto lending:** car dealership employee helps arrange financing with a third party

- March 2013 – CFPB issued a Special Bulletin warning indirect (mostly non-bank) auto lenders they were liable for interest rate discrimination

- December 2013 – CFPB & DOJ fined Ally Bank $98 million for charging minorities higher interest rates
The CFPB’s 2013 enforcement initiative reduced discrimination at the non-bank lenders it targeted.

Figure 3
Increased oversight reduced discrimination.

2013 CFPB Initiative:

➢ Overall, it led to a 60% reduction in the additional APR paid by minorities (from 84bps to 35bps)

➢ Had no effect on approval rates for minorities… suggesting that the additional interest minorities were paying wasn’t necessary to make the loans viable

➢ This is the first analysis of the market-wide impact of the CFPB’s initiative

➢ Important, because CFPB oversight is controversial:

The 2013 Bulletin used to spearhead the CFPB’s efforts was repealed in 2018
Thank You!