Racial Stratification and Local Education Funding

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Race and education funding

- It's clear that race and educational attainment are correlated in the United States
- Race and education funding are also correlated but in complex ways
- There may be multiple causal mechanisms at work

Stratification economics

- One theory getting renewed attention is racial stratification: a dominant group stigmatizes another group and underfunds their education

- Two features of this theory:
  1) Different minority groups get different treatment depending on stigmatization
  2) Adult race/ethnicity and student race/ethnicity matter differently

- Existing literature doesn't always accommodate these asymmetries

Research questions (findings)

- Two measurement questions:
  1) Do adult and student racial/ethnic distributions have different effects on local education revenue? (Yes: students matter much more)
  2) Do different minority groups have different effects on local education revenue? (Yes, and more than just disadvantaged vs. not disadvantaged)

- Leading to an economic question:
  Do we see the patterns predicted by stratification economics? (Yes: when White voters dominate there is stigmatization of Black students)

Public goods theory

- Race matters if voters prefer spending money on goods that benefit their own racial/ethnic group (Alesina, Baqir, and Easterly 1999); more diversity lowers overall willingness to pay for public goods
- Stronger effects when private alternatives exist, as they do for education
- May also be strengthened which racial/ethnic differences are correlated with income inequality (An, Levy, and Hero 2018)
- Result is driven by ethnic difference; symmetric across all ethnic groups, including the majority group

Stratification theory

- Difference in racial/ethnic groups only matters when one group has a negative view of another – stigmatization - and group members care about the relative performance of their group (Loury 2002)
- Origins in the sociological literature since Blumer (1958) and the education literature since Ogbu (1994) – introduced to economics by Darity (2005)
- WTP for public goods will be affected only by the stigmatized group, not other minority groups, and only when the stigmatizing group controls funding

Measurement

- Much of the literature, following Alesina, Baqir, and Easterly (1999) uses a fractionalization index: $FI = 1 - \Sigma (s_i)^2$
  where s_i is the share of each racial/ethnic group in the population
  Symmetric across all groups (including White)

- Some papers use group shares as linear terms (sometimes only Black and Hispanic)

- Nations and Martin (2020) use the racial generation gap: percent nonWhite students minus percent nonWhite senior citizens
  This reflects generational effects but is symmetric across all nonWhite groups

Model of local education revenue

- Voters have a willingness to pay for local education spending which depends on the racial/ethnic distribution of the students who receive it and on which groups they stigmatize
- Voter preferences are aggregated to produce a collective decision about spending. When one group is dominant its preferences will determine the collective decision.

Local revenue = f(Student race/ethnicity, voter race/ethnicity, other variables affecting WTP for education spending)

Data sample

- 10,537 school districts across the United States
- Education finance data and student distribution come from NCES Common Core for 2018 (pre-pandemic)
  Adult distribution comes from 2020 Census
  Other data from 2018 American Community Survey
- Controls include median HH income, mean/median income ratio, poverty rate, number of students, family percentage, owner occupancy rate, age distribution, education levels, percent ELL and special ed, percent charter, state level FEs, in one specification state funding

Estimation

- Estimate on two subsamples, above-median White voters (White preferences dominate) and below-median (they do not) – cutoff at 86.4% White

- Because of possible Tiebout sorting, consider IV as well as OLS estimates

Least squares results, high-White adult sample

AdultPctAIAN	-0.0182		StudPctAIAN	-0.0103**
	(0.0713)			(0.00437)
AdultPctAsian	-0.0152		StudPctAsian	-0.0205***
	(0.0721)			(0.00716)
AdultPctNHPI	-0.157*		StudPctNHPI	0.00968
	(0.0899)			(0.0186)
AdultPctHisp	-0.000496		StudPctHisp	-0.0143***
	(0.0700)			(0.00358)
AdultPctBlack	-0.015		StudPctBlack	-0.0269***
	(0.0704)			(0.00498)
AdultPctOM	-0.029		StudPctOM	-0.0114***
	(0.0714)			(0.00311)
AdultFracIndex	1.036		StudFracIndex	1.082***
	(3.967)			(0.212)

Adult distribution matters little

Student distribution matters a lot and is particularly large for Black students

Standard errors in parenthesis: ***=1% significance, **=5%, *=10%

Effect of 1% increase minority student population

$$\frac{\partial logRevLocPS}{\partial StudentPctj} = \gamma_j + \frac{2}{10{,}000} * \gamma_0 * (\overline{StudPctWhite} - \overline{StudentPctj})$$

	Change	Std. Err	t-stat	p-value
StudentPctAIAN	0.0090	0.0033	2.70	0.007
StudentPctAsian	-0.0011	0.0064	-0.18	0.859
StudentPctNHPI	0.0291	0.0182	1.60	0.110
StudentPctHispanic	0.0042	0.0021	2.02	0.043
StudentPctBlack	-0.0077	0.0037	-2.11	0.035
StudentPctOther	0.0075	0.0027	2.82	0.005

Increase in local revenue for all groups except (stigmatized) Black students: decrease for them

Least squares results, low-White adult sample

AdultPctAIAN	-0.0055***		StudPctAIAN	0.00246
	(0.00195)			(0.00152)
AdultPctAsian	-0.00178		StudPctAsian	0.00525
	(0.00362)			(0.00325)
AdultPctNHPI	0.0667*		StudPctNHPI	-0.0135
	(0.0393)			(0.0177)
AdultPctHisp	-0.00303**		StudPctHisp	0.00586***
	(0.00149)			(0.00116)
AdultPctBlack	-0.00496***		StudPctBlack	0.00727***
	(0.00179)			(0.00120)
AdultPctOM	-0.0108**		StudPctOM	-0.00178
	(0.00517)			(0.00237)
AdultFracIndex	-0.0813		StudFracIndex	0.0142
	(0.105)			(0.0807)

Adult distribution matters much more here

Student distribution matters for Black and Hispanic students and is positive

Standard errors in parenthesis: ***=1% significance, **=5%, *=10%

Effect of 1% increase minority student population

$$\frac{\partial logRevLocPS}{\partial StudentPctj} = \gamma_j + \frac{2}{10{,}000} * \gamma_0 * (\overline{StudPctWhite} - \overline{StudentPctj})$$

	Change	Std. Err	t-stat	p-value
StudentPctAIAN	0.0026	0.0016	1.59	0.113
StudentPctAsian	0.0054	0.0032	1.68	0.093
StudentPctNHPI	-0.0134	0.0177	-0.76	0.448
StudentPctHispanic	0.0059	0.0011	5.19	0.000
StudentPctBlack	0.0074	0.0013	5.80	0.000
StudentPctOther	-0.0016	0.0022	-0.76	0.448

Increase in local revenue for Black and Hispanic students (and only for them)

Instrumental variables approach

- Households are not randomly assigned to school districts
- Preferences may cause racial/ethnic sorting caused by taxation
- Instrument using corresponding share of consolidated statistical area (CSA) or non-MSA/μSA portion of state (559 CSAs, 44 states with non-CSA area)
- Assumes no Tiebout sorting across CSA boundaries

Instrumental variables results

- Small-sample bias from large number of instruments is a problem
- Adult population fractions are not significant in either sample
- Reduce models to include only significant student populations
  High-White adult sample: Only Black students and the fractionalization index
  Low-White adult sample: Hispanic and other-race students and the index

- Controls generally similar to OLS results
- First-round Cragg-Donald stats are 34.8 (high-White) and 77.5 (low-White)

Effect of 1% increase minority student population: instrumental variables version, high-White adults

$$\frac{\partial logRevLocPS}{\partial StudentPctj} = \gamma_j + \frac{2}{10{,}000} * \gamma_0 * (\overline{StudPctWhite} - \overline{StudentPctj})$$

	Change	Std. Err	t-stat	p-value
StudentPctAIAN	0.0356	0.0058	6.16	0.000
StudentPctAsian	0.0356	0.0058	6.16	0.000
StudentPctNHPI	0.0358	0.0058	6.16	0.000
StudentPctHispanic	0.0341	0.0055	6.16	0.000
StudentPctBlack	-0.0436	0.0279	-1.56	0.118
StudentPctOther	0.0348	0.0056	6.16	0.000

Result similar to OLS:
Increase in local revenue for all groups except (stigmatized) Black students: decrease for them

Effect of 1% increase minority student population: instrumental variables version, low-White adults

$$\frac{\partial logRevLocPS}{\partial StudentPctj} = \gamma_j + \frac{2}{10{,}000} * \gamma_0 * (\overline{StudPctWhite} - \overline{StudentPctj})$$

	Change	Std. Err	t-stat	p-value
StudentPctAIAN	0.0064	0.0017	3.79	0.000
StudentPctAsian	0.0066	0.0017	3.79	0.000
StudentPctNHPI	0.0070	0.0018	3.79	0.000
StudentPctHispanic	0.0084	0.0020	4.10	0.000
StudentPctBlack	0.0043	0.0020	2.17	0.030
StudentPctOther	-0.0130	0.0072	-1.81	0.071

Increase in local revenue for most groups, but less for Black students and much less for other race students

Conclusions

- In high-White adult districts, we see evidence of stigmatization: Black students have a different (more negative) effect on local education revenue than other minority groups have
- In more diverse adult districts we see either higher spending for most groups (IV results) or specifically for Black and Hispanic students
- When White adults dominate, Black students (only) are underfunded; when they don't spending generally increases with diversity

Implications

- Historical White stigmatization of Blacks continues to affect educational funding for Black students in areas where White voters are dominant

- More diverse populations of adult voters do not display the effect