Acing the Test: Educational Effects of the *SaberEs* Test Preparation Program in Colombia

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Introduction

This paper provides new evidence on the effectiveness of standardized test preparation programs by analyzing *SaberEs*, an extracurricular test preparation program aimed at economically disadvantaged students implemented in the city of Medellin-Colombia in 2016.

Research questions:

1. Does the *SaberEs* program affect student learning gains measured by *Saber 11* scores?
2. Does the program affect access to tertiary education?
3. What mechanisms made *SaberEs* successful in increasing access to tertiary education programs?

SaberEs

Between June and July of 2016, the Secretariat of Education of Medellin implemented *SaberEs*. **Goal:** Strengthen preparation for standardized tests.
Two firms delivered the program to 68% of the city's public schools (with the lowest *Saber 11* scores on average). A separate set of schools was assigned to each of them.

How it worked:

1. Teacher training in the five subject areas of the *Saber 11*.
2. Students receive the lessons from their teachers **during school hours**.
3. Students take a mock test.
4. Feedback sessions on these results with students and teachers.
5. Repeat the previous steps two more times.
6. Students take the *Saber 11*.

Data

- List of treated schools in 2016 and 2017.
- Higher education records between 2016 and 2019 (SNIES).
- Additional datasets like *Saber TyT*, ICETEX, Sapiencia, *Ser Pilo Paga*, and *Olimpiadas del Conocimiento*.
- All ***Saber 11*** test-takers between 2010 and 2017.

Saber 11 scores

Two variations:

- Student's rank rescaled from 0-100.
- Standardized scores.

Empirical strategy

We focus on the 2x2 setting (2015-2016), and estimate a simple DiD regression as follows:

$$Y_{ict} = \alpha_0 + \alpha_1 \text{Treated}_c + \alpha_2 \text{Post}_t + \beta \text{Treated*Post}_{ct} + X'_{ict}\delta + \varepsilon_{ict} \quad (1)$$

Note: Standard errors are clustered at the school level. **Additional methods:** two-way fixed effects (TWFE), outcome regression (OR), inverse probability weighting (IPW), and doubly robust DiD (DR) as in Sant'Anna and Zhao (2020).

Results

Effects on students' scores

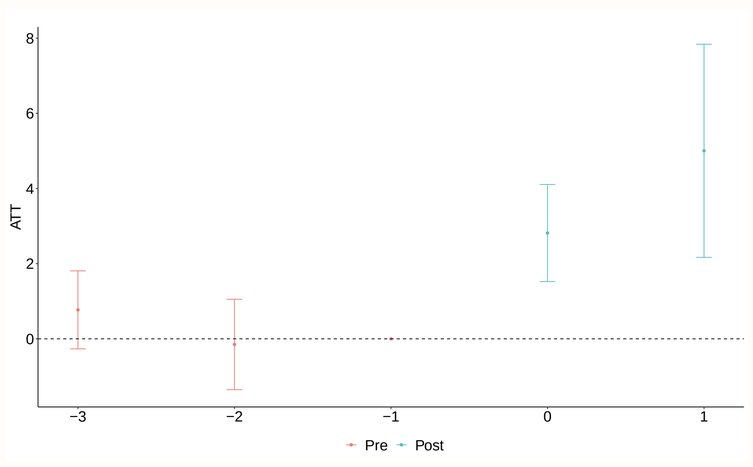
SaberEs reduces the pre-existing gap between control and treated students by 22.9%.

Table 1: Effects on student's rank

	(1) DiD	(2) DiD	(3) TWFE	(4) OR	(5) IPW	(6) DR
SaberEs effect (β)	2.965***	2.559***	1.511**	2.222**	2.693***	2.233**
	(0.976)	(0.886)	(0.741)	(0.917)	(1.032)	(0.916)
Gap reduction	30.6%	26.4%	15.6%	22.9%	27.8%	22.9%
Observations	35,495	35,484	35,484	35,484	35,484	35,484
Controls	NO	YES	YES	YES	YES	YES

Additional schools were treated in 2017 (**staggered treatment adoption**). We use the Callaway and Sant'Anna (2021), and Borusyak, Jaravel, and Spiess (2021) estimators. Results hold.

Figure 1: Dynamic DiD estimates.

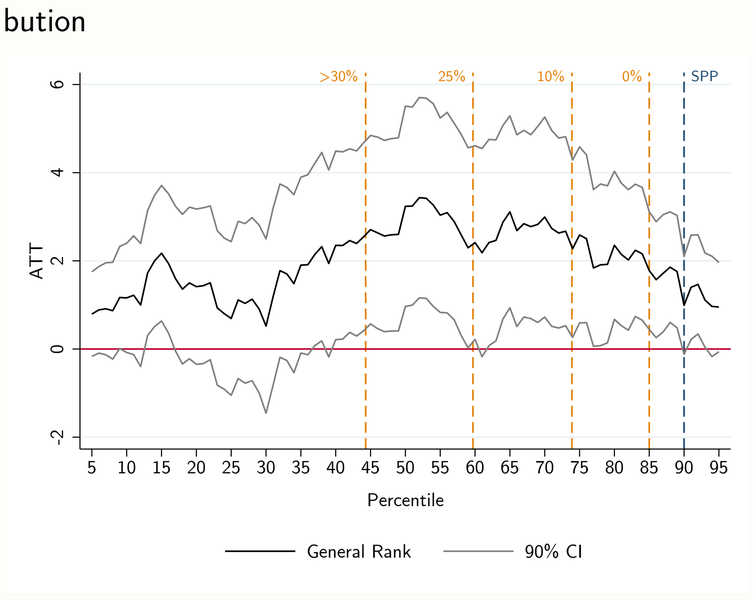


Testing the main identification assumption: Informal and formal evidence in favor of the validity of the parallel trends assumption (Roth, Forthcoming; Rambachan and Roth, 2022).

Heterogeneous effects

RIF regressions (Firpo, Fortin, and Lemieux, 2009) to examine effects at the unconditional quantiles of the test scores distribution. Concentrated on students **above the 40th percentile**.

Figure 2: Heterogeneous effects on the outcome's distribution



Effects on higher education

The program increases access to higher education through short-cycle programs (**relative effect of 11.8%**).

Table 2: Effects on access to a higher education program

	Higher Education			Short-cycle		
	(1) 1 year	(2) 2 years	(3) 3 years	(4) 1 year	(5) 2 years	(6) 3 years
SaberEs effect (β)	0.033**	0.039***	0.024**	0.026**	0.023**	0.010
	(0.015)	(0.015)	(0.012)	(0.013)	(0.011)	(0.011)
Observations	35,484	35,484	35,484	35,484	35,484	35,484
Controls	YES	YES	YES	YES	YES	YES
Mean Control 2015	0.511	0.559	0.587	0.219	0.230	0.224

Additional results: Positive effect on access to short-cycle STEM programs, and positive effect on graduation from short-cycle programs.

Potential mechanisms

- Financial aid. ×
- Motivational effect. ×
- Merit-based scholarships. ✓
- Specific human capital. ✓

Table 3: Access to short-cycle programs by type of institution

	Admission exam			No admission exam		
	(1) 1 year	(2) 2 years	(3) 3 years	(4) 1 year	(5) 2 years	(6) 3 years
SaberEs effect (β)	0.026**	0.024**	0.010	0.000	-0.001	0.000
	(0.012)	(0.010)	(0.010)	(0.007)	(0.006)	(0.008)
Observations	35,484	35,484	35,484	35,484	35,484	35,484
Controls	YES	YES	YES	YES	YES	YES
Mean Control 2015	0.132	0.141	0.126	0.0865	0.0896	0.0982

Conclusions

Main results:

↑ Students' scores in *Saber 11*.

Results are concentrated on students above the 40th percentile.

↑ Access to higher education (through short-cycle programs).

↑ Access to short-cycle STEM programs.

↑ Graduation from short-cycle programs.

↑ Access to *Ser Pilo Paga*.

This is one of the few papers that have analyzed these types of policies for socioeconomically disadvantaged students in Latin America. In this context, our paper might help the debate on public policies positively affecting access to higher education.

References

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