College Enrollment and Government Financial Aid in Chile

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Abstract

Governments usually subsidize higher education, they give grants, scholarships or credits to students, to increase enrollment in college. Using a large data set from The Chilean College Selection Test (PSU in Spanish) and information from the Ministry of Education, we assessed the impact of governmental financial aid on student access to universities at a national level. Using a *Regression-Discontinuity* technique, we found that students pre-selected for financial aid increased their enrollment rate in 18 percentage points, which doubles the enrollment of non-funded students at the cut-off point. This measure shows a considerably higher impact than those reported in the international literature. The impact of financial aid varies across school types and income quintile of the students, showing larger effect in students from low and middle-low revenue families. We discuss the importance of the impact presented, verifying its relevance and suggesting that it is insufficient for the lowest income sector.

1. College Enrollment and Financial Aid Assesment

Although higher education policies have a long tradition in Chile, the effect of policies –as governmental financial aid for students– has not been completely measured. This research shows the impact of a nation-wide enrollment's incentive policy on different types of students attending universities.

In this paper, we will focus our analysis on students that just graduated from high school and want to go to college. By single out these students we expect to sharpen our approach by considering only motivated students who are trying to pursue a college degree and constitute the main target of the Chilean governmental funding for higher education.

In Chile, senior high school students take the College Selection Test (PSU in Spanish), a voluntary standardized test –necessary to apply to college– like the S.A.T in the US. Each year, colleges select their applicants based on their PSU scores and high school grades. The PSU can be taken several times; therefore we will only consider students taking it for the first time on their last year of high school.

Narrowing down our selection, we included only the 2008 cohort of students who just graduated from high school, as they are possible candidates for college enrollment. As governmental funding policy is interested in increasing the enrollment rate efficiently, credits and scholarship programs should focus on the regular students that participate in this massive process of admission.

The present research has certain limitations. This analysis does not target (a) students that did not finish high school, (b) students that did not take the PSU test (c) students that did not at least try to go to college in Chile (i.e. study abroad or pursue vocational education) and (d) our research only focuses on the 2008 cohort, excluding students who are taking the PSU one or more years after they left high school.

We will also exclude vocational financial aid for this research, because entry requirements, target population, economical perspectives, prestige and academic level of vocational degrees differ considerably from college education. We consider that vocational education is a rather specific case of higher education and deserves a particular analysis, which future research should assess.

2. The educational system debate in Chile

According to an OECD report (2009), the tertiary educational system in Chile accounts for one with the smallest proportion of public contribution in the world, which makes local families the main economic provider, in order to compensate low public expenditure. Also, over 90% of the students in primary and secondary education attend *voucher* schools and more that 70% of students in higher education pursue their degrees in private institutions (SIES, 2009), making Chile one of the most market-oriented educational systems in the world.

Since the early implementation of the Education Reform in 1981, the system has allowed progressively more private organizations to create schools, manage universities and collect *vouchers* from the national government. In nearly 30 years, private *voucher* schools had increased systematically upon public *voucher* schools and today they teach more than 46% of Chilean students (MINEDUC, 2009). As high school coverage reached near 100% at the national level, a widespread discussion has emerged regarding the effectiveness of the 1981 scheme, on the quality of education as a whole and the equity of the outcomes: i.e. the higher education enrollment rate for the poorest quintile was 15% and it was 80% for the richest (CASEN, 2006). Several authors had discussed that socioeconomic disadvantages do generate educational inequalities as well, thus expanding the gap between the poor and the rich ones (Mizala et al, 2002; Contreras et al, 2002; Tokman, 2002).

In trying to balance these persistent inequalities, the government increased the *voucher* value for the lowest quintile students in 2008. Another initiative has been the increase of financial aid to improve college enrollment among low income students.

3. From High School to Higher Education in Chile

High school education conditions influence to a great extend further educational development. In order to be admitted to better colleges and most competitive degrees, Chilean students must obtain higher scores on PSU and higher grades in high school. Recent studies had shown that students from private school obtain significantly higher scores both in the PSU and also in high school grades (Meneses et al, 2005). It has been argued, as well, that this selection system drives poor students to vocational education, while mostly privileged students pursue university degrees. This has been arguably one of the outcomes –among other higher education issues– derived from the market oriented educational model in Chile (Brunner, 2009).

Tertiary education in Chile has faced profound alterations during the last decades. Before the 1981 Education Reform, the scheme consisted of only a few State supported universities and some vocational institutions. As the system changed, allowing the entrance of private institutions, a broader educational market emerged. Private universities and vocational institutes –in three decades– have expanded significantly, reaching more than two thirds of the higher education supply.

The current tertiary system has low entry requirements and few structural restrictions for private actors to establish new educational institutions. The government imposes no significant performance commitments, neither precise obligations regarding information to the public. State-supported universities are partially financed by the government, and they charge similar fees than private universities, generating a highly competitive system. It is not clear if these conditions have a positive impact on national academic development (Brunner, 2009).

As the higher education market is regulated mostly by demand and supply, student demand for degrees and tuition fees are the most important determinants regarding strategies of private educational institutions. Institutional behavior regulations for private colleges are limited, as it is believed that these kinds of interventions are more efficient and may avoid problems of asymmetrical information, control and monitoring (Brunner, 2009).

The Chilean higher educational system makes a distinction between

State-supported Universities (SSU) and Private Universities (PU). The first ones are usually assessed as rather public-oriented institutions, with higher admission requirements, as private universities are considered to be academically less demanding and with rather higher tuition costs. The system's evolution, however, leads to a relative balance, as tuition costs tend to even out, and also private universities are gaining more prestige. Currently, for both kinds of universities, most of the resources come from tuition fees and to a lesser extent from governmental financial support (SIES, 2010). Governmental funding comes in the form of a direct state contribution to SSU, in addition to a *voucher* system assigned to SSU and PU that recruit students with higher scores in PSU.

Vocational education is imparted by Professional Institutes (PI) and Centers for Technical Formation (CTF). These educational alternatives are mainly selected by students from middle to low income sectors, as tuition fees are usually more affordable, though they have less prestige and lower expected returns. Tuition fees are the main income source for these institutions (SIES, 2010), as they do not receive almost any financial support from the State.

This market-oriented system has evolved with little central planning. The public policy makers have restricted their efforts only to develop capacities and research, strengthening information systems and improving accrediting institutions, while trying to achieve equal opportunities with credits and scholarships (Brunner, 2009).

There has been also an important increase in the enrollment numbers, as students attending higher education has more than tripled since 1984, increasing from 190.000 students, to 876.000 aprox. in 2009.[1] The increase in college coverage has been achieved mostly by PU, who today account for 30% of the students.

The increase on higher education enrollment may be explained by an expansion in high school graduations rates and on higher expectations among students. There have been attempts to explain this increase by the expansion of scholarships and state-managed credit programs available (Blanco et al, 2010). This paper intends to portray more and better evidence in order to support the latter hypothesis, as financial aid programs might be a significant factor in the enrollment in Chilean higher education.

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[1] Currently, close to 30% of population between age 18 and 24 attend some kind of higher education (CASEN, 2006).

4. Literature review

Scholarships evaluation, financial aid and its impact on enrollment has been widely discussed in international literature (a review in Deming et al, 2009). On the other hand, in Chile we found only one work regarding this issue (Paredes et al, 2007). It points out the strong influence of economic conditions on higher education decisions and shows how poor students tend to follow shorter vocational programs or they simply prefer to start working, not pursuing a degree in higher education.

Among the international literature, the most relevant research to this work is Van der Klaauw's paper (2002), who estimated the effect of financial aid using regression-discontinuity (RD) approach on an US East Coast college. We followed his methodology in this paper. To assess the impact of aid on college enrollment, he converted a binary variable –if a student enrolls or not– into a continuous variable, denoting the proportion of enrolled students at each application point. Then, he evaluates the impact of the aid at the different discontinuities of the assignment rule. He found that college aid is an effective instrument in enhancing competitiveness with other colleges, increasing the probability of enrollment, with an elasticity of 0.1 to 0.14.

Goodman (2008) estimates an increase on the probability of enrollment by 6% as students reacted to a quasi-experimental merit scholarship intended to attract talented students to state public colleges. He used a difference-in-difference (DD) versus a Regression-Discontinuity (RD) approach, finding that the RD estimates were larger that the DD method.

Singell et al (2002) developed a bivariate probit model to find that an increase in US $1,000 of financial aid increases the probability of enrollment by 7.7%, 4.6% and 3% in non-need-based, subsidized, and un-subsidized aid, respectively. Using data from a large public university in the US, they found that merit-based aid increased the enrollment for all students, but that financially able students respond disproportionately better. They argue that higher emphasis on merit-aid may exacerbate the trend of income inequality.

Monks (2008) randomly assigned scholarships to 230 of its highest rated admitted applicants, leaving unfunded 319 students with the same characteristics as a control

group. Using a logistic approach, he founds that a US$7000 grant, increases the probability of enrollment by approximately 3%. Regardless of the ethic implications, this research shows a small impact on the enrollment probability.

Linsenmeier et al (2006) –using a probit model– found that a grant program increases the likelihood of enrollment in between 8 to 10 percentage points among low-income minority students. Kane (2003) uses a regression discontinuity design to evaluate a quasi-experiment, assessing the impact of the CalGrant college enrollment, finding a 3 to 4% impact. Dynarski (2004) evaluates the HOPE Scholarship in seven states from US using OLS (simple regression), finding that this scheme increases the attendance probability in college of freshmen by 5 to 7 percentage points. Baumgartner et al (2006), using a DD methodology, found that the aid program produced a small but significant effect on enrolment rates of students from low-income families.

Champman and Ryan (2003), on the other hand, evaluated on a small sample, a change in the tuition cost in Australia, finding that the income contingent charges had no impact on the enrollment of lower income student.

A guide for the RD approach, and a review of literature using RD designs in economics, can be found in Lee and Lemieux (2010).

5. Data Base

The current paper uses information from three different sources: (a) PSU test, which contains also self-reported income data. (b) Scholarship application of students, from the Ministry of Education and pre-selection for financial aid, and (c) also from the Ministry of education, information from students enrolled in the 60 Chilean universities. The three data sets are merged at student level using the RUT (Chilean national identification number). This research uses the largest data set reviewed in the literature so far and accounts for the most extensive attempt to evaluate the impact of Chilean financial aid on college enrollment.

This data set, however, has two weaknesses: (a) After merging the data sets, we only obtained information regarding 199,029 students that graduated from high school on 2008 and took the PSU, out of a population estimated in 244,000. Thus, approximately 45,000 students did not take the PSU that year. This study does not tackle the selection bias caused by students that choose not to take the PSU.

In addition, (b) we did not address the fact that only 101,936 students applied to governmental financial aid (from a total of 199,029). Only near 15,000 students –that are already paying private high school fees– are meant to be able to afford similar amounts of money for college education. The large percentage (close to 50%) of non-applicants may be explained by: the lack of aid information among students and teachers, low performance expectations or simply because it is believed that the prospective student would not reach the PSU or income standards to be eligible for benefits. This massive number of students that do not apply to financial aid is regarded to be a public policy problem in the Chilean education system and is meant to be addressed. Further research may approach these issues.

Even though around 85,000 eligible students did not apply to aid in the Chilean case, we still had 101,936 valid cases for our analysis. Therefore, this research takes into account specifically those individuals who are subject and willing obtain benefits from public policy in the form of governmental financial aid, and thus, we were able to evaluate its impact.

Table 1 – Data sets merging results

	PSU Test	Higher Education	Scholarship Application	Scholarship pre-selection	Total Information
Base	278,275	876,000	198,750		
Total merge	199,029	60,639	101,936	46,743	199,029

Table 2 – Research variables and informational sources

Variables	Sources	Description
PSU Test	PSU 2008	Mathematic and language average points of each student at the PSU test
High School Type	PSU 2008	Schools can be public voucher, private voucher or private tuition schools
Family Income	PSU 2008	Students that take the PSU self-report the family income. Level variable with 12 categories
High School Grades	RECH 2008	Average grades from the four years of high school
High School Graduation year	RECH 2008	Identification the students' graduation year
Financial aid	Ministry of Education	Dummy: 1 if the student has been pre-selected for college financial aid for 2009
College enrollment	Ministry of Education	Dummy: 1 if the student attended a university during 2009
Family Income Quintile	Ministry of Education and Tax	Information regarding the family income, provided by the Chilean Tax Service. Information is only available for the students that applied for financial aid

6. Financial aid and application process

The Chilean government has various scholarships and credits schemes that students can use to pay for university education. Here we show benefits that are managed directly by the Ministry of Education, excluding those administered by other government agencies. All these benefits are intended to cover tuition costs partially or in full. These aids may seem to be very small in comparison to international standards in US dollars, but they cover in average close to 85% of the total tuition cost. At this point, we adventure the hypothesis that the percentage of tuition coverage is a very important factor regarding the increase of enrollment rate in Chile on a comparative basis with the international evidence.

Table 3 – MINEDUC financial aid summary

College of financial aid (tuition)	Requirements and conditions	Students benefited per year	Average expenditure (Dollars per year)*
Juan Gómez Millas Scholarship	Quintiles I and II, over 640 PSU points	2.854	1.902
University Credit	Quintiles I to IV, over 475 PSU points. Enrollment in a CRUCH university.	111.468	1.674
Academic Excellency Scholarship	Best 5% graduates from voucher school. Quintiles I to IV	10.278	1.832
Bicentenary Scholarship	Quintiles I and II, over 550 PSU points. Enrollment in a CRUCH university.	40.788	2.942
Pedagogy Scholarship	PSU score over 600 points and HS Grades over 6.0. Only for Pedagogy.	793	1.916
Son of Teacher Scholarship	Quintiles I to IV. PSU over 500 points and HS grades over 5.5. Be the son of a school teacher.	7.960	978

Source: SIES, web page www.becasycreditos.cl, Ministry of Education, Chile.
* One US Dollar equals 500 Chilean Pesos. Average 2010 exchange rate approximated.

The first requirement for all financial benefits is to apply to a centralized system of scholarships and credits at the Ministry of Education, by completing the Unique Form of Socioeconomic Accreditation (FUAS in Spanish). All applicants that correctly fill out the online form may be subjects for financial aid. This process takes place in October.

After the student applies to the financial aid, he/she must take the PSU in December. With PSU results and high school grades (HSG) on hand, the Ministry of Education evaluates the students' scores and profile, and assesses if he/she meets the requirements to be pre-selected for financial aid on January. During summer break –January and February– students enroll into College, already knowing if they have been pre-selected for financial aid. Once the student is admitted in a University, the financial aid is assigned to him/her and it is paid directly to the institution in which the student is enrolled.

Figure 1 – MINEDUC benefit assignment process

Besides the benefits in table 3, there are other college benefits not considered here: i.e. we do not consider living costs benefits administered by National Committee for School Aid and Scholarships (JUNAEB in Spanish), nor a system of private credit with governmental guarantee administered by the Ingresa Commission. Although, to obtain this credit students have first to apply to the governmental aid, enroll into college and then verify if they are subject to the benefit. Therefore, during the period between the application process and the enrollment, these students are not sure if they may be able to acquire the Ingresa Credit, therefore there is a high uncertainty about this benefit among students. JUNAEB's and Ingresa Commission, thus, are excluded from this research.
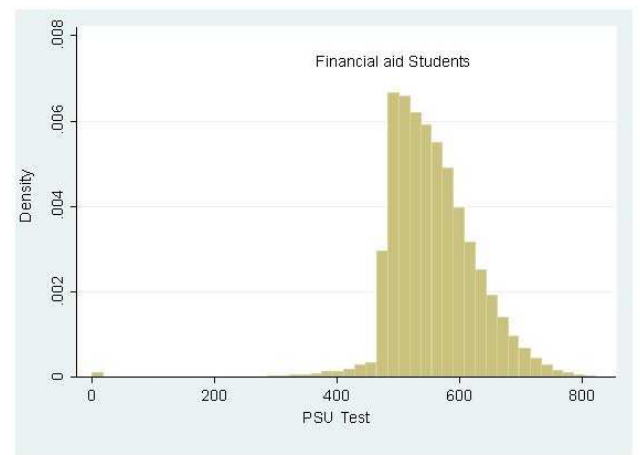
For most of the governmental financial aid, the cutoff point is over 475 PSU points. The only college scholarship that does not have a PSU score cutoff point is the Academic Excellency Scholarship, because its purpose is to correct inequalities in college admission generated by the PSU (Contreras et al, 2009). We have also excluded this benefit from the analysis.

In graph 1 we can see that the PSU test has a rather normal distribution, but there is a large proportion which are students with 0 PSU points, that register for the test, but do not take it. Graph 2 shows the distribution of PSU scores of students pre-selected for financial aid. In graph 3 corresponds to the same sample, but excluding students with Excellency Scholarship. Graph 4 shows the PSU scores of the students that were not pre-selected for financial aid. It is possible to see that an important number of students with PSU scores over 475 did not apply to financial aid or were not pre-selected because of their income.

Graph 1- PSU Scores Histogram	*Graph 2- PSU Histogram Financial aid students*
Graph 3- PSU Histogram, students used F. aid	*Graph 4- PSU Histogram, students without F. aid*
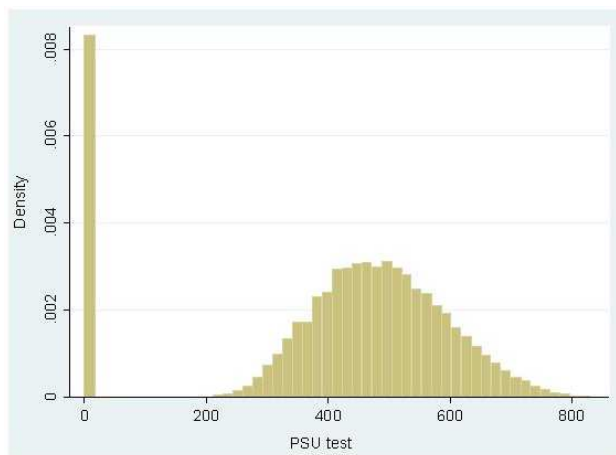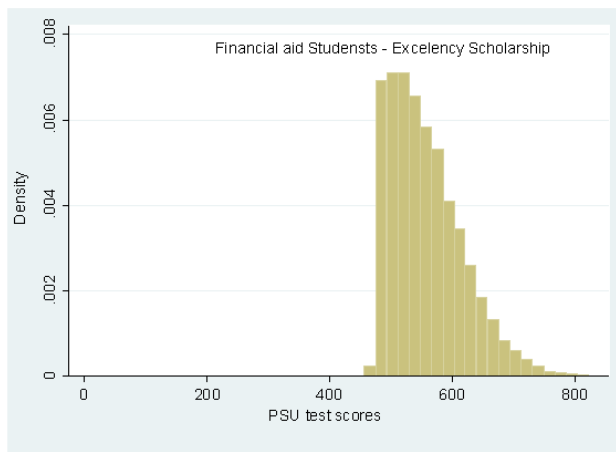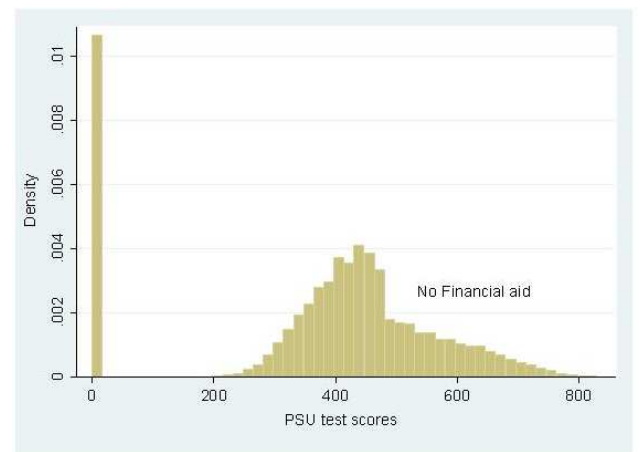
In graph 5 we show the proportion of students that were pre-selected for financial aid and their family income. It is possible to see that at higher income levels, it is less likely to obtain financial aid. In graph 6 we can see the enrollment rate for

students preselected for financial aid and for students that do not have financial aid. For both groups of students, income seems to be highly correlated with college enrollment. The impact of financial aid does not relate to the difference between both groups, because students with financial aid have been selected mainly by their PSU scores. Therefore, it is necessary to consider the PSU score effect on the impact of financial aid.
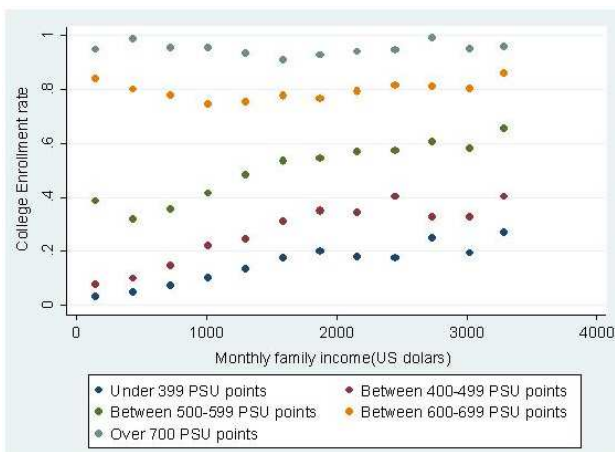
Graph 5- Financial aid pre-selection and income
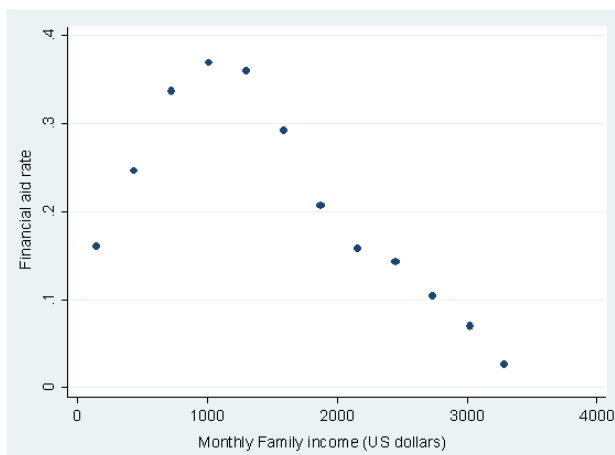
Graph 6- Enrollment rate and family income
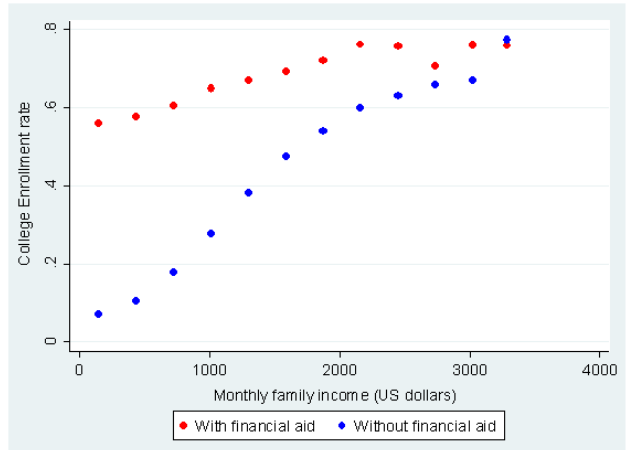
Graph 7-Enrollment rate, students without F. aid

Graph 8- Enrollment rate for students with F. aid
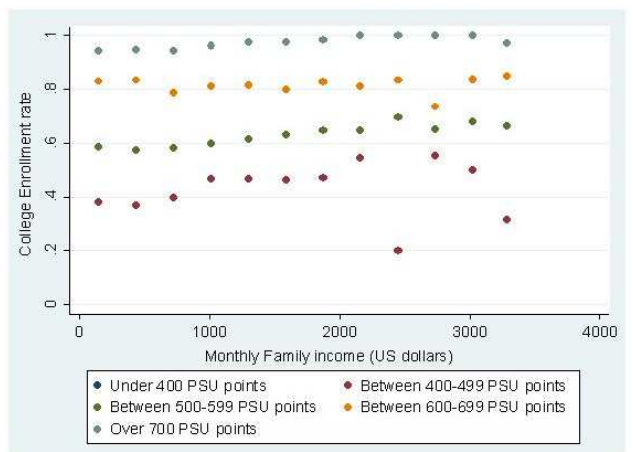
Graph 6 is disaggregated into graph 7 and 8. In graph 7 we have college enrollment rate and family income for five different groups of PSU scores, for students without financial aid. We can see that in this case income is not strongly correlated with

college enrollment when controlling for PSU scores. Income has a lower correlation with enrollment when the PSU scores increase. The same effect can be appreciated in graph 8, where there seems to be only a small effect of income over college enrollment but a high effect of the PSU test. This is actually the intended effect of financial aid, to make students enroll into college regardless of their social origin but making it to depend mostly on their academic abilities. In the comparison between graph 7 and 8, we can appreciate a higher enrollment rate of students with financial aid, especially in the groups between 400-499 PSU points and 500-599 PSU points.

In the following section we will explain the methodology used to measure impact of financial aid over enrollment.
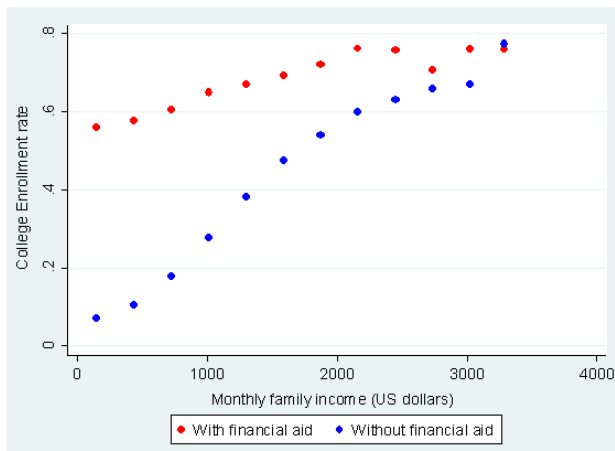

7. Methodology

This paper follows closely the methodology used by Wilber van der Klaauw (2002) in the creation of the dependent variable. First we create the variable that indicates the enrollment rate for students that are pre-selected or not for financial aid benefits, at each PSU points segment.

a) $Pr[Enrollment = 1| PSU) \; if \; Financial \; aid = 1$
b) $Pr[Enrollment = 1| PSU) \; if \; Financial \; aid = 0$

The variable "enrollment probability" is created considering intervals of 10 PSU points. The Graph below shows the different enrollment rates for students with and without financial aid, at each PSU interval.

The effect of being or not pre-selected for financial aid seems to have –at least in this graphic– a very strong influence in the enrollment rate. The cutoff point for financial aid is at 475 PSU points (also the cutoff point of selection of SSU). We do not appreciate a big impact on the enrollment rate of students without financial aid at this score.

Graph 9- College Enrollment Rate and Family income   *Graph 10- College Enrollment Rate and PSU Scores*
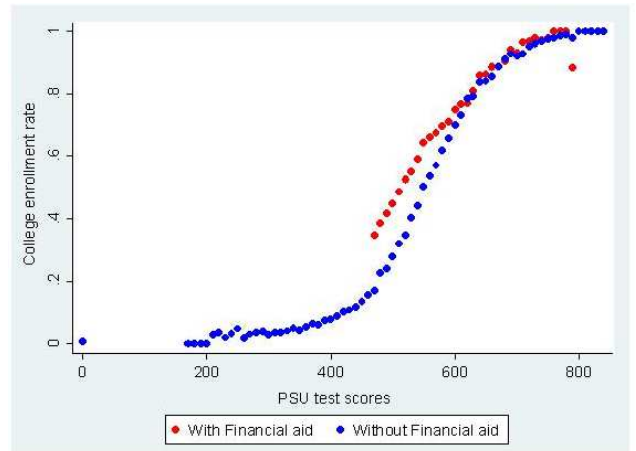
To assess the impact of financial aid, we evaluate the enrollment rate controlling for interval of 10 PSU points, using a Regression Discontinuity design. We also evaluate the RD estimations using intervals of one PSU point with similar results (see appendix).

The RD assumes that students around the cutoff points are very similar, therefore we can evaluate the differences of enrollment around this discontinuity without having to control for other variables, like income. We run the regressions according to the following equation:

$$Enrollment\ rate = \beta 1*PSU + \beta 2*Financial\ Aid$$

The variable PSU corresponds to the average PSU score for each student, minus 475 points. With this treatment, the cutoff point is fixated at zero. Financial aid is a dummy variable, in which the value 1 represents that the student has been pre-selected for financial aid.

8. Results

We will analyze the impact of financial aid using two samples of the date. The first one will consider the 199 thousand students that graduated from high school. The second one will consider only the 100 thousand students that after graduating from high school. The second sample is supposed to be more strictly the impact evaluation, because focuses on the effect on the ones who were subject to the benefit and the ones, that applied to the benefit, but did not get it. RD results are shown for the whole sample and for different sub-samples.

### a. Analysis with complete sample

For the whole sample, the results are very robust. In three different bandwidths, the estimated coefficients are very similar: all of them are statistically significant at 1% and close to 18 percentage points. This means that having financial aid, it increases the enrollment rate in 18 percentage points at the cutoff point. To evaluate the statistical significance of these results, we estimate the standard deviation using a bootstrap procedure with 1,000 replications.

Table 4 – College enrollment rate for different bandwidths

Enrollment Rate	Coef.	Bootstrap Std. Err.	P>|z|	Normal-based [95% Conf. Interval]	
Band(100)	.1795701	.0003055	0.000	.1789713	.180169
Band(50)	.1808453	.0003121	0.000	.1802335	.181457
Band(200)	.1859893	.0002308	0.000	.1855369	.186442

The following graph presents the effect of being pre-selected to financial aid in the college enrollment rate in Chile. The gap between the red curve, which represents students without financial aid, and the green one of pre-selected students, reaches 18 percentage points. Financial aid increases in 18% the rate of college enrollment.

Graph 11 – College enrollment rate for students with and without financial aid
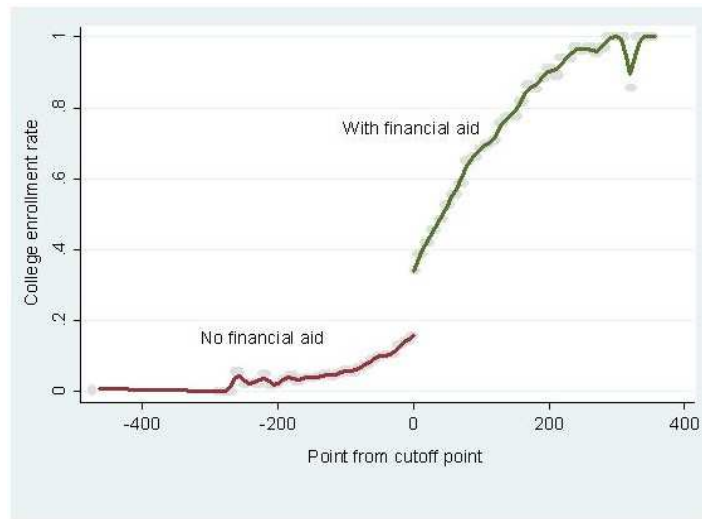
The effect of financial aid is evaluated for different types of high schools. Students from public high schools show the highest impact of financial aid for all bandwidths. On the other hand, students from private schools show the lowest of the impacts. It is important to consider that only 7% of Chilean students attended paid private schools and they correspond mostly to the richest quintile.

Table 5 – Enrollment rate in different bandwidths for income quintiles

Enrollment Rate	Coef. Band(50)	Coef. Band(100)	Coef. Band(200)	Coef. Band(400)
Public *Voucher*	.21206648	.20985365	.21669629	.22178266
Private *Voucher*	.15932055	.15869077	.16108534	.16067095
Private	.10369562	.11376805	.06567839	-.02878993

As table 6 shows, the effect of financial aid in the enrollment rate of students from private schools reaches 10% and 11% in the 50 and 100 bandwidths, decreasing to 6% and -3% in the 200 and 400, respectively. Students from public *voucher* schools, on the other hand, increase their enrollment rate around 22% for all bandwidths considered. Private *voucher* schools also show certain regularity, although the impact of financial aid is not as strong.

b. *Analysis with subsample*

The previous results may have a bias, because the self-selection process of the application is not controlled (were students do not apply to benefits and other do). To solve this issue we will evaluate the impact of financial aid only on the 100 thousand students that applied to benefits.   To be able to the evaluation correctly, it is necessary to have similar groups of control; therefore we divide the students according to their income level in quintiles, being the first one the poorest[2] this information is only available for the students that actually applied for benefits. The result of the RD procedure shows that financial aid has a very important impact at the low and middle-low income groups, reaching 14to 17% for the second quintile in the 50, 100 and 200 bandwidth and by 18% in the 400 bandwidth. As regarded to other bandwidths of the regressions, we find different coefficients. It appears to be that financial aid has larger impact in the II and III quintile and has the lowest impact in the Quintile IV.   We can see that students from the riches Quintile do not have any benefits (except the pedagogy), and there is no discontinuity in the enrollment rate.
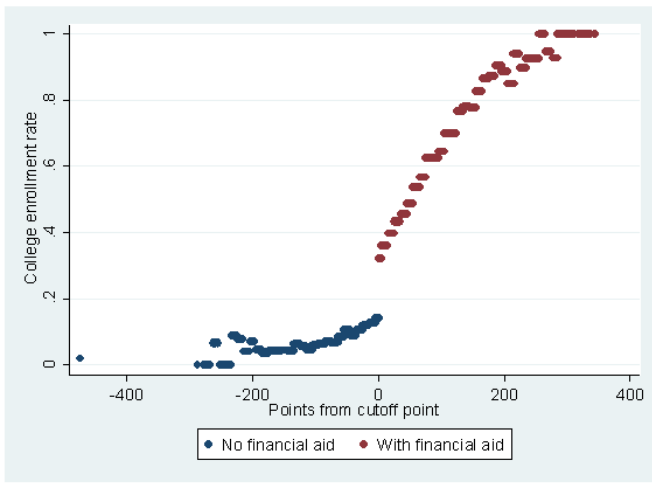
Table 6 – Enrollment rate in different bandwidths for income quintiles

| Enrollment Rate	Coef. Band(50)	Coef. Band(100)	Coef. Band(200)	Coef. Band(400)	Nº
Quintile I	.17385032	.17083382	.17878284	.18474346	44,157
Quintile II	.14778868	.14807752	.17103225	.18591846	20,619
Quintile III	.22517235	.22495836	.18289242	.13743167	14,058
Quintile IV	.15036185	.15255343	.15976363	.13591357	12,607
Quintile V	nn	nn	nn	nn	8,919
Total Nº					100,360

There results show with robustness the effect of financial aid on enrollment. These coefficients are similar to those obtained with the full sample suggesting that the students that apply and the ones that do not apply to benefits behave in a similar way.

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[2] The Income Quintile has estimated using data from the Chilean income -tax service.
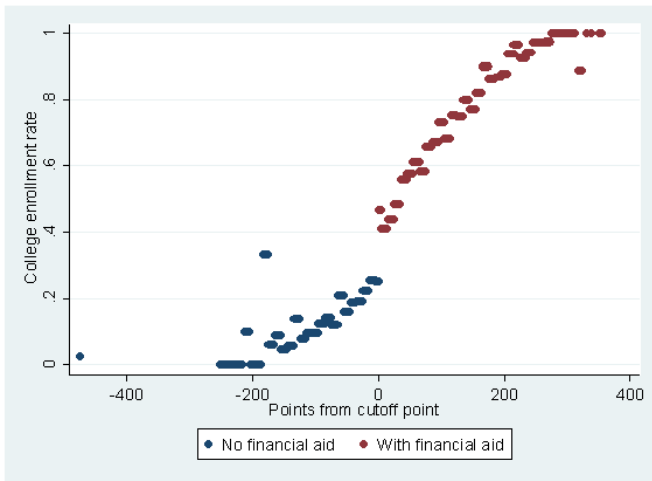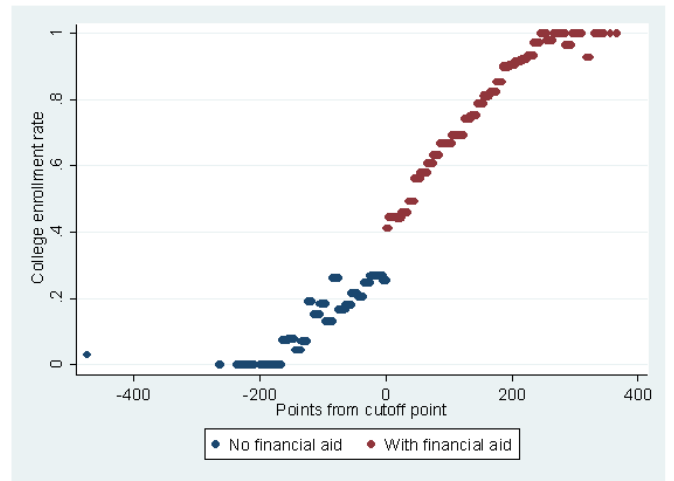
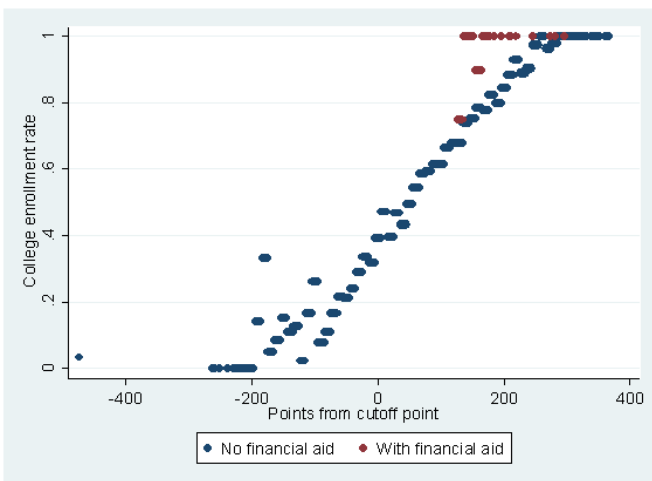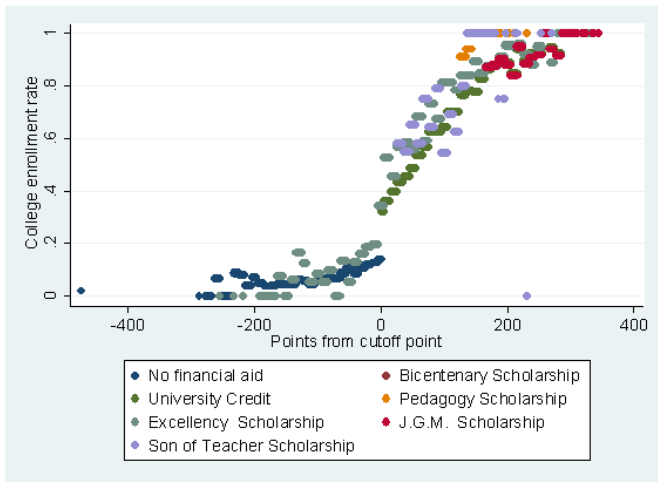| Graph 12- Enrollment rate and aid for Income quintile I	Graph 13- Enrollment rate and aid for Income quintile II
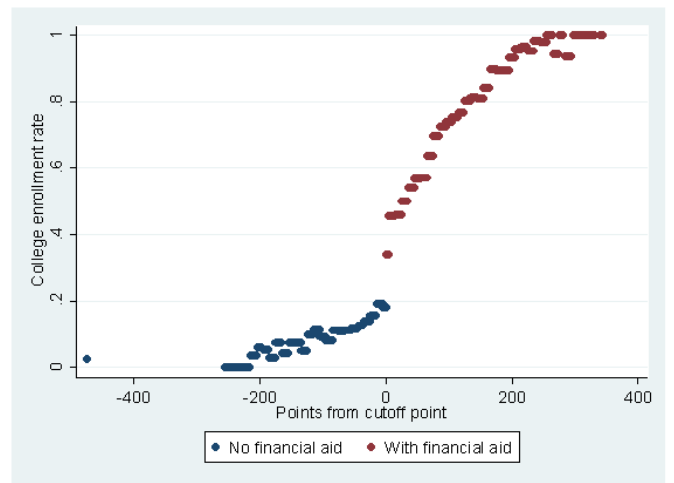
Graph 14- Enrollment rate and aid for Income quintile III	Graph 15- Enrollment rate and aid for Income quintile IV

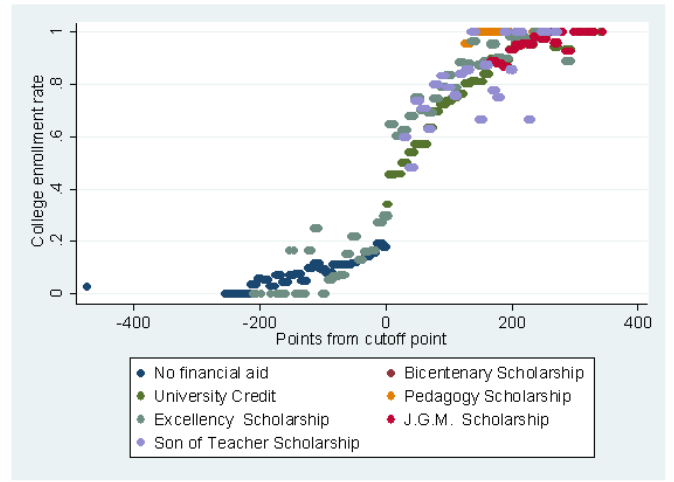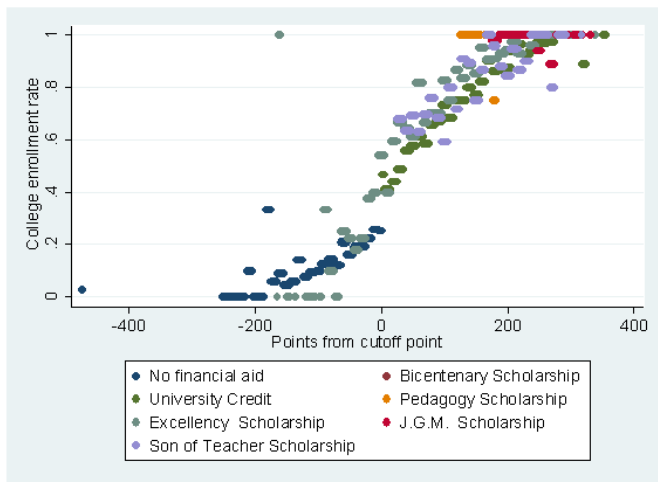| Graph 16- Enrollment rate and aid for Income quintile V	

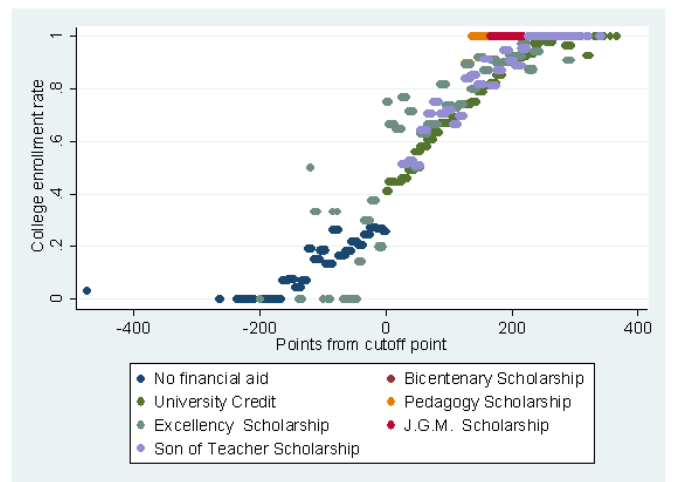*Graph 17 -Enrollment and benefits for Income quintile I*

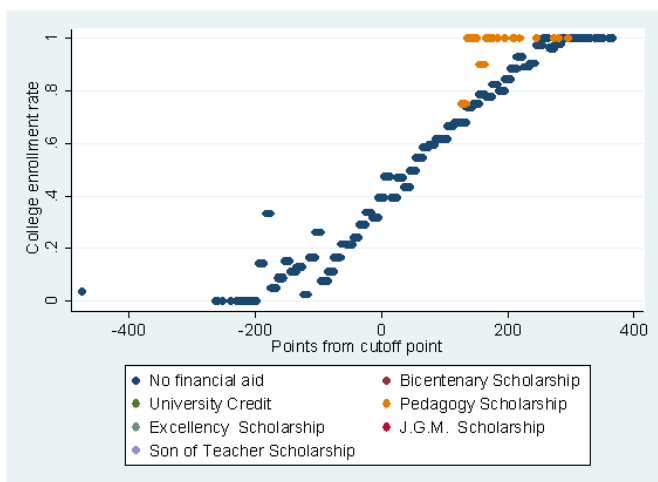*Graph 18– Enrollment and benefits for Income quintile II*

Graph 19- Enrollment and benefits for Income quintile III

Graph 20– Enrollment and benefits for Income quintile IV

Graph 21– Enrollment and benefits for Income quintile V

9. Discussion: Financial aid and public policy

In the context of market-oriented system of Chilean education, credits and scholarships are the main policy that national government has used to improve equity in the higher education. In this paper we found a significant contribution of the financial aid programs in increasing the college enrollment rate. Financial aid succeeded in increasing in 18 percentage point the probability of enrollment at the cutoff point, doubling the probability of college enrollment without benefits.

These results evidence the success of this public policy, considering that its effects are larger than those reported in the international literature and seems be a much more cost-efficient scheme. However, the impact of financial aid programs differs between students from different income levels. Financial aid has larger impact in the II and III income quintile and has the lowest impact in the IV quintile. While higher income students are not eligible to receive benefits, we found slightly weaker effect of the benefits on low income students.

An important number of low income students who are pre-selected for aid do not attend college. There are a number of possible explanations for this phenomenon, and should be addressed in future quantitative and qualitative researches: they may have other economic priorities beyond college tuition or other social or cultural factors may be affecting the value attributed to higher education. It also may be due some students prefer ultimately to pursue vocational education.

Interesting questions arises regarding the financial aid for vocational higher education. These kinds of degrees are usually followed by lower income students because of their accessibility and fewer entry requirements. The impact of financial aid for this segment is meant to be assessed in further research.

This research presents a good scenario for the application of a Regression-Discontinuity methodological design, in one of the largest data set reviewed in the financial aid evaluation literature. Income level as a control variable was proved effective to assess non-homogeneous effects among different sectors of the student population.

Public policy recommendations emerged from this analysis. The high effectiveness in increasing college enrollment of the financial aid scheme in Chile supports the decision to maintain, and possibly strengthen the current benefits program. Regarding the weaker impact on the lowest income students, public policy makers

should consider increasing the benefits in order to achieve larger effects. On the other hand, new research should be conducted to identify the factors involved in higher education decisions in low income families.

Besides promoting that more students take the PSU, the government should make efforts to increase the number of applicants to financial aid, as some eligible students are not participating in the selection process. This may be achieved by strengthening diffusion systems in order to reach more students with better information about financial aid. Also, it should be consider revising the application process to make it easier to use and more accessible.

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b)Appendix

Regression Discontinuity results for enrollment rate at each point of the PSU test.

Enrollment Rate	Coef.	Bootstrap Std. Err.	P>|z|	Normal-based [95% Conf. Interval]	
Band(100)	0.1709994	0.0005967	0.000	0.16983	0.1721689
Band(50)	0.1915126	0.0006905	0.000	0.1901593	0.1928659
Band(200)	0.1759326	0.0004233	0.000	0.1751029	0.1767624