

# Understanding the youth of Colombia: From the socioeconomic determinants of college enrollment to the design of student loans

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*The drop in college enrollment and the huge enrollment inequalities call for a public intervention. The expansion of the current student loan program stands as a good option to help credit constrained people. We found that the labor market provides enough incentives in terms of wages to go to college and make the loan program very attractive for beneficiaries, even at lower rates of return than the current ones. However, the high level of unemployment is still a big threat to borrowing. An increase in the number of new loans from the current 20,000 to 60,000 represents a very reasonable target. This new program would be roughly a total expenditure of US\$ 103 million per year (US\$ 60 million more than the present expenditure) and represents an increase from 5% to 20% in coverage. Our quantitative analysis suggests that demographic groups such as females, blacks, indigenous and children of households headed by a single woman and, in general, people coming from families with low resources and poor backgrounds should be targeted to boost college enrollment. Two repayment alternatives emerge as better substitutes of the current mortgage-type loan: income-contingent loans and tax on graduated recipient's loans. Finally, we state that the enlargement of the current loan system partially solves the problem. The unequal access to college is greatly explained by a bottleneck in the basic education system, affecting mainly poor children. Likewise, past family factors affecting cognitive and non-cognitive skills of children along their life cycle also account for the gaps in enrollment. For that reason, we believe that policies targeted only to teenagers may not be enough to promote skill formation at college level.*

*Key Words:* education, enrollment, policies, formation, resources, households

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### *Executive Summary*

Between 1998 and 2001, Colombia experienced its worst economic crisis in over half a century, with GDP decreasing by -4.5% in 1999. This economic performance had adverse consequences on enrollment at all levels but especially on college enrollment. Between 1997 and 1999 the number of new entrants declined by almost 17%, a decrease of over 100,000 students. College opportunities to access and complete education at this level are very limited. In 2000, less than 5% of youth from poor families were enrolled. The Ministry of Education and Instituto Colombiano de Crédito Educativo y Estudios Técnicos en el Exterior (ICETEX), the main public offices ruling the higher education sector in Colombia, are currently working in the design of a broader student loan program with US\$ 200 millions from the World Bank. This intervention stands as a good option to help credit constrained people to attend and complete their education. Our calculations indicate that the labor market provide enough incentives in terms of wages to go to college and make the loan program very attractive for beneficiaries, even at lower rates of return than the current ones. Nevertheless, the high level of unemployment is still a big threat to borrowing.

An increase in the number of new loans from the current 20,000 to 60,000 represents a very reasonable target for the expansion of the program. We recommend that the average loans in the new system be increased – particularly for poor applicants – to cover between 75% and 80% of tuition and fee expenses, instead of the current limit of 60%. This amount of resources complemented with direct credits from universities would allow a full funding of studies and other related expenses such as living expenses, travel allowances and books. This program would be roughly a total expenditure of US\$ 103 million per year (US\$ 60 million more than the present expenditure) and represents an increase from 5% to 20% of the total college enrollment receiving loans. Additionally, we suggest keeping the current subsidy of 25% of the loan to poor applicants from socioeconomic strata 1 and 2. At the same time, the government has to amend the current funding scheme, in which the public expenditure for state-run institutions is regularly based on historical preference, past agreements and collective negotiations. To align incentives, we advise switching part of these resources



to fund demand subsidies programs. The remaining part may be allocated through mechanisms that compensate only efficient and accountable institutions.

The new system of loans should reduce the importance of the ICFES test (high school national standardized test) as a screening mechanism, in which poor children are systematically scoring poorly, and give more weight to other elements into the formula of eligibility. Demographic groups such as females, blacks, indigenous and children of households headed by a single woman and, in general, people coming from families with limited resources and poor backgrounds meeting the minimum conditions should be targeted in terms of loan eligibility. Furthermore, grants and flexible loans may be an ideal intervention for poorest applicants with outstanding academic performance.

Two repayment alternatives emerge as better substitutes of the current mortgage-type loan of ICETEX: income-contingent loans and tax on graduated recipient's loans. The first method sets repayments proportional to future earnings and allows beneficiaries to defer them until they have a job. Hence, less wealthy families would have better incentives to borrow and repay. The second method levies a tax on graduates who received support from the public loan program over their working lives. In this case, a flexible tax to adjust for different income levels may be more favorable to achieve equity results as well. The success of either one or the other depends mostly on repayment rates. We recommend ICETEX to invest in enforcement strengthening by increasing mutual access to nationwide information systems such as the Colombian office of tax collection (DIAN), the national social security system or several financial risks agencies.

Finally, we want to emphasize that our study shows that credit does not represent the only constraint to college enrollment. The enlargement of the current student loan system partially solves the problem. Some of the simulations presented here show that other alternatives can be explored to boost enrollment and may be even better cost-benefit ranked. Furthermore, the unequal access from high school to college is greatly explained by the bottleneck in the basic education system, disproportionately affecting

disadvantaged children. Besides, the analysis presented in this report suggests that past family factors affecting cognitive and non-cognitive skills of children along their life cycle also account for the gaps in college enrollment. For that reason, we believe that policies targeted only towards teenagers may not be enough to promote skill formation at college level.

### *Introduction*

The Colombian government announced in 2003 that a loan agreement with the World Bank for US\$ 200 million had been signed. At first, people could have thought that these resources were going to be used to fund initiatives labeled as national priorities by the government, like expanding the defense expenditures, controlling the effects of the fiscal deficit and the macroeconomic imbalances or to provide unemployment insurance in a country with a jobless rate over 15%. However, another goal has recently emerged as prominent component of the public agenda: controlling the negative trend in the demand for college education of the last four years and reducing the increasing inequalities in access at this level of education.

Between 1998 and 2001, Colombia experienced its worst economic crisis in over half a century, with GDP decreasing by -4.5% in 1999. This economic performance had adverse consequences on enrollment at all levels but especially on higher education enrollment. The rate of transition from secondary to tertiary education fell to 40%, its lowest level in 30 years. The number of new entrants declined by almost 17% from 1997 to 1999, which accounts for a decrease of over 100,000 students. Private colleges faced a notorious decline in enrollment during and after the crisis. Many people either switched from those institutions—where the enrollment is mainly of youth belonging to families of higher incomes—to public institutions (and restraining opportunities for students with fewer resources) or they simply quit their studies. Overall, around 150,000 students dropped out from the system between 1997 and 2001, citing reasons such as high opportunity costs of schooling, the need to work and lack of resources (World Bank 2003: 9). Moreover, wide inequalities in college opportunities are still present: nearly one out of 30 students attending college institutions comes from families with the lowest income levels.



Many effects associated with the recent economic shock and the structural conditions of this sector may emerge as potential explanations of the adjustments in the demand for higher education in Colombia. For instance, it may be possible that with a proportion of almost 70% of private providers – or equivalently less tuition and fee subsidy options – the probability of being enrolled in college is now more dependent on parental income; or alternatively, that higher competition for relatively fewer seats in public institutions favors student coming from high quality schools, usually children from wealthier families. Or could be that the high levels of unemployment of the country during the last 6 years (on average nearly 18%) produced dissimilar effects in terms of labor supply and opportunity costs of college attendance among different groups of people; or that these effects are not homogeneous all over the country but more city-specific.

The Ministry of Education and Instituto Colombiano de Crédito Educativo y Estudios Técnicos en el Exterior (hereafter ICETEX), the main public offices ruling the higher education sector in Colombia, are currently working in the design of a broader student loan program with the resources from the World Bank. Thus, there is a great need for robust analysis to reach a better understanding of the socioeconomic factors influencing the demand for college education and the roots of the inequality in college enrollment.

In fact, we found that many teenagers from middle and low income have no financial alternatives to go to college. In that sense, the expansion of the current student loan program stands as a good option to help credit constrained people to attend and complete their education. However, this paper looks at a set of elements that have to be either modified or incorporated in the new system to increase access and equity. Additionally, we argue that credit does not represent the only constraint to college enrollment and that the enlargement of the current student loan system partially solves the problem.

In what follows, this paper presents in its first section a general overview of the main trends in higher education in Colombia during the nineties. The second and third sections are devoted to identifying the inequalities in access and exploring the labor market conditions for college graduates in the country.

The fourth section includes a set of econometric exercises to model the determinants of college enrollment, complemented with some simulation exercises. The fifth section is dedicated to the discussion of the underlying factors behind the credit markets for college, the current financial aid programs and the most suitable alternatives to expand the current student loan system. Finally, the conclusions go over the main results of this study in terms of the public interventions to be undertaken and their feasibility in the current context.

### I. A Quick Snapshot of the Higher Education System in Colombia

Similar to what is observed in other Latin-American countries, three decades in Colombia have seen increasing expansion in access mainly to primary and partly to secondary education. The national public expenditure on education has grown over the period, from 3.7% of the GDP in 1984 to around 5.7% in the late 1990's and at the present the country has one of the highest ratios of public expenditures in education to GDP within the region.<sup>1</sup> The results of these policy trends are quite evident. For instance, in 1988 only 44% of the children in the relevant-age group completed secondary education in the country; ten years later this proportion went up to 66%.

As a result of these policies, the pool of college applicants and the enrollment rates at this level doubled during the last twenty years. That increase in the amount of high school graduates and the potential demand for college education was accompanied by a large expansion in the number of institutions of higher education. Yet, while the country as a whole had 29 institutions in 1960, this number grew to 193 in 1980, 242 in 1990 and 311 in 2001 (Sanchez, et al. 2003: 8). Basically, there are three sublevels in the market of college education in Colombia that instruct nearly 900,000 students: technical training studies (1 to 2 years long), technological studies (3 years long) and professional studies (4-5 years long), with most of the students (86%) enrolled in the last type of institutions (World Bank, 2003).<sup>2</sup>

<sup>1</sup> The World Bank, "Colombia. The Economic Foundation of Peace", M. Guigou, O. Laffontade and Corine Luff (Eds.), Washington, 2002, pp. 612-613.

<sup>2</sup> Professional studies in Colombia are normally offered by two types of institutions: *universidades* and *instituciones universitarias*. The main difference between them is the research emphasis in the academic activities of the first group of institutions but the length of the programs offered is quite similar.



The private providers played the main role in the increase of the supply of higher education in the country. They were mostly stimulated by both the new rules introduced by the passage of the Ley 30 of 1992, which eliminated several restrictions and controls to set up new institutions, and by the switch during the last decade in the allocation of public expenditures to education, giving more priority of funding for basic primary and secondary levels. In fact, the budget share of tertiary education in the public expenditures in education fell from 24% at the end of the 1980's to 15% at the end of the 1990's. Consequently, the composition of the provision of higher education changed dramatically along this time. Currently, over two thirds of the students enrolled at this level are attending private colleges, while in 1950 the proportion was exactly the opposite (World Bank, 2002: 738-742).

As a result of the trends illustrated previously, college enrollment rates increased between the mid 1980's and the late 1990's, from 7% to 15%. In consequence, the amount of people older than 25 years with education at this level is now the twice than that of 1980 (Table I.1). Nonetheless, a comparison with the indicators observed in neighbor countries suggests that even though they are more favorable now than twenty years ago, there is still a long way to go. For instance, Colombia exhibits lower levels of gross enrollment in tertiary education than most of the similar Latin American countries (Graph A.1).<sup>3</sup> Likewise, only 11% of Colombian work force has attained some form of tertiary education, while 24% of workers have this type of education in OECD countries (World Bank, 2003: 23-25).

Table I.1. Percentage of Population by Educational levels, Colombia (1980-2000)

Educational Level	1980	1985	1990	1995	2000
	%	%	%	%	%
No education	7.6%	6.3%	4.4%	4.2%	4.9%
Primary	47.6%	44.7%	39.9%	36.4%	32.9%
Secondary	35.2%	36.8%	41.5%	44.3%	44.1%
Tertiary	9.8%	12.1%	14.2%	15.0%	18.1%

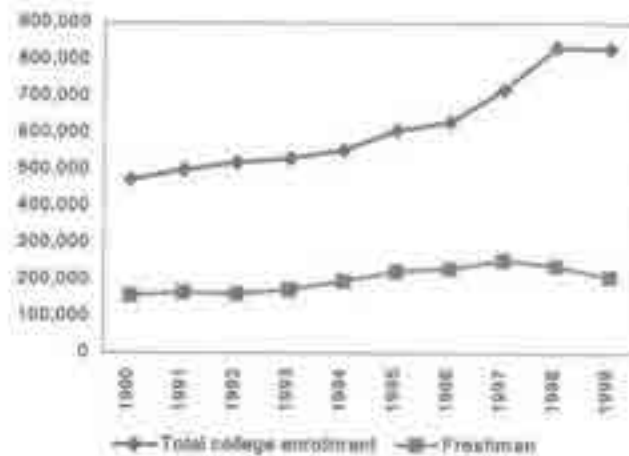
Note: Calculations based on population older than 25 years.

Source: National Households Survey, Colombia (1980, 1985, 1990, 1995, 2000), calculations by the author.

<sup>3</sup> The Latin American region as a whole has a very low rate of enrollment in tertiary education despite the fact that the Latin American countries tend to spend more per student at this level than other groups of countries.

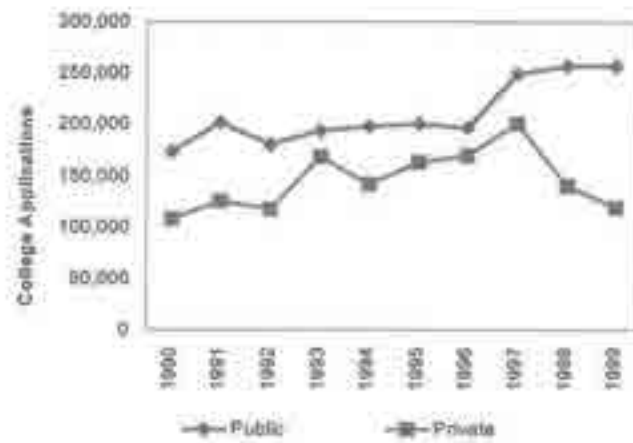
As shown in Graph I.1., most of the indicators of the demand for higher education imply that it grew continually from 1990 to 1997, the time in which the country coped with the beginning of a big economic crisis. From 1998, the trend seemed to change, especially the total enrollment and number of new entrants in private colleges. Some simple calculations suggest that, on average, 4.5% of the total college enrollment dropped out each year between 1997 and 2001. Although the reasons for that crash have been usually attributed to the rising opportunity costs of schooling during the period of stagnation, more empirical work is needed to underpin this proposition. The bad economic shock surely had adverse consequences on enrollment. However, only a huge elasticity of demand for college to income would imply that income explains the whole fall – particularly of new entrants – and no other factor is relevant. Similarly, we found that big increases in college costs and fees do not seem to explain the drop in the demand for higher education. As shown in Graph I.2., tuition and fees show a very similar trend to that of the general level of prices in the economy during the years the demand decreased.

Graph I.1. Some Indicators of the Demand for College Education in Colombia, 1990-1999

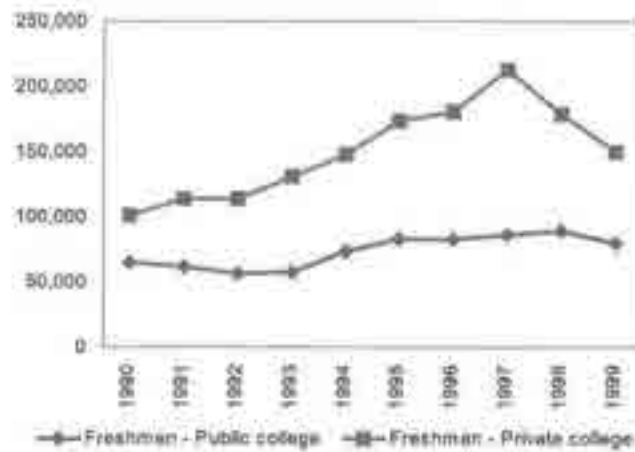


Source: ICFES, 2001

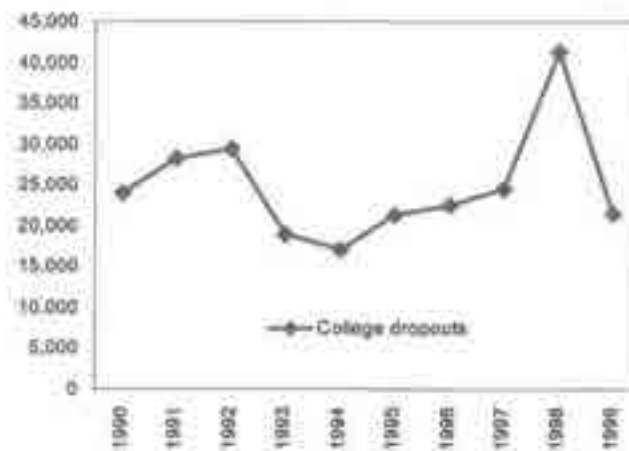




Source ICFES, 2001

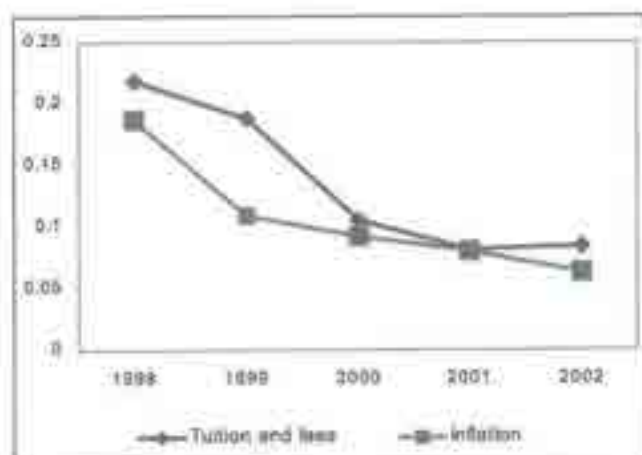


Source ICFES, 2001



Source ICFES, 2001

Graph 1.2. Evolution of College Costs and Inflation, 1998-2002



Source: ICFES and National Department of Planning

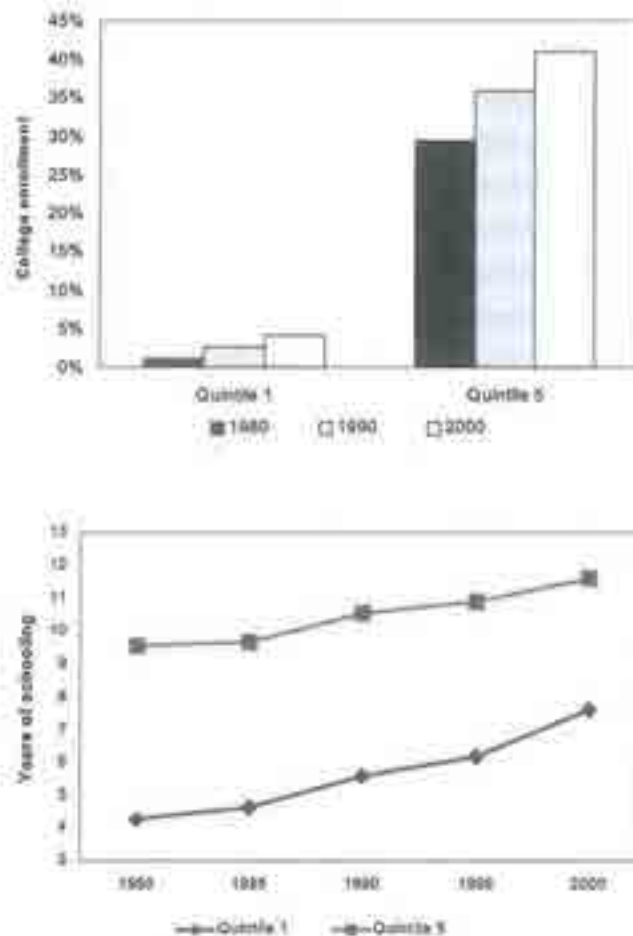
## II. College Enrollment in Colombia: Right or Privilege?

College opportunities to access and complete education at this level are extremely limited for a youth from a poor family in Colombia. In 2000, less than 5% of them could attend higher education and only one out of 30 current college enrollees belonged to the lowest 20% quintile of income. The picture for their counterparts is much more pleasant: three out of four current college students come from the upper 40% of the income distribution (Sanchez, et al. 2003: 8). In general, there are enormous disparities in the country in terms of human capital distribution. On average, the richest 10% of the population have around twice the schooling as those from the poorest group.

It is very natural to relate this shocking gap to the recent poor performance of the economy. The impact of the crisis of the last four years reduced the available resources of households and affected their consumption behavior. Long term investments like education could have been postponed or even cancelled under these circumstances, the latter being more likely for the lowest income groups. Yet, in 2001, after the worst part of the stagnation, 19 out of every 20 poor people between 18 and 25 years old were not attending college. Even though the crisis may have had implications regarding college attendance and gaps for those with fewer resources, this is not a new

phenomenon for the country. Looking at the gaps at the beginning of the 1990's or just the year before the crisis, we can observe that the differences in college enrollment among rich and poor children were relatively similar to those observed recently. For example, only 2% of the potential children of the lowest quintile were attending college as of 1992, compared to 20% of the comparable group belonging to the highest quintile. After the expansion of the system in the 1990's the differences in terms of schooling and tertiary education attendance still remain intact. Both groups increased their enrollment rates to 4.5% and 40%, respectively.

Graph II.1. College Enrollment and School Attainment by Income Quintiles, Colombia, 1980-2000



Note: School attainment based on population older than 25 years.

Source: National Households Survey, Colombia (1980, 1985, 1990, 1995, 2000), calculations by the author



Colombia has always had a high proportion of capable poor potential students without access to the education system. This characteristic has several implications in several socioeconomic aspects, and income distribution is probably the most obvious one. Since these individuals are less likely to go to college or to re-enter once they dropped out, it is very likely that economic crises like the recent one may reinforce this phenomenon and have permanent consequences on their future skills and earnings, worsening inequality (i.e. education/poverty trap). Not surprisingly Sanchez and Nunez (1998) show that the high premium to higher education combined with large discrepancies in attained schooling has become one of the fundamental sources of income inequality in Colombia. Hence, a valid concern on this issue lies in exploring policy options to increase enrollment and make the access more equitable for middle and low classes and less dependent on family income.

Many of the causes of the unequal access can be found in the basic education system, where the transition from high school to college does not appear to favor equity at all. The capacity of the public system to provide primary education does not match with that at secondary level. Many of the students trying to make the transition from the first level of basic education find no opportunities at the next level and have to dropout because of the bottleneck, namely the system has fewer seats at secondary than at primary level. This is particularly true in the rural areas of the country. Additionally, the efficiency of the education process at this level – measured mainly in terms of rates of repetition and dropouts – and the quality of instruction is particularly low, especially in the public schools instructing children from families with low incomes. Currently, for every ten students enrolled in first grade only six and three of them will complete primary and secondary education, respectively (World Bank 2002: 612).

There are two main aspects of the provision of college education in Colombia that deserve to be mentioned at this point. First, over 80% of the total college supply is concentrated in the four main urban centers, which makes the system less prone to grant opportunities – at least at the level of technical studies – to people from small municipalities and rural areas. Second, as mentioned earlier, the private sector represents the majority of the college capacity of the country (around 70%). A survey from the World Bank of 20

Latin American countries ranked Colombia in 1994 in the third place in terms of the fraction of college students attending private institutions. This segmentation of the market may imply that the sector is relatively more expensive and less effective in terms of the redistributive impact of public tuition and fee subsidies and highly selective in favor of the elites. Clearly, both characteristics deepen or at least impose rigid barriers to the promotion of a progressive development in terms of college expansion and completion.

During and after the crisis, many students responded to the shock by moving from high-fee charging private institutions to public colleges. The effects of this switch also had negative consequences on those high school graduates from families with low resources. At least, the competition among the pool of applicants became less fair for them. The average admission rate in the Colombia public colleges is 17%, while in the private ones that rate is around 70% (Sanchez, et al. 2003: 8). Low and middle income teenagers mostly apply to public institutions and compete with applicants of rich families, who come from environments more supportive to higher education, graduate from high quality high schools and exhibit higher scores in the national standardized tests required for college admission. Under these conditions, it is likely that a disproportionate fraction of applicants of low-resources families is systematically forced or crowded out of the system.

College education is relatively expensive in Colombia. For instance, a middle class family living in an urban center is expected to spend around 50% of its total income to fund educational expenses, including college tuition and fees. Similarly, the average cost of one year of higher education in a private institution is approximately 5% more than the income per capita in the country, while in developed countries this value is around 50% of their average incomes (World Bank 2002: 612-613, 743).

### III. Does the Labor Market Reward Higher Skills?

The first issue to explore is whether high school graduates have positive expectations about investing in college education. In other words, do they anticipate to be rewarded in the future in terms of higher wages if they attend college? If not, they will probably not enroll even if we expand the



services of the current loan student institute or other similar financial aid programs. Secondly, we want to examine if college graduates will have enough job vacancies available after graduation or if they will experience similar levels of joblessness to those of workers with lower levels of education. We expect that high levels of unemployment for high skilled workers may affect college enrollment negatively and obviously will increase the aversion to borrowing, particularly for applicants of low income groups.

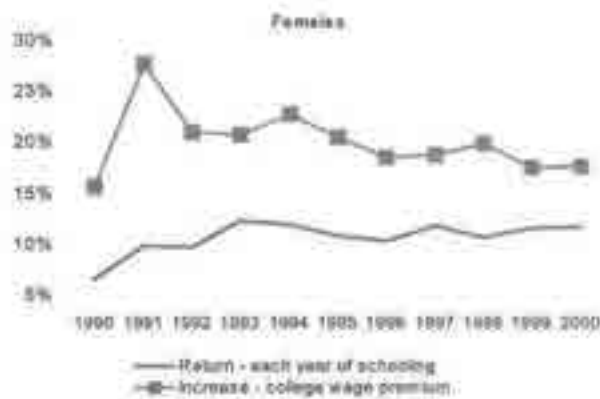
Our approach to answer the first question is very simple. We looked at the returns to schooling during the 1990's in Colombia, calculating the average return for each year of education and the premium effect in terms of wages for college workers. Using a Spline specification, we run regressions by gender, controlling for some observable characteristics (age, experience, economic activity, type of job, hours worked).<sup>4</sup> Overall, the results of these econometric exercises show that the returns to schooling and particularly the premium of an additional year of college have been very high during the last decade. On average, the return for each year of education for females and for males is 10.6% and 11.3%, respectively, while the college premium is 9.6% and 12.2% for the same groups (Graph III.1 and tables III.1 and III.2). A similar picture can be depicted by looking at the index of relative earnings among skilled and non-skilled workers (Baez, 2001). As shown in Graph III.2, the gap between these two groups has been raising during most part of the 1990's, favoring workers with college education.

Graph III.1. Returns to Schooling and College Premium, Colombia, 1990-2000



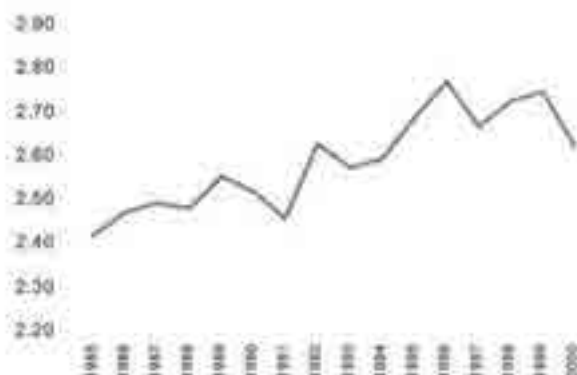
<sup>4</sup> The results with more covariates and correction for selection problems produced similar results but for simplicity are not included in this document.





Notes: Coefficients estimated using OLS.  
 Source: National Households Survey, Colombia (1990-2000), calculations by the author.

Graph III.2. Index of Relative Wages, Skilled vs Non-skilled Workers, Colombia, 1985-2000

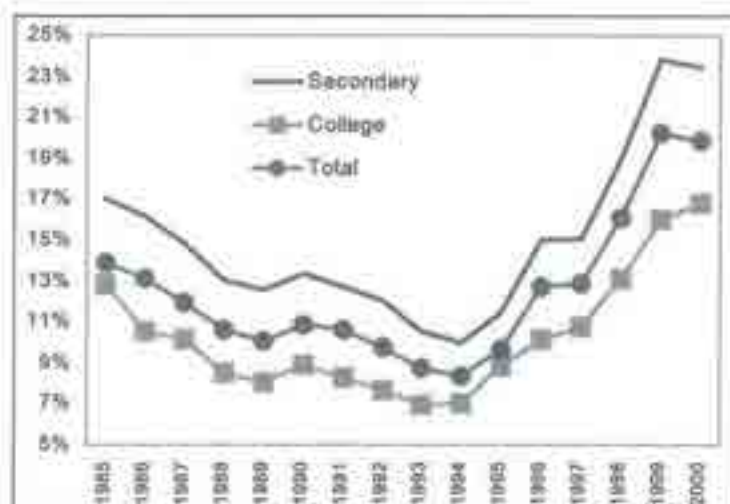


Notes: Skilled workers = at least one year of college education, non-skilled workers = less than 6 years of education. Source: Barr, J. (2001)

These results imply that, on average, a year of higher education reinforces extensively the effect of previous educational levels in terms of future income such it doubles the profitability of the investment on education. Similarly, alternative estimates for the Colombian case show that the annual growth of demand for high-skilled workers from 1990 to 1996 was around 11% and 7% from 1996 to 1999, while the demand for this type of work grew just at 2% per year in the United States and at 4% in Argentina and Mexico along the same period. (World Bank 2003: 739). Other previous studies link part of this trend to the structural changes introduced in the economy of the

country during the first half of the 1990's, which promoted a significant increase in capital imports, new technologies and increased the demand for high skilled workers (Sanchez and Nunez, 1998, Baez and Duncan, 1999, Ocampo, et. al. 2001).

Graph III.3. Unemployment Rate by Educational Levels



Source: National Households Survey, Colombia (1985-2000)

Table III.1. Income Equations and College Premium for Males, Colombia, 1990-2000

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Constant	10.555	10.868	10.949	10.613	11.044	10.522	10.634	9.747	10.059	9.534	9.321
	(12.9)**	(204.8)**	(376.10)**	(511.5)**	(562.8)**	(16.71)**	(398.8)**	(507.6)**	(302.9)**	(393.6)**	(282.3)**
experience	0.043	0.032	0.029	0.024	0.032	0.034	0.04	0.034	0.034	0.044	0.042
	(9.16)**	(7.80)**	(21.10)**	(21.11)**	(21.51)**	(22.56)**	(25.97)**	(25.66)**	(26.62)**	(26.69)**	(24.61)**
experience <sup>2</sup>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-0.001	0.000
	(3.56)**	(3.27)**	(11.05)**	(12.81)**	(12.36)**	(12.81)**	(16.40)**	(11.68)**	(14.65)**	(17.19)**	(14.61)**
schooling	0.08	0.104	0.119	0.124	0.12	0.111	0.108	0.125	0.117	0.11	0.117
	(10.10)**	(43.60)**	(54.66)**	(55.31)**	(56.86)**	(47.52)**	(47.17)**	(56.70)**	(52.39)**	(51.31)**	(52.61)**
schooling <sup>2</sup>	-0.001	-0.003	-0.002	-0.002	-0.002	-0.002	-0.001	-0.002	-0.002	-0.001	-0.002
	-1.27	(50.32)**	(23.08)**	(24.69)**	(24.80)**	(20.28)**	(17.41)**	(22.32)**	(19.33)**	(19.36)**	(16.30)**
years of work	0.004	0.008	0.007	0.008	0.007	0.007	0.007	0.007	0.007	0.007	0.006
	(3.07)**	(7.24)**	(18.64)**	(19.83)**	(18.29)**	(16.46)**	(16.43)**	(16.86)**	(17.68)**	(18.23)**	(13.82)**
college premium	0.134	0.185	0.332	0.128	0.129	0.14	0.107	0.124	0.117	0.089	0.107
	-1.16	(20.32)**	(14.32)**	(9.73)**	(9.73)**	(17.69)**	(14.66)**	(16.69)**	(15.47)**	(13.46)**	(14.99)**
import*(Dcollege)	0.007	-0.001	0	-0.003	-0.001	-0.002	0.003	-0.005	-0.005	0	-0.004
	-1.28	-1.37	-4.29	(2.90)**	-0.87	-1.18	(2.23)**	(3.35)**	-1.95	-1.19	(2.03)**
Observations	11,591	15,436	16,521	16,749	18,080	17,218	17,336	17,702	18,060	16,597	15,406
R-squared	0.41	0.34	0.42	0.4	0.4	0.36	0.34	0.38	0.35	0.4	0.39

Note: Robust t-statistics in parentheses, \* significant at 5%, \*\* significant at 1%.  
 Source: National Households Survey, Colombia (1990-2000), calculations by the author

Unemployment turned out to be a big concern during the second half of the 1990's. The joblessness rate grew from 8.3% in 1994 to 20% in 2000. In consequence, we now examine the differences in unemployment between those with some year of college education and those who completed high school. The results of our calculations point to systematic differences favoring people with some type of college education. That is, their unemployment levels are always below that of low skilled individuals and other groups in the labor market. Nevertheless, it is impossible to ignore the jump in terms of unemployment experienced by the labor force with college skills – and all the other categories as well – from 1996 to 2000 and its effect on college enrollment decisions.

Table III.2. Income Equations and College Premium for Females, Colombia, 1990-2000

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Constant	10.758 (26.81)**	10.324 (228.1)**	10.963 (315.9)**	10.34 (254.3)**	10.233 (256.1)**	10.167 (238.3)**	10.632 (345.1)**	9.46 (284.2)**	9.863 (239.5)**	9.22 (216.7)**	9.041 (197.5)**
experience	0.023 (3.96)**	0.05 (27.29)**	0.013 (11.44)**	0.02 (11.01)**	0.022 (13.81)**	0.02 (12.56)**	0.022 (12.78)**	0.019 (14.59)**	0.02 (8.46)**	0.027 (15.18)**	0.025 (11.14)**
experience <sup>2</sup>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
schooling	2.483 (8.08)**	20.57** (37.34)**	3.89** (18.60)**	6.95** (44.81)**	6.77** (47.45)**	6.83** (40.12)**	7.37** (37.91)**	6.96** (46.81)**	14.26** (39.33)**	19.32** (43.54)**	6.90** (41.51)**
(schooling) <sup>2</sup>	-0.001	-0.003	-0.002	-0.002	-0.002	-0.002	-0.001	-0.001	-0.002	-0.001	-0.001
years of work	0.007 (3.00)**	0.011 (24.57)**	0.01 (24.83)**	0.013 (26.67)**	0.013 (26.16)**	0.013 (24.89)**	0.011 (23.29)**	0.012 (22.96)**	0.012 (24.25)**	0.011 (21.59)**	0.01 (18.57)**
college premium	0.001 (2.18)*	0.179 (19.87)**	0.114 (17.12)**	0.083 (12.79)**	0.108 (16.29)**	0.091 (13.44)**	0.082 (10.71)**	0.07 (9.63)**	0.091 (12.32)**	0.06 (8.30)**	0.06 (7.76)**
age <sup>2</sup> *(1-college)	0.014 (1.97)*	-0.002 (3.25)**	0.008 (3.40)**	0.001 (3.30)**	0.003 (1.66)	0.007 (4.02)**	0.006 (3.27)**	0.005 (2.56)*	0.003	0.003	0.003
Observations	11,333	11,644	12,011	11,734	12,975	11,785	11,511	11,815	12,899	11,049	9,688
R-squared	0.04	0.41	0.41	0.4	0.4	0.37	0.31	0.34	0.32	0.35	0.37

Notes: Robust t-statistics in parentheses, \* significant at 5%, \*\* significant at 1%.  
Source: National Households Survey, Colombia (1990-2000), calculations by the author

Under these circumstances, it is very likely that many high school graduates from middle and low income groups opted for alternative options. That being said, if the negative expectations about the performance of the labor market still prevail, larger student loan options with the current specifications may hardly solve the problems of college access and inequality. However,



given that high-skilled workers face mostly unemployment of short duration (three times shorter than non-skilled workers) and the labor market rewards them relatively more, we still believe that there are enough incentives to redesign the current loan program and promote enrollment. Thus the next sections devote time to understand the demand for college education and explore alternatives for the new loan program.

## IV. Looking at the Factors Driving the Demand for College Education

### IV.1. Analytical Framework

A very simple version of the model of human capital would tell us that the decisions of a high school graduate of whether to enroll or not enroll in college depend mostly on the expected returns of the investment and its related costs – both direct and opportunity costs. According to this framework, the individual will allocate time to study in such a way that she maximizes the expected utility of attending higher education (i.e. higher consumption, savings and/or investment in physical capital in the future) subject to some constraints such as the current and expected stream of future income, wealth within the household, the degree of perfection of capital markets, time restrictions and relative prices.

This previous analysis indicates that the probability of college enrollment will be positively related with the family income, previous wealth and returns to schooling and negatively on relative prices of consumption goods and wages. In view of that, keeping everything else constant, an individual should enroll when the marginal benefit of an additional year of college is greater or equal to the marginal cost of one extra year of education. Although it is true that some barriers such as college costs, opportunity costs and credit constraints can disproportionately affect the decision to enroll in higher education, it is also likely that the gaps observed in college attendance could be explained by past family characteristics, which influence cognitive and non-cognitive skills of children along their life cycle, namely during their primary and secondary education. At the extreme case in which this aspect accounts for most of the variance in enrollment, there would not be much

scope for college cost or financial aid policies to close the gap among high school graduates planning to attend college.<sup>5</sup>

We think that in the Colombian context both current (e.g. liquidity constraints, labor market conditions) and early family (e.g. parental environments in the early childhood years) factors interact and introduce large inequalities in college education opportunities. Obviously, the existence of these elements would require quite different public interventions. This paper focuses on socioeconomic characteristics influencing the decision at the time of college enrollment, mainly because of the lack of longitudinal data to explore also the effect of long term family factors. However, since education is a dynamic process in which the previous inputs affect the next learning stages, we recognize the importance of including those interactions in future analysis.

#### IV.2. Empirical Strategy

In what follows we present a multivariate analysis to explore the determinants of the probability of being enrolled at college level. Using Colombian household surveys, we exploit cross-sectional data to study the behavior of the objective group, namely young between 18 and 24 years old. The samples utilized in this exercise include only dependent members within the household belonging to the relevant-age group. The probit models were run to estimate the following general relation:

$$\Pr(CE_i = 1 | R_i) = \beta_0 + \beta_1 X_i + \beta_2 Y_i + \beta_3 Z_i + \varepsilon \quad (1)$$

Where the probability of being enrolled in college, conditioned by some aspects of the children (mainly of age, school attainment and status at home to define the relevant group to study) is expected to be related to a vector of socioeconomic characteristics of the individual and her household ( $X$ ), local labor market conditions and opportunity costs ( $Y$ ) and regional effects ( $Z$ ).

<sup>5</sup> Recent work by Heckman and Carneiro find that after controlling for early family characteristics that influence ability such as parental education, household structure, income along the life cycle and place of residence, the gaps in college attendance among poor and rich children in the U.S. are no larger explained by differences in family income. See James Heckman and Pedro Carneiro, "Human Capital Policy", NBER, working Paper 9495, February, 2003, in order to deepen in the discussion of this topic and alternative early public interventions.



Initially, equation (1) was estimated in two different years, as an attempt to capture possible changes in the behavioral parameters due to cyclical components: 1995, a year of economic boom and 2000, a year of recession. As we will show later, most of the coefficients in both samples look very alike in magnitude and significance. However, the marginal effect of income and other wealth measures on the expected probability in 2000 appears to be slightly greater than that calculated for 1995.<sup>6</sup> We went one step further and pooled the information of several years to have time series of cross-sectional data. This was useful to increase the number of observations, and enhance the power of the estimates, and we used time dummies to control for changes over time in college attendance and other possible relations that may not be very stable in the middle and long run. Although the results were not included for simplicity, they are similar to those obtained in the other exercises.

In spite of the fact that the analysis presented here relies in the most relevant covariates affecting schooling decisions, it is crucial to mention that unfortunately two important variables were not included. On one hand, it was not possible to match socioeconomic information at household level with the scores of the *ICFES* test, namely the national standardized tests taken by children during the last year of high school. However, we include other covariates of the children and their family environments (age, gender, parental education and income, family size, household structure), which have been shown empirically to be good predictors of children's abilities (Kane 1994; Sanchez *et al.* 2003). On the other hand, the household surveys do not include cross-sectional data of expenses on tuition and fees and college costs faced by families in different regions. Although we are not completely satisfied with the solution given this limitation, some dummy variables to capture city effects were included. Although these two weaknesses in the regressions can bias our estimates, we still believe the direction and significance of the effects found are quite robust.

<sup>6</sup> Most of the discussion in this section is based on the results obtained from the econometric models run for 2000. The results of 1995 are enclosed in the appendix to this document.



### IV.3. Interpreting the Results

Two interesting results emerge from the demographic variables included in the model, although their limited statistical significance mitigate their impact. First, male children seem to have some advantage over their counterparts in enrollment. It may be that parents prefer to send their boys to college while girls could be more likely to take care of some chores at home. However, theoretically the opposite can be also true. That is, male children may be a more important source of income for the household and then stay out of college. Second, we also observe that the older the children, the higher the probability of attending college. Apparently, once the young are enrolled it is easier for them to continue pursuing their studies. Yet, the jump from secondary to higher education seems to be the most critical part.<sup>7</sup>

Overall, the variables associated with the resources within the household suggest that the wealthier families clearly have a higher probability of having their children enrolled in higher education. In other words, keeping everything else constant, a child who belongs to a family which enjoys a higher income per capita, that owns a house or with both the head and spouse of the household employed has advantages over other high school graduates. Conversely, those families under the poverty line and very big in size have fewer opportunities of college studies for their members.<sup>8</sup> It is clear that parental income influences college decisions.

The tastes and possibilities for college access seem to reinforce themselves at home. Both father and mother with some college education – separately and jointly<sup>9</sup> – are more likely to send their kids to college institutions. Surely this is not explained only by the effect of higher incomes in households headed by college parents but also by a more suitable environment to develop cognitive and non-cognitive abilities at home and by wider access to

<sup>7</sup> Since we limited the sample of respondents in the model to those who have already finished their high school, we can ignore the effect of over-age in our estimates of age on probability of college enrollment.

<sup>8</sup> Even though parental income influences college decisions, there is always the risk a potential omitted variable bias arising from the fact that several forms of family wealth are not always included in survey data. See Susan Dynarski, "The Behavioral and Distributional Implications of Aid for College", Kennedy School of Government, Harvard University and NBER, Working Paper Series, January 2001, pp. 2.

<sup>9</sup> The joint effect was measured by the interaction term of dummy variables for both father and mother with some college education.

information about better schools, demand for skills and returns to investment in higher education. Furthermore, the structure of the family also seems to be related with some trends in enrollment. For instance, children from households headed by a woman (single, divorced or widowed) are less likely to enroll in college after high school. Conversely, more stable families, i.e., with the head both married and being the main source of income increase the probability of enrollment.<sup>10</sup> Siblings at home with at least some college education appear positively related with college attendance as well.<sup>11</sup>

Finally, a set of variables related to labor market conditions, opportunity costs faced by potential college applicants and city effects were included. Their results exhibit low statistical relevance but the direction of influence is quite interesting. Initially, we constructed a relative index of the rate unemployment of each city with respect to the moving average of the country and an index of relative earnings of workers with and without college education. The effect of the first variable implies that youth are less likely to go to college in those cities with comparatively higher levels of joblessness. The effect of the second one highlights higher college enrollment in those urban centers which reward relatively more college skills. We go one step further and include two additional variables to deepen our understanding of the opportunity costs effects: the average weekly earnings in manufacturing and the numbers of hours worked by children participating in the labor market. The direction of both covariates indicates simply that higher indirect costs of college reduce the demand for this type of investment. Finally, some dummy variables were included to control for the location of the people under analysis with respect to city specific factors. More specifically, we want to check to what extent the variation in the probability of college attendance is due to fixed differences across cities.<sup>12</sup> For instance, Bogota – the main urban center in the country – has a higher relative supply of college, a higher

<sup>10</sup> On one hand, if the head of the household is the main contributor, children may have less need to allocate time in extra academic activities to earn money. On the other hand, one important source of income implies that the family is highly dependent, less diversified and more susceptible to shocks. In the context of the results presented here, the first effect seems to offset the second one.

<sup>11</sup> Similarly, Sanchez, *et al.* find that the number of sibling with college degree is positively related with college completion in the public universities in Colombia. See F. Sanchez, M. Quiros, C. Reveron and A. Rodríguez, "Equidad social en el acceso y permanencia en la Universidad Pública. Determinantes y Factores Asociados", CEDE, Universidad de los Andes, Bogotá, mimeo, 2005.

<sup>12</sup> For a similar analysis, see Susan Dynarski, "Loans, Liquidity and Schooling Decisions", Kennedy School of Government, Harvard University and NBER, February 2002, pp. 2.)

index of industrial activity and the head office of the government. Therefore, this city was defined in the regressions as the default effect. The results obtained indicate that high school graduates in cities such as Cali, Pasto and Cartagena may be less likely to attend college just by being in these cities.

Table IV.1. College Enrollment Probability Equations, Colombia, 2000

	Equation 1	Equation 2	Equation 3	Equation 4
Constant	-1.86 (6.01)**	-2.999 (3.54)**	-0.025 -0.02	-1.851 (3.92)**
Demographics:				
Gender	0.019 -0.39	0.071 -0.92	0.021 -0.44	0.021 -0.43
Age	0.009 -0.72	0.033 -1.65	0.009 -0.74	0.002 -0.54
Family Resources:				
Log (income per capita)	0.069 (2.35)*	0.107 (3.99)**	-0.069 (2.34)*	0.07 (2.37)*
Log (family size)	-0.264 (3.53)**	-0.161 -0.84	-0.281 (3.71)**	-0.264 (3.46)**
Head unemployed	-0.204 (2.18)*	-0.206 -1.37	-0.198 (2.12)*	-0.193 (2.05)*
Spouse unemployed	-0.234 (2.71)*	-0.327 -1.73	-0.233 (2.30)*	-0.225 (2.12)*
Own home	0.32 (5.61)**	0.368 (4.07)**	0.318 (3.55)**	0.318 (5.53)**
Poverty line	-0.121 (6.38)**	-0.305 (3.73)**	-0.318 (6.30)**	-0.326 (6.43)**
Parental Education:				
Father - Some college education	0.912 (8.32)**	1.047 (5.86)**	0.913 (8.84)**	0.918 (8.86)**
Father - Some secondary education	0.359 (6.33)**	0.502 (5.47)**	0.361 (6.37)**	0.363 (6.37)**
Mother - Some college education	0.594 (6.40)**	0.499 (3.30)**	0.598 (6.44)**	0.603 (6.47)**
Mother - Some secondary education	0.355 (3.20)**	0.227 (2.02)*	0.36 (3.25)**	0.359 (3.23)**
Both with some college education	0.203 -1.32	0.406 -1.7	0.207 -1.55	0.201 -1.31
Family Structure:				
Household headed by woman	-0.404 (4.05)**	-0.407 (2.96)**	-0.403 (4.97)**	-0.408 (5.00)**
Head married	0.085 -1.49	0.086 -0.51	0.089 -1.55	0.082 -1.44
Head main source of income	0.187 (3.75)**	0.225 (2.80)**	0.182 (3.64)**	0.183 (3.64)**
Sibling with college	0.245 (5.44)**	0.203 (2.49)*	0.244 (5.41)**	0.242 (5.38)**
Children main source of income			-0.310 (3.66)**	
Labor Market Conditions:				
Log (unemployment rate)			-0.307 -1.47	
Log (relative wage: College/No college)			0.02 -0.17	
Opportunity Costs:				
Log (weekly earnings manufacturing)			-0.094 -0.93	
Log (hours of work last week)			-0.061 -0.96	
Demographic Effects:				
Barranquilla				0.034
Bucaramanga				-0.37
Medellin				0.162
Medellin				-1.64
Medellin				-0.04
Medellin				-0.4
Cali				0.04
Cali				-0.43
Pasto				-0.179
Pasto				-1.4
Pasto				-0.005
Cartagena				-0.05
Cartagena				-0.012
Cartagena				-0.34
Observations	3,529	3,529	3,529	3,529

Notes: Probit coefficients. Absolute value of z-statistics in parentheses. \* significant at 5%, \*\* significant at 1%.  
Source: National Households Survey, Colombia (2000), calculations by the author



#### IV.4. Simulating Potential Policy Interventions

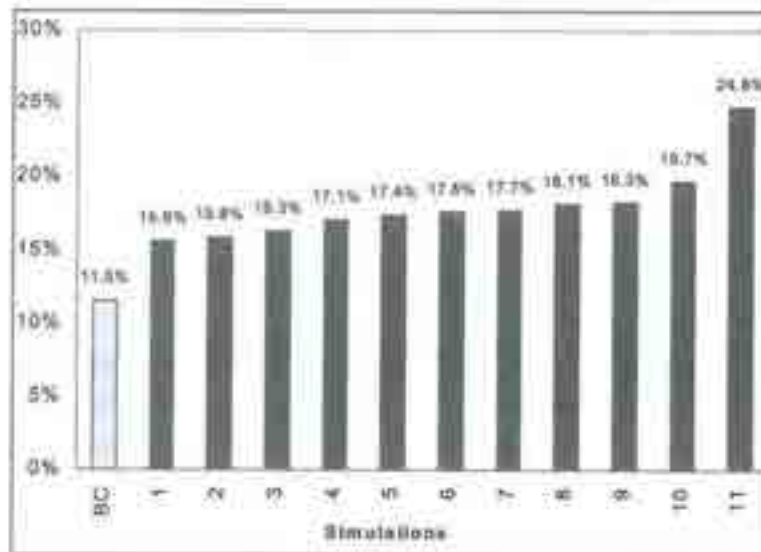
This section uses the previous quantitative analysis to simulate the sensitivity of college enrollment to changes in variables in several dimensions, including income transfers or financial aid mechanisms. We depart from a base case, which was defined as the expected probability of college enrollment for a girl, 18 years old (roughly the age in which a youth is expected to be making the transition from high school to college in Colombia), belonging to the lowest 20% of the income distribution and evaluated at the mean values in the remaining socioeconomic variables of this quintile. The calculations were made for both quintiles 1 and 2, using the specification and marginal effects from the normal probability distribution estimations defined in Equation 3 for 2000.

The base case predicts an expected probability of college enrollment of 11.5% and 13.6% for relevant-age people belonging to quintiles 1 and 2, respectively (Graph IV.1). The same calculation for people in the highest 20% of the income scale gives a predicted probability of 70.2%, around six times higher than its counterpart. A hypothetical increase in per capita income of 30% and 50% (around US\$ 100 and US\$ 150 per year) within a poor household represent the first set of simulations. These changes increase the probability by 8 and 12.5 percentage points, respectively, which is just about two times the enrollment observed in the baseline. As we will see later, this scenario depicts approximately the effect on enrollment of a loan in the amount of US\$ 500 per year given to a household with four or five members. Because the impact of alternative sources of liquid wealth than can be used as collateral, the estimations here say that an increase in the assets of poor households – simulated by an increase of 20 percentage points in the ratio of house ownership – would increase enrollment for this group in over 5 percentage points.

We also explore other interesting effects on access to college different from proxies of cash transfers or loans interventions. For instance, a reduction of 30% in the need of child and teenager labor as main sources of income within the household could increase enrollment of poor youngsters by almost seven percentage points. Similarly, if we cut in half the number of hours

worked by people in the relevant-age group their expected enrollment would go up by more than five percentage points. Thus, interventions oriented to keep teenagers out of the labor market may contribute notably to college access and completion in a comparable way that financial aid options.

Graph IV.1. Sensitivity of College Enrollment in the Lowest Income Quintile.



Simulations: BC = Base case, 1 = 50% less spouse's unemployment, 2 = 50% less head's unemployment, 3 = 1 member less in the family, 4 = 10% households headed by single women, 5 = 20% more assets, 6 = 50% hours less working, 7 = 30% less children as main source of income, 8 = 20% more mothers with college, 9 = 20% more fathers with college, 10 = 1/3 higher income per capita, 11 = 1/2 higher income per capita.

Source: Calculations by the author

Policies devoted to increase college enrollment today will have positive effects in the future generations. Our estimations suggest that an increase in 20 percentage points in the proportion of parents in poor households with some instruction at college level would raise college enrollment of their high school graduates in about six points.<sup>13</sup>

Finally, we looked at the effects of some factors associated with the family structure within the household. Although it is difficult for public policy to have an influence, these simulations offer an interesting insight to the

<sup>13</sup> This number represents the effect of an increase in this proportion for either the head or the spouse. As shown in the previous regression, the combined interaction of both types of skills at home (both father and mother with college) reinforces this effect.

mechanisms affecting decisions of college enrollment at the micro level. For example, between four and six percentage points of higher enrollment would be reached if the average size of poor families were reduced in one member. An impact of similar magnitude is also simulated when the ratio of poor households headed by a single woman is reduced in 10 points or, alternatively, the average probability of the head or the spouse to be unemployed is reduced in 50%. In general, most of these simulations appeared to be robust to other base cases as well.

## V. Funding College Education: Underlying Facts, Current Schemes and Policy Alternatives

### V.1. Liquidity Constraints and Imperfections in the Credit Markets

As in any other type of capital, people invest in education expecting to get returns on this investment in the future. To do so they need to have either their own resources or access to credit markets, or both. The second alternative seems to be the most plausible one under the financial constraints of a country with more than 50% of population under the poverty line, the high relative costs of college education, mostly private, with no subsidies in tuition and fees but with high returns to this type of education.

Initially, lenders would find it very attractive to provide loans to satisfy the demand for credit of high school graduates aiming college education. Nonetheless, a big problem emerges at this point: failures of capital markets in response to education. Where do these imperfections come from? This market is normally plagued by information risks in both the demand and supply side. First, private banks and money lenders usually do not accept an intangible asset like college education as collateral. Second, poor people do not own alternative collateral to be used as guarantee. Third, investments in education are riskier per se because of the *moral hazard* problem, namely the lender has big uncertainty about the student's performance while in school, the employment status after graduation and future income profile (Heckman and Carneiro, 2003). Fourth, the lender has imperfect information about the risk of the borrower, leading to the *adverse selection* problem. In other words, the inability of the lenders to screen big risks from low risks leads



them to set extremely high interest rates, reducing the scale of the market and making it unfeasible. Fifth, the small size of the loans to students may not be very attractive to banks because of the high administrative and monitoring costs associated with running such a program.

Under restricted credit markets, the costs of borrowing and the negative consequences of the failures are relatively higher for children from poor households. Yet, the market failures mentioned before justify a public intervention to promote access and equity in higher education. For instance, the government can create or enlarge existing student loan programs by taking advantage of the dynamic – individual and aggregate – benefits of higher levels of human capital. Although it appears to be the most reasonable and feasible solution, some empirical evidence shows that very often this mechanism does not meet the expected results or may simply collapse. For example, a study that analyzed twenty-three loan programs in different countries found that in most of them subsidies were quite large, there were high default rates and high administrative costs and, in general, students had paid back only a small fraction of the value of the loan (World Bank, 1993: 71).

Student loans and other financial aid programs can have an impact not only on those high school graduates considering college but also on completion of those already enrolled. Similarly, they can also influence the type and quality of college chosen. For instance, once they are eligible for the loan they could prefer to switch from two or three years to five years colleges or apply to more expensive institutions, frequently associated with higher standards of quality in the country.

## V.2. Financial Aid and College Enrollment: What Does the Empirical Evidence Say?

A frequent concern about financial aid is to know whether it increases college attendance or only reduces the costs for inframarginal high school graduates. The empirical answer to that question is not easy at all. The fact that loan eligibility – or any other type of aid – is not randomly assigned but highly associated with other determinants of schooling may bias standard cross-section estimators (Dynarski, 2001: 3).

Most of the evidence available – mainly from the U.S. – indicates that different forms of financial support seem to be linked with higher enrollment and completion. For instance, Dynarski (2000) argues that the Georgia's HOPE scholarship program increased attendance by 4 to 6 percentage points for each \$1,000 of aid. Dynarski (2001) uses quasi-experimental methods to show that a shift in 1982 OF a financial aid policy in the U.S. significantly reduced college attendance and schooling of the affected group. She also estimates that a \$1,000 grant aid increased the probability of college enrollment by 3.6 percentage points. Manski and Wise (1983) use data of the 1970's and achieve very similar effects: \$1,000 in aid appears to increase enrollment by 3.8 percentage points. Kane (1994) found that a reduction in public tuition in the same amount increased attendance by 3.7 percentage points. Angrist (1993) estimated that schooling levels of a group receiving special educational benefits increased when compared with those of the control group. Van der Klaauw (2001) found that changes in the financial aid scheme of an individual school had positive effects on beneficiaries' attendance. Some of these empirical works also show that financial aid systems have dissimilar substitution and income effects among beneficiaries and influence other decisions such as the type of college or the duration of the academic program.

### V.3. Existing Financial Aid Options in Colombia

As mentioned at the very beginning, more than two thirds of the existing college supply in Colombia is private. At first, we cannot label this as a negative characteristic of the system. On the contrary, there is a trend towards the reduction of the share of public expenditures and provision in higher education in several countries, including Australia, United Kingdom, New Zealand, Chile and Argentina (World Bank, 1998). However, under these conditions private colleges have to be autonomous institutions and highly dependent on own resources such as tuition, fees, external services, investments and donations. Following that behavior, private - and some public - Colombian colleges are free to charge what they consider as financially reasonable. Consequently, high tuition and fees describe the system and defines its accessibility. The main problem of this structure lies in those talented or motivated but economically disadvantaged high school



graduates who want to enroll in college and have no way to fund their studies.<sup>14</sup> At present the financial aid options for that type of young are still very limited.

Colombia led the way in establishing programs of loans for students in the region. In 1953 ICETEX was created, mainly as a public office to support students attending universities overseas. Later on it also started providing financial assistance to college students in the country but with a marginal coverage. At present, according to estimates of the National Department of Planning, only 5% of the current college enrollment receives some type of financial aid from this agency.<sup>15</sup> Besides the loan program, there are three other alternative financial aid options. Students from families with low resources have a limited access to few sources of public financial aid – less than 1% total resources spent on tertiary education – in the form of specific scholarships and grants. Some non-regular discounts from tuition and fees are offered autonomously by higher education institutions as well, but they are not necessarily targeted to poor students. Finally, there are some private providers of loans which have become more common recently. In fact, private banks have established partnerships with more than 50 education institutions in the country. Nonetheless, this alternative offers mainly short-term credit and asks for liquid collaterals and guarantors, thus is mostly limited to high income students.

#### V.4. Towards a More Equitable and Larger State-Run Student Loan Program

Given that the government has agreed that the majority of the resources from the World Bank are going to be used in strengthening the student loan system, we will turn now our attention to assess the current program and see how it should be expanded. Therefore, it is not only interesting for this analysis to explore how a student aid program can influence college decisions but also how the effects of several types of financial aid vary among groups

<sup>14</sup> Some empirical evidence for the U.S. show that low-income individuals are not necessarily more sensitive to college costs. See Susan Dynarski, "The Behavioral and Distributional Implications of Aid for College", Kennedy School of Government, Harvard University and NBER, mimeo, January, 2001, pp. 17.

<sup>15</sup> Icetex declared a coverage of 6.9% at the end of 2003, value slightly higher than the one used as reference in this document.



according to their socioeconomic characteristics, regional environment and financial constraints. With that purpose in mind, we used our previous quantitative results and qualitative analysis to provide a general framework for the expansion of the student loan program in Colombia.

#### *V.4.1. Basics of the Current System and Possible Expansions*

According to ICETEX, its program provides now assistance to 45% of the total demand for loans. Nearly 20,000 new loans and over 65,000 renewals are expected to be signed in 2004. On average, the current loans cover 60% of tuition and fee expenses. However, we think that the amount of beneficiaries can be expanded considerably with the new flow of external resources and some modifications to incorporate different rules regarding targeting, eligibility and repayment.

We developed a simple exercise to illustrate potential scenarios to enlarge the coverage of the current system, incorporating the future resources from the loan of the World Bank (Table V.1.) This is a static analysis that reproduces the current picture of the system in different circumstances by modifying two variables of public control: the number of new loans to be allocated and the average amount of money lent per beneficiary.<sup>16</sup> As we just said before, ICETEX expects to grant around 20,000 new loans and nearly 70,000 renewals in 2004, which roughly represents a total expenditure of US\$ 40 millions per year. Option 1, for instance, depicts the case in which the number of loans is increased to 40,000 and the average loan per semester is kept at the same level (around US\$ 442). This alternative implies that the level of expenditures of the program would reach US\$ 62 million per year. Option 5 illustrates the case in which the number of loans is increased from 20,000 (base case) to 60,000 and the average loan size per student is raised by 30% (from US\$ 442 in the base case to US\$ 575) to allow funding of other

<sup>16</sup> These calculations include simple approximations of increases in staff and administrative expenditures and rough calculations of college demand between technical (3 years) and professional studies (4-5 years). However, limitations of information about the current infrastructure of ICETEX and the repayment record of the system – among others – reduce the accuracy of this exercise. Therefore, this should be seen as a very basic approach.

expenses (e.g. stipend, travel allowances, books). This choice entails a total expenditure of approximately US\$ 103 million and represents an increase from 5% to 20% of the total college enrollment receiving loans. Similarly, other options are included in this part to be compared with financial simulations of different repayment and investment scenarios – that should be carried out by ICETEX – in order to choose the optimal option. This analysis is crucial to define the financial structure that would make the new loan program sustainable.

At present, the loan system charges a nominal interest rate of 12% to beneficiaries from the lower socioeconomic strata (1, 2 and 3), while charges 18% to the other borrowers. As shown in the graph below, the price the rich pay for loans is slightly higher than the average interest rate in the market during the last 4 years. However, this is also true for families with low incomes during the last two years. A more equitable rule would be to keep the interest the same or slightly lower than the rate in the market for applicants from strata 1, 2 and 3. For the rest, ICETEX may charge a rate somewhat above that the current one in the market to avoid subsidizing schooling attainment for those who are not credit constrained (Dinarsky, 2002).

Table V.2. Some Alternatives to Expand the Current System

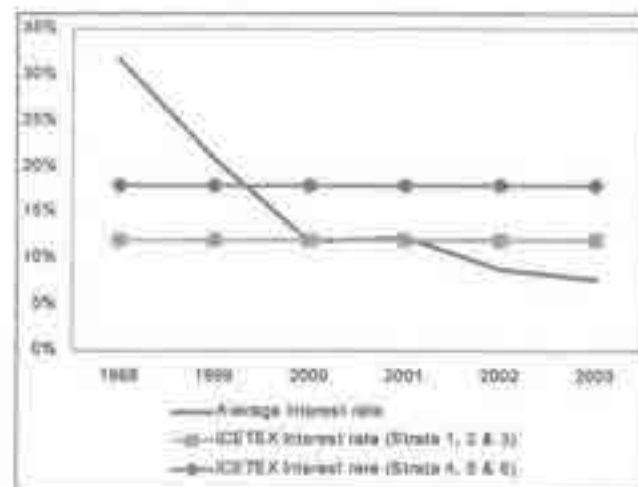
Potential programs	Average loan per borrower (\$)	Number of new loans	\$ for new loans (millions)	Number of renewals	\$ for renewals (millions)	Total amount (\$ millions)
Current program (expected for 2004)	442.6	26,000	9.85	70,000	31.0	39.8
Option 1 (+20,000 new loans)	442.6	40,000	17.71	100,000	44.3	62.0
Option 2 (Option 1 + 30% increase in \$/loan)	575.4	40,000	23.02	100,000	57.5	80.6
Option 3 (Option 1 + 50% increase in \$/loan)	664.0	40,000	26.58	100,000	66.4	93.0
Option 4 (+40,000 new loans)	442.6	60,000	26.56	120,000	53.1	79.7
Option 5 (Option 4 + 30% increase in \$/loan)	575.4	60,000	34.53	120,000	69.1	103.6
Option 6 (Option 4 + 50% increase in \$/loan)	664.0	60,000	39.84	120,000	79.7	119.5
Option 7 (+60,000 new loans)	442.6	80,000	35.41	150,000	66.4	101.8
Option 8 (Option 7 + 30% increase in \$/loan)	575.4	80,000	46.03	150,000	86.3	132.3
Option 9 (Option 7 + 50% increase in \$/loan)	664.0	80,000	53.12	150,000	99.6	152.7
Option 10 (+80,000 new loans + 50% increase in \$/loan)	664.0	100,000	66.40	170,000	112.9	179.3

Note: Values in dollars, 2003. Exchange rate = 2,700 pesos/dollar

Source: ICETEX and calculations by the author

The maximum length to repay the credit is 10 years, including one year of grace period after graduation. However, beneficiaries should start to pay back a minor amount one month after the first reimbursement. Although this can be seen simply as a mechanism intended to keep an eye on current borrowers, it is very likely to discourage the poorest pool of graduates from potential borrowing, even if the repayment required is not very high. They usually have higher degrees of risk aversion and less certainty about the stream of future income.

Graph IV.1. Interest Rates Charged by Icetex vs. Interest Rate in the Market



Source: Central Bank of Colombia and ICETEX

The system is progressive in terms of the relative amount of money lent among beneficiaries. Yet, richer applicants can fund at most 50% of tuition with the loan while poorest applicants can cover up to 75% of it. Additionally, the poorest among the strata 1 and 2 applicants receive a direct subsidy in the amount of 25% of the tuition, with the remaining 50% taking the form of a loan. The program has also agreements with several private universities, in which these institutions are committed to manage the public loans and offer a direct credit over 25% of the tuition to those receiving loans from ICETEX. This is a good strategy not only to expand the coverage of the program but also to gather more information and split risk between this public office and the universities.



**Table V.2. Structure of the Current Loan program**

Socioeconomic group and type of college	% Nominal interest rate	% funded by sources		
		Loan (ICETEX)	Credit (college)	Student
Strata 1 & 2 - Private college	12	75	25	0
Strata 1 & 2 - Public college	12	75	0	25
Strata 3 - Private college	12	50	25	25
Strata 3 - Public college	12	50	0	50
Strata 4, 5 & 6 - Private college	18	50	25	25
Strata 4, 5 & 6 - Public college	18	50	0	50

Source: ICETEX (2004)

The capacity to fund living expenses is very narrow in the current system. Only beneficiaries enrolling public universities can receive a limited amount of money – between one and five minimum legal wages per semester. In most of the cases this amount of money is not enough, especially when students have to move from small municipalities to the main urban centers. Given its relevance in college enrollment decisions, it is crucial to expand the amount of resources allocated to this component.

The current program works now on a mortgage-type loan, in which borrowers have to pay back fixed monthly payments over a specific period of time according to the agreement with ICETEX. These payments vary by the interest rate and the length of the repayment horizon. Clearly this system does not persuade poor people to apply for loans, harms inequality and induces defaults and low repayment rates in times of economic crises. For this reason, we suggest exploring two repayment alternatives to reform the program: income-contingent loans and tax on graduated recipient's loans.

In the first system, beneficiaries can defer payments until they have a job and a fixed share of the graduate's income is used to pay the loan back. The main advantage of this option is that the repayment is set proportional to the level of earnings and is less arbitrary. Since people with less wealth are usually more risk averse, this option persuades low-income students to apply for this kind of loan, minimizing default risks. Indeed, this system has

increased equity in college access in countries like Sweden and Ghana (Albrecht and Ziderman, 1993). The main weakness of this mechanism comes from the moral hazard risk, since the system can discourage the effort and future earnings of graduates.

The second system is based on a tax on graduates who received support from the public loan program over their working lives. Hence, the government is funding an investment on a specific form of capital which will produce some expected benefits, namely higher earnings for graduates. In other words, "... the government essentially acquires an equity share in the human capital created and is thus entitled to a dividend from the ensuing income benefits" (Albrecht and Ziderman, 1993:76). We proposed to slightly modify this rule to achieve equity results as well. For instance, the tax rate could fluctuate progressively with different income levels or those graduates working on low income activities may be exempted from the tax burden. In general, the success of both systems would depend on strong instruments to exert enforcement and collect repayments.

#### *V.4.2. Screening Applicants and Regional Allocation*

The score of the ICFES test is one of the instruments used by ICETEX to screen applicants. However, the analysis shown in this report indicates that this mechanism does not seem to favor equality. As we have mentioned before, potential applicants from poor backgrounds are not only budget constrained but also deprived from high quality education in high school. Their dropout rates are consistently higher and their transition from primary to secondary education is very limited. They live in households with lower levels of human capital and more limited conditions to promote educational processes. Consequently, their scores in the standardized tests are systematically lower than those of richer children (Sanchez *et. al.* 2003), which not only put them in a second place in the contest for seats in the private and public colleges but also weaken their eligibility to receive loans. The results of our exercises advise assigning more weight to other elements into the formula of eligibility. For example, given her lower probability of enrollment, a female applicant should have advantages when compared with



her counterpart, after conditioning for the other relevant characteristics. Similarly, other demographic groups such as blacks, indigenous and children growing in households headed by a single woman and, in general, people coming from families with limited resources and poor backgrounds should be a priority in terms of loan provision by ICETEX. Poor households can be identified as those residing in areas classified as socioeconomic strata 1 and 2 (the lowest out of 6 strata). Applicants may proof their eligibility by submitting their SISBEN identification record (system to target special beneficiaries of social programs) or a utility bill.

The current public system of loans exhibits another major drawback: students need to have a guarantor with collateral and credit history to be eligible. However, poor people could hardly meet this prerequisite. If not addressed properly, this requirement discourages poor families from borrowing and most of the money can go to less needed students. Unfortunately we did not have access to data to test this hypothesis, but another report on this issue has found that the allocation of these funds in the country appears to be biased towards the middle-high and high income classes (World Bank, 2003). Even though these rules of eligibility are designed to assure high repayment rates, they undermine the purposes of increasing equity. Therefore, paradoxically the public system may be falling in the same trap – or the market imperfection – of the private lender.

Does the current system induce parents from low income households to enroll their children in college? Should they be combined with partial grants? Under the conditions described previously, the loan system does not seem to be increasing the levels of school attainment of those who are facing the biggest liquidity constraints. For this reason, targeting should be a primary condition in the design of the new system. Considering the high sensitivity of college enrollment to income found in our quantitative simulations, grants and flexible loans jointly with enforcement based on academic performance appear to be a suitable alternative for the poorest applicants. After graduation, they could be monitored through wide information systems available like the Colombian office of tax collection (DIAN), the national social security system or several financial risks agencies. There is still some potential risk of default if they join the informal sector, but our calculations of the returns to



college and joblessness by education level suggest that there is not reason to think this is going to be their main labor market.

The current regional allocation of resources follows some parameters of distribution defined by ICETEX. This study suggests incorporating flexibility in that distribution with regard to geographical allocation and social assistance inequalities. Some urban centers and small municipalities have fixed characteristics (i.e. less college supply from the public sector, higher levels of poverty, weaker labor market conditions, higher child labor ratios, less access to information, more inflows of refugees from violent rural zones, among others), that would demand a “big push” to encourage teenagers to go to college in these areas. Cali, Cartagena and Pasto could be examples of these urban centers.

#### *V.4.3. Governance and Management: The Role of the Main Actors*

There are three main public offices regulating, supervising and planning college education in the country: The Ministry of Education, The Colombian Institute for the Promotion of Higher Education (ICFES) and ICETEX. The latter has had for more than five decades the control of the national loan program and stands obviously as the main responsible of its enlargement plan. ICETEX has already in place a remarkable infrastructure with regional offices in 26 main urban centers, information centers in 25 states of the country and enough staff to carry its activities. Additionally, ICETEX has developed a wide data base with information of allocation of loans, socioeconomic characteristics of applicants and repayment history. This agency also has the resources to publicize the new system and its advantages. The success of the program mostly lies in the ability to let families learn about their potential eligibility.

In our opinion, ICETEX has all the resources and logistics available to expand the coverage of the current system from 5% to 20% (Option 5 discussed in section V.3.1.). Although some new investments may be needed (e.g. information technology, training, hiring of additional staff), we considered that these costs are not very significant and will be completely offset by the benefits of the program. Similarly, we think that the program management

can be enhanced through alliances with private banks – intermediaries, which have more experience in dealing with credit markets and have important comparative advantages in terms of information, monitoring, enforcement and a greater set of instruments to screen and track borrowers. This point is essential because the program can be amplified only if stronger mechanisms to reduce default rates are jointly developed. Otherwise the sustainability of the project will be threatened. These alliances may also reduce the needs for public investments in infrastructure, expenses on staff and administrative costs to collect repayments.

On the other hand, The Ministry of Education and ICFES are already involved in other components that are part of the whole plan of higher education strengthening announced by the government and which are also funded by the World Bank loan. These components include improvements of past and new quality assurance systems, enhancing of legal and technical framework governing the sector, institutional capacity building and strategic planning and management (World Bank, 2002).

Despite the fact that all these public offices can all contribute to a better governance and management of the loan program, it is necessary to be aware of potential overlapping responsibilities that have undermined some initiatives in the past. We suggest keeping the current mechanisms of accountability and control used to monitor ICETEX's performance, mostly through its own board of directors and the permanent evaluations carried out by the Ministry of Education. In summary, our analysis allows us to conclude that the current amount of physical and human resources are enough to tackle the expansion plans and do not justify the creation of new institutional structures.

#### V.5. Other College Funding Issues to Correct Current Incentives

This study has also been helpful in identifying other relevant financial issues that can undermine any strategy towards more access and equality at college level. First, we call attention to revising the current funding scheme, in which the government allocates expenditure on public institutions based



mostly on historical preference, past agreements and collective negotiations. Lacking fundamental incentives, this funding method does not reward consistently well-performing universities, has caused many important institutions to face unprecedented financial crisis and has failed to help generate new sources of revenues. As a result, higher costs and inefficiencies characterize most of the public universities in the country. For instance, seats in public universities cost 29% per year more than seats in private universities. Similarly, the appointment process for instructors in public universities responds very often to considerations other than real pedagogical needs within the system. Public universities allocate on average around 42% of their budgets on wage bills to fund academic staff while private institutions spend 32% for similar purposes.<sup>17</sup>

In our opinion, two alternatives may be combined to get rid of those undesirable incentives. On one hand, we suggest switching part of the current expenditures to fund demand subsidies programs such as grants, loans with low interest rates or vouchers for the poorest students. On the other hand, the remaining part may be allocated to stimulate the public supply through a system that compensates only efficient and accountable institutions. For instance, a fraction of this public budget could be distributed among institutions according to their inputs (faculty, students enrolled, pedagogical and research resources) and the other fraction can take into account their outputs (graduated students, publications and other products of research).<sup>18</sup>

An interesting exercise could come from linking the public budget to the individual performance of the institutions, discriminating by students' achievement. For example, a scale can be created to reward universities according to the students' average test score right before graduation.<sup>19</sup> Nevertheless, several problems and perverse incentives should be considered

<sup>17</sup> For instance, seats in public universities cost 29% per year more than seats in private universities. Similarly, the appointment process for professors in public universities responds very often to other than real pedagogical needs within the system. Public universities allocate around 42% of their budgets on wage bills to fund academic staff while private institutions spend 32% for similar purposes. See "Colombia. The Economic Foundation . . . .", pp. 742.

<sup>18</sup> Salmi and Alcalá illustrate the case of Holland as a successful example of this alternative. See Jamil Salmi and Gabriela Alcalá, *op.cit.*, pp. 7-9.

<sup>19</sup> There are two main tests to implement this rule: Pruebas ICFES (after finishing high school) and Sistema de Pruebas de Evaluación de la Calidad de la Educación Superior (right before finishing college).



before following this strategy. Standardized tests may not be a good predictor of academic performance, students can spend more time on subjects which are tested, instructors can devote part of their effort to teach test-taking strategies or universities can allocate more resources to those students who are expected to do better in the test. Additionally, a system like this could create elitist institutions, given the fact that usually higher income students attend private primary and secondary institutions with higher quality and educational achievement.

This document supports policies aimed to provide subsidies and other types of transfers to poor prospective and college students. In spite of that, we also propose that the public provision of college education in the country be embedded in a cost recovery framework, something that is not met at present. On average, only 9% of the public expenses per student at tertiary education level are recovered in Colombia (Graph A.6).<sup>20</sup> It is needed to pursue cost recovery policies such as increasing tuition and fees of public universities in tandem with loans and grants programs to facilitate access and completion. The central idea of this proposal is that college graduates pay for their education and not all taxpayers in general. This option can be complemented with new rules that encourage and reward institutional autonomy to generate new sources of revenues (business sponsorship of students, consultancy and research services, fund-raising) and increase individual control of inputs, costs, wages and outputs.

## Conclusions

The drop in college enrollment observed during the last years and the huge inequalities in the access to education at this level call for public intervention in Colombia. As expected for a developing country, the opportunities to enroll at this level appear to be highly influenced by current household incomes and alternative sources of wealth. Many teenagers from middle and low income groups have no financial alternatives to go to college. In that sense, the expansion of the current student loan program stands as a good

<sup>20</sup> This value is even lower for Latin America: 7%. See Salmi and Alcala, *op.cit.*, pp. 13.

option to help credit constrained people to attend and complete their education. Our calculations indicate that the labor market provide enough incentives in terms of wages to go to college and make the loan program very attractive for beneficiaries, even at lower rates of return than the current ones. Nevertheless, the high level of unemployment is still a big threat to borrowing.

An increase in the number of new loans from the current 20,000 to 60,000 represents a very reasonable target for the expansion of the program. We also recommend that the average loans in the new system be increased – particularly for poor applicants – to cover between 75% and 80% of tuition and fee expenses, instead of the current limit of 60%. This amount of resources complemented with direct credits from universities would allow a full funding of studies and other related expenses such as living expenses, travel allowances and books. This program would be roughly a total expenditure of US\$ 103 million per year (US\$ 60 million more than the present expenditure) and represents an increase from 5% to 20% of the total college enrollment receiving loans. Additionally, we suggest keeping the current subsidy of 25% of the loan to poor applicants from socioeconomic strata 1 and 2. At the same time, the government has to amend the current funding scheme, in which the public expenditure for state-run institutions is regularly based on historical preference, past agreements and collective negotiations. To align incentives, we advise switching part of these resources to fund demand subsidies programs. The remaining part may be allocated through mechanisms that compensate only efficient and accountable institutions

The new system of loans should reduce the importance of the ICFES test as a screening mechanism, in which poor children are systematically scoring poorly, and give more weight to other elements into the formula of eligibility. Demographic groups such as females, blacks, indigenous and children of households headed by a single woman and, in general, people coming from families with limited resources and poor backgrounds meeting the minimum conditions should be targeted in terms of loan eligibility. Furthermore, grants and flexible loans may be an ideal intervention for poorest applicants with outstanding academic performance.



Two repayment alternatives emerge as better substitutes of the current mortgage-type loan of ICETEX: income-contingent loans and tax on graduated recipient's loans. The first method sets repayments proportional to future earnings and allows beneficiaries to defer them until they have a job. Hence, less wealthy families would have better incentives to borrow and repay. Although there may be some potential moral hazard danger, this system has achieved interesting results in countries like Sweden and Ghana. The second method levies a tax on graduates who received support from the public loan program over their working lives. In this case, a flexible tax to adjust for different income levels may be more favorable to achieve equity results as well. The success of either one or the other depends mostly on repayment rates. We recommend ICETEX to invest in enforcement strengthening by increasing mutual access to nationwide information systems such as the Colombian office of tax collection (DIAN), the national social security system or several financial risks agencies.

Demand-side financing mechanisms driven by students' interests and preferences like the one discussed here are expected to have positive effects in terms of quality. In principle, the expansion of the student loan program could make both public and private institutions more responsive to demand and more exposed to higher competition.

Finally, we want to emphasize that our study shows that credit does not represent the only constraint to college enrollment. The enlargement of the current student loan system partially solves the problem. Some of the simulations presented here show that other alternatives can be explored to boost enrollment and may be even better cost-benefit ranked. Furthermore, the unequal access from high school to college is greatly explained by the bottleneck in the basic education system, disproportionately affecting disadvantaged children. Besides, the analysis presented in this report suggests that past family factors affecting cognitive and non-cognitive skills of children along their life cycle also account for the gaps in college enrollment. For that reason, we believe that policies targeted only towards teenagers may not be enough to promote skill formation at college level. Additional research is needed to achieve more robust answers to these and other questions in this topic. Nevertheless, we hope this study has become a relevant step to stimulate the debate.

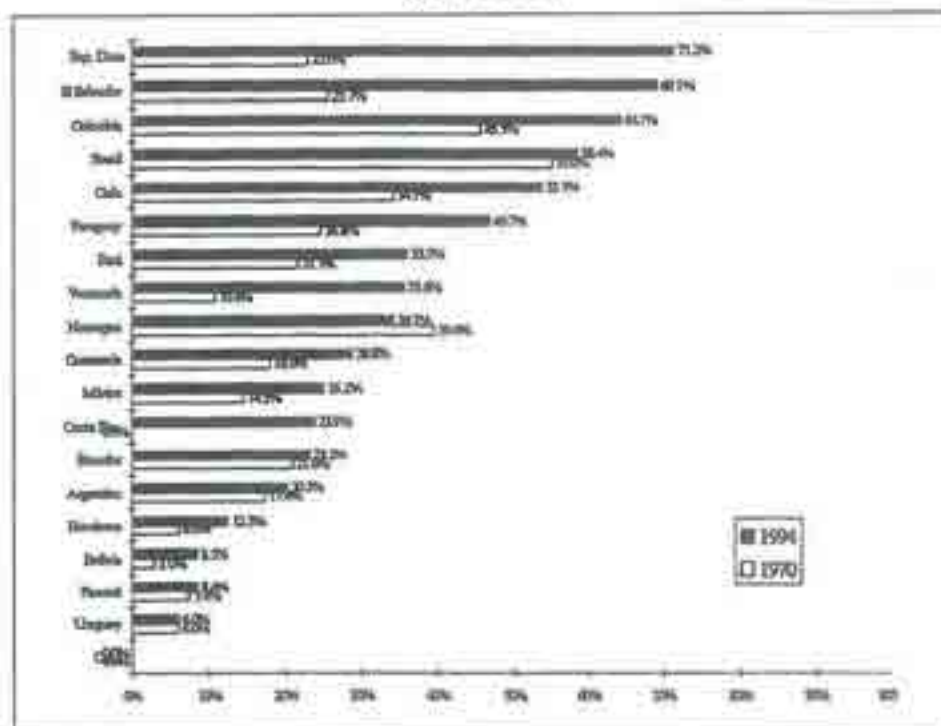


## Appendix

Graph A.1. Percentage of Gross Enrollment in Secondary and Tertiary in Latin American Countries, 1999.

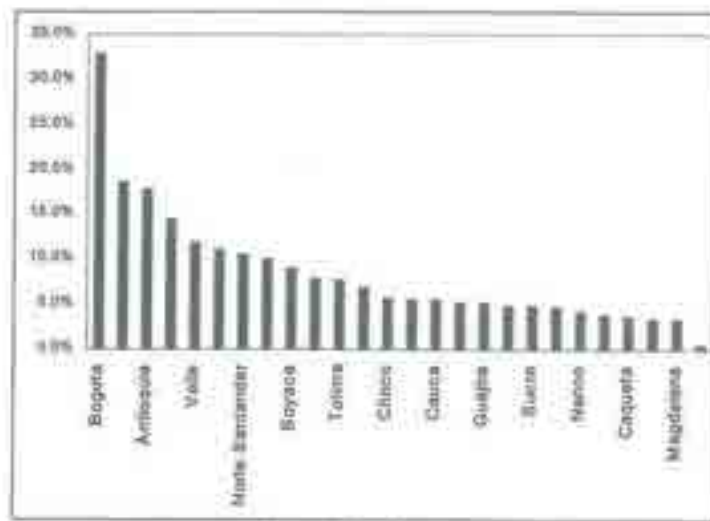


Graph A.2. Proportion of Students Attending Private Universities, Latin America (1970-1994).



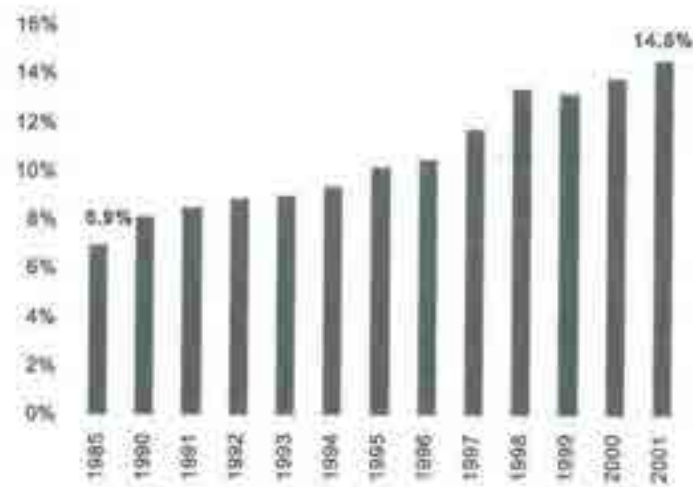
Notes: Horizontal axis is measured in dollars per student. Source: The World Bank, 1996

Graph A.3. College Enrollment Rate by States, Colombia, 1999.



Source: ICFES, 1999.

Graph A.4. College Enrollment Rate, Colombia, 1985-2001.



Source: ICFES, 2001.



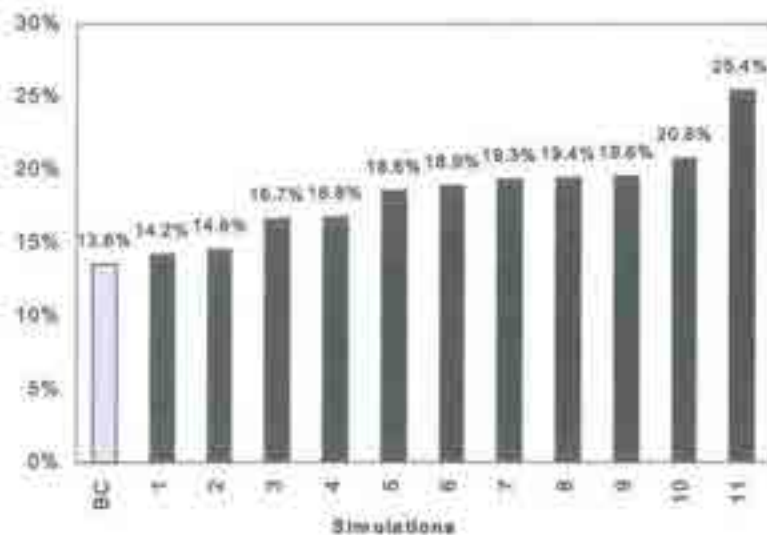


**Table A.1. College Enrollment Probability Equations, Colombia, 1995**

	Equation 1	Equation 2	Equation 3	Equation 4
Constant	-4.642 (6.58)**	-4.733 (4.37)**	-6.366 (2.98)**	-4.417 (6.03)**
<b>Demographics :</b>				
Gender	0.123 (2.42)*	0.161 (2.04)*	0.122 (2.36)*	0.133 (2.57)*
Age	0.01 -0.77	0.061 (2.97)**	0.01 -0.79	0.011 -0.79
<b>Family Resources:</b>				
Log (income per capita)	0.3 (6.36)**	0.41 (6.20)**	0.28 (5.49)**	0.292 (5.70)**
Log (family size)	-0.284 (3.30)**	-0.307 (2.41)*	-0.296 (3.41)**	-0.251 (3.97)**
Head unemployed	-0.400 (2.10)*	0.145 -0.6	-0.408 (2.99)*	-0.435 (2.23)*
Spouse unemployed	-0.259 -0.91	-0.291 -0.67	-0.283 -1	-0.314 -1.12
Own home	0.216 (3.30)**	0.099 -1.04	0.219 (3.34)**	0.215 (3.24)**
Poverty line	-0.073 (2.16)**	-0.115 (5.01)**	-0.095 (2.16)**	-0.046 (3.05)**
<b>Parental Education:</b>				
Father - Some college education	0.920 (9.77)**	0.516 (3.41)**	0.941 (9.84)**	0.957 (9.85)**
Father - Some secondary education	0.416 (7.33)**	0.304 (3.61)**	0.417 (7.34)**	0.413 (7.18)**
Mother - Some college education	0.878 (4.63)**	0.54 -1.83	0.867 (4.57)**	0.826 (4.26)**
Both with some college education	-0.5 (2.11)*	-0.332 -0.82	-0.491 (2.07)*	-0.432 -1.8
<b>Family Structure:</b>				
Household headed by woman	0.165 -1.13	0.023 -0.1	0.168 -1.15	0.178 -1.2
Head married	0.133 -0.92	0.033 -0.15	0.142 -0.98	0.166 -1.13
Head main source of income	0.228 (3.09)**	0.007 -0.08	0.222 (3.58)**	0.203 (3.26)**
Sibling with college	1.026 (5.61)**	1.253 (4.30)**	1.032 (5.62)**	1.013 (5.35)**
Children main source of income		-0.161 (2.41)*		
<b>Labor Market Conditions :</b>				
Log (unemployment rate)			0.289 -1.16	
Log (relative wage: College/No college)			0.815 (2.56)*	
<b>Opportunity Costs :</b>				
Log (weekly earnings manufacturing)			-0.051 -0.27	
Log (hours of work last week)			-0.694 (6.51)**	
<b>Dummy City Effects:</b>				
Barranquilla				0.055 -0.64
Bucaramanga				0.234 (2.39)*
Medellin				0.126 -0.96
Medellin				-0.297 (3.73)**
Cali				-0.153 -1.69
Pasto				-0.163 -1.33
Cartagena				-0.003 -0.04
Observations	2,869	2,869	2,869	2,869

Note: Probit coefficients. Absolute value of z-statistics in parentheses. \* significant at 5%, \*\* significant at 1%.  
Source: National Households Survey, Colombia (1995), calculations by the author.

**Graph A.7. Sensitivity of College Enrollment in the Second Quintile.**



Simulations BC = Base case, 1 = 50% less spouse's unemployment, 2 = 50% less head's unemployment, 3 = 1 member less in the family, 4 = 10% households headed by single women, 5 = 20% more assets, 6 = 50% hours less working, 7 = 30% less children as main source of income, 8 = 20% more mothers with college, 9 = 20% more fathers with college, 10 = 1/3 higher income per capita, 11 = 1/2 higher income per capita.

Source: Calculations by the author.

**Table A.2. Some Alternatives to Expand the Current System (Pesos, 2003)**

Potential programs	Average loan per semester (thousands \$)	Number of new loans	\$ for new loans (millions)	Number of renewals	\$ for renewals (millions)	Total amount (\$ millions)
Current program (expected for 2004)	1,195	20,000	23,902	70,000	83,658	107,560
Option 1 (+20,000 new loans)	1,195	40,000	47,804	100,000	119,611	167,415
Option 2 (Option 1 + 30% increase in \$/loan)	1,554	40,000	62,146	100,000	155,364	217,510
Option 3 (Option 1 + 50% increase in \$/loan)	1,793	40,000	71,707	100,000	179,267	250,973
Option 4 (+40,000 new loans)	1,195	60,000	71,707	120,000	143,413	215,120
Option 5 (Option 4 + 30% increase in \$/loan)	1,554	60,000	93,219	120,000	186,437	279,656
Option 6 (Option 4 + 50% increase in \$/loan)	1,793	60,000	107,560	120,000	215,120	322,680
Option 7 (+60,000 new loans)	1,195	80,000	95,659	150,000	179,267	274,925
Option 8 (Option 7 + 30% increase in \$/loan)	1,554	80,000	124,281	150,000	253,046	377,326
Option 9 (Option 7 + 50% increase in \$/loan)	1,793	80,000	143,413	150,000	283,900	427,313
Option 10 (+80,000 new loans + 50% increase in \$/loan)	1,793	100,000	179,267	170,000	304,753	484,020

Note: Values in pesos, 2003. Exchange rate = 2,700 pesos/dollar

Source: ICETEX and calculations by the author

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