

The Educational PPP: Parents, Peers, Prices

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Abstract

This paper studies the roles of financial constraints and information frictions on enrollment and progression in higher education. We use Chilean administrative data, allowing us to link students to their parents and their high school peers. Our empirical strategy exploits the massive entry of private universities during the 1980s to instrument parental educational achievement, panel data methods to estimate peer influence, and the staggered rollout of Free College from 2016 that generated exogenous variation to out-of-pocket fees. Results show that parental exposure to higher education increases enrollment through Short Cycle Programs, older peers enhance enrollment and match quality, and subsidies increase university access.

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1 Introduction

Educational attainment is a key driver of economic growth (Benos & Zotou, 2014; Krueger & Lindahl, 2001) and social mobility (Mountjoy, 2022; Zimmerman, 2019). Nevertheless, individuals from disadvantaged socioeconomic backgrounds remain significantly less likely to enroll in university, even when they perform as well academically as their more advantaged peers (Chetty et al., 2014). Instead, they disproportionately sort into Short-Cycle Programs (SCPs)¹ or forgo higher education altogether.

These three post-secondary pathways (university, SCPs, and non-enrollment) differ substantially in duration, cost, expected returns, and long-term opportunities. Understanding why students sort into programs based on their socioeconomic status requires disentangling the relative influence of multiple mechanisms. The first one is financial constraint: out-of-pocket costs for university can be prohibitively high relative to short-cycle alternatives. The second is the information environment: students may rely heavily on signals and advice from parents and peers, who themselves may lack accurate or complete information about educational options and returns. The third one is match quality: individual preferences and perceived or actual abilities likely play a central role in shaping the choice of educational track.

This paper provides evidence on the mechanisms driving post-secondary educational choices. We identify the main determinants behind the decision to enroll in university, short-cycle programs, or to forgo higher education entirely. Determining the relative importance of financial constraints, information frictions, and student-program match quality is essential for designing effective policy responses—ranging from tuition subsidies and student loans to informational interventions and reforms targeting school segregation.

The setting of this paper focuses on the Chilean higher education system during the period from 2013 to 2019. This period includes the phased implementation of the “Gratuidad” policy, which progressively extended tuition-free college to students from lower-income households, significantly altering the relative costs of degree programs. The empirical analysis leverages detailed administrative data covering students’ applications, enrollment decisions, academic records, and demographic characteristics.

¹SCPs generally last two to four years and emphasize occupation-specific skills, providing a shorter and less expensive route into the labor market than university degrees. Examples include technical and professional programs in fields such as nursing assistance, electricity, administration, and other applied occupations.

First, we examine the intergenerational effects of higher education expansion by exploiting an instrumental variable strategy based on the geographic distribution of new universities created in the 1980s. The findings reveal a causal impact of parental exposure to higher education opportunities on the educational choices of their children. Specifically, results show that students whose parents had access to newly established universities are more likely to enroll in SCPs, while the effect on overall university enrollment is statistically indistinguishable from zero. This suggests a persistent transmission of educational aspirations and expectations, shaped by the institutional environment available to the previous generation.

Second, we explore peer effects in the enrollment decision. Using a school-year fixed effects strategy, we find that students are more likely to enroll in higher education when older peers from the same school cohort have recently done so. This increase in enrollment is observed for both universities and SCPs, and importantly, it is not associated with negative academic outcomes. On the contrary, students influenced by peers are less likely to drop out and do not exhibit higher rates of switching programs, suggesting that these peer effects operate through mechanisms of information transmission or confidence-building rather than misguided imitation.

Finally, we study the impact of out-of-pocket fees by leveraging the Gratuidad policy. The evidence suggests that both absolute and relative prices play a significant role in shaping enrollment decisions. On one hand, many disadvantaged students enter university only when it becomes financially accessible, revealing that affordability is a binding constraint. On the other hand, we find substitution effects: some students enroll in university simply because it becomes cheaper than SCPs, highlighting the role of relative price distortions in educational choices.

Related Literature This paper contributes to three strands of literature on post-secondary educational choice. First, we contribute to the literature on intergenerational educational mobility. A large body of work documents the role of higher education in shaping children's outcomes (Chetty et al., 2014, Zimmerman, 2019). For Chile, the dictatorship-era contraction of higher education has been used to estimate intergenerational effects on educational attainment (Bautista et al., 2023), mortality (González et al., 2024), and long-run social mobility (Bautista et al., 2025). We contribute by exploiting the geographic variation in the post-1981 *expansion* of private universities to identify a causal effect of parental exposure to higher education on children's enrollment decisions, with a focus on the transmission of aspirations and information rather than earnings alone.

Second, we contribute to the literature on peer effects in education. A growing body of work documents the role of neighbors (Barrios-Fernández, 2022), siblings (Altmejd et al., 2021), cohort peers (Gazmuri and Prager, 2024), and exposure to elite institutions (Estrada et al., 2025, Barrios Fernández et al., 2024) in shaping educational decisions, while Agostinelli et al. (2020) provide a framework in which informational interactions between families generate persistent socioeconomic gradients. A central concern in this literature is the endogenous selection of families into peer groups. We exploit within-school double-shift variation to identify the causal effect of older school-cohort peers—a group with a more credible informational advantage than classmates or neighbors—and show that these peer effects improve match quality (lower dropout, minimal switching) rather than inducing misguided imitation. Our identification strategy is related to that of Sacerdote (2001), extended to a large administrative setting.

Finally, we contribute to the research on higher education financing. A large body of work has documented the role of out-of-pocket costs on enrollment (Denning, 2017, Londoño-Vélez et al., 2020, Azmat and Simion, 2021) and on graduation and earnings (Denning et al., 2019). For Chile, Bucarey (2018) predicts that free tuition may crowd out low-income students absent a supply response, while Bucarey et al. (2020) estimate the labor market returns to student loans. A related strand studies the equilibrium effects of admission, tuition, and aid policies (Epple et al., 2006). The most closely related paper is Mountjoy (2022), who exploits proximity to community colleges as an instrument to show that the returns to two-year programs are highly context-dependent, with positive effects for students diverted from non-enrollment but negative effects for those diverted from four-year programs. The existing literature has focused on absolute price effects, while less is known about the role of relative prices in shaping choices across post-secondary alternatives. Our difference-in-differences strategy exploiting the staggered rollout of *Gratuidad* contributes by documenting both absolute price effects (entry from non-enrollment) and substitution induced by relative price distortions between universities and SCPs, the latter evidenced by cohort-level switching patterns largely absent from prior work.

Overview The remainder of this paper is structured as follows. Section 2 presents the institutional context of Chile and the data used for the analysis. Section 3 estimates the intergenerational effect of parental education using the 1980s expansion of private universities as an instrument. Section 4 estimates the influence of older school peers on enrollment and match quality. Section 5 estimates the role of out-of-pocket costs by exploiting the staggered rollout of *Gratuidad*. Section 6 concludes.

2 Setting

This section describes the institutional context and the data used in the empirical analysis. Section 2.1 provides an overview of the Chilean higher education system, including the structure of admissions and the distinction between university programs and short-cycle programs. Section 2.2 describes the administrative datasets that support our empirical work.

2.1 Chile Higher Education System

The college admissions process in Chile operates under a semicentralized structure. The most selective institutions participate in a centralized system, while the remaining universities conduct their admissions independently. This paper focuses on the centralized system, known as the Sistema Único de Admisión (SUA).

The centralized admissions process is administered by the Consejo de Rectores de las Universidades Chilenas (CRUCH) and implemented by the Departamento de Evaluación, Medición y Registro Educacional (DEMRE). To apply to any of the nearly 1,500 academic programs offered by the 41 universities that are part of this system, students must take a series of standardized exams, known as the Prueba de Selección Universitaria (PSU). These tests include sections in Mathematics, Language, and a choice between Science or History, with students receiving separate scores for each.

In addition to the PSU results, applicants receive two further scores based on their performance in high school: the NEM score, which is the average of their high school grades, and the Ranking score, which captures the student's relative standing within their graduating cohort. A key feature of this admissions process is that admission to programs is determined solely based on these scores and criteria.

Once the test scores are released, students can submit a ranked list of up to ten program choices, known as Rank Order Lists (ROLs). These lists must be ordered strictly according to the student's preferences. Importantly, applicants apply directly to specific university-major pairs, which we refer to as "programs" throughout this paper. There is no fee associated with submitting an application.

On the supply side, each academic program publicly announces the number of seats available, the weights applied to each admission criterion, and any additional eligibility requirements. For example, some programs may set minimum thresholds for application scores or require specific minimum scores on individual PSU components. Programs cre-

ate preference rankings by first eliminating any applicants who fail to meet these basic requirements. They then rank the remaining applicants based on a weighted average of the scores, using the weights previously defined.

Given the applicants' preferences and the programs' selection rules, DEMRE performs the matching process using a version of the Deferred Acceptance (DA) algorithm. Enrollment takes place in two rounds. In the first, only students who received an offer through the centralized match can enroll in the program they were assigned to. In the second round, programs that still have open spots may extend offers to students on their waitlists. In addition, at any point, students retain the option to apply to and enroll in programs outside the centralized SUA system or to enter the labor market directly.

Finally, students can participate in the admissions process multiple times, and are allowed to reuse their PSU scores from the previous year when reapplying.

Nevertheless, Short Cycle Programs in Chile, offered by Centros de Formación Técnica and Institutos Profesionales, are not part of the centralized admission system used for university degree programs. Unlike traditional undergraduate programs, SCPs do not require applicants to submit scores from standardized university admission tests such as the PSU or its successors. Instead, access to SCPs is managed through decentralized, institution-specific processes, with each educational institution setting its own entry requirements. These may include completion of secondary education, internal assessments, or interviews, thereby providing more flexible and diverse pathways into higher education.

2.2 Data

The data used in this study correspond to Chile for the period 2013 to 2019 and consist of the following sources:

Administrative Records (DEMRE) The DEMRE administrative dataset contains comprehensive individual-level records from the Chilean centralized university admission system. For each applicant between 2013 and 2019, it includes results from the Prueba de Selección Universitaria (PSU) or Prueba de Acceso a la Educación Superior (PAES), detailed ranked lists of up to ten program preferences, program-level admission scores and cutoffs, and final enrollment outcomes. Additionally, the dataset records institutional and program identifiers, modality (e.g., day or evening), and type of financing used (e.g., tuition-free, loan, scholarship). Each student record is uniquely identified and linked

across application cycles, allowing for the construction of academic histories and reapplication patterns.

SIMCE (Sistema de Medición de la Calidad de la Educación) SIMCE is a nationwide standardized assessment system administered by the Chilean Ministry of Education throughout primary and secondary education. It comprises multiple test cycles applied at various educational stages (e.g., 4th, 6th, 8th, and 10th grades), covering core subjects such as language, mathematics, natural sciences, and social sciences. In addition to academic test scores, SIMCE includes contextual questionnaires for students, parents, teachers, and school principals, capturing information on household background, educational expectations, and school resources. The system is designed to evaluate the performance and equity of the Chilean educational system over time.

Higher Education Census (Censo de Educación Superior) The Higher Education Census is an official statistical operation conducted annually by the Chilean Ministry of Education. The census compiles exhaustive information from all higher education institutions—universities, professional institutes, and technical training centers—that are recognized by the state. It includes detailed records on student enrollment (by program, level, gender, and modality), number of academic programs offered, graduates, teaching staff, tuition fees, and infrastructure. It also provides institutional identifiers, regional and municipal location data, and information on institutional characteristics such as ownership (public/private) and accreditation status. The data span several decades and enable consistent tracking of the structural evolution of the Chilean higher education system.

3 Parents

This section examines the intergenerational transmission of higher education choices. Section 3.1 describes the historical expansion of universities in Chile during the 1980s, which we exploit as a source of exogenous variation in parental education, and presents the IV strategy. Section 3.2 reports the results, showing that an additional year of parental education has a positive and marginally significant effect on SCP enrollment, while the effect on overall higher-education enrollment is statistically indistinguishable from zero.

3.1 Empirical Strategy

Parents play a crucial role in shaping students' educational choices through multiple channels, including access to resources, the provision of information, and the transmission of expectations and aspirations.

In our setting, students from the lowest decile exhibit a university enrollment rate of 12.7%, compared to 63.8% among those from the highest decile. In contrast, enrollment in Short-Cycle Programs is highest among low-income students—reaching 41.8% in the bottom decile—and declines monotonically with income until 6% in the highest decile. These descriptive gradients are consistent with a causal role for parental education, but they also reflect the joint determination of parents' and children's outcomes by unobserved family characteristics.

A naive regression of children's education on parents' education would therefore yield a biased estimate of the causal effect of parents' education on children's outcomes, since parents' education is likely to be correlated with unobserved characteristics that also affect children's education. We therefore need an instrument that generates exogenous variation in parents' education. We exploit the expansion of universities during the 1980s to obtain such variation.

Following the military coup of 1973, the Augusto Pinochet regime viewed universities not only as educational institutions but also as political threats. Universities were accused of being hubs of Marxist indoctrination, prompting the junta to impose military control over all institutions, expel politically active students and faculty, and censor academic content. Despite these purges, all eight existing universities remained formally open. However, enrollment declined sharply, dropping by 38% between 1973 and 1981, driven primarily by a reduction in new admissions. The share of education spending devoted to tertiary education fell from nearly 50% under Allende to just 30% by 1980 ([Bautista et al., 2023](#); [Bautista et al., 2025](#); [González et al., 2024](#)).

In 1981, the Chilean military regime implemented a set of legal reforms that fundamentally restructured the higher education system. Central to this transformation was the Decreto con Fuerza de Ley (DFL) N° 1, which established the legal framework for academic freedom and, crucially, authorized private actors to create and operate educational institutions. This decree dismantled the public university network by decentralizing existing institutions—such as dividing the University of Chile into regional campuses—and legally permitted the creation of private universities. Simultaneously, DFL N° 4 redefined the financial model by reducing direct state funding to traditional universities and introducing

a competitive subsidy system based on student test scores, thereby incentivizing both student performance and institutional competition. The system shifted from universal state funding to targeted support, favoring institutions that attracted high-scoring applicants. Finally, DFL N° 30 granted new institutions legitimacy by allowing degree equivalence with traditional universities, provided academic programs were similar. Together, these decrees not only facilitated a dramatic increase in the number of private universities—from 8 in 1980 to over 60 by the 1990s—but also laid the foundation for a market-driven, stratified higher education system that prioritized expansion over equity.

We exploit this policy-driven expansion—specifically, the rapid creation of universities and the sharp increase in available vacancies across regions—as a source of exogenous variation to instrument for parental education. By leveraging this variation, we aim to identify causal effects of parental educational attainment on outcomes of the next generation, while mitigating concerns of endogeneity arising from unobserved family or regional characteristics.

Figure A4, based on [Bernasconi \(2004\)](#), and Figure A5, based on [Braun Llona et al. \(2000\)](#), show that 52 of the 60 universities currently operating were established during that decade, alongside the creation of the entire system of Short-Cycle Programs. Higher education coverage—measured as the proportion of individuals eligible for tertiary education who actually enrolled—increased sharply following the implementation of the 1981 decrees. Using SIMCE parent data, we also observe a corresponding increase in the share of parents with tertiary education after 1981 (see Figure A6).

To implement the IV strategy, we rely on information regarding the educational attainment of the parent and the parent’s age at 21—the age at which individuals typically made the decision to pursue higher education during the 1980s ([Bautista et al., 2025](#)). This information is available in the SIMCE dataset, which records the educational level of both the father and the mother, as well as the age of the legal guardian. In approximately 80% of cases, the legal guardian corresponds to the mother, and in about 95% of cases, it is either the mother or the father. We exclude observations where the legal guardian is another relative, such as a grandparent or older sibling.

To determine whether the parent was exposed to an increase in higher education vacancies, we require information on the region in which the parent resided at age 21. While we do not observe this directly, we use the region of the student’s school as a proxy, under the assumption that the parent resided in the same region at that decisive age. For this assumption to be valid, we must believe in the absence of significant intraregional

migration. According to Chilean Census data, internal migration is a relatively minor phenomenon, affecting approximately 3% to 5% of the population depending on the year of the Census consulted, thereby lending plausibility to our identifying assumption.

We instrument parental years of education with the number of university vacancies available in the parent’s region when they were aged 21. The first stage takes the form:

$$ParentEduc_{irt} = \pi_0 + \pi_1 \widehat{Vacancies}_{rt} + \delta' X_{irt} + \nu_{irt} \quad (1)$$

where $ParentEduc_{irt}$ denotes the approximate years of education of the parent of student i in region r observed in year t , mapped from the SIMCE education scale. The second stage estimates:

$$Y_{irt} = \alpha + \beta \widehat{ParentEduc}_{irt} + \gamma' X_i + \varepsilon_{irt} \quad (2)$$

where $\widehat{ParentEduc}_{irt}$ is the predicted value from the first stage, so that β captures the causal effect of one additional year of parental education on the child’s outcome.

3.2 Results

The results are presented in Table 1. Panel A reports the IV second-stage estimates for enrollment outcomes. Each coefficient measures the causal effect of one additional year of parental education, instrumented by regional university vacancies, on the student’s outcome. The estimate for any higher-education enrollment is negative but statistically indistinguishable from zero, so the table does not provide evidence of an overall extensive-margin effect on enrollment. By contrast, the coefficient for SCP enrollment is positive and marginally significant. The second-stage estimates therefore point to a positive SCP-specific response, rather than a broad extensive-margin effect on higher-education enrollment.

Panel B reports the first stage, showing the effect of university vacancies in the parent’s region of residence when the parent was aged 21 on the parent’s years of education. Vacancies are standardized, so the coefficient represents the effect of a one standard deviation increase in regional vacancies. Greater vacancy availability significantly increases parental educational attainment, consistent with the 1981 reform expanding access to higher education and raising the number of years parents spent in school.

Table 1: Effect of Parent's Years of Education on Student Outcomes (2SLS)

<i>Panel A: Second Stage</i>		
	Enrolled Any	Enrolled SCP
Parent's Education	-0.070 (0.055)	0.303* (0.143)
Observations	521569	521569
KP F-stat	21.129	
<i>Panel B: First Stage</i>		
	Parent's Education	
Vacancies	0.186*** (0.041)	
Observations	521,569	
F-statistic	21.1	

NOTES: Panel A reports IV second-stage estimates. The endogenous variable is Parent's Education, instrumented by university vacancies (standardized, one SD \approx 3,359 slots) in the parent's region when they were aged 21. Panel B reports first-stage estimates. Parent's Education is the education of the legal guardian. If both parents are guardians, the father's education is used. Controls include gender, employment, family income, and private health insurance. Year and region fixed effects included. Standard errors clustered at the 1981-region level.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Two lessons emerge from these results. First, the first stage confirms that the 1980s expansion of private universities had a meaningful effect on the educational attainment of the parents we observe in our sample, consistent with the institutional history documented above. Second, the second-stage estimates indicate that the intergenerational effect of parental education operates predominantly through the SCP margin rather than university enrollment. This is consistent with the interpretation that parents who themselves had access to the expanded higher-education sector primarily transmit aspirations and informational resources that move children toward post-secondary participation, with the SCP margin being more responsive than the university margin in our setting. We caveat these results given the limited geographic resolution of our instrument: refining the measurement of supply shocks from the regional to the municipal (*comuna*) level is a natural next step to sharpen identification.

4 Peers

This section examines the role of older peers in shaping educational decisions. Section 4.1 describes the identification challenges in estimating peer effects, our within-school empirical strategy, and the IV strategy that uses Gratuidad eligibility of older cohorts as an exogenous shifter of the peer environment. Section 4.2 presents the results, showing that exposure to enrolled older peers increases participation in higher education without compromising match quality, and that effects are reinforced when peers enrolled specifically in university.

4.1 Empirical Strategy

Older peers may shape younger students' educational decisions through information, guidance, and social influence at pivotal junctures. Having already navigated the application process, selected educational tracks, and experienced higher education firsthand, they are well-positioned to influence the expectations and decisions of their younger schoolmates.

Descriptive evidence supports the importance of these peer dynamics: students who ultimately enroll in university are surrounded by significantly more peers who themselves pursued higher education. The average share of university-enrolled peers among university entrants is nearly 70%, compared to just over 50% among those who did not enroll. Moreover, enrollment outcomes vary strongly with the degree of exposure to enrolled peers: among students in the highest peer-exposure group (where 80–100% of older peers enrolled), over 54% enrolled in university, while only 20% did so in the lowest quintile group. There is substantial variation in the average share of older peers who enrolled in University or SCP, as we can see in Figure A3.

A naive OLS specification is unlikely to recover a causal effect. A central identification concern in estimating peer effects arises from endogenous selection: families may choose schools or neighborhoods based on peer characteristics, making it difficult to distinguish the causal effect of peers from that of shared unobserved traits (Agostinelli et al., 2020; Barrios-Fernández, 2022). To address this, the literature often employs fixed effects at the school, neighborhood, or cohort level, thereby controlling for time-invariant unobserved heterogeneity. While such approaches mitigate some sources of bias, they rely on the assumption that within-group variation in peer composition is exogenous, a condition that may not universally hold.

Our empirical strategy exploits within-school variation. In the Chilean education system, schools commonly operate on a double-shift basis, with separate morning and afternoon sessions; notably, only 27% of schools function on a single-shift schedule. This generates variation in peer composition within the same school environment that is plausibly less driven by family sorting. We estimate the following specification:

$$Y_{it} = \alpha + \beta \cdot PeersEnrolled_{i,t-1} + \gamma X_{it} + \epsilon_{it} \quad (3)$$

In this model, Y_{it} denotes a range of educational outcomes for student i in year t , including enrollment (any program, university and SCP), standardized exam scores, dropout probability, and switching probability between university and SCP (and vice versa). The key independent variable, $PeersEnrolled_{i,t-1}$, captures the average proportion of students in the preceding cohort from the same school environment who enrolled in any post-secondary program. The specification includes school and year fixed effects, and controls for a rich set of covariates: student gender, parental education and employment status, family income decile, and private health insurance. The variable $PeersEnrolled_{i,t-1}$ is normalized for interpretability.

Even under the fixed effects specification, concerns about residual endogeneity remain. To address this, we develop a more stringent identification strategy by leveraging the exogenous variation generated by the rollout of the Gratuidad policy. Since the policy substantially increased university and SCP enrollment among low-income students, we use it as an instrument to isolate exogenous changes in the peer environment. Specifically, we focus on the cohorts from 2017 to 2019 (years after the full expansion of Gratuidad) and restrict the sample to students who were not eligible for the policy (i.e., those in household income deciles 6 to 10). For these individuals, we instrument the average number of older peers in their school who enrolled in university with the share of Gratuidad-eligible students (deciles 1 to 5) in the preceding cohort. The exclusion restriction requires that the share of Gratuidad-eligible older peers affects the outcomes of higher-income younger students only through the realized peer enrollment behavior it induces, not through any direct channel.

4.2 Results

Table 2 reports the peer-effect estimates in two panels. Panel A shows that a one standard deviation increase in the average peer enrollment rate in the previous cohort is associated with a 3.7 percentage point increase in any post-secondary enrollment. Disaggregating by

type of program, the peer effect is associated with increases in both university and SCP enrollment, of 2.0 and 1.6 percentage points, respectively. The same increase in peer enrollment is associated with a 0.8 percentage point reduction in the probability of dropping out and small reductions in switching behavior.

Panel B focuses exclusively on peers who enrolled in university. The overall patterns remain consistent with the previous results for total enrollment, standardized exam scores, university enrollment, dropout, and switching. A key difference appears in the effect on SCP enrollment: the coefficient is negative and significant, indicating that exposure specifically to university-enrolled peers discourages SCP enrollment. This is consistent with a substitution channel in which students with more university-enrolled older peers update toward university rather than SCPs.

Table 2: Effect of Peer Enrollment on Educational Outcomes

<i>Panel A. OLS: peers enrolled in any higher education</i>							
	Enrolled	Score Exam	Prob. Enroll Uni	Prob. Enroll SCP	Dropout	Switch SCP-Uni	Switch Uni-SCP
Mean Peers Enrolled t-1	0.037*** (0.002)	0.008*** (0.001)	0.020*** (0.002)	0.016*** (0.002)	-0.008*** (0.002)	-0.002*** (0.000)	-0.000 (0.001)
Observations	678355	678355	678355	678355	459944	459944	459944
<i>Panel B. OLS: university-enrolled peers</i>							
	Enrolled	Score Exam	Prob. Enroll Uni	Prob. Enroll SCP	Dropout	Switch SCP-Uni	Switch Uni-SCP
Mean Peers Enrolled Uni t-1	0.008*** (0.002)	0.021*** (0.001)	0.033*** (0.002)	-0.026*** (0.002)	-0.014*** (0.002)	-0.001*** (0.001)	-0.002** (0.001)
Observations	673867	673867	673867	673867	457437	457437	457437

NOTES: Panel A reports estimates using the standardized share of older peers from the previous cohort enrolled in any higher education institution. Panel B reports estimates using the standardized share of older peers from the previous cohort enrolled in university. For indicator outcomes, coefficients are percentage-point changes. Controls include father's education, father's employment, family income decile, private health insurance, gender, own employment, and year fixed effects. School fixed effects are included, and standard errors are clustered at the school level.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Overall, the reduced-form analysis shows that older peers are strongly associated with enrollment decisions. The combination of higher enrollment, lower dropout, and minimal switching is consistent with an information-transmission channel rather than misguided imitation.

5 Prices

This section provides empirical evidence on the role of out-of-pocket fees in shaping post-secondary enrollment. We exploit the staggered implementation of *Gratuidad*, the 2016 Chilean reform that progressively eliminated tuition for students from households

in the bottom 50% of the income distribution. Section 5.1 describes the policy and the difference-in-differences strategy used to identify its effects. Section 5.2 presents the results, showing that the reform reshaped enrollment decisions both by relaxing absolute financial constraints and by altering the relative prices of universities and short-cycle programs.

5.1 Empirical Strategy

Gratuidad is a Chilean higher education policy introduced in 2016, aimed at providing free tuition for students from households in the bottom 50% of the income distribution. Initially, the policy applied only to Bachelor’s programs at around 30 universities that voluntarily joined the initiative (all the public universities and many private ones). In this first stage, eligible students faced zero tuition costs for Bachelor’s programs, while SCPs were not yet covered, creating a relative price shift where Bachelor’s programs became cheaper than SCPs for the targeted group. In 2017, the policy was expanded to include SCPs, equalizing the price of both types of programs to zero for eligible students. Throughout its implementation, Gratuidad coexisted with other financing mechanisms such as subsidized loans and merit- or income-based scholarships.

On the supply side, there is no significant expansion in the number of vacancies. Enrollment capacity remained relatively stable in the years following the implementation of Gratuidad, suggesting limited institutional adjustment in terms of supply.

To estimate the impact of higher education prices on enrollment decisions, we exploit the staggered implementation of the Gratuidad policy using a difference-in-differences approach. The identification strategy compares enrollment outcomes before and after the policy’s introduction, separately for treated (Gratuidad-eligible) and non-treated students. We estimate:

$$\text{Enroll}_{it} = \alpha + \sum_{\tau \neq 2015} \delta_{\tau} \cdot I[\text{Year}_t = \tau] + \beta \cdot \text{Treated}_i \quad (4)$$

$$+ \sum_{\tau \neq 2015} \gamma_{\tau} \cdot (I[\text{Year}_t = \tau] \times \text{Treated}_i) + X_i' \theta + \varepsilon_{it} \quad (5)$$

where Enroll_{it} is a binary indicator equal to 1 if student i is enrolled in any post-secondary program in year t . We estimate this equation separately for overall enrollment, university enrollment, and enrollment in SCPs. The variable Treated_i equals 1 if the student belongs

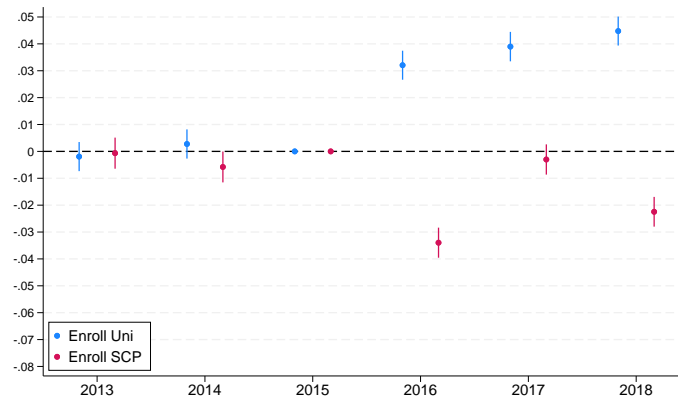
to a household in income deciles 1 to 5, making them eligible for Gratuidad. The set of controls X_i includes gender and social background, measured by parental education. The omitted year is 2015, the year prior to implementation.

The identifying assumption is parallel trends between Gratuidad-eligible students (deciles 1–5) and the higher-income control group (deciles 6–10) absent the policy. Because the policy operates entirely on the demand side—there was no expansion in the aggregate supply of university or SCP seats over this period (Bucarey, 2018)—we interpret the estimated effects as demand responses to changes in out-of-pocket prices rather than supply-driven shifts.

5.2 Results

Figure 1 reports the event-study estimates of the effect of Gratuidad on enrollment. The policy increases the probability of university enrollment while reducing the probability of SCP enrollment by a similar magnitude. This pattern suggests that the policy’s effect operates mainly through substitution rather than by expanding total enrollment. In 2016, when only university programs were covered by Gratuidad, the treatment effect reflects a composite impact: tuition costs for university students fell to zero, and the relative price of university decreased compared to SCPs. Part of the effect is driven by students who had a latent demand for university but were previously constrained by prohibitive costs, while another portion arises from individuals who shifted simply because university became cheaper. In 2017, with SCPs also included in Gratuidad, the estimated treatment effect diminishes, indicating that some of the initial increase in university enrollment in 2016 was driven by students who chose university merely due to its relative affordability compared to SCPs.

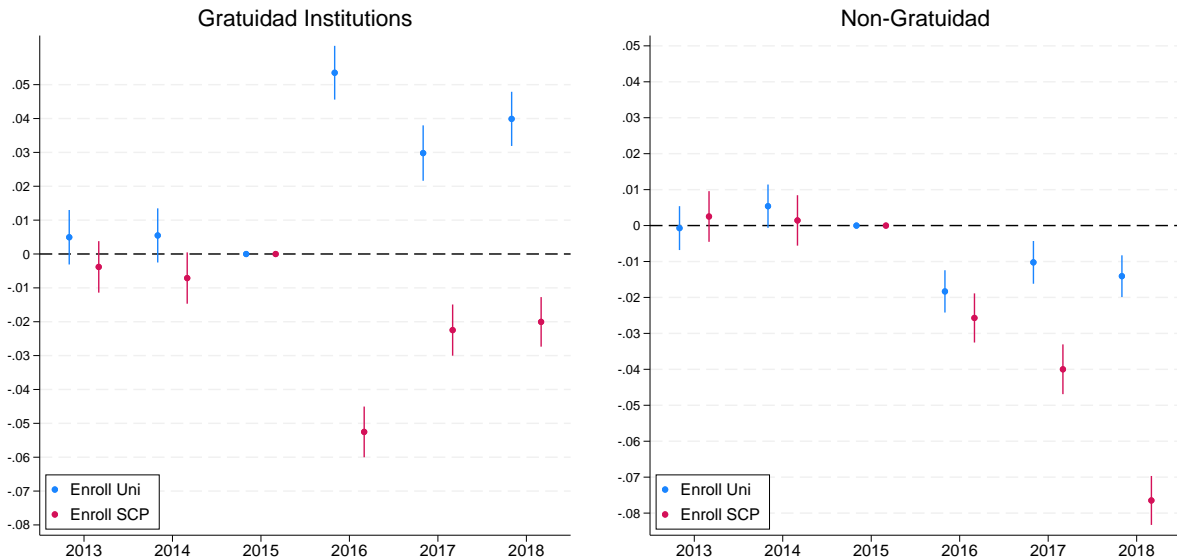
Figure 1: Effect of Gratuidad on Enrollment



NOTES: This figure plots event-study estimates of the effect of Gratuidad eligibility on post-secondary enrollment. The omitted year is 2015, the year before implementation. Outcomes separate enrollment in university programs and SCPs. The treated group is composed of students in income deciles 1 to 5, while the control group is composed of students in income deciles 6 to 10. Estimates include controls for gender, entrance exam scores, mother’s education, and school type.

We then re-estimate the model distinguishing between universities that joined Gratuidad and those that did not, in order to assess whether the observed substitution patterns are concentrated within specific segments of the higher education market. Figure 2 shows that the substitution effect is particularly pronounced among institutions that joined the policy, with a clear increase in enrollment into these universities. In contrast, enrollment in non-Gratuidad universities declined following the policy’s implementation. This suggests that, rather than inducing students to choose only between university and SCPs, the policy also triggered substitution across university types—students shifted away from non-subsidized institutions toward those offering free tuition under Gratuidad.

Figure 2: Effect of Gratuidad on Enrollment, by Institutional Participation



NOTES: This figure plots event-study estimates separately for institutions that joined Gratuidad and institutions that did not. The omitted year is 2015. Outcomes separate enrollment in university programs and SCPs, and estimates include controls for gender, entrance exam scores, mother’s education, and school type.

To further understand whether students enroll in university due to the elimination of tuition fees or because of changes in relative prices, we examine cohort-specific switching patterns between universities and SCPs. For the 2015 cohort, we observe a noticeable increase in the number of students who switch from SCP to university after their first year (see Figure A1). This suggests that some individuals, initially enrolled in SCPs, became aware during their first year that university had become free under Gratuidad, prompting them to transfer. This pattern provides supporting evidence of financial constraints that previously prevented them from accessing university education.

Conversely, in the 2016 cohort—prior to the extension of Gratuidad to SCPs—there is a significant increase in the probability of switching from university to SCP (see Figure A2). These students, having begun university studies when SCPs were not yet free, appear to have responded to the newly introduced tuition-free SCPs by transferring out of university. This behavior indicates that some individuals initially chose university not out of preference but because, under the 2016 policy configuration, it was relatively cheaper than SCPs.

Three lessons can be drawn from these results. First, the strong reaction to absolute price changes reveals that financial constraints are a binding determinant of enrollment for

low-income students, who enter university only when out-of-pocket fees fall to zero. Second, the substitution patterns across university types and between universities and SCPs show that relative prices, not only absolute ones, distort post-secondary choices. Third, the cohort-specific switching evidence suggests that some students respond to changes in relative prices only after enrolling, consistent with informational frictions about policy benefits at the moment of the initial enrollment decision.

6 Conclusion

This paper studies the mechanisms that shape post-secondary educational choices in Chile, with a focus on the persistent inequality in university enrollment across socioeconomic groups. To address this, we combine a rich set of administrative data with quasi-experimental variation from three sources: the post-1981 expansion of private universities, within-school variation in older-cohort peer enrollment, and the staggered rollout of *Gratuidad*. Our empirical strategy isolates three channels: financial constraints, information frictions, and intergenerational transmission. The evidence reveals that parental access to higher education—instrumented by regional university expansions in the 1980s—has lasting intergenerational effects, primarily along the SCP margin; that exposure to older peers improves enrollment and match quality; and that tuition subsidies significantly influence both absolute and relative enrollment decisions.

The next steps of our analysis involve refining the reduced-form evidence by (i) expanding the sample through the inclusion of additional SIMCE cohorts, and (ii) improving the measurement of supply shocks by reallocating university vacancies from the regional to the municipal (*comuna*) level, thereby enhancing the plausibility of our instrumental variable strategy based on parental exposure. A natural extension of this work is the estimation of a structural model of college choice that quantifies and decomposes the relative contribution of each channel—parents, peers, and prices—and enables the simulation of counterfactual policy scenarios.

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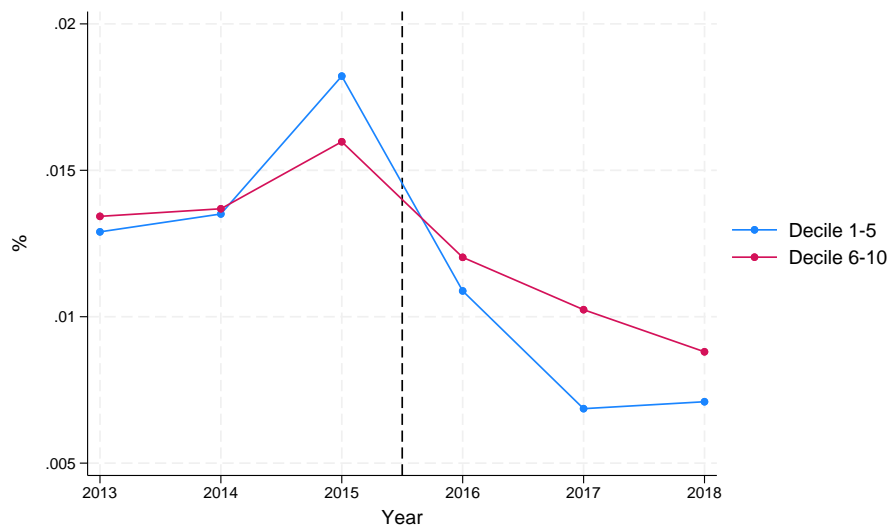
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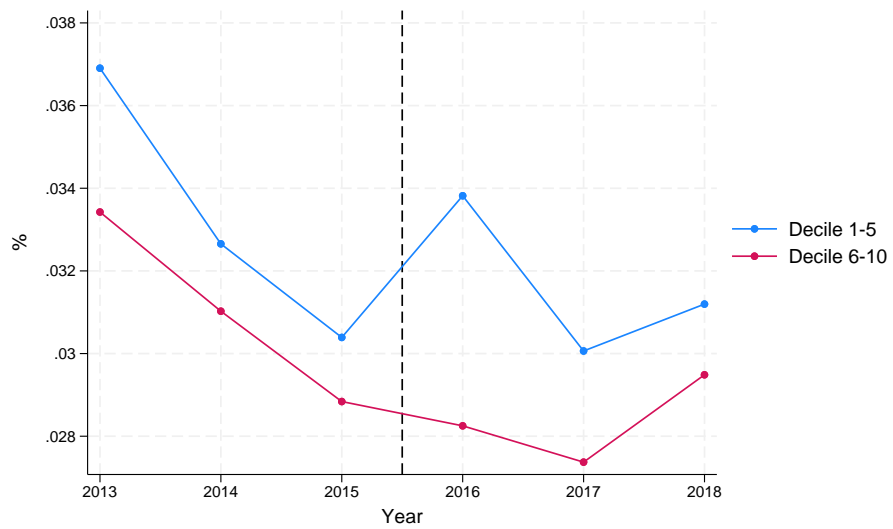
A Appendix: Additional Figures and Tables

Figure A1: Probability of Switching from SCP to University



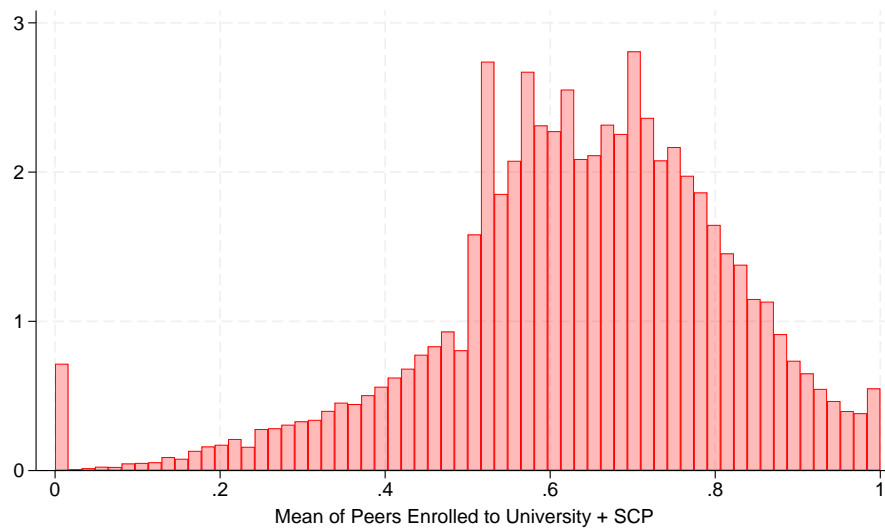
NOTES: This figure plots the mean probability of switching from an SCP to a university program, separately for students in income deciles 1 to 5 and income deciles 6 to 10. The sample is restricted to students enrolled in higher education between 2013 and 2018. The vertical line marks the introduction of Gratuidad in 2016.

Figure A2: Probability of Switching from University to SCP



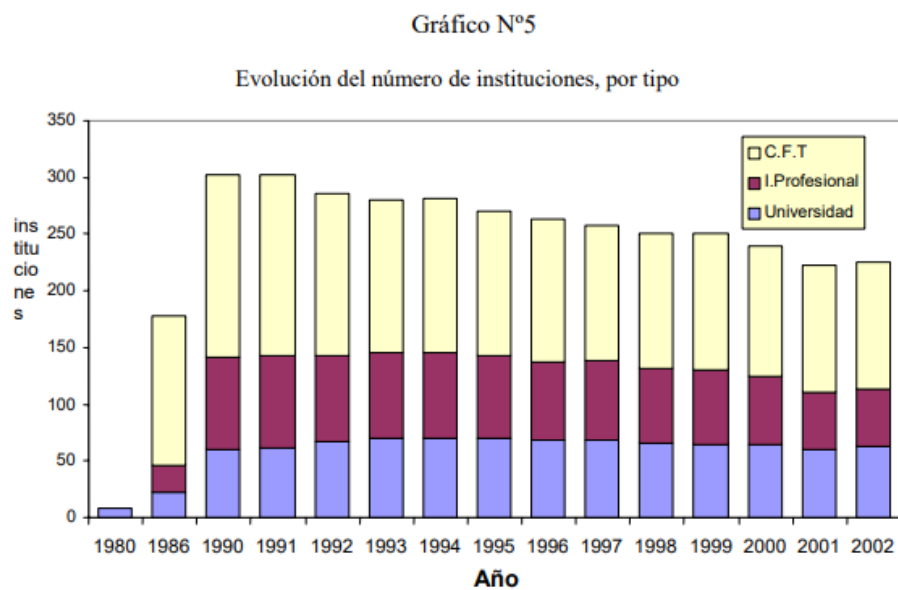
NOTES: This figure plots the mean probability of switching from a university program to an SCP, separately for students in income deciles 1 to 5 and income deciles 6 to 10. The sample is restricted to students enrolled in higher education between 2013 and 2018. The vertical line marks the introduction of Gratuidad in 2016.

Figure A3: Distribution of Older Peer Enrollment



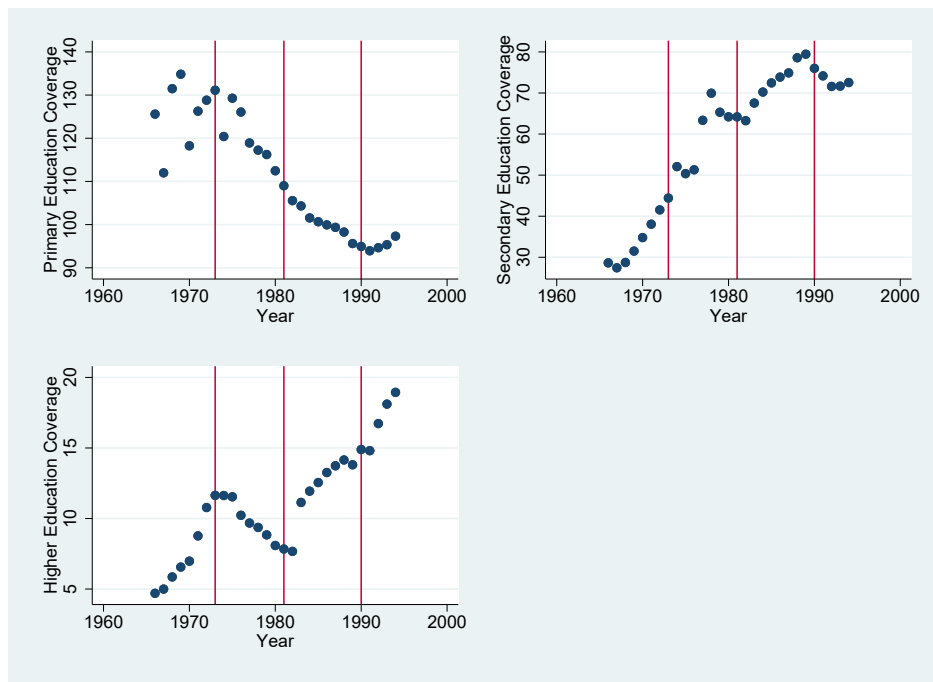
NOTES: This figure shows the distribution of the mean share of older peers from the previous cohort who enrolled in either a university program or an SCP. The peer measure is constructed at the student level using students from the same school environment in the preceding cohort.

Figure A4: Number of Universities and SCP Institutions by Year



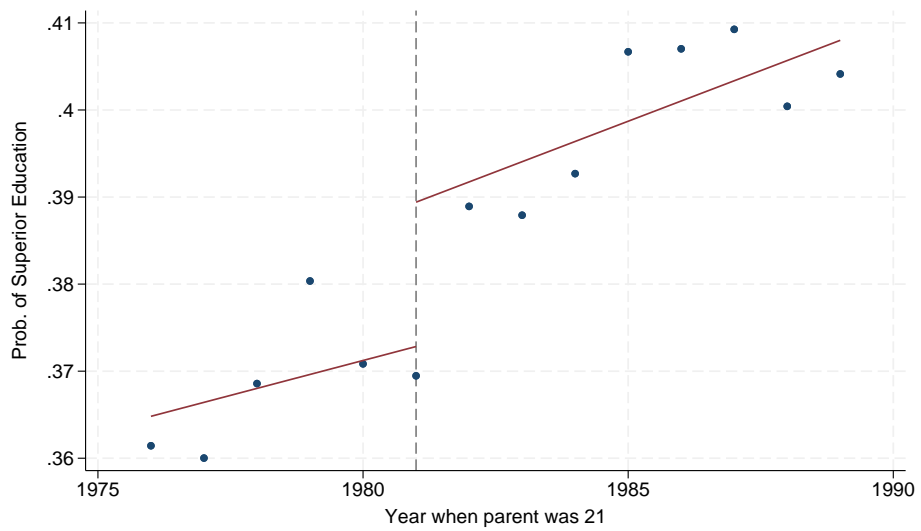
NOTES: This figure shows the number of universities and short-cycle higher education institutions operating in Chile between 1980 and 2000. The series is based on [Bernasconi \(2004\)](#).

Figure A5: Education Coverage by Year, Chile 1965–1995



NOTES: This figure shows education coverage by level in Chile between 1965 and 1995. Coverage is defined as enrollment divided by the population in the corresponding age group. The series is based on [Braun Llona et al. \(2000\)](#).

Figure A6: Tertiary Education by Parent Cohort



NOTES: This figure plots the share of guardians with tertiary education by the year in which the guardian turned 21. The education measure comes from SIMCE parent questionnaires. The vertical cutoff corresponds to 1981, the year of the higher education reform that enabled the expansion of private universities.