Black Tax: Evidence of Racial Discrimination in Municipal Borrowing Costs

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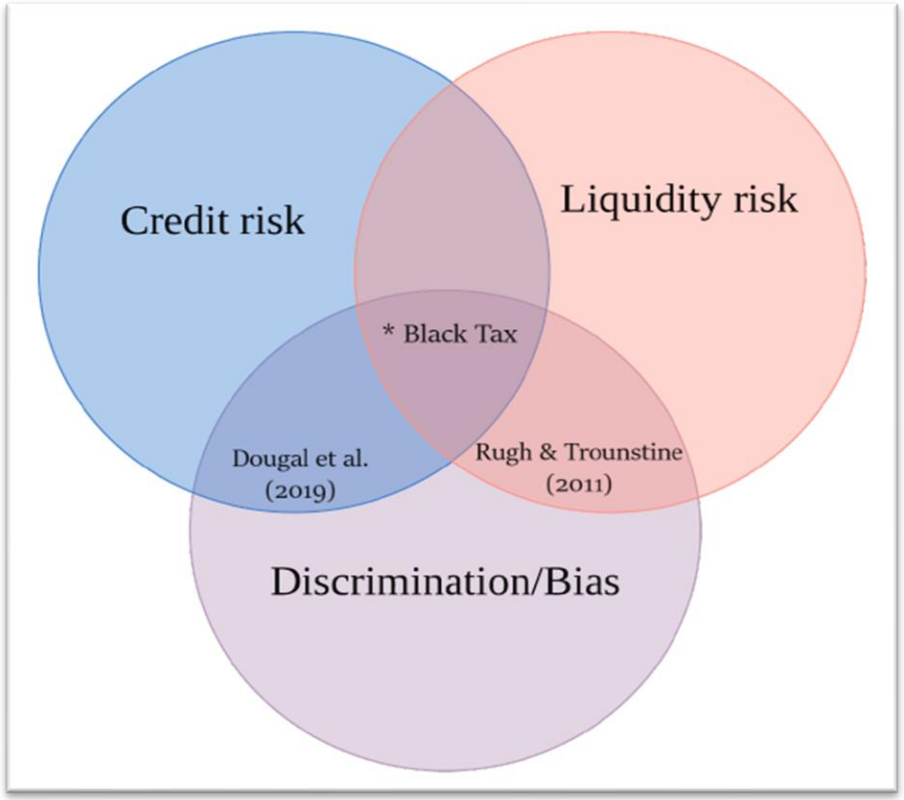
Overview and key finding

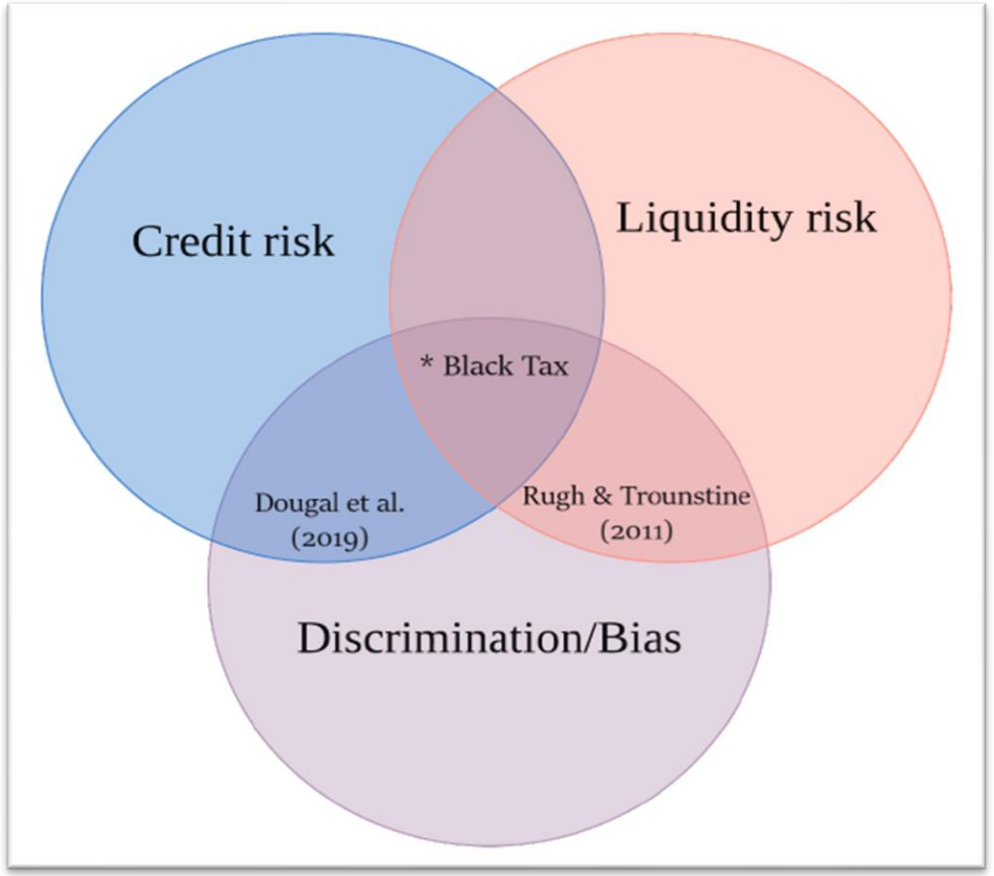
- Main finding: Cities and towns with higher BlackPop% pay higher borrowing costs: +.44bps ($4.6K per-year) in total annualized costs
  - BlackPop median: 7.4 percent
  - Sample: **Rated** Direct issues (3K+ Cities/counties), 66.5K+ bonds, State*Year FE
- We face several empirical challenges including: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

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

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

	Below Median			Above Median			Mean t-test Below-Above
	mean	p50	sd	mean	p50	sd	diff
Black Pop.(%)	5.69	2.68	6.99	11.83	8.73	10.97	-6.14***
White Pop.(%)	79.41	84.37	19.14	70.21	73.33	18.84	9.19***
County Size(log)	11.69	11.73	1.35	12.84	13.03	1.36	-1.15***
Income/PC (10K)	3.74	3.53	1.52	4.03	3.84	1.64	-0.28***
Employment/PC	0.54	0.53	0.13	0.62	0.61	0.16	-0.08***
RacialResnt	25.83	28.00	15.63	28.91	31.00	13.58	-3.07***
nqRacialResnt	1.97	2.00	0.85	2.14	2.00	0.82	-0.17***
RacistTweets	24.31	23.50	12.36	26.17	23.50	11.82	-1.86***
nqRacistTweets	1.87	2.00	0.70	1.99	2.00	0.71	-0.12***
State Tax Privilege	0.68	1.00	0.46	0.57	1.00	0.49	0.10***
Obs.	13659			52840			66499

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

$$\textit{Total Annualized Cost}_{i,t} = \beta_1 \textit{BlackPop}_{i,t-1} + \gamma_1 \textit{CountyControls}_{i,t-1} + \gamma_2 \textit{BondControls} + \gamma_3 \textit{State} \times \textit{Year fixed effects} + \epsilon_{i,t}$$

ATC = $\sum$ offering yield + annualized gross spread, (Butler et al. 2009)

BlackPop = proportion of Black residents in county i, 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

	Black Pop. (%) Below Median			Black Pop. (%) Above Median			Mean t-Test Below-Above
	mean	p50	sd	mean	p50	sd	diff.
Ann. Total Cost (%)	2.56	2.10	1.87	2.74	2.50	1.93	-0.18***
Yield (%)	2.53	2.06	1.86	2.71	2.48	1.92	-0.17***
Spread (%)	0.85	0.74	0.48	0.79	0.68	0.47	0.06***
Maturity	15.29	15.26	7.78	15.10	15.09	8.22	0.19*
Offer Amount	14.70	6.02	26.63	26.07	7.18	73.26	-11.36***
Long-term Rating	14.14	17.00	5.98	14.62	17.00	5.58	-0.48***
Callable	0.72	1.00	0.44	0.73	1.00	0.44	-0.01**
Sinking Fund	0.26	0.00	0.44	0.26	0.00	0.43	0.00
Pre-refunded	0.63	1.00	0.48	0.65	1.00	0.47	-0.01**
Competitive	0.54	1.00	0.49	0.56	1.00	0.49	-0.02***
GO	0.76	1.00	0.42	0.74	1.00	0.43	0.01**
Tax Exempt	0.91	1.00	0.27	0.88	1.00	0.32	0.03***
Insured	0.19	0.00	0.39	0.16	0.00	0.36	0.03***
Multi-cusips	0.59	1.00	0.49	0.75	1.00	0.42	-0.16***
Obs.	13659			52840			66499

Municipalities with higher BlackPop% pay more and have larger issuances (relative to other issuers in the same state and year)

Table 3: Main Result

	OLS					2SLS IV: Black Pop.$_{1980}$(%)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Black Pop.(%)	0.485***			0.444***		0.692***	0.588***
	(0.140)			(0.125)		(0.184)	(0.133)
Ln(Black Pop.)		0.539***			0.514***		
		(0.171)			(0.152)		
Maturity			0.179***	0.180***	0.180***		0.180***
			(0.036)	(0.036)	(0.036)		(0.036)
Offer Amt (M)			0.001	-0.001	-0.001		-0.000
			(0.017)	(0.017)	(0.017)		(0.018)
Long-term Rating			0.012***	0.012***	0.012***		0.012***
			(0.004)	(0.004)	(0.004)		(0.004)
Callable			0.058**	0.059**	0.059**		0.061**
			(0.025)	(0.024)	(0.024)		(0.025)
Sinking Fund			0.328***	0.328***	0.328***		0.329***
			(0.033)	(0.033)	(0.033)		(0.033)

Key finding:

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

IV: BlackPop 1980

Table 4: Borrowing Costs, Racial Resentment

PANEL A: Racial Resentment	OLS		2SLS, IV: Black Pop.$_{1980}$(%)	
	(1) High	(2) Low	(3) High	(4) Low
Black Pop.(%)			0.438***	1.091
			(0.135)	(0.643)
Ln(Black Pop.)	0.489**	0.326		
	(0.184)	(0.356)		
Maturity	0.416***	0.098***	0.412***	0.098***
	(0.075)	(0.028)	(0.074)	(0.028)
Offer Amt (M)	-0.025	-0.035**	-0.021	-0.037**
	(0.021)	(0.015)	(0.021)	(0.015)
Long-term Rating	0.014**	0.013***	0.015**	0.013***
	(0.006)	(0.004)	(0.006)	(0.004)

Main Hypothesis:

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

Table 4: Borrowing Costs, Racial Resentment

PANEL B: Racist Tweets	OLS		2SLS IV: Black Pop.$_{1980}$(%)	
	(1) High	(2) Low	(3) High	(4) Low
Black Pop.(%)			0.560***	0.382
			(0.132)	(0.294)
Ln(Black Pop.)	0.617***	0.304		
	(0.182)	(0.318)		
Maturity	0.176***	0.223***	0.169***	0.223***
	(0.059)	(0.048)	(0.057)	(0.048)
Offer Amt (M)	0.015	-0.040*	0.020	-0.040*
	(0.019)	(0.021)	(0.019)	(0.020)

Main Hypothesis:

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

Table 5: Borrowing Costs, Bond Terms

PANEL A: Offer Amount	Full Sample		Small Offers by Resentment		Large Offers by Resentment	
	(1) Small Offers	(2) Large Offers	(3) High	(4) Low	(5) High	(6) Low
Ln(Black Pop.)	0.249	0.633***	0.037	0.476	0.928***	0.182
	(0.156)	(0.166)	(0.201)	(0.379)	(0.245)	(0.390)
R^2	0.776	0.706	0.770	0.807	0.678	0.770
Adjusted R^2	0.766	0.694	0.759	0.801	0.662	0.762
Controls	✓	✓	✓	✓	✓	✓
State × Year FE	✓	✓	✓	✓	✓	✓
Clustered County, Year	✓	✓	✓	✓	✓	✓
Observations	31977	30657	9694	13297	9131	12941

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

	Full Sample		Privilege by Resentment		No Privilege by Resentment	
	(1) Privilege	(2) No Privilege	(3) High	(4) Low	(5) High	(6) Low
Ln(Black Pop.)	0.582***	0.453*	0.692**	0.541	0.365*	0.222
	(0.184)	(0.239)	(0.270)	(0.528)	(0.212)	(0.452)
R^2	0.750	0.717	0.699	0.797	0.730	0.760
Adjusted R^2	0.745	0.711	0.690	0.793	0.724	0.756
Controls	✓	✓	✓	✓	✓	✓
State × Year FE	✓	✓	✓	✓	✓	✓
Clustered County, Year	✓	✓	✓	✓	✓	✓
Observations	37401	25647	8515	19226	10279	7334

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)

POLLING MATTERS MAY 19, 2017

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.

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DECEMBER 19, 2017

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

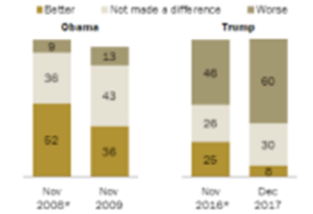
Survey Report

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 26% expected little change).

Majority of public says Trump's election has led to worse race relations

% who say each president's election has led to ___ race relations in the U.S.



*November 2016 and 2008 surveys based on those who reported voting; they were asked whether each president's election will lead to better or worse race relations.
Note: Don't know responses not shown.
Source: Survey of U.S. adults conducted Nov. 29-Dec. 4, 2017.
PEW RESEARCH CENTER

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)

Panel A: 1992-2016	All Elections 1992 to 2016 (1)	Polarized Elects. 2008 to 2016 (2)	2008 (3)	2012 (4)	2016 (5)
Ln(Black Pop.)	0.522***	0.527***	0.522***	0.521***	0.510***
	(0.159)	(0.157)	(0.153)	(0.156)	(0.152)
Election Year=1 × Ln(Black Pop.)	-0.107				
	(0.197)				
Polarized Election=1 × Ln(Black Pop.)		-0.265			
		(0.268)			
2008 Election=1 × Ln(Black Pop.)			-0.606***		
			(0.162)		
2012 Election=1 × Ln(Black Pop.)				-0.392**	
				(0.143)	
2016 Election=1 × Ln(Black Pop.)					0.291**
					(0.129)
Election Year=1	-0.037				
	(0.067)				
Polarized Election=1		-0.010			
		(0.065)			
2008 Election=1			0.168***		
			(0.014)		
2012 Election=1				-0.079***	
				(0.016)	
2016 Election=1					-0.089***
					(0.010)

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)

Panel B: Polarized Elections	2008 by Resentment		2012 by Resentment		2016 by Resentment	
	(1) High	(2) Low	(3) High	(4) Low	(5) High	(6) Low
Ln(Black Pop.)	0.497**	0.320	0.511**	0.331	0.492**	0.314
	(0.184)	(0.355)	(0.191)	(0.360)	(0.185)	(0.351)
2008 Election=1 × Ln(Black Pop.)	-0.596***	0.749				
	(0.205)	(0.526)				
2012 Election=1 × Ln(Black Pop.)			-0.912***	-0.693		
			(0.223)	(0.579)		
2016 Election=1 × Ln(Black Pop.)					-0.026	0.508*
					(0.211)	(0.264)
2008 Election=1	0.192***	0.131***				
	(0.041)	(0.023)				
2012 Election=1			-0.009	-0.098***		
			(0.041)	(0.034)		
2016 Election=1					-0.038	-0.061***
					(0.024)	(0.021)
R^2	0.720	0.785	0.720	0.785	0.720	0.785
Adjusted R^2	0.712	0.781	0.712	0.781	0.712	0.781
Controls	✓	✓	✓	✓	✓	✓
State × Year FE	✓	✓	✓	✓	✓	✓
Clustered County, Year	✓	✓	✓	✓	✓	✓
Observations	18942	26560	18942	26560	18942	26560

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)

	Gov. Elections 2010-2018			Dem. Gov. by Resentment		Rep. Gov. by Resentment	
	(1) All	(2) Dem. Gov.	(3) Rep. Gov.	(4) High	(5) Low	(6) High	(7) Low
Ln(Black Pop.)	0.832***	0.853*	0.739**	-0.304	1.013	1.038**	0.023
	(0.231)	(0.397)	(0.302)	(0.984)	(0.603)	(0.340)	(0.350)
Gub. Election Cycle=1 × Ln(Black Pop.)	-0.566	-0.402	-0.533	0.632	1.002*	-0.422	0.196
	(0.366)	(0.371)	(0.488)	(0.793)	(0.459)	(0.559)	(1.540)
Gub. Election Cycle=1	-0.081	-0.045	-0.150***	-0.385	-0.096	-0.149**	-0.155
	(0.052)	(0.080)	(0.040)	(0.221)	(0.084)	(0.058)	(0.151)
R^2	0.478	0.489	0.448	0.399	0.482	0.470	0.448
Adjusted R^2	0.469	0.481	0.439	0.382	0.474	0.459	0.438
Controls	✓	✓	✓	✓	✓	✓	✓
State × Year FE	✓	✓	✓	✓	✓	✓	✓
Clustered County, Year	✓	✓	✓	✓	✓	✓	✓
Observations	29910	14726	14180	1821	9708	7110	2375

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

	Full Sample	By Resentment	
	(1)	(2) High	(3) Low
Black Pop.(%)	0.474***	0.430**	0.154
	(0.130)	(0.163)	(0.317)
Hispanic Pop. (%)	0.188*	0.005	0.434*
	(0.097)	(0.096)	(0.249)
Asian & P. I. Pop. (%)	0.087	0.219	-0.118
	(0.317)	(0.686)	(0.447)
R^2	0.716	0.701	0.767
Adjusted R^2	0.710	0.693	0.763
Controls	✓	✓	✓
State × Year FE	✓	✓	✓
Clustered County, Year	✓	✓	✓
Mean stats:			
Asian & P.I. Pop. (%)	4.04	2.81	4.97
Hispanic Pop. (%)	11.37	15.31	10.4
Observations	62139	18651	26061

Key finding:

Higher costs for issuers with larger proportions of Hispanic residents

Suggests pricing penalties are not exclusive to BlackPop%.

Conclusion

- 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
  - Consistent with racial bias reducing financial inclusion in credit markets (Butler et al (2020), Dougal et al (2019), Pope and Sydnor (2011), Ravina (2008), many others