Black Tax: Evidence of Racial Discrimination in Municipal Borrowing Costs

Authors: Ashleigh Eldemire, University of Tennessee, Kimberly F. Luchtenberg, American University, Matthew M. Wynter, Stony Brook University

Brookings Institute

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Overview and key finding

- Main finding: Cities and towns with higher BlackPop% pay higher borrowing costs: +.44bps ($4.6K per-year) in total annualized costs
  - BlackPop median: 7.4 percent
  - Sample: Rated Direct issues (3K+ Cities/counties), 66.5K+ bonds, State*Year FE

- We face several empirical challenges including: Endog, Difficulty to measure tastes (racial resentment) and statistical discrimination (credit, liquidity, etc)
  - We use 1980 BlackPop, various measures of racial resentment, time-variation, and the bond controls standard in the literature (credit, liquidity, muni controls, etc)

- Why does racial discrimination increase municipal borrowing cost?
  - Endog: (BlackPop1980), Market Structure (Tax Priv, Shorting), Default Free (robust), Tax Adjs (0.97bps)
  - Also found for Latino Pop (out of sample)
  - Suggests: limited competition can enable racial bias to influence muni prices
Racial bias can reduce financial inclusion in credit markets

- Minority borrowers pay higher car loan rates, despite having lower default rates (Butler et al, 2020)
- Black-owned homes devalued (~ $48K, Perry, Rothwell, and Harshbarger, 2018)
How can perceived credit risk complicate issuance costs?

- **Diverse municipalities**
  - Key idea: bias affects credit risk (Dougal et al. 2019) and liquidity (offering size) (R&T, 2011)
  - Lower voter support for spending when minorities are expected to benefit (Alesina et al. 1999)
  - (-) bond elections, (+) larger offers (coalition building) (Rugh and Trounstine, 2011)
  - (+) pricing discounts (Longstaff, 2011)
  - Bergstresser et al. (2013) - no credit rating evidence that diverse municipalities are riskier
Economic Setting

- Rated Direct Offers (SDC 1990 - 2019), link to US Census (race and ethnicity)
  - Key idea: Rated Bonds, Directly associated with cities and counties that issue

- How can discrimination operate in our setting? Taste and Statistical
  - Taste-Based: +Black residents ≠ riskier
  - Stat-based: Priced lower regardless of demographics (riskier, less liquid, etc)

- Important points: No credit rating evidence that diverse municipalities are riskier (Bergstresser et al. (2013))
  - For example, in our sample: +BlackPop% look less risky (Bigger Population, Higher Employment, Higher Income) (next slides)
  - Also, no evidence with ratings’ downgrades or lower credit ratings (Badu et al., 1996)
Sample Snapshot (From Table 1)

- Municipal Bonds (SDC, Global Public Finance Database)

- Sample selection:
  - 66,502 rated-direct offers (1990-2019)
  - Keep: direct issues by county/parish (issuer type 11), city/town/village (type 12)
  - Drop: state/agency issuers, non-missing price or gross spread

<table>
<thead>
<tr>
<th></th>
<th>mean</th>
<th>p50</th>
<th>sd</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ann. Total Cost (%)</td>
<td>2.70</td>
<td>2.40</td>
<td>1.92</td>
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<tr>
<td>Yield (%)</td>
<td>2.67</td>
<td>2.40</td>
<td>1.91</td>
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<tr>
<td>Spread (%)</td>
<td>0.80</td>
<td>0.70</td>
<td>0.47</td>
</tr>
<tr>
<td>Maturity</td>
<td>15.14</td>
<td>15.11</td>
<td>8.13</td>
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<td>Offer Amount</td>
<td>23.74</td>
<td>6.95</td>
<td>66.57</td>
</tr>
<tr>
<td>Long-term Rating</td>
<td>14.52</td>
<td>17.00</td>
<td>5.67</td>
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<tr>
<td>Callable</td>
<td>0.73</td>
<td>1.00</td>
<td>0.44</td>
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<tr>
<td>Sinking Fund</td>
<td>0.26</td>
<td>0.00</td>
<td>0.43</td>
</tr>
<tr>
<td>Pre-refunded</td>
<td>0.64</td>
<td>1.00</td>
<td>0.47</td>
</tr>
<tr>
<td>Competitive</td>
<td>0.56</td>
<td>1.00</td>
<td>0.49</td>
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<tr>
<td>GO</td>
<td>0.75</td>
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<td>Tax Exempt</td>
<td>0.88</td>
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<td>0.31</td>
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<tr>
<td>Insured</td>
<td>0.16</td>
<td>0.00</td>
<td>0.37</td>
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<tr>
<td>Multi-cusips</td>
<td>0.72</td>
<td>1.00</td>
<td>0.44</td>
</tr>
</tbody>
</table>
Table 1 (Issuer Descriptive Stats)

Key point: Economic theory would predict lower, not higher costs

Higher BlackPop%
- Larger (pop)
- +Income per capita
- + Employment

- But, have higher levels of racial resentment and racist tweets

<table>
<thead>
<tr>
<th></th>
<th>Below Median</th>
<th></th>
<th></th>
<th>Above Median</th>
<th></th>
<th></th>
<th>Mean t-test Below-Above</th>
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<td></td>
<td>mean</td>
<td>p50</td>
<td>sd</td>
<td>mean</td>
<td>p50</td>
<td>sd</td>
<td>diff</td>
</tr>
<tr>
<td>Black Pop. (%)</td>
<td>5.69</td>
<td>2.68</td>
<td>6.99</td>
<td>11.83</td>
<td>8.73</td>
<td>10.97</td>
<td>-6.14***</td>
</tr>
<tr>
<td>White Pop. (%)</td>
<td>79.41</td>
<td>84.37</td>
<td>19.14</td>
<td>70.21</td>
<td>73.33</td>
<td>18.84</td>
<td>9.19***</td>
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<tr>
<td>County Size (log)</td>
<td>11.69</td>
<td>11.73</td>
<td>1.35</td>
<td>12.84</td>
<td>13.03</td>
<td>1.36</td>
<td>-1.15***</td>
</tr>
<tr>
<td>Income/PC (10K)</td>
<td>3.74</td>
<td>3.53</td>
<td>1.52</td>
<td>4.03</td>
<td>3.84</td>
<td>1.64</td>
<td>-0.28***</td>
</tr>
<tr>
<td>Employment/PC</td>
<td>0.54</td>
<td>0.53</td>
<td>0.13</td>
<td>0.62</td>
<td>0.61</td>
<td>0.16</td>
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<td>RacialResnt</td>
<td>25.83</td>
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<td>28.91</td>
<td>31.00</td>
<td>13.58</td>
<td>-3.07***</td>
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<td>nqRacialResnt</td>
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<td>2.00</td>
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<td>2.14</td>
<td>2.00</td>
<td>0.82</td>
<td>-0.17***</td>
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<td>RacistTweets</td>
<td>24.31</td>
<td>23.50</td>
<td>12.36</td>
<td>26.17</td>
<td>23.50</td>
<td>11.82</td>
<td>-1.86***</td>
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<tr>
<td>nqRacistTweets</td>
<td>1.87</td>
<td>2.00</td>
<td>0.70</td>
<td>1.99</td>
<td>2.00</td>
<td>0.71</td>
<td>-0.12***</td>
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<td>State Tax Privilege</td>
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<td>1.00</td>
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<td>0.10***</td>
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<td>Obs.</td>
<td>13659</td>
<td></td>
<td></td>
<td>52840</td>
<td></td>
<td></td>
<td>66499</td>
</tr>
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</table>
What do we do?

- We predict +BlackPop% increases ATC due to racial bias
  - Taste Based: **Predicts**: + Racial Resentment (states and time-periods)
  - Stat Based: **Predicts**: +Credit risk, +Large offers, -/+Maturity

How do we attempt to identify Taste and Stat Discrimination?

- **Credit risk**: standard controls (Butler et al 2009) (BEA - income, employment)
- **Liquidity risk**: offer size (Longstaff, 2011), **Maturity** (Bond Years)
- **Taste**: Racial bias: Resentment measures (Cooperate Congressional Election Study) (Ansolabehere, 2012; Dougal et al., 2019); Racist tweets following Obama’s second presidential election (Zook 2012) (Main idea: States)
  - Elections (Presidential Election Cycles of Obama 2008, 2012 and Trump 2016) - Pew and Gallup Surveys suggests changing levels of racial resentment during these election cycles; Gubernatorial Elections (Main idea: Time Periods)
- **Market structure**: State tax privilege (Schultz, 2012; Babina et al., 2021)
- **Bankruptcy protection**: (Gao et al., 2019)
Main Regression Specification

\[
Total \text{ Annualized Cost}_{i,t} = \\
\beta_1 \text{BlackPop}_{i,t-1} + \gamma_1 \text{County Controls}_{i,t-1} + \gamma_2 \text{Bond Controls} + \gamma_3 \text{State} \times \text{Year fixed effects} + \epsilon_{i,t}
\]

\[
\text{ATC} = \sum \text{ offering yield } + \text{annualized gross spread}, \quad (\text{Butler et al. 2009})
\]

\[
\text{BlackPop} = \text{proportion of Black residents in county } i, \text{ at } t-1
\]

- **County Controls:** Log(total population), per capita income, per capital employment
- **Bond Controls:** Ln(issue amount), ln(maturity), issuers long-term credit rating
  - Indicators: Callable, Sinkable, Pre-refunded, Competitive issues, General Obligation, Federal Tax Exempt, Insured
  - Indicator for four or more CUSIPS packaged in the same issue (Coalition building)
  - State*Year FE (account for any local effects and compare bonds within the same state and year)
- All errors clustered by county and year
Table 2: Bond Descriptive Stats

<table>
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<th>Parameter</th>
<th>Below Median</th>
<th>Above Median</th>
<th>Mean t-Test Below-Above</th>
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<td>Black Pop. (%) Below Median</td>
<td>mean 2.56</td>
<td>mean 2.74</td>
<td>diff. -0.18***</td>
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<td>p50 2.10</td>
<td>p50 2.50</td>
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<tr>
<td></td>
<td>sd 1.87</td>
<td>sd 1.93</td>
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<td></td>
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<tr>
<td>Ann. Total Cost (%)</td>
<td>mean 2.53</td>
<td>mean 2.71</td>
<td>diff. -0.17***</td>
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<td></td>
<td>p50 2.06</td>
<td>p50 2.48</td>
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<tr>
<td></td>
<td>sd 1.86</td>
<td>sd 1.92</td>
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<tr>
<td>Yield (%)</td>
<td>mean 0.85</td>
<td>mean 0.79</td>
<td>diff. 0.06***</td>
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<tr>
<td></td>
<td>p50 0.74</td>
<td>p50 0.68</td>
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<td></td>
<td>sd 0.48</td>
<td>sd 0.47</td>
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<tr>
<td>Spread (%)</td>
<td>mean 15.29</td>
<td>mean 15.10</td>
<td>diff. 0.19*</td>
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<td></td>
<td>p50 15.26</td>
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<td>sd 7.78</td>
<td>sd 8.22</td>
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<td>Maturity</td>
<td>mean 14.70</td>
<td>mean 26.07</td>
<td>diff. -11.36***</td>
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<td></td>
<td>p50 6.02</td>
<td>p50 7.18</td>
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<td></td>
<td>sd 26.63</td>
<td>sd 73.26</td>
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<tr>
<td>Offer Amount</td>
<td>mean 14.14</td>
<td>mean 14.62</td>
<td>diff. -0.48***</td>
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<td></td>
<td>p50 17.00</td>
<td>p50 17.00</td>
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<td></td>
<td>sd 5.98</td>
<td>sd 5.58</td>
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<td>Long-term Rating</td>
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<td>mean 0.73</td>
<td>diff. -0.01**</td>
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<td>p50 1.00</td>
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<td></td>
<td>sd 0.44</td>
<td>sd 0.44</td>
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<tr>
<td>Callable</td>
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<td>mean 0.26</td>
<td>diff. 0.00</td>
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<td>p50 0.00</td>
<td>p50 0.00</td>
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<td>sd 0.44</td>
<td>sd 0.43</td>
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<tr>
<td>Sinking Fund</td>
<td>mean 0.63</td>
<td>mean 0.65</td>
<td>diff. -0.01**</td>
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<tr>
<td></td>
<td>p50 1.00</td>
<td>p50 1.00</td>
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<td></td>
<td>sd 0.48</td>
<td>sd 0.47</td>
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<tr>
<td>Pre-refunded</td>
<td>mean 0.54</td>
<td>mean 0.56</td>
<td>diff. -0.02***</td>
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<td>p50 1.00</td>
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<td></td>
<td>sd 0.49</td>
<td>sd 0.49</td>
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<td></td>
</tr>
<tr>
<td>Competitive</td>
<td>mean 0.76</td>
<td>mean 0.74</td>
<td>diff. 0.01**</td>
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<tr>
<td></td>
<td>p50 1.00</td>
<td>p50 1.00</td>
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<td></td>
<td>sd 0.42</td>
<td>sd 0.43</td>
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<tr>
<td>GO</td>
<td>mean 0.91</td>
<td>mean 0.88</td>
<td>diff. 0.03***</td>
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<td></td>
<td>p50 1.00</td>
<td>p50 1.00</td>
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<tr>
<td>Tax Exempt</td>
<td>mean 0.19</td>
<td>mean 0.16</td>
<td>diff. 0.03***</td>
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<td>p50 0.00</td>
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<td>Insured</td>
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<td>mean 0.75</td>
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<td>p50 1.00</td>
<td>p50 1.00</td>
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<td></td>
<td>sd 0.49</td>
<td>sd 0.42</td>
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<tr>
<td>Multi-cusips</td>
<td>mean 13659</td>
<td>mean 52840</td>
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<td>Obs.</td>
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</tbody>
</table>

Municipalities with higher BlackPop% pay more and have larger issuances (relative to other issuers in the same state and year).
Table 3: Main Result

Key finding:

+BlackPop% higher costs (relative to other muni issuers in the same state and year)

IV: BlackPop 1980

<table>
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<tr>
<th></th>
<th>OLS</th>
<th>2SLS IV: Black Pop. 1980(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Black Pop.(%)</strong></td>
<td>0.485*** (0.140)</td>
<td>0.692*** (0.184)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.588*** (0.133)</td>
</tr>
<tr>
<td><strong>Ln(Black Pop.)</strong></td>
<td>0.539*** (0.171)</td>
<td>0.514*** (0.152)</td>
</tr>
<tr>
<td></td>
<td></td>
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</tr>
<tr>
<td>Maturity</td>
<td>0.179*** (0.036)</td>
<td>0.180*** (0.036)</td>
</tr>
<tr>
<td></td>
<td>(0.017)</td>
<td>(0.017)</td>
</tr>
<tr>
<td>Offer Amt (M)</td>
<td>0.001 -0.001</td>
<td>-0.001 -0.001</td>
</tr>
<tr>
<td></td>
<td>(0.017)</td>
<td>(0.017)</td>
</tr>
<tr>
<td>Long-term Rating</td>
<td>0.012*** (0.004)</td>
<td>0.012*** (0.004)</td>
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<tr>
<td></td>
<td>(0.025)</td>
<td>(0.024)</td>
</tr>
<tr>
<td>Callable</td>
<td>0.058** (0.025)</td>
<td>0.059** (0.024)</td>
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<tr>
<td></td>
<td>(0.033)</td>
<td>(0.033)</td>
</tr>
<tr>
<td>Sinking Fund</td>
<td>0.328*** (0.033)</td>
<td>0.328*** (0.033)</td>
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<tr>
<td></td>
<td>(0.033)</td>
<td>(0.033)</td>
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</table>
Table 4: Borrowing Costs, Racial Resentment

Main Hypothesis:
Yes, costs appear concentrated in states with higher levels of racial resentment (and racist tweets, next slide)

<table>
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<tr>
<th></th>
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<th>2SLS, IV: Black Pop.1980(%)</th>
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<tr>
<td></td>
<td>(1) High</td>
<td>(2) Low</td>
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<tr>
<td>Black Pop.(%)</td>
<td>0.489**</td>
<td>0.326</td>
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<tr>
<td></td>
<td>(0.184)</td>
<td>(0.356)</td>
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<tr>
<td>Ln(Black Pop.)</td>
<td>0.416***</td>
<td>0.098***</td>
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<tr>
<td></td>
<td>(0.075)</td>
<td>(0.028)</td>
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<tr>
<td>Maturity</td>
<td>-0.025</td>
<td>-0.035**</td>
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<td>(0.021)</td>
<td>(0.015)</td>
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<td>Offer Amt (M)</td>
<td>0.014**</td>
<td>0.013***</td>
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<td>(0.006)</td>
<td>(0.004)</td>
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<tr>
<td>Long-term Rating</td>
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</table>
Table 4: Borrowing Costs, Racial Resentment

Main Hypothesis:
Higher costs are driven by states with higher levels of racial bias, as captured by racists tweets

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<thead>
<tr>
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<th>OLS</th>
<th>2SLS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Black Pop.(%)</td>
<td>0.617***</td>
<td>0.304</td>
</tr>
<tr>
<td></td>
<td>(0.182)</td>
<td>(0.318)</td>
</tr>
<tr>
<td>Ln(Black Pop.)</td>
<td>0.176***</td>
<td>0.223***</td>
</tr>
<tr>
<td></td>
<td>(0.059)</td>
<td>(0.048)</td>
</tr>
<tr>
<td>Maturity</td>
<td>0.015</td>
<td>-0.040*</td>
</tr>
<tr>
<td></td>
<td>(0.019)</td>
<td>(0.021)</td>
</tr>
</tbody>
</table>
### Table 5: Borrowing Costs, Bond Terms

<table>
<thead>
<tr>
<th>PANEL A: Offer Amount</th>
<th>Full Sample</th>
<th>Small Offers by Resentment</th>
<th>Large Offers by Resentment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1) Small Offers</td>
<td>(2) Large Offers</td>
<td>(3) High</td>
</tr>
<tr>
<td>Ln(Black Pop.)</td>
<td>0.249</td>
<td>0.633***</td>
<td>0.037</td>
</tr>
<tr>
<td></td>
<td>(0.156)</td>
<td>(0.166)</td>
<td>(0.201)</td>
</tr>
<tr>
<td>R²</td>
<td>0.776</td>
<td>0.706</td>
<td>0.770</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.766</td>
<td>0.694</td>
<td>0.759</td>
</tr>
<tr>
<td>Controls</td>
<td>✓</td>
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<td>✓</td>
</tr>
<tr>
<td>State × Year FE</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Clustered County, Year</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Observations</td>
<td>31977</td>
<td>30657</td>
<td>9694</td>
</tr>
</tbody>
</table>

**Key finding:**

Taste and Stat discrimination matter

Higher costs for large offers and bonds w/o long-term ratings (not shown on slide)

Largely driven by states with high racial resentment
### Table 6: State-Tax Privilege, Competition

<table>
<thead>
<tr>
<th></th>
<th>Full Sample</th>
<th>Privilege by Resentment</th>
<th>No Privilege by Resentment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1) Privilege</td>
<td>(2) No Privilege</td>
<td>(3) High</td>
</tr>
<tr>
<td>Ln(Black Pop.)</td>
<td>0.582***</td>
<td>0.453*</td>
<td>0.692**</td>
</tr>
<tr>
<td></td>
<td>(0.184)</td>
<td>(0.239)</td>
<td>(0.270)</td>
</tr>
<tr>
<td>R²</td>
<td>0.750</td>
<td>0.717</td>
<td>0.699</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.745</td>
<td></td>
<td>0.690</td>
</tr>
<tr>
<td>Controls</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>State × Year FE</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Clustered County, Year</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Observations</td>
<td>37401</td>
<td>25647</td>
<td>8515</td>
</tr>
</tbody>
</table>

**Channel:**
- Taste and Market structure

The costs are concentrated in states with high tax privilege and higher racial resentment.

Suggests taste of marginal investor are important.
Table 7: Pres Elections, (Time-varying Resent)

White Racial Resentment Before, During Obama Years

BY ROBERT BIRD AND FRANK NEWPORT

What impact did the first African-American U.S. president, Barack Obama, have on racial attitudes in the U.S.? Did race relations improve, stay the same or get worse during his administration -- the last perhaps as a result of a "backlash" effect among racially resentful whites?

Our recent analysis of several indicators of racial resentment before and during the Obama administration provides evidence that racial resentment decreased among the majority of white Americans during Obama’s presidency. Republicans were the only political group who did not decrease in racial resentment -- but they did not increase significantly either.

Most Americans Say Trump’s Election Has Led to Worse Race Relations in the U.S.

Growing share of public says there is too little focus on race issues

Survey Report

Nearly a year into Donald Trump’s presidency, a majority of Americans (60%) say his election has led to worse race relations in the United States. Just 8% say Trump’s election has led to better race relations, while 30% say it has not made a difference.

Shortly after Trump’s victory last year, voters had less negative expectations for how his election would affect race relations. In November 2016, nearly half (46%) said it would lead to worse race relations, while 25% expected his election to lead to improved race relations (another 20% expected little change).

POLLING MATTERS MAY 10, 2017

Channel:

Rising and falling national levels of racial resentment

-Surveys predict:

(-) The costs would fall during the Obama-cycle (2008, 2012)

(+) The costs would rise during the Trump-cycle (2016)
Table 7: Pres Elections, (Time-varying Resent)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ln(Black Pop.)</td>
<td>0.522*** (0.159)</td>
<td>0.527*** (0.157)</td>
<td>0.522*** (0.153)</td>
<td>0.521*** (0.156)</td>
<td>0.510*** (0.152)</td>
</tr>
<tr>
<td>Election Year=1 × Ln(Black Pop.)</td>
<td>-0.107 (0.197)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polarized Election=1 × Ln(Black Pop.)</td>
<td>-0.265 (0.268)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008 Election=1 × Ln(Black Pop.)</td>
<td>-0.606*** (0.162)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012 Election=1 × Ln(Black Pop.)</td>
<td>-0.392** (0.143)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2016 Election=1 × Ln(Black Pop.)</td>
<td></td>
<td>0.291** (0.129)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Election Year=1</td>
<td>-0.037 (0.067)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polarized Election=1</td>
<td>-0.010 (0.065)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008 Election=1</td>
<td></td>
<td>0.168*** (0.014)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012 Election=1</td>
<td></td>
<td>-0.079*** (0.016)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2016 Election=1</td>
<td></td>
<td>-0.089*** (0.010)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Main Hypothesis:
Yes, the costs fall in 2008, 2012 and rise in 2016 election cycle

Suggests time variation in racial resentment can be important for mispricing.
Table 7: Pres Elections, (Time-varying Resent)

<table>
<thead>
<tr>
<th>Panel B: Polarized Elections</th>
<th>2008 by Resentment</th>
<th>2012 by Resentment</th>
<th>2016 by Resentment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1) High</td>
<td>(2) Low</td>
<td>(3) High</td>
</tr>
<tr>
<td>Ln(Black Pop.)</td>
<td>0.497** (0.184)</td>
<td>0.320 (0.355)</td>
<td>0.511** (0.191)</td>
</tr>
<tr>
<td>2008 Election=1 x Ln(Black Pop.)</td>
<td>-0.596*** (0.205)</td>
<td>0.749 (0.526)</td>
<td>-0.912*** (0.223)</td>
</tr>
<tr>
<td>2012 Election=1 x Ln(Black Pop.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2016 Election=1</td>
<td>0.192*** (0.041)</td>
<td>0.131*** (0.023)</td>
<td>-0.009 (0.041)</td>
</tr>
<tr>
<td>R²</td>
<td>0.720</td>
<td>0.785</td>
<td>0.720</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.712</td>
<td>0.781</td>
<td>0.712</td>
</tr>
<tr>
<td>Controls</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>State × Year FE</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Clustered County, Year</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Observations</td>
<td>18942</td>
<td>26560</td>
<td>18942</td>
</tr>
</tbody>
</table>

Channels:

(⁻) 2008 and 2012 are driven by states with relatively high resentment

(₊) 2016 driven by state with relatively low resentment

Suggests changing levels of racial resentment can affect municipal borrowing costs
Table 8: Gov Elections, (Time-varying Resent)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ln(Black Pop.)</td>
<td>0.832***</td>
<td>0.853*</td>
<td>0.739**</td>
</tr>
<tr>
<td></td>
<td>(0.231)</td>
<td>(0.397)</td>
<td>(0.302)</td>
</tr>
<tr>
<td>Gub. Election Cycle=1 × Ln(Black Pop.)</td>
<td>-0.566</td>
<td>-0.402</td>
<td>-0.533</td>
</tr>
<tr>
<td></td>
<td>(0.366)</td>
<td>(0.371)</td>
<td>(0.488)</td>
</tr>
<tr>
<td>Gub. Election Cycle=1</td>
<td>-0.081</td>
<td>-0.045</td>
<td>-0.150***</td>
</tr>
<tr>
<td></td>
<td>(0.052)</td>
<td>(0.080)</td>
<td>(0.040)</td>
</tr>
<tr>
<td>R²</td>
<td>0.478</td>
<td>0.489</td>
<td>0.448</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.469</td>
<td>0.481</td>
<td>0.439</td>
</tr>
<tr>
<td>Controls</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>State × Year FE</td>
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<tr>
<td>Clustered County, Year</td>
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<td>✓</td>
</tr>
<tr>
<td>Observations</td>
<td>29910</td>
<td>14726</td>
<td>14180</td>
</tr>
</tbody>
</table>

Key finding:

Higher costs for states that elect Dem or Rep Govs

Suggests cost are not found across US political structures
Table 10: Non-Black Minorities

<table>
<thead>
<tr>
<th></th>
<th>Full Sample (1)</th>
<th>By Resentment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(2) High</td>
</tr>
<tr>
<td>Black Pop.(%)</td>
<td>0.474*** (0.130)</td>
<td>0.430** (0.163)</td>
</tr>
<tr>
<td>Hispanic Pop. (%)</td>
<td>0.188* (0.097)</td>
<td>0.005 (0.096)</td>
</tr>
<tr>
<td>Asian &amp; P. I. Pop. (%)</td>
<td>0.087 (0.317)</td>
<td>0.219 (0.686)</td>
</tr>
<tr>
<td>R²</td>
<td>0.716</td>
<td>0.701</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.710</td>
<td>0.693</td>
</tr>
<tr>
<td>Controls</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>State × Year FE</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Clustered County, Year</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Mean stats:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian &amp; P.I. Pop. (%)</td>
<td>4.04</td>
<td>2.81</td>
</tr>
<tr>
<td>Hispanic Pop. (%)</td>
<td>11.37</td>
<td>15.31</td>
</tr>
<tr>
<td>Observations</td>
<td>62139</td>
<td>18651</td>
</tr>
</tbody>
</table>

Key finding:

Higher costs for issuers with larger proportions of Hispanic residents.

Suggests pricing penalties are not exclusive to BlackPop%.
Racial discrimination seems to increase municipal borrowing costs.

- Suggests that marginal investors’ taste and the municipal bond market’s structure can increase municipal borrowing costs

- +1pp(%) of Black Pop ~+.44bps in total annualized costs relative to peer issuers.
  - Note, BlackPop% is relatively small for the typical issuer (~7.4 percent)
  - Large national sample (3K+ issuers, SDC) over long time series (1990 - 2019)

We find that both taste-based and statistical discrimination matter

- +BlackPop seem less risky, not more: (+pop. Size, +income, +employment).
  - The mispricing is higher in periods of increased racial resentment and in states with more segmented markets


Conclusion