Centralized Admission Systems and School Segregation: Evidence from a National Reform

Shanjukta Nath [1] Macarena Kutscher [2] Sergio Urzúa [3]

[1]Stanford Graduate School of Business [2]University of Maryland [3]University of Maryland and NBER

Motivation

- Centralized admission system are being adopted to coordinate student assignment
- In practice, also used as policy tools to promote diversity, giving priority to low-SES students
  - E.g. New York and Boston
- However, more efficient and welfare-enhancing theoretical allocation might not necessarily lead to less segregated schools
  - Residential segregation and heterogeneity in outside option: Calsamiglia et al 2020, Baum-Snow et al 2011
- **This paper**: Studies Chile's large-scale adoption of a centralized allocation system and it effects on school segregation
  - DA mechanism
  - Replaced country's decentralized system
- Exploits sequential introduction of the reform across regions using a Difference-in-Difference strategy
- **Preview of results:** No impact on average school segregation, but important heterogeneity across school districts.
  - Increased segregation in areas with high levels of residential segregation
  - Higher provision and differential access to private education associated with increased segregation

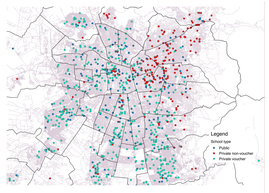
Background

- Since 1980s, three types of school in Chile: public, voucher schools and private schools,
- Decentralized school admission system; highly selective
- High socioeconomic stratification in the educational system
  - Overwhelming majority of low SES students in public schools
- In 2015 the government passed the law (*Ley de Inclusión Escolar*)
  - Major component: centralized school admission system (SAS)

Centralized Schooling Admission System

- Centralized Schooling Admission System (SAS) for public and voucher schools through a web application platform.
  - Admissions to private schools continues to be decentralized.
- Deferred Acceptance algorithm with multiple tie breaking
  - Priorities:
    1. sibling enrolled in the school
    2. priority students, (up to the min of 15%)
    3. children of school officials
    4. former students (except expelled)
- Reform was gradually introduced at the regional level, between 2016-2019

Figure 1. Spatial distribution of school types in the Metropolitana (Santiago) and Coquimbo regions



A. Metropolitana

B. Coquimbo

Empirical Strategy

- Incremental implementation and geographic variation: Diff-in-Diff design

$$y_{crt} = \delta_0 \times D_{rt} + Z_{1cr}\beta + \gamma_r + \lambda_t + \epsilon_{crt} \quad (1)$$

y_{crt} is Duncan index, D_{rt} is treatment variable and Z_{1cr} are pre-SAS measures of local schooling. γ_r captures time invariant region specific differences, and λ_t captures aggregate differences in segregation over time

- The policy parameter of interest is δ_0.
- Assumptions:
  - Adoption date of the policy random to existing levels of school segregation
  - No responses in anticipation of the treatment
- Also heterogeneous effects

Data

- Enrollment, SIMCE and school data
- School segregation (Duncan Index) at school district level
  - Low SES: mothers without a HS degree
  - As of 2019, Duncan $[0.3, 0.5]$ in Chile.
- Residential segregation: commuting time to amenities using complete road network of Chile
  - Captures variation in access to amenities within a municipality.
- Outside option: local provision differential access to private education
  - Private schools are a substitute for voucher and public schools and impacts participation in DA.

Final sample: Panel of 327 school districts (municipalities) over five years

Main Results

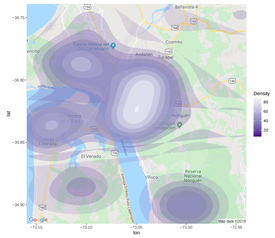
- Overall no statistically significant impact
- Heterogeneous effects?

	Duncan index		
VARIABLES	(1)	(2)	(3)
SAS dummy (D_{rt}) × Residential Segregation	0.008*		
	[0.004]		
SAS dummy (D_{rt})× % of public pre-SAS		-0.601***	
		[0.253]	
SAS dummy (D_{rt})× % of voucher pre-SAS		-0.656***	
		[0.274]	
SAS dummy (D_{rt})× Travel time to private (sd)			0.034*
			[0.018]
Observations	1,623	1,623	1,623
R-squared	0.598	0.501	0.534
Region FE	✓	✓	✓
Year FE	✓	✓	✓

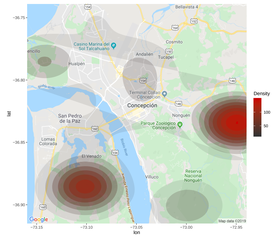
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Residential Segregation

Figure 2. Spatial density plots of low and high SES students in the Biobio region



A. Low income families



B. High income families

Potential Mechanism

Potential mechanism: high SES migrating from public and voucher to private schools

VARIABLES	Dependent Variable: % of switchers
SAS dummy (D_{rt})	0.004**
	[0.002]
Educ mother >= 12	0.010***
	[0.003]
SAS dummy (D_{rt})× [Educ mother >= 12]	-0.004
	[0.004]
Private dummy (pre-SAS)	-0.009**
	[0.004]
Private dummy (pre-SAS) ×[Mother educ. >= 12]	0.015**
	[0.006]
SAS dummy (D_{rt}) ×Private dummy (pre-SAS)	-0.041*
	[0.025]
SAS dummy (D_{rt}) ×Private dummy (pre-SAS)× [Educ mother >= 12]	0.068*
	[0.038]
Constant	-0.004**
	[0.002]
Observations	1,712
R-squared	0.179
Region FE	✓
Year FE	✓

Threats to Identification & Robustness Tests

Threats to identification

- Parallel trends: leads and lags test, visual pre-trends, region-specific trend variables, random assignment into treatment
- Rule out strategic responses/migration by parents in anticipation of the policy.
- No correlation between the policy adoption date and the existing levels of school segregation in a region

Robustness tests

- Duncan Index: alternative proxies for student SES
- Only urban municipalities
- Provinces as school districts
- Alternative segregation measure