

Financial Aid and Higher Education Dropout in Colombia

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ABSTRACT: One of the reasons for a government to support an education system is its role in productivity growth of its citizens and nation's economic development. Although in some less-developed countries, such as Colombia, there is low levels of non-participation in primary and secondary education, there are high levels of dropout in higher education. The Colombian educational loan system experienced some changes to comply the 2010 National Agreement to Reduce Dropout. This paper analyzes the behavior of higher education dropout and its relation with financial aid before and after this Agreement. By means of a discrete-time logit model and a difference-in-differences approach, there is evidence that loans conditions after the National Agreement would not have achieved its goal.

KEYWORDS: dropout, duration analysis, financial aid, higher education

Introduction

The accumulation of human capital has effects on productivity, economic growth and quality of life of a country (Barro 1991, Mankiw, Romer, and Weil 1992, Sala-I-Martin, Doppelhofer, and Miller 2004). A common strategy adopted by some countries to promote investments in human capital has been to strengthen their education system (Burton 1969). However, the absence of studies has not only direct effects on the student but also implications in society (Gartner Isaza, Dussán Lubert, and Montoya 2016). With respect to higher education, Latin America has had a high percentage of dropout (Espíndola and León 2002, Henríquez and Escobar 2016, Donoso and Schiefelbein 2007, Velázquez Narváez and González Medina 2017, Estrada-Ruiz 2015). In Colombia, the dropout rate was approximately 50% in 2000, with a slowing downward trend over time (Pardo Jaime 2016, MEN, 2009, Gartner Isaza, Dussán Lubert, and Montoya 2016).

The Colombian government established in 2010 a national agreement that involved the participation of different education system actors. Its purpose were to reduce higher education dropout, from 12.9% in 2010 to 9% in 2014, and strengthen the relationship between education quality and students permanence (MEN 2012). Among its strategies, it was sought to relax loans conditions and strengthen the institution in charge of the educational credit system, the Colombian Institute of Educational Credit and Abroad Technical Studies (ICETEX, by its Spanish acronym). In this way, it is possible to reduce not only entry barriers to higher education but also educational inequality opportunities, bringing individual and social benefits (Chen and DesJardins 2008, Chen 2008, Reuterberg and Svensson 1983). There was an increase of 96% in the number of education loans given between 2010 and 2012. In this sense, there was an increase in educational loans and renewal transfers to students with low socioeconomic stratum between 2010 and 2011 (Figure 1).

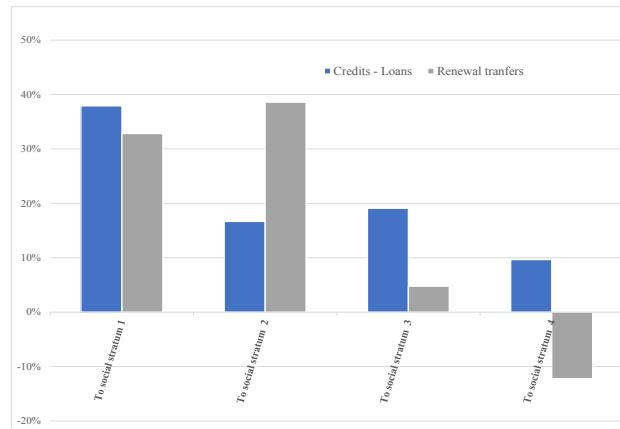


Figure 1. ICETEX loans and renewal transfers by socioeconomic stratum between 2010 and 2011

In this paper we analyzed – through a discrete survival model – whether these changes on financial aid conditions have influenced dropout behavior on Colombian undergraduate programs. For this, we use data between 2000 and 2015 from the System of Prevention and Analysis of the Dropout from the Higher Education Institutions (SPADIES, by its Spanish acronym).

The paper is organized as follows. Section 2 briefly describes the methodology employed, a discrete-time logit model and a difference-in-differences approach to identify the impact of changes in the conditions of educational loans by the 2010 National Agreement on students' probability of dropping out. The data is described in Section 3. Our main findings are summarized in Section 4 and some concluding remarks are expressed in Section 5.

Empirical strategy

In this paper we analyzed undergraduate dropout behavior under 2010 Colombian government initiative to reduce it. Particularly, we compare dropout behavior of students who enrolled before the first semester of 2010 (2010h1) with students who enrolled after the second semester of 2010 (2010h2). Following Belot, Canton, and Webbink (2007), we use a difference-in-differences approach. The first difference corresponds to the difference in behavior of students before and after the agreement. The second one tries to isolate the effect of changes in the educational loan conditions from other changes that could have been occurred before and after the agreement. As a control group we used students without educational loans. We expect that the agreement has less of an effect on students without a credit than on students with it.

The discrete-time logit model to estimate is:

$$\log \left(\frac{p_{it}}{1-p_{it}} \right) = \alpha_1 D_{it} + \beta X_{it} + \delta Year_i + \lambda Icetex_{it} + \gamma Year \times Icetex_{it} + \varepsilon_i \quad (1)$$

where,

p_{it} : probability of student i of dropout during interval t

D_{it} : vector of functions of the cumulative duration by interval t

X_{it} : vector of covariates

$Year$ = Time dummy corresponding to the year of enrolment (0= before 2010h1, 1= after 2010h2)

$Icetex$ = Dummy of financial aid (1= student had a loan, 0= on other case)

ε_i = Error term

In this model, δ measures the overall effect of time on the log-odds, λ the effect of financial aid and γ the impact of the agreement.

Data

We used SPADIES data as main source of information. Table 1 presents the descriptive statistics for the set of covariates used in the model.

Table 1. Covariates

Variables	Before 2010h1		After 2010h2	
	Without loans	With loans	Without loans	With loans
Individual characteristics				
Age	21.101 (4.150)	20.895 (3.779)	21.836 (4.528)	20.709 (3.714)
Gender				
Male	0.483	0.517	0.496	0.496

Female	0.517	0.483	0.504	0.504
Academic performance				
Number of inscribed courses	4.866	5.561	4.74	5.235
	(3.501)	(4.267)	(3.306)	(3.202)
Number of failed courses	1.601	1.289	1.834	1.645
	(2.119)	(1.946)	(2.293)	(2.253)
Score in the secondary education national exam	63.756	68.67	60.336	72.96
	(26.732)	(23.994)	(28.339)	(23.511)
Semesters before start undergrad	3.529	3.302	6.716	4.616
	(4.642)	(4.323)	(7.557)	(5.842)
Number of semesters	5.128	5.197	2.909	3.043
	(4.145)	(3.439)	(1.779)	(1.787)
Social stratum				
1	0.128	0.145	0.188	0.208
2	0.354	0.388	0.381	0.365
3	0.265	0.264	0.268	0.277
4	0.039	0.035	0.061	0.07
5	0.016	0.014	0.024	0.024
6	0.008	0.005	0.013	0.009
Unclassified households	0	0	0	0
Do not report	0.19	0.149	0.066	0.048
Level household income (in minimum wages)				
Less than 1	0.131	0.142	0.175	0.177
Between 1 and 2	0.342	0.36	0.416	0.397
Between 2 and 3	0.226	0.226	0.207	0.213
Between 3 and 5	0.169	0.165	0.118	0.128
Between 5 and 7	0.071	0.063	0.041	0.046
More than 7	0.062	0.044	0.043	0.038
Mother's education level				
Does not report/Without education	0.034	0.021	0.024	0.017
Primary	0.209	0.216	0.234	0.208
Secondary	0.384	0.37	0.435	0.415
Technical/technologist	0.17	0.186	0.125	0.145
Undergrad	0.203	0.207	0.183	0.213
Academic support				
No	0.971	0.958	0.913	0.918
Yes	0.029	0.042	0.087	0.082
Financial support				
No	0.882	0.787	0.825	0.761
Yes	0.118	0.213	0.175	0.239
Juridical nature				
National	0.195	0.092	0.203	0.111
Departmental	0.221	0.058	0.192	0.056
Municipal	0.034	0.009	0.032	0.007
Corporation	0.283	0.466	0.307	0.438

Foundation	0.267	0.375	0.265	0.388
Academic programs	95.427	83.011	93.398	85.275
	(94.995)	(66.191)	(91.782)	(71.839)
Quality accredited Institution				
No	0.534	0.554	0.622	0.557
Yes	0.466	0.446	0.378	0.443
Age of the high institutions	50.329	47.285	45.981	47.014
	(16.584)	(16.553)	(16.789)	(17.064)
Context				
Inflation	0.047	0.044	0.030	0.029
	(0.018)	(0.016)	(0.009)	(0.008)

Note: Standard deviations in parentheses

Results

Using SPADIES sample, we estimated equation (1). We found that mostly all covariates are statistically significant at the 1% level. Table 2 presents estimated marginal effects of the difference-in-differences approach. Time and financial aid had a negative effect on dropout. In particular, dropout probability decreased on average 0.2 percentage points after 2010, and 1.2 percentage points due to changes on loans conditions. However, once it was controlled by other factors, dropout probability increased in 2 percentage points because of the National Agreement.

Table 2. Effects of National Agreement on dropout rates from discrete-time logit model

Variable	Estimate
Time	-0.002 *** (0.000)
Financial aid	-0.012 *** (0.000)
Agreement	0.020 *** (0.001)

Note: Standard errors in parentheses. *Significant at 10% level, ** Significant at 5% level, *** Significant at 1% level

Concluding remarks

The 2010 National Agreement to Reduce Dropout was a Colombian government strategy to bring support to students in risk of not continue their undergrad education. One of its principal strategies was to offer more credits with more favorable conditions for undergrad students. However, the effect does not seem to comply its objective. Instead, it seems that the initiative augmented the probability of dropout.

One of the possible explanations of our results is that there was a selection bias of the students who benefited from this policy, since they were the students with unfavorable economic conditions with whom a greater probability to dropout is related. This would imply that the financial aid offered through the government strategy was not enough to guarantee the permanence of the students.

In future research, it would be relevant to improve the identification strategy of the students who benefited from this policy and students with similar characteristics who did not benefit from this policy. In this way, any change in the trend of dropout could be associated with this strategy.

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