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Equity in Tertiary Education in Central America

An Overview

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Abstract

This paper analyzes the evolution in socio-economic and ethnic disparities in tertiary education attainment, participation, and completion and labor market outcomes in the six countries of Central America. There is evidence of differential progress, with Costa Rica, a middle-income country, and Nicaragua, a low-income country, having improved participation of low-income students in tertiary education, while this continues to be negligible in Guatemala, El Salvador, and Honduras. Wide differentials in salaries linked to socio-economic background can signal differences in the quality of tertiary education or prior educational experiences. The analysis distinguishes between long-term and short-term constraints and the key transitions in the education cycle that impede access to tertiary education. The main obstacle to accessing tertiary education for poor students is the failure to either start or complete secondary education, suggesting different priorities for different countries in addressing long-term constraints. However, problems also arise within tertiary education, as in all countries the average tertiary education completion rate is below 50 percent, with even lower rates for students from low-income families and indigenous backgrounds. The paper uses an OECD framework for public policies for promoting equity in tertiary education to assess policies in Central American countries and concludes that many of them currently lack the policies, instruments, and institutional mechanisms to promote greater equity in tertiary education. The paper highlights how valuable insights can be obtained from analysis of household survey data in the absence of comprehensive data on tertiary education which is typical of many developing countries.

This paper is a product of the Human Development Department, Latin America and the Carribean Region. It is part of a larger effort by the World Bank to provide open access to its research and make a contribution to development policy discussions around the world. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at sbashir@worldbank.org.

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Produced by the Research Support Team

Equity in Tertiary Education in Central America: An Overview[1]

By

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[1] This article is based on analysis undertaken in the context of the World Bank's study on Equity in Tertiary Education (J. Salmi and R. Bassett, "Opportunities for All? A Global Study on Equity in Tertiary Education" (forthcoming)). The analysis was partly funded by a Trust Fund financed by The Dutch Government for the purpose of studying equity in developing countries. The findings, interpretations, and conclusions expressed herein are those of the authors, and do not necessarily reflect the views of the International Bank for Reconstruction and Development / The World Bank and its affiliated organizations, or those of the Executive Directors of The World Bank or the governments they represent.

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1. INTRODUCTION

Latin America is known for its historically high levels of consumption and income inequality, and within the region, many of the Central American countries stand out for their high levels of inequality[3]. The Gini index for income for these countries, around 2009, was between 0.47 and 0.52 (World Bank, 2011) in comparison to an average of 0.31 for OECD countries.[4] Between 2002 and 2008, income inequality went down significantly in almost all Latin American economies (Gasparini and Lustig, 2010). Central America, however, presents a mixed picture: while El Salvador and Panama showed a slight decrease in the income Gini between circa 2005 and circa 2009, Honduras stayed at the same level and Costa Rica showed an increase in inequality (World Bank, 2011).[5]

Fiscal transfers can be used as a way of offsetting consumption inequality, but eliminating income inequality requires interventions targeting the "deep roots of inequality", in particular skills and knowledge, as the lack of education limits the access to good quality jobs and shapes life-time opportunities and income structure. The decline in inequality in Latin America in recent years has been attributed to both factors: a more progressive allocation of government spending through monetary transfers, together with improved access to education and fall in skill premia in the labor market (López-Calva and Lustig, 2010; Gasparini and Lustig, 2011; World Bank, 2011).

Access to and completion of tertiary education is particularly important for addressing income inequality through two channels. First, enabling individuals of lower socio-economic background to access higher earnings through tertiary education can contribute directly to reducing inequality. Extra years of education translate in general into higher salaries and therefore, inequality in education attainment can contribute to inequality in income. Second, a high quality tertiary education system can build the strong human capital basis for economies to compete globally and increase growth, laying the ground for both higher productivity and earnings, and more fiscal space that can create room for redistribution. With respect to the first issue, the possible "equalizing" role of education depends to a great extent on whether students from poor backgrounds are able to reach tertiary education. Moreover, even if they do reach this level, they may not benefit from higher earnings if the labor market does not value their knowledge, skills and competencies to the same extent as of richer students. This could happen either due to the poor quality of education institutions attended by the poor or the better access of the rich to quality jobs through family and social connections (or a combination of both). These factors can significantly attenuate the potentially "equalizing" role of education and even generate negative incentives for investing in higher levels of education among the poor.

In this paper, we analyze the inequality in access to and completion of tertiary education in Central America, as it is an important means to reduce income inequality in the long run. Because access to tertiary education is contingent on successfully completing lower levels of education, the paper also examines the inequality in progression through the education system.

[3] The Central American countries analyzed in this paper includes Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama.

[4] OECD.StatExtracts. Income distribution- Inequality- GINI coefficient after taxes and transfers for latest year. Available online: http://stats.oecd.org/Index.aspx?QueryId=26068. Date accessed: June 14, 2012.

[5] These three countries are the only available in World Bank, 2011.

The Central American sub-region is of interest not only because of its high levels of income inequality, but also because of its heterogeneity and the fact that several countries have only recently emerged from civil war. The sub-region comprises two upper middle income countries (Costa Rica and Panama), two lower middle income countries (El Salvador and Guatemala) and two low income countries (Honduras and Nicaragua). Further, Guatemala and Honduras have a sizeable proportion of indigenous population, while Honduras and Nicaragua also have people of Afro-Caribbean origin. Both these groups have traditionally had limited access to tertiary education. Since the early 1990s, the focus in almost all countries (with the possible exception of Panama), especially those affected by civil war (El Salvador, Guatemala and Nicaragua) has been on promoting basic education, often using innovative models to expand coverage. The situation regarding tertiary education is different: on the one hand, there have been few policy changes with respect to public tertiary education while, on the other, the private sector has expanded rapidly. There has been no systematic analysis of the progress made in tertiary education, particularly for lower income and indigenous groups.

Our study relies heavily on household surveys but also draws on analysis of public spending data and qualitative studies of the participation of indigenous people in tertiary education in Nicaragua and Guatemala.[6] We begin by examining the growth in average education attainment and different measures of education inequality, as well as inter-generational and intra-generational inequality. Next, we present the progress of tertiary education attainment over time, enrollment and completion rates by income quintiles and the participation of indigenous people. This is followed by an examination of labor market outcomes for tertiary education graduates. The following section analyses the key obstacles to reaching tertiary education for students from different backgrounds across the education cycle. Finally, we evaluate the level and role of public funding for tertiary education, including the incidence of public spending on tertiary education and assess the public policy options for addressing these obstacles.

2. RELATED LITERATURE

Research on education inequality has been relatively scarce and, to our knowledge, there has been no analysis done for the Central American countries. Thomas, Wang and Fan (2001), employing techniques from the income inequality literature, pioneered the analysis of inequality in education attainment across the world using the Gini coefficient and demonstrated that inequality (measured in this manner) had fallen in most countries, as average education attainment increased between 1960 and 1990. Their study did not examine inequality at different levels of education. As countries attain higher levels of coverage in primary and secondary education, inequality in tertiary education becomes increasingly more relevant.

Going beyond the documentation of inequality patterns, several studies have focused on the determinants of inequality in education attainment. Inequality in education attainment has been correlated with lack of resources and the existence of market failures in the market for education financing, justifying public intervention, in most cases through the provision of free

[6] These analyses were also undertaken as part of the World Bank's study on equity in tertiary education.

education (Hanushek, 2002). Nonetheless, despite free education, inequalities in education attainment still remain. New research has identified additional sources in inequality in education attainment. For example, Caneiro and Heckman (2002) add to the traditional short-term constraints (financial barriers), long-term constraints (such as family background and prior education attainment), finding an important impact of the later. Following a different approach, the human opportunity index advanced by Barros et al.(2009) provides a synthetic measure of inequity in children's access to basic services. These opportunities to access basic education ultimately influence access to tertiary education, but the index itself does not examine tertiary education itself.

Several recent studies on Latin America have documented the inequality in access and completion of tertiary education for lower income groups. Gonzalez (2007) finds that while more students gain access to colleges in Latin American countries, lower income students face a greater probability of failure and desertion. In a study in Latin America, Mendes Braga (2008) finds that "*the expansion of access to higher education has not led to a proportionally decrease in inequality, since access and completion still depend on socio-economic factors".*

3. CENTRAL AMERICA – EDUCATIONAL PROGRESS AND INEQUALITY

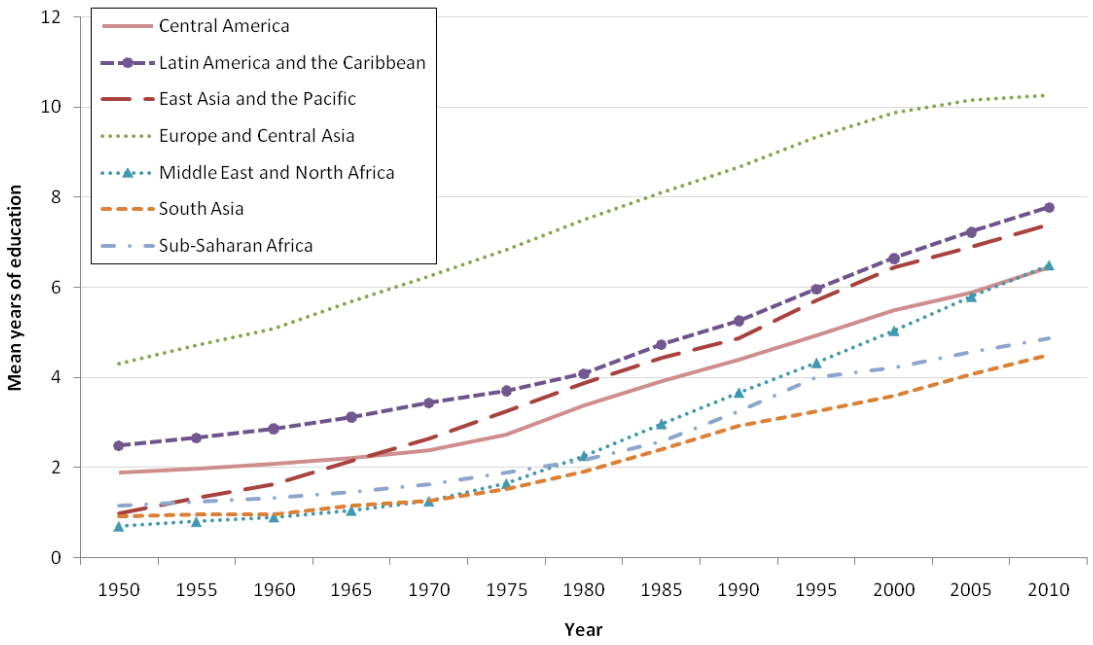
Progress in Education Attainment

The growth in the stock of human capital, as measured by the years of education of the population aged 25 years and over, has increased considerably in Central America. Figure 1 shows that, since 1970, the average years of education in the region increased by approximately 1 year per decade, and is currently at about 6.4 years. This is still below the Latin American average of around 8 and moreover, progress has been limited in comparisons with high performing countries (not shown in graph). For instance, Korea, which in 1960 had only a year's edge over Central America, rapidly increased its average educational attainment consistently over 5 decades, and widened its edge to over 5 years. Brazil, which started out even lower than Central America in 1960, after two decades of stagnation, has accelerated and by 2010, the mean years of education exceeded that of Central America.

In short, as a region, Central America moved to a slightly higher trajectory from 1970 onwards, but has not made a significant shift, and this average itself is the result of sharply differing trends across countries resulting in a widening intra-regional inequality in educational attainment (Figure 2). The stars are Panama and Costa Rica, which have steadily accumulated education, though surprisingly, Costa Rica's progress seems to have slowed down between 2000 and 2010. For both of them, the shift to a higher trajectory seems to have been around 1970. For Guatemala and Honduras, the shift came later, around 1975, but Guatemala in particular shifted back to a slower growth in education attainment from 1980. Although this could be a reflection of the civil war, the key issue is that there has been no change in trajectory even after the Peace Accords of the early 1990s. The other two countries which also suffered from civil wars in the eighties have pursued different paths. For Nicaragua, there has been slow but steady progress, with no major shifts. For El Salvador, on the other hand, the transition to a higher trajectory came in 1990, following the end of the civil war, surpassing both Nicaragua and Honduras in 2000.

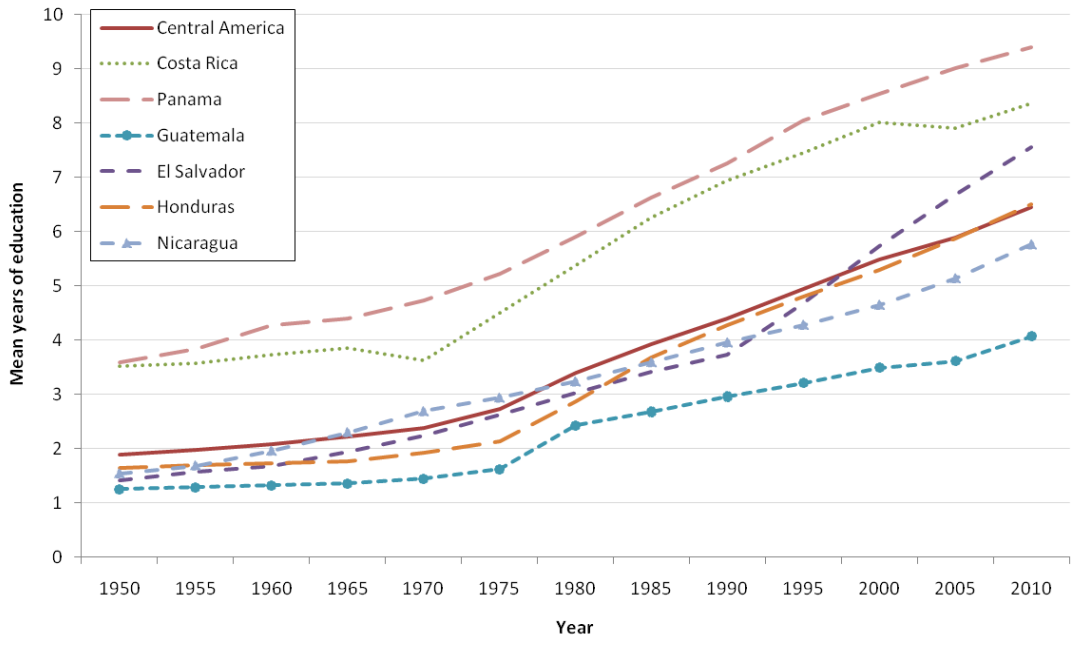
The differential growth in educational attainment of the three Central American countries affected by civil war highlights the difference that sustained policy and programmatic interventions can make. Among the Central American countries, the true outlier is El Salvador which, in the twenty years since the end of the civil war, increased its average years of education by almost as much as Costa Rica has done in forty years. This reflects the strong policy and financial commitment to expanding access to primary and basic education through community managed schools, facilitated by the continuity of policies due to the fact that one party remained in power for 20 years, and by the financial support of international institutions. By contrast, Guatemala, which also concluded peace agreements around the same time as El Salvador, has currently the same education attainment that El Salvador had in 1990, and the gap between the two countries has widened from 1 year to about 3.5 years. Changes in government in Guatemala have led to changes in policies and programs in school education, including primary education, limiting the increase in mean years of schooling. In the case of Nicaragua, although different governments adopted different approaches between 1980 and 2005, and subsequently, there has as yet been no sharp break with historical trends in average attainment. As we will see later, however, from 2005 onwards, Nicaragua has made rapid progress in primary education and this is likely to be reflected in future years.

Figure 1: Mean Years of Education – Central America and Selected Regions (Population age 25 years or more)



Source: Authors calculations based on Barro and Lee (2010).

Figure 2: Mean Years of Education – Central American Countries (Population age 25 years or more)

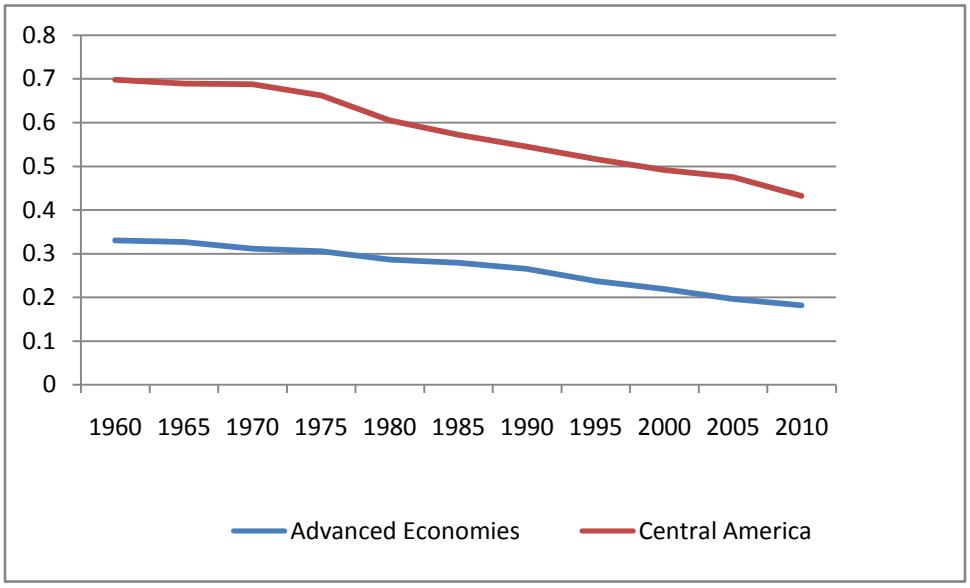


Source: Authors'' calculations based on Barro and Lee (2010).

Education Inequality

The improvement in education attainment has led to a reduction in education inequality, though different measures of inequality present somewhat different perspectives. During the last fifty years, the region has been able to systematically reduce education inequality, as the Gini coefficient of years of education decreased from approximately 0.70 to 0.43. By construction, the Gini coefficient falls when the mean years of education rises. It is striking, however, that the region's Gini coefficient in 2010 was higher than that of the advanced economies in 1960. In 2010, the educational Gini coefficient in advanced economies was 0.18 (Figure 3)[7].

Figure 3: Evolution of Gini Coefficient in Education 1960 – 2010
Central America and Advanced Economies



Data Source: Barro-Lee 2010

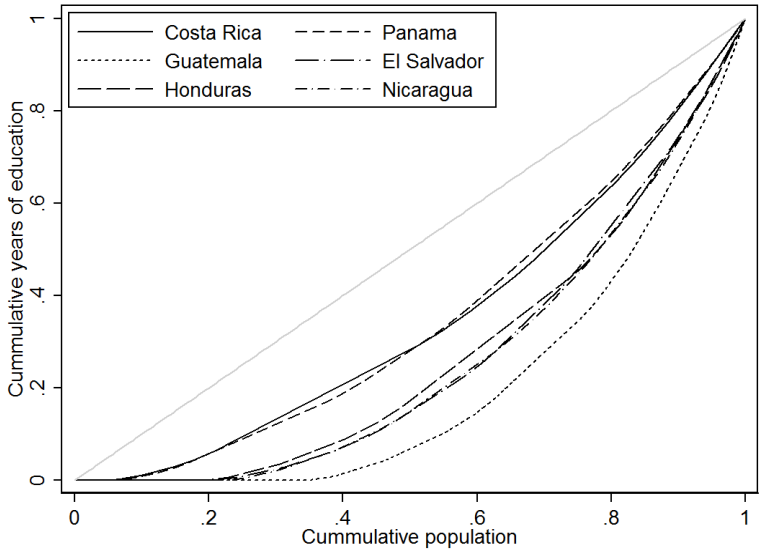
Average figures for the region mask important disparities between countries and different indicators also highlight the varying degrees to which disparities have been reduced. As shown by the education Lorenz curve (Figure 4), Costa Rica and Panama are more equal than El Salvador, Honduras and Nicaragua, which share a similar distribution. Guatemala stands out with its markedly higher degree of inequality. Table 1 shows the evolution of inequality between 2001 and 2009 using different indicators. Using the difference in education attainment between the highest and lowest groups (the 75th and 25th percentiles in terms of years of education), none of the countries in the region registered a decline in this measure of inequality. The standard deviation in years of education, another measure of inequality, declined only in one country, Honduras. Based on these two indicators, therefore, the range in education attainment within

[7] Gini coefficients were approximated using detailed information on levels (years) of education achieved using the Barro-Lee (2010) dataset. "Advanced economies" represents countries classified as such in the dataset.

countries has not reduced. Again, Guatemala shows a marked increase in education inequality according to these measures.

The Gini coefficient for years of education declined in all countries, particularly in Guatemala (7 percentage points), more modestly El Salvador, Honduras and Nicaragua (about 3 percentage points), and least for the two richest countries, Costa Rica and Panama. Compared to the Latin American average[8] of 0.32, the education Gini in these two countries is lower (0.30 in 2009), while the other four countries have higher coefficients ranging from 0.46 to 0.50.

Figure 4: Central America: Lorenz Curves for Years of Education (Age 25 years or more), circa 2009



Source: Authors' calculations based on Costa Rica EHPM 2009, Guatemala ENCOVI 2006, Honduras EPHPM 2009, Nicaragua EMNV 2009, Panama ECH 2009 and, El Salvador EHPM 2009

[8] Calculated as the simple average of individual country Ginis of years of education, circa 2009. Data are from SEDLAC.

Table 1: Evolution in Inequality – Key Indicators, Age 25 years or more										
	Circa 2001					Circa 2009				
	Mean	Median	SD	Dif 75 25	Gini	Mean	Median	SD	Dif 75 25	Gini
Costa Rica	7.3	6	6	4.3	0.32	7.9	6	5	4.3	0.30
Panama	9.1	9	6	5.0	0.31	9.4	9	6	5.0	0.30
Guatemala	3.7	2	6	4.6	0.63	4.4	3	6	4.9	0.58
El Salvador	5.8	5	8	5.2	0.50	6.4	6	9	5.3	0.47
Honduras	5.1	4	5	4.6	0.49	5.4	6	5	4.4	0.46
Nicaragua	5.0	4	8	4.7	0.51	5.9	6	7	5.0	0.48

Note: Dif 75 25 refers to the difference in mean years of education between the 75th and 25th percentile.

Source: Authors calculations based on Costa Rica EHPM 2001 and 2009, Guatemala ENCOVI 2000 and 2006, Honduras EPHPM 2001 and 2009, Nicaragua EMNV 2001 and 2009, Panama ECH 2000 and 2009, El Salvador EHPM 2001 and 2009

Inter and Intra Generation Evolution of Inequality

The average gain in years of education is mainly achieved by marginal gains as new generations accumulate more years of education, which raises two important questions. First, is the education achievement of more educated new generations more equal? And second, what is the current level of intergenerational inequality?

Clearly, new generations are more educated, and currently the education achievement reaches its peak for the age group 25-29 years old in Panama and for the age group 20-24 years old in other countries in the region (Figure 5). Surprisingly, no country in the region has a cohort that has finished on average upper secondary; Panama is the closest one to achieving that level (approximately 11 years of education); in Costa Rica, the highest level achieved is lower secondary education (9 years) whilst in Guatemala the youngest cohort finishes only primary education (approximately 6 years of education). In comparison, in the OECD countries, an average of 81% of 25-34 years olds have achieved upper secondary education[9] and the average number of years of schooling for this cohort is just over 12.5 years.[10]

Analyzing the education attainment across cohorts enables us to compare the speed at which accumulation of human capital took place over time. Of particular interest is the fact that Costa Rica, Panama and Nicaragua had "plateaus" in the accumulation of human capital, the first two during the period 1960 to 1970 (ie for the 40-49 year age group), and Nicaragua in the period 1970 to 80 (30-39 year age group). For El Salvador and Guatemala, successive cohorts have steadily increased their investment in education, albeit starting from a low level.

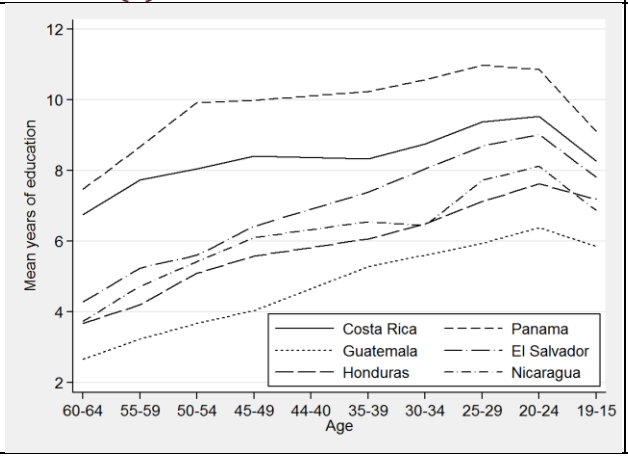
[9] OECD Education at a Glance 2011. Population with at least upper secondary education (2009)- Year of reference is 2002.

[10] OECD Family database. Educational Achievement expressed in average number of years in formal education (2004), Year of reference is 2003. Available online: http://www.oecd.org/document/4/0,3746,en_2649_34819_37836996_1_1_1_1,00.html. Data accessed: June 15, 2012.

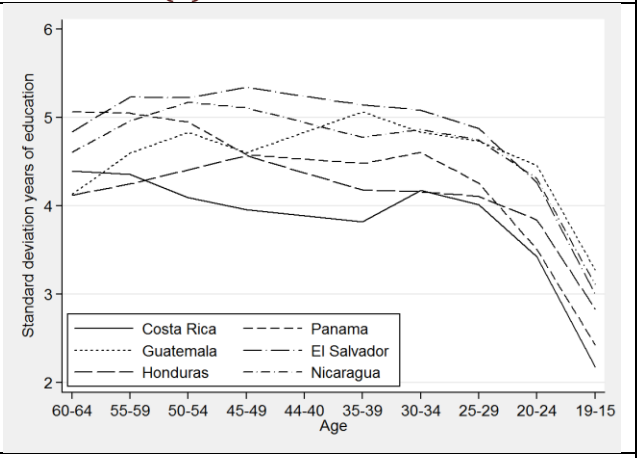
Intergenerational inequality has widened, particularly in the countries that have registered fast growth in schooling of younger cohorts, such as El Salvador. In this country, individuals in their twenties have approximately double the education attainment of individuals in their fifties. By contrast, in Panama, the difference between the same two cohorts is only two years of education, as the generation in their fifties had already achieved 9 years of education. This suggests that the rate of increase in education in the younger generation in Panama is slower than that in other countries.

Figure 5: Education Attainment by Age Group, Circa 2009

(a) Mean Years of Education



(b) Standard Deviation



Source: Authors' calculations based on several household surveys circa 2009

The higher education attainment of new generations has the potential to boost economic growth. But a collateral effect could be that the young, more educated labor force displaces older, less educated generations from the workplace, increasing intergenerational income inequality. Where inter-generational inequality is large, and especially where the average education attainment of the older generation is relatively low, governments may have to institute safety nets or re-training of older workers.

While younger generations are accumulating more education, which is a positive trend, within generation inequality is still a major concern. We use two measures to look at intra-generation inequality: the standard deviation and the mean years of education of the 25th and 75th percentiles of the population. Figure 5 shows that the standard deviation of years of education (within generations) has declined only slightly when we compare generations in their fifties and sixties to the 25-29 year old age group. The apparent decline in the standard deviation for the age groups of 20-24 years and for the 15-19 years old must be interpreted cautiously as a significant share of these younger generations is still at school, and inequality could still increase as students may leave the education system at different pace.

Table Table 2 presents intra-generation inequality using the difference between the 25th and 75th percentile in mean years of education. For example, in Costa Rica, in the 25-29 year old age group, an individual at the 75th percentile would have 7 more years of education than an individual at the 25th percentile. This gap is larger than for the 55-59 year old age group, and the

ratio has increased from 1.8 to 2.2. This evolution indicates a widening intra-generational inequality, given that the mean years of education also rose for the 25th percentile, only at a slower rate than for the 75th percentile. A similar pattern is observed across other Central American countries, suggesting an increase in intra-generation inequality, even as average years of education attainment increase across the board.

It is important to note that the existence and widening of intra-generation inequality will lead to the persistence or widening of inequality, as new generations replace older generations. Further, if intra-generation inequality is correlated with socio-economic status, this is cause for greater concern as it perpetuates socio-economic inequality.

Table 2: Difference 75 percentile-25 percentile by age

Age	Costa Rica	Panama	Guatemala	El Salvador	Honduras	Nicaragua
Difference 75 percentile-25 percentile						
15-19	3	3	4	4	3	4
20-24	6	4	8	6	5	6
25-29	7	6	7	7	6	7
30-34	5	8	8	8	5	7
35-39	5	6	9	9	6	7
40-44	5	6	6	10	6	8
45-49	5	6	6	9	6	7
50-54	5	6	6	8	4	9
55-59	5	6	6	9	6	7
60-64	6	8	3	6	6	6
Ratio 75 percentile/25 percentile						
15-19	15-19	15-19	15-19	15-19	15-19	15-19
20-24	20-24	20-24	20-24	20-24	20-24	20-24
25-29	25-29	25-29	25-29	25-29	25-29	25-29
30-34	30-34	30-34	30-34	30-34	30-34	30-34
35-39	35-39	35-39	35-39	35-39	35-39	35-39
40-44	40-44	40-44	40-44	40-44	40-44	40-44
45-49	45-49	45-49	45-49	45-49	45-49	45-49
50-54	50-54	50-54	50-54	50-54	50-54	50-54
55-59	55-59	55-59	55-59	55-59	55-59	55-59
60-64	60-64	60-64	60-64	60-64	60-64	60-64

Source: Authors' calculations based on several household surveys circa 2009.

4. TERTIARY EDUCATION ATTAINMENT, ENROLMENT AND COMPLETION - EQUITY DIFFERENTIALS

Structure of the Tertiary Education Systems in Central America

The characteristics of tertiary education system greatly influence access and completion and here we briefly present the key characteristics of the Central American systems. Tertiary education comprises a relatively small non-university or para-university sector, offering 2-3 short courses and a university sector offering the traditional long-duration courses, usually 4-5 years for the first degree. One common characteristic shared by the Central American systems is that public universities provide almost free education, funded mainly by public resources. In at least three countries - Costa Rica and Nicaragua and Guatemala – the level of public funding for public universities is constitutionally guaranteed.[11] Further, public universities are highly autonomous, with freedom to set admission policies, offer courses, and provide scholarships and financial aid.

The governance of the public tertiary education system differs according to the number of universities. Costa Rica and Panama each have 5 public universities, which are self-regulated by a Council of Rectors of Public Universities. El Salvador and Guatemala each have a single large public university. In both countries, the constitution prescribes that the sole public university has the authority to manage public higher education. In Honduras, there are several public universities and institutes; however, the university sector as a whole is led by the large public university, the National University of Honduras. Nicaragua has 4 public universities. Unique among the Central American countries, the rector's council (Consejo Nacional de Universidades) in Nicaragua includes both public and private institutions, although it does not infringe on the autonomous decision-making authority of the public universities.

Despite the existence of free public tertiary education, the private sector is large in Central America in terms of number of institutions and enrolment. Many private institutions are very small, have few accredited programs. They receive no public subsidies as a general rule. A few among them are considered of high quality, but there is no quality assurance or accreditation system that provides information. In Costa Rica there are 50 private universities; in Panama, 37, in Guatemala 11 and in Nicaragua 48. For relatively small tertiary education systems, these represent a large number of institutions. With the exception of Nicaragua, the private universities are regulated by the rectors or associations of the private universities, which also have the authority to recognize new private institutions.

Entrance into tertiary education varies by country and even by university. Completion of secondary education (11 or 12 years, depending on the country) is mandatory, although most countries do not have a common school leaving examination. All public universities in the region have an entrance examination. Private universities in El Salvador and Guatemala also set entrance examinations. In some cases, students that do not reach the required academic level have the chance to engage in remedial courses.

[11] The actual mechanisms vary across countries. In Costa Rica, the constitution guarantees a certain proportion of GDP for public education. The public universities and the government negotiate a financial agreement for 5 years. The most recent agreement (2011-2015) sets a target of public spending on tertiary education to reach 1.5 % of GDP by 2015. The Nicaraguan constitution assigns 6 percent of the government revenues to tertiary education.

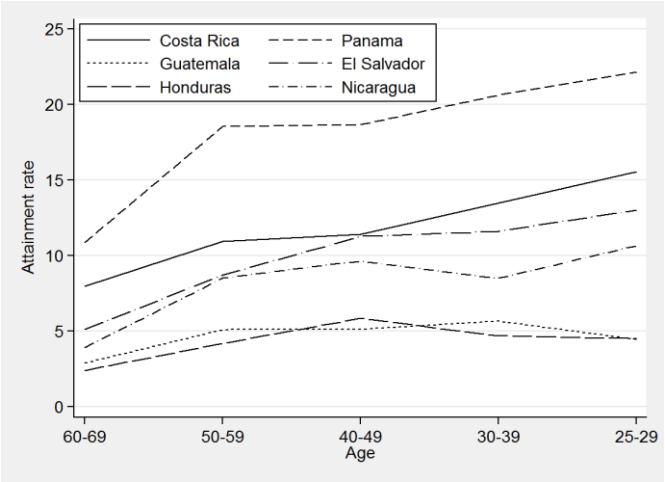
An important feature of the Central American systems is the absence of a governance body for steering the entire tertiary education system. Another important feature is the lack of an organic link between the school education system and the tertiary system.

Attainment of Tertiary Education

We now turn to examining the rate at which the population has accumulated different levels of education, which gives an indication of the changing composition of the stock of human capital as average levels of education attainment have risen. Figure 6 shows the tertiary education attainment of different age cohorts for six countries. For tertiary education, we look at the age groups 50-64 years, 40-49 years, 30-39 years, and 25-29 years.

Figure 6: Education Attainment by Age Group, circa 2009

At least tertiary education

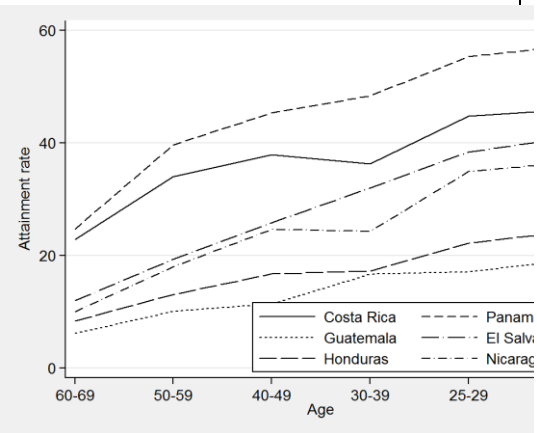


Source: Authors calculations based on several household surveys circa 2009
Note: "At least tertiary education" signifies 15 years of education or more.

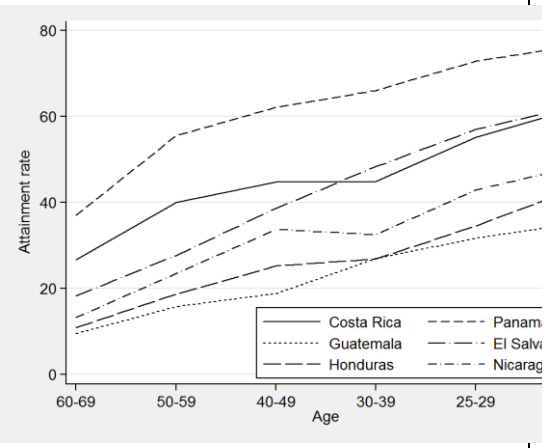
The low rate of accumulation of tertiary education, even in the two middle income countries, is striking. For all countries, the most rapid increase in tertiary attainment occurred about half a century ago (comparing the cohorts aged 60-69 years and 50-59 years). In Panama, just over 20 percent of the youngest eligible cohort (25-29 year olds) has attained at least 15 years of education (which we take as equivalent to first level of tertiary education), but this proportion is only slightly higher than for the 40-49 year age group. In Costa Rica, the proportion is even lower, at 15 percent and, again, has stagnated. Surprisingly, this proportion is similar to that of El Salvador and only slightly higher than that in Nicaragua. In Guatemala and Honduras, only about 5 percent of the youngest cohort attains higher education.

Figure 7: Education Attainment by Age Group, circa 2009

(a) At least upper secondary



(b) At least basic education



Source: Authors' calculations based on several household surveys circa 2009

Note: "At least upper Secondary" equals 12 years of education or more, except for Costa Rica and Nicaragua where it means 11 years of education or more. "At least basic education" equals 9 years of education or more.

As tertiary education attainment is clearly dependent on the proportion of people completing lower levels of education, the patterns of attainment at lower levels of education are important. Here, we review the progress in attainment of different levels, leaving the analysis of transitions to a later section. In the case of upper secondary education (Figure 7 a), we see that the gap between Panama and Costa Rica is large. The proportion of the youngest cohort (20-24 years old) which completed upper secondary education in Costa Rica is just above 40 percent, compared to 58 percent for Panama. In Costa Rica, clearly, increasing the attainment of tertiary education is constrained by the lack of students who complete upper secondary and basic education. Nicaragua has made rapid progress in completion of upper secondary education, catching up with El Salvador. Again, Honduras and Guatemala are the laggards.

The progress in completing basic education (Figure 7 b) is more varied. Panama is the clear leader, but surprisingly, Costa Rica had slowed down and progress has increased only in the last twenty years. In fact, similar proportions of young people complete basic education in El Salvador and Costa Rica. As tertiary education attainment in the former is lower than in Costa Rica, this suggests that there seems to be an additional constraint of gaining entry into tertiary education, even if students have completed upper secondary education. The progress in completing basic education in Nicaragua has been less rapid than for upper secondary education, while both Honduras and Guatemala have made steady, but slow advances. Hence, for the three countries with the lowest levels of tertiary education attainment, Honduras, Nicaragua and Guatemala, clearly, the relatively small proportion of each cohort that completes basic education is a critical constraining factor. Within this group, Nicaragua presents an interesting picture of relatively low basic education attainment, with relatively higher upper secondary and tertiary education attainment. Apparently, the selection process is more stringent at the basic education level, but of those who complete this level, many are able to continue to upper secondary and even tertiary education.

Participation in Tertiary Education by Quintile

Current tertiary enrollment rates provide one indication of future trends in tertiary education attainment. On the whole, there has been no significant increase in the tertiary Gross Enrollment Ratio (GER)[12] (Table 3). Yet there are some surprises. Costa Rica has caught up with and overtaken Panama (where the GER has declined slightly): the GER rose from 39 percent in 2001 to 49 percent in 2009. The true surprise is Nicaragua, which has a relatively high enrolment ratio of about 29 percent, about 3 percentage points higher than in 2001, and above that of El Salvador (26 percent). This is consistent with the relatively higher levels of tertiary education attainment noted earlier for Nicaragua. The enrollment rate in Guatemala and Honduras is about 16 percent, which is similar to the levels in low income countries, and has remained stable over the decade. These rates compare with an average gross enrolment ratio of 76 percent in 2010 for OECD countries. [13]

Table 3: Gross Enrollment Ratio Tertiary Education

Country	Circa 2001	Circa 2009
Costa Rica	39%	49%
Panama	50%	47%
Guatemala	16%	15%
El Salvador	21%	26%
Honduras	16%	17%
Nicaragua	26%	29%

Source: Authors' calculations based on several household surveys circa 2001 and circa 2009

In all countries, participation in tertiary education is extremely unequal across socio-economic groups. The stark gap in tertiary enrollment between the top and bottom income quintiles[14] is reflected in Figure 8. In Costa Rica, the increase in the tertiary GER has been accompanied by a great increase in inequality. While the participation rate of the poorest quintile in Costa Rica is the highest among all countries (about 20 percent), this proportion has hardly changed between 2001 and 2009. On the other hand, the enrollment ratio of the richest quintile has increased and is now 130 percent. A GER of more than 100 percent indicates that for the richest group, a large number of students are beyond the theoretical age group of 18-23 years. In Panama, less than 20 percent of the bottom quintile of the age group is enrolled in tertiary education, while for the top quintile, the enrollment ratio is close to 100 percent. In short, in both countries, the richest sections are not only likely to enter tertiary education, they also tend to stay longer than the theoretical duration of the program. For the four other countries in Central America, there is only a minimal representation of the poorest sections of the population at the tertiary level, and this percentage has hardly changed between 2000 and 2009.

The enrollment rate for the richest quintile has increased in all countries, with the sharpest increase in Costa Rica. Hence, although by one measure Costa Rica is more equitable as it is provides more opportunities to the poor than other Central American countries in as a larger proportion of the poor are enrolled in tertiary education, by another measure, it is the most

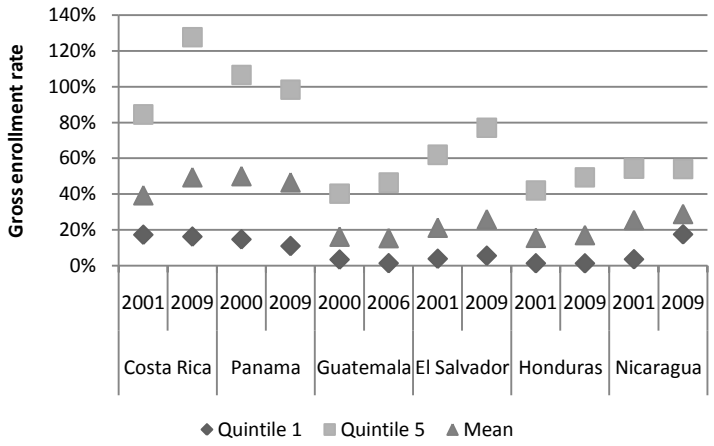
[12] Following standard practice, the tertiary GER is defined as the number of people currently enrolled in tertiary education divided by the population of the 18-23 year old age group.

[13] UNESCO Institute for Statistics. Gross enrolment ratio Total, ISCED 5 and 6. Available online: http://stats.uis.unesco.org/unesco/TableViewer/tableView.aspx. Date accessed: June 15, 2012.

14 Quintiles are estimated using household income per capita.

inequitable, with the largest gap between the richest and the poorest. Costa Rica has made the greatest effort in providing access to the poorest sections; however, the enrollment amongst the richer groups has risen even faster, probably due to the rapid expansion of private higher education.

Figure 8: Tertiary Gross Enrollment Rate by Income Quintiles, circa 2001 and 2009



Source: Authors' calculations based on several household surveys circa 2001 and circa 2009

The relatively high enrollment rates of the richer section of the population are related partly to the growth of the private sector. As Table 4 shows, the private sector accounts for a high share of tertiary education enrollment[15] in many countries: the shares are close to 70 percent in Nicaragua, 60 percent in El Salvador, 55 percent in Costa Rica and 48 percent in Guatemala. The lowest share is in Honduras at about 35 percent of total enrolment[16]. In all countries, the top quintile constitutes the overwhelming share of private tertiary enrollment.

Table 4: Percentage enrolled in private tertiary education, circa 2009

Country	All	Quintile 1	Quintile 5
Costa Rica	54.7%	33.8%	58.9%
Guatemala	47.5%	0.0%	50.0%
El Salvador	63.2%	55.0%	72.4%
Honduras	33.9%	24.1%	36.4%
Nicaragua	70.8%	66.7%	74.1%

Source: Authors calculations based on several household surveys circa 2009

Of the relatively small share of the poor who enroll in tertiary education, a surprisingly large proportion is enrolled in private institutions, even though public universities offer free education. Data for Nicaragua show that about two-thirds of those from the first quintile attend private institutions. In El Salvador about 55 percent of students in tertiary education attend private institutions Amongst students from quintiles 1 to 3, the private enrollment share is about 40 percent, while in the richest quintile, this share rises to 60 percent (not shown in table) In Costa Rica, about 34 percent of students from quintile 1, and 40 percent form quintiles 2 and 3 attend private institutions (not shown in table). The equity objectives of public financing of tertiary education are drawn into question when a

[15] Tertiary education enrollment defined as population attending any education level with 13 years of education of more. For Nicaragua is 12 years of education or more.

[16] Household surveys in Panama do not distinguish between enrollment in public and private tertiary institutions.

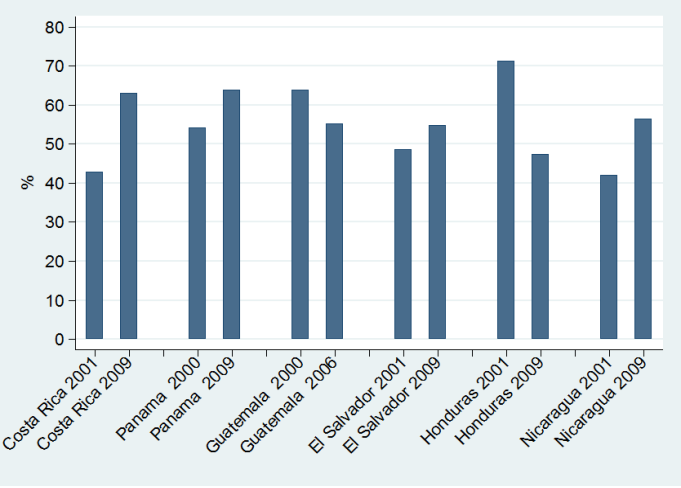
significant section of the poor bear the high costs of private tertiary education while the richest students gain access to free public tertiary education.

Completion of Tertiary Education

Although accessing tertiary education is important, completing it is even more so, given that most labor market benefits will probably accrue on acquiring a credential. How many of those who enroll in tertiary education actually complete it? We define the completion rate as the proportion of individuals aged 31 to 35 years, who reached 4 or more years of tertiary education, given that they started tertiary education.

Across the six countries, on average, more than 50 percent of people who start tertiary education do not complete it, representing an enormous wastage of resources (Figure 9). The average non-completion rate– in OECD countries is estimated to be 30 percent.[17]– Panama presents the best picture with about 65 percent completing their studies, an improvement over the 55 percent registered in 2001. Costa Rica has reached almost the same completion rate as Panama in 2009, a substantial improvement compared to 40 percent in 2001. The completion rate also improved in El Salvador and Nicaragua, but in 2009, it was only just over 50 percent. In the other two countries, Honduras and Guatemala, the completion rate actually declined significantly: from 71 percent to 46 percent in the former, and from 65 percent to 55 percent in the latter (note that for Guatemala the latest data is for 2006). The sharp decline in the completion rate for Honduras could be related to the political crisis that engulfed the country in 2009.

Figure 9: Tertiary Education Completion Rate, circa 2001 and 2009



Source: Authors' calculations based on several household surveys circa 2001 and circa 2009

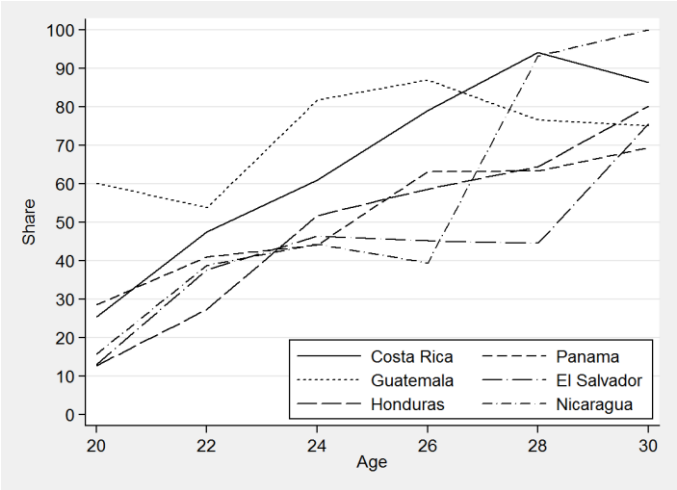
Note: Tertiary completion rate is calculated as the percentage of individuals aged 31-35 who reached 4 or more years of education, given that they started tertiary.

[17] OECD Education at a Glance, Completion rates in Tertiary Education (2005)

One factor that may explain the relatively low levels of completion is that many students are working. At age 20, between 20 to 60 percent of all students enrolled in tertiary education are working in all countries. Between the ages of 25 to 29, the proportion of those working steadily rises to between 40 and 90 percent. Guatemala has the highest proportion of tertiary students who are working, starting with about 60 percent at age 20. But even in Costa Rica, about 30 percent are working between at age 20 and by age 28, about 90 percent are working (Figure 10).

The extent to which these factors affect students from the poorer quintiles in particular cannot be assessed from household survey data, as sample sizes are too small. Nonetheless, it is fair to hypothesize that these students, who would not have parental savings to support them, are more likely to start working, especially if they have the same propensity to start a household as their richer counterparts. These high costs of tertiary education, the low success rates and long duration of study, would also act as a deterrent to students from poor backgrounds to aim for tertiary education, thus contributing to perpetuating inequality in tertiary education attainment.

Figure 10: Share of Tertiary Education Students Working, circa 2009



Source: Authors' calculations based on several household surveys circa 2009

Note: Students aged 20-30 years with 13 to 16 years of education who are currently working

Participation of Indigenous Communities in Tertiary Education

The indigenous population of Central America is of special importance due to their large numbers in some countries, the legacy of deprivation and exclusion from the educational system as well differences in language and culture that have made it difficult for them to access higher levels. The indigenous population is important in Guatemala (40 percent of the population), Nicaragua (8.6 percent) and Honduras (7 percent).[18] Guatemala also has the greatest variety of linguistic groups within the indigenous population. In this section we will focus only in Guatemala and Nicaragua as their surveys identify the indigenous population.

Overall educational attainment is extremely low for the indigenous population in Guatemala, where in 2006 they had on average only 2.5 years of education, compared to 5.6 years for the non-indigenous population. This gap of about 3 years had not narrowed significantly since 2000. In Nicaragua, there was less than 0.1 year difference between the two groups, and it had reduced by almost 0.9 years between 2000 and 2005.

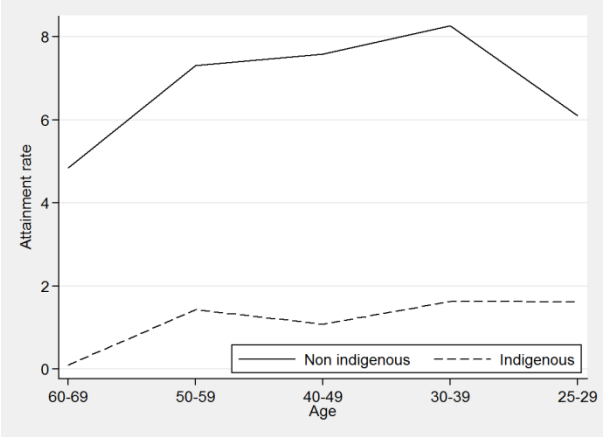
Figure 11 show the large differences between indigenous and non-indigenous people in attainment of tertiary education for different cohorts. In Guatemala even the younger generations of the indigenous population have not improved the education attainment compared with older

[18] In Nicaragua, this comprises mainly the Afro-Caribbean population.

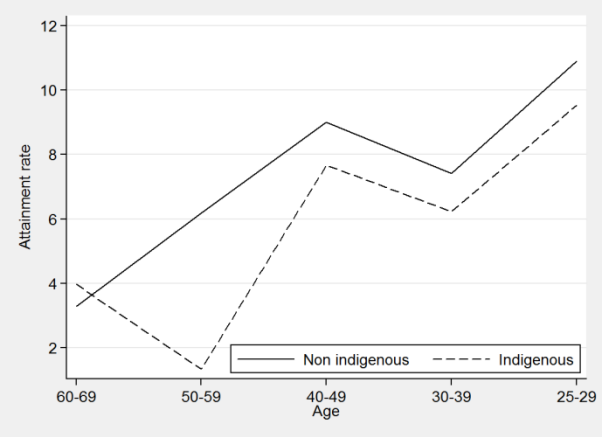
ones and have not decreased the gap with the non-indigenous at all. The situation is quite different in Nicaragua, where the gap in attainment rates is much smaller between indigenous and not indigenous and has also shown an improvement in younger generations for both ethnic groups. Amongst the indigenous population as whole (for all age groups), only 2 percent had attained tertiary education in Guatemala compared to 12 percent in Nicaragua for 2006 and 2005, respectively (not shown in figure).

Figure 11: Indigenous population tertiary education attainment by age group

(a) Guatemala 2006



(b) Nicaragua 2005



Source: Authors' calculations based on Guatemala ENCOVI 2006 and Nicaragua EMNV 2005.

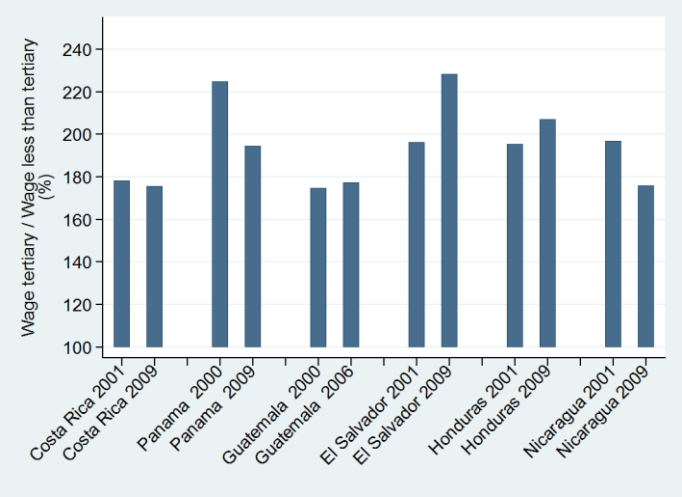
Recent data from the sole public university in Guatemala shows that in 2010, approximately 13 percent of new entrants into the university were of indigenous background; this represented a significant increase from 6 percent in 2008.[19] Qualitative responses from administrators and students indicate that difficulties in passing the entrance examination pose special difficulties for indigenous students. The choice of disciplines, however, does not seem to significantly differ from that of non-indigenous students, with a majority enrolled in arts and humanities, and less than 15 percent enrolled in engineering and science courses. The share of indigenous students in private universities is not available.

Perhaps one reason for the better performance of the Afro-Caribbean community in Nicaragua is their geographical concentration in two autonomous regions, where there are two universities which are specifically for the people of those regions. While these two universities receive public funding, they also obtain additional funding from the community and from donors. The universities cater to the needs of skilled people for the regional administration. However, as the public and private universities do not collect information on the ethnic background of students in Nicaragua, further data are not available.

[19] Information in this paragraph and the next is drawn from two background studies in Spanish. "Equidad: Los pueblos indígenas y el acceso a la educación terciaria" Guatemala, Nicaragua (World Bank, 2010; unpublished reports).

5. LABOR MARKET OUTCOMES FOR TERTIARY EDUCATION GRADUATES

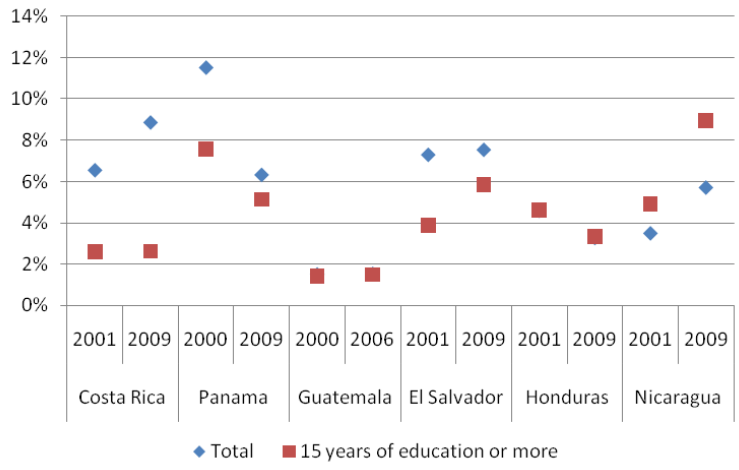
Figure 12: Evolution of tertiary education premium [1]



Source: Authors' calculations based on several household surveys circa 2001 and circa 2009

[1]Percentage difference in income between individuals with 15 or more years of education against individuals with 11-14 years of education. Population aged 25 years or older.

Figure 13: Unemployment rate for tertiary education graduates



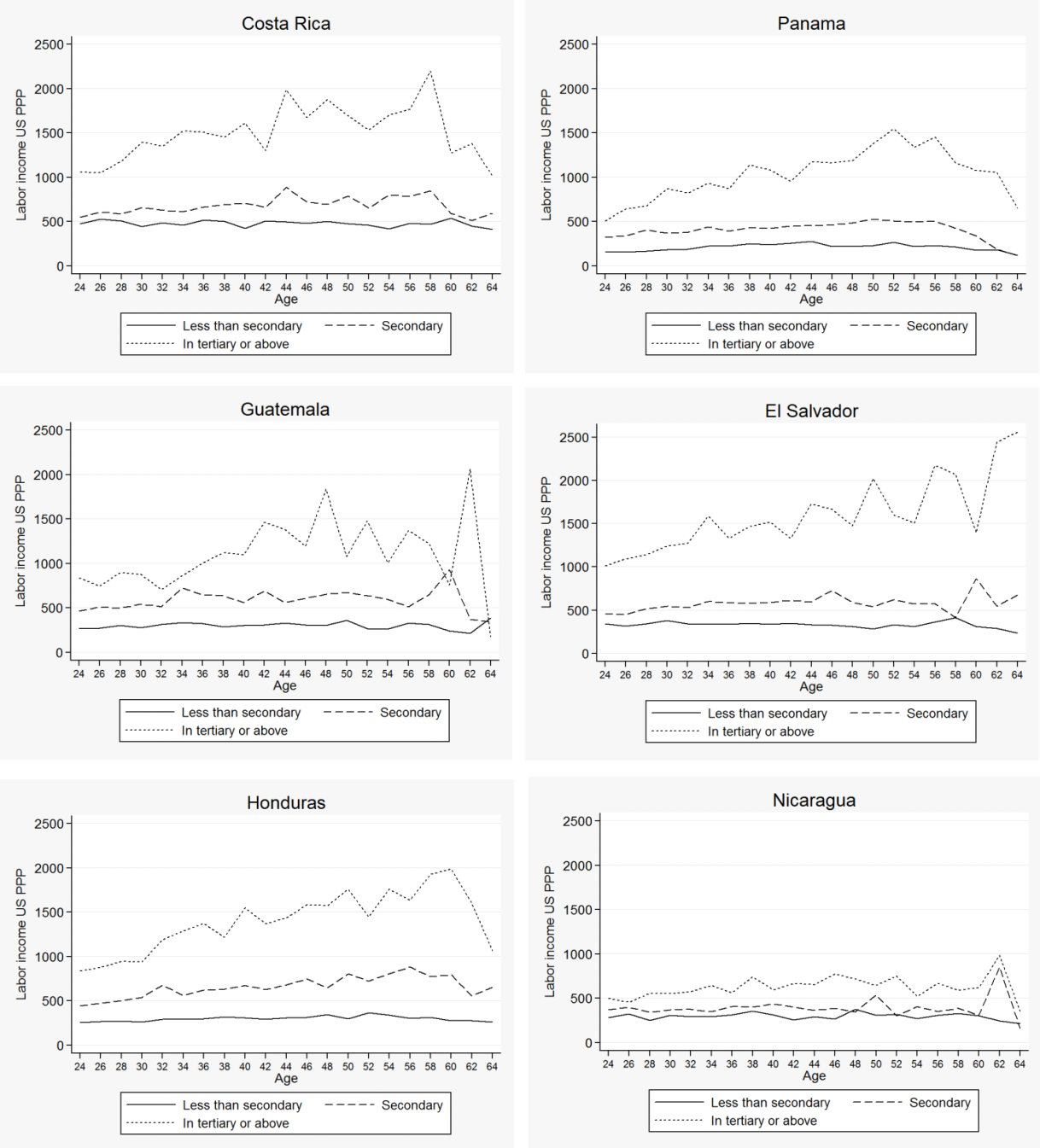
Source: Authors' calculations based on several household surveys circa 2001 and circa 2009

Completing tertiary education confers substantial benefits on graduates. The premium in annual earnings compared to people who have at least secondary education is about 200 percent for all countries, except Nicaragua where it is about 175 percent (Figure 12Figure). In the OECD, the premium in annual earnings for adults who have graduated from tertiary education is 153 percent compared to earnings of those who have just secondary education.[20] There is little variation between 2001 and 2009 (except Nicaragua, where there was a sharp fall) and, indeed, little variation across countries in this premium. The high private returns to tertiary education suggested by these premiums should encourage individuals to invest in tertiary education. A similar signal is conveyed by unemployment rates which are in general lower for those with tertiary education than for the labor force as whole (Figure 13Figure). The exception is, again, Nicaragua in 2009, where the unemployment rate for graduates is significantly higher.

Figure 14 shows, for all six countries, the advantage conferred on average by tertiary education on life-time incomes: workers with secondary and primary education are essentially stuck in low-paying jobs, with little increase in income over their lifetime, while those with tertiary education enjoy not only a higher starting income, but also continued increases over their working life. Again, Nicaragua appears to be an exception, where tertiary education graduates have higher incomes, but these do not seem to increase with experience.

[20] OECD at a Glance 2011. Relative earnings of the population with income from employment (2009 or latest available year).

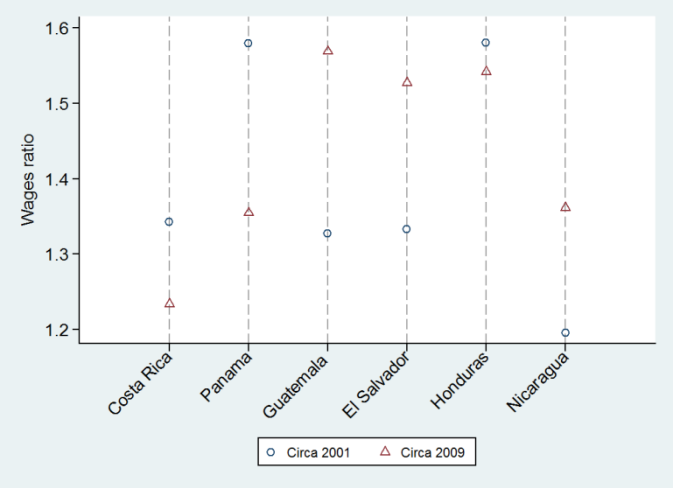
Figure 14: Labor income by age and education. Circa 2009



Source: Authors' calculations based on several household surveys circa 2001 and 2009

Yet, these average returns hide significant differences in the returns to tertiary graduates from different socio-economic backgrounds (Figure 15). Comparing two people with tertiary education, the wage income of a person whose father also had tertiary education is about 60 percent higher than one whose father had a lower level of education, in Honduras, El Salvador and Guatemala. In the latter two countries, this differential had worsened over the decade. The differential in Nicaragua also worsened, from 20 percent to 30 percent. On the other hand, the family background effect narrowed in Costa Rica, from around 35% to 25%, and even more significantly in Panama, from near 60% to 35%.

Figure 15: Wages ratio. Head of household tertiary education effect [1]



Source: Authors' calculations based on several household surveys circa 2001 and circa 2009

[1] Ratio of workers wage (with tertiary education) whose head of household have tertiary education / wage of those whose head of household has less than tertiary education.

These wide differentials in salaries linked to socio-economic background, which persist in some countries, may be related to several factors. First, they could signal significant quality differences in tertiary education – students from poor backgrounds enter poor quality universities or courses. Second, this selection process may itself be the result of inequalities in prior educational experiences, leading to differences in cognitive and non-cognitive achievement. Students from poor backgrounds go to poor quality schools and their homes may not offer the same level of support or stimulation to enable academic success. A third factor may be segmentation in the labor market, with access to "high quality" jobs being determined not only by education level, but also by family or social networks. The existence of such networks in countries with high levels of inequality is common, though the extent to which this continues to be the case in Central American countries is not known. At the same time, the narrowing of the family background effect in the faster growing and richer economies signals some room for optimism: as the number of jobs expands and people access jobs through formal channels rather than through social networks, people will be tend to be hired based on their knowledge and skills, rather than due to their family backgrounds. Whether this is a sustained trend in Costa Rica and Panama remains to be assessed.

6. OBSTACLES TO REACHING TERTIARY EDUCATION

The Importance of Household Factors

Enrollment decisions in education in general, and in tertiary education in particular, are made by individuals assessing expected benefits in terms of extra valued added versus the expect cost (tuition, transportation and related cost, and lost income of work). The decisions are affected by both short-term constraints (financial constraints) and long-term constraints (such as the household's characteristics). The former affect the ability to finance the costs of education. The latter, in particular the education level of the household, which is difficult to change in the short run, affect the student's progression through school as well as the quality of education received. More educated households are more likely to provide family support to continuing with education, as they are more familiar with the lifelong gains associated with education attainment, especially tertiary education. Additionally, children in more educated households may be more likely to develop non-cognitive skills and attitudes, which have a value per se, and at the same time interact positively with the cognitive skills acquired in the education system, therefore increasing the expected payoffs of education. Educated parents also seek out higher quality schools.

If the objective of the education system is to provide equal opportunities to all children to reach tertiary education, the effect of household characteristics in attaining tertiary education should be minimized. In order to provide a measure of equity in access to tertiary education in Central American countries, a variance decomposition analysis is performed, using a probit regression, to assess how much of the probability of starting post-secondary education is explained by household income, the education of the head of the household and location. If underlying family characteristics have little or no explanatory power in the decision to enroll, the R^2 would be close to zero.

Table 5: Explaining Access to Tertiary Education[1] [2]

Country	Circa 2001	Circa 2009
Costa Rica	0.18	0.19
Panama	0.17	0.18
Guatemala	0.35	0.43
El Salvador	0.30	0.23
Honduras	0.26	0.34
Nicaragua	0.28	0.18

Source: Authors' calculations based on several household surveys circa 2001 and circa 2009

[1]Pseudo R^2 from probit regressions. Dependent variable is starting post secondary education, independent variables are income and education of head of household and urban location.

[2]Population group 21 to 25 years old.

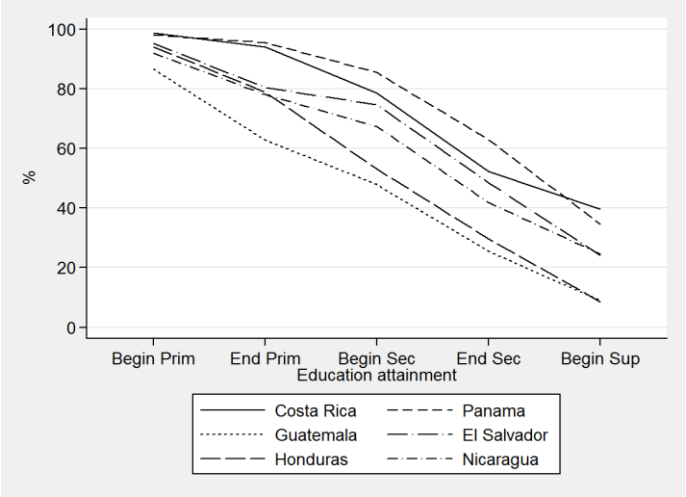
As presented in Table 5, clearly, Central America is still far from reaching equal opportunity for all individuals, although the picture is mixed. Guatemala has the most unequal access to tertiary as household characteristics explain an important part of the probability of reaching tertiary education. Guatemala is followed by Honduras, and in both cases, the inequity in access has increased since 2000. On the other hand, El Salvador and Nicaragua have improved the equity in access to tertiary education. This evolution has allowed Nicaragua to join Costa Rica and Panama, which constitute the countries with the most equitable access to tertiary education in the region.

The Importance of Key Transitions in the Education System

In order for students to reach tertiary education, they have had to start and finish primary school, and start and finish secondary school. There are a number of factors affecting each of these steps: household resources, school availability and the low quality of prior levels of education, among others. The interaction of these factors determines, at the end, the pool of students reaching tertiary educations, and may affect differently each step.

Although in this paper we cannot determine the effect of each of these factors, we analyze the nature of the transitions at each critical threshold by socio-economic and education quintile to assess where the key bottlenecks lie in each country. First, we look at the unconditional probability of these key transitions for the population aged 21-25 years old in 2009, for each of the six countries (Figure 16). Next, we present the unconditional probability of attaining different levels of education for students of this age group, with different levels of household education attainment (as measured by the years of education of the head of the household) (Figure 17). Finally, we analyze the probability of each transition, conditional on achieving the previous threshold, for the poorest and richest income quintiles and highlight changes of more than 5 percent with respect to the situation in the early part of the decade (Table 6) at the end of the paper - green denotes an increase of 5 percent and red a decline of 5 percent over the 2001 level).

Figure 16: Share of population (21-25 years old) attaining key education thresholds



Source: Authors' calculations based on several household surveys circa 2009

Looking first at the unconditional probabilities for 2009 for the 21-15 year age group as a whole, we see that the major challenge in Central America is in students finishing secondary education (Figure 16). In Panama, nearly all students start primary and finish primary and in Costa Rica, although all students start primary, surprisingly, a significant proportion do not complete primary. For three countries, primary completion is a problem, with the most extreme situation being in Guatemala, where nearly 85 percent of the age cohort started primary, but only 60 percent finished primary. Although there is a drop in the proportion between those who end primary and start secondary, the steepest decline occurs within the secondary education cycle. Hence, although during the past decade, the region has registered progress in completion of

primary education and enrollment into secondary education, entrance into tertiary education has remained stable as those gains are lost by the lack of improvement on students completing secondary education.

These transitions are very different for children from households with low educational attainment (Figure 17). The difference between the most educated households (top quintile) and all the others is striking with respect to beginning secondary education, but especially completing secondary education. Even in Costa Rica and Panama, those from educationally disadvantaged households face barriers in completing primary education, but especially in beginning and completing secondary education. In four countries (Guatemala, El Salvador, Honduras and Nicaragua), for children from the least educated households, there is a problem of completing primary education.

Nevertheless, looking at the gap between the highest and lowest quintiles at each threshold, Panama appears to be the "most equitable" as this gap appears to be the smallest. By the same token, Guatemala is the most unequal. However, another aspect of inequality is manifest in Honduras, where the top quintile is clearly significantly ahead in terms of educational attainment, compared to the rest of the population. Nicaragua, on the other hand, presents a picture of disparities that are distributed across each quintile. These differences will need to be taken into account in designing appropriate policies that target specific households for ensuring completion of secondary education.

At the final transition between ending secondary and beginning tertiary education, it is apparent that there is a big gap between the bottom three (and sometimes four quintiles) and the top two (or one) quintiles. Hence, although much needs to be done before the end of the secondary cycle to enable students from disadvantaged backgrounds to access tertiary education, specific policies to support the transition to tertiary education of the few that do complete secondary education from the bottom three or four quintiles, would help to break the cycle that perpetuates inequality. In short, policies at this level may not need to differentiate between students coming from households that belong to the bottom 60 or 80 percent in terms of education attainment.

Finally, looking at the conditional probabilities of each transition by socio-economic quintile, we see that Central American countries have improved certain transition but, with the exception of Nicaragua, the impact has not been strong enough to increase the access to tertiary education (Table 6). We start first by looking at changes over time (highlighted in different colors). Nicaragua has improved the access to tertiary education of the lowest quintile of its population by greater than 5 percent. To do so, Nicaragua improved primary and secondary education entrance and completion, which however, was attenuated by the decrease in the probability of starting tertiary among those that finished secondary.

Table 6: Conditional Transitions for Population (21-25 years old) by Key Education Thresholds and Selected Socio-Economic Quintiles

	Primary			Secondary			Post-Sec.		Memo
	Start	Finish [2]		Start [2]	Finish [2]		Start [2]		Unconditional Post-Secondary
	A	B		C	D		E		F=A*B*C*D*E
Costa Rica									
Lowest	94%	78%		**63%**	39%		51%		9%
Richest	100%	99%		**94%**	**82%**		83%		**63%**
Total	98%	**91%**		**76%**	60%		71%		29%
Panama									
Lowest	93%	87%		**63%**	44%		38%		8%
Richest	100%	99%		97%	87%		72%		61%
Total	98%	96%		**86%**	68%		58%		32%
Guatemala									
Lowest	**69%**	**48%**		**53%**	32%		29%		2%
Richest	98%	89%		86%	61%		50%		23%
Total	86%	69%		69%	47%		39%		7%
El Salvador									
Lowest	86%	59%		78%	34%		33%		5%
Richest	98%	94%		96%	77%		61%		41%
Total	93%	78%		89%	53%		44%		15%
Honduras									
Lowest	**87%**	**63%**		**37%**	**37%**		**36%**		3%
Richest	99%	94%		**83%**	70%		60%		32%
Total	94%	82%		**64%**	58%		48%		14%
Nicaragua									
Lowest	**86%**	**79%**		**84%**	**50%**		49%		**14%**
Richest	97%	**96%**		95%	**77%**		72%		**49%**
Total	**95%**	**89%**		**88%**	**63%**		60%		**28%**

Note: numbers in bold (green) denote an increase of 5 percent over 2001 level, highlighted (red) numbers indicate a decline in 5 percent.

[2] Conditional on achievement of the previous threshold.

Source: Authors' calculations based on several household surveys circa 2001 and circa 2009

In some other countries, gains at some thresholds were neutralized by losses at other thresholds. For example in Costa Rica for the poorest quintile, the probability of starting secondary increased more than 5 percent between 2001 and 2009, but the probability of finishing secondary and starting tertiary decreased by more than 5 percent. As result, the unconditional probability of starting tertiary did not register a major change. Therefore policies to improve access should pay particular attention to retain student once they have made school available to them. This is particularly important as expansions of coverage are likely to bring into the education system poorer students with less exposure to education.

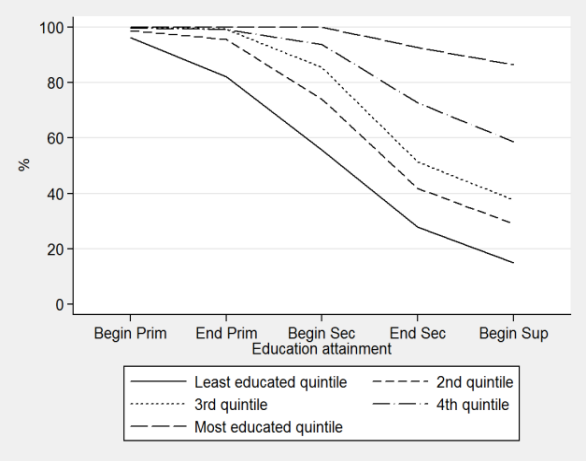
The conditional probabilities reinforce the findings of the earlier analysis but highlight some key thresholds for special attention in order to boost access to tertiary education among the poorest students (lowest quintile in the table). Using a rough rule of thumb, we focus on those probabilities which are about 60 percent or below for the poorest quintiles (implying that more than 40 percent of the students are being "lost" in the previous transition, and hence indicating a heavy loss to the system as a whole). For richer countries, like Costa Rica and Panama, lower probabilities may be more appropriate for priority setting. Nevertheless, using this rule of thumb, in Costa Rica, for example, the priority is clearly in ensuring starting and completion of secondary education. In Panama, the focus needs to be on ensuring the transition to secondary education and completing it, but also on ensuring the transition to higher education for those who complete secondary. In Guatemala, special attention should be given from the primary level onwards at *each* transition, including enabling those few who complete secondary to enter tertiary education. Hence, a system-wide approach is critical for Guatemala to break the cycle of inequality. For El Salvador, completion of primary, completion of secondary and transition to tertiary education are clearly important. In Honduras, enabling the transition to and completing secondary education are the main priorities. For Nicaragua, the first priority would seem to be ensuring completion of secondary education for those who start it and enabling the transition to tertiary education.

Table 7: Key Thresholds for Promoting Greater Equity in Access to Tertiary Education

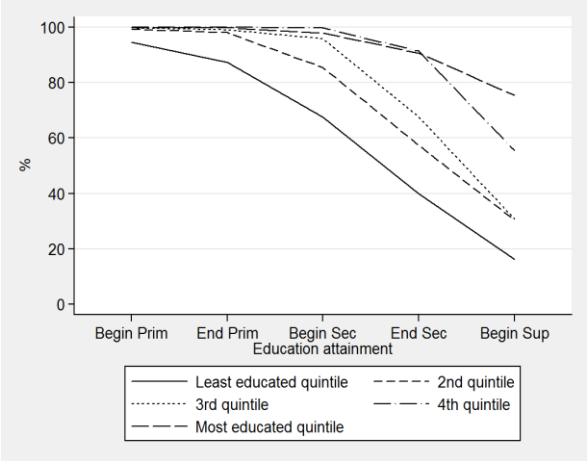
Threshold	Costa Rica	Panama	El Salvador	Guatemala	Honduras	Nicaragua
Start primary				xxx		
Complete primary			xxx	xxx		
Start secondary	xxx	xxx		xxx	xxx	
Complete secondary	xxx	xxx	xxx	xxx	xxx	xxx
Start tertiary		xxx	xxx	xxx		xxx

Figure 17: Share of population (21-25 year olds)

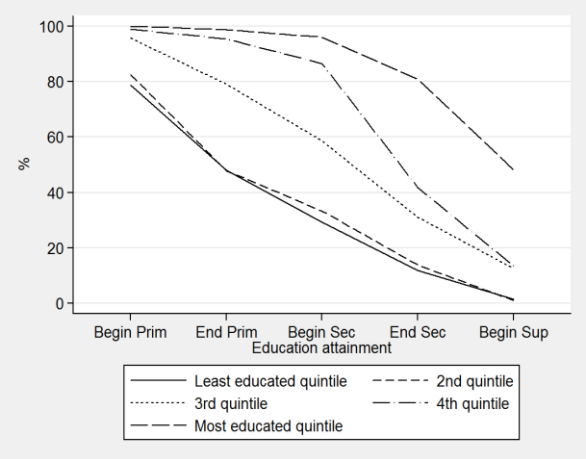
Costa Rica - 2009



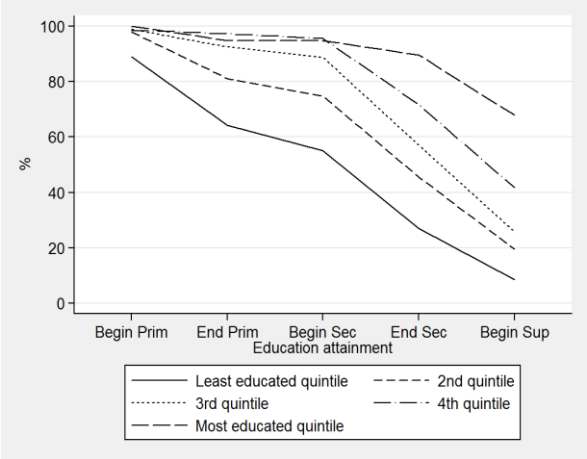
Panama - 2009



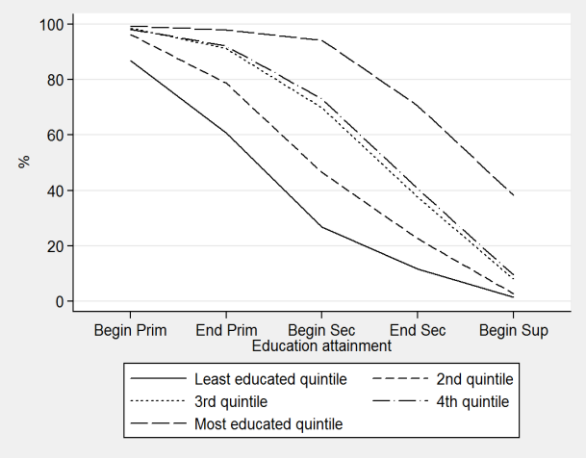
Guatemala - 2009



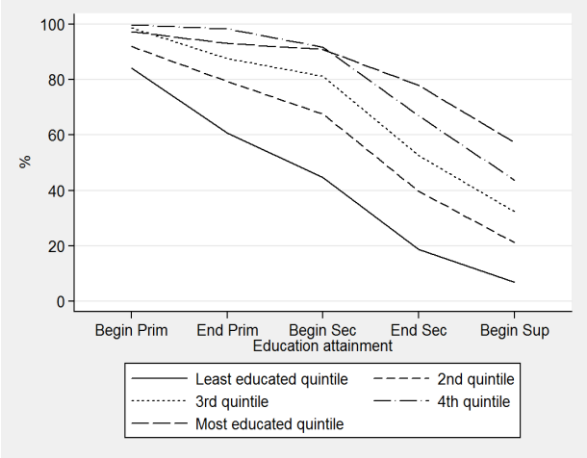
El Salvador - 2009



Honduras - 2009



Nicaragua - 2009



Source: Authors' calculations based on several household surveys circa 2001 and circa 2009

Note: Education quintiles defined by years of education of the head of household

7. PUBLIC POLICIES FOR IMPROVING EQUITY IN TERTIARY EDUCATION

The above analysis highlights the fact that achieving equity in tertiary education is still a distant goal in Central America. Public policy, if it is guided by promoting equity objectives, should aim to address the short-term and long-term constraints that prevent students from poor and disadvantaged backgrounds from reaching and completing tertiary education. In this section, we review three arenas of public policy action: (a) public spending on tertiary education, which can be a powerful tool of redistributive policies, and facilitating entry into tertiary education (b) addressing financial constraints and (c) addressing long-term constraints, including addressing inequalities throughout the educational cycle. We use some of the general pointers for policy development, drawn from the OECD Thematic Review of Tertiary Education, which covered tertiary education policies in 24 countries.[21]

The level of public resources going to tertiary education, as percentage of GDP, is relatively high in four countries, including the two richest and the two poorest: Costa Rica (1.5 percent), Panama (1.2 percent), Nicaragua (over 1 percent) and Honduras (about 1 percent). By contrast, El Salvador and Guatemala have traditionally spent less than 0.4 percent of GDP on public tertiary education (Figure 18).[22] Public expenditure on tertiary education in OECD countries represents on average 1.0 percent of GDP. [23] Among the high spenders in tertiary education, Costa Rica and Honduras devote a large share of public resources to the education sector as a whole – 6 percent in the former and 7 percent in the latter.[24] The other countries of Central America spend between 3 and 4 percent of GDP on public education.[25] These shares are low especially for the middle income countries, and reflect the low levels of public spending and revenue collection (Figure 19).

Ánnual per student expenditure in higher education is low, except in Costa Rica. Even in Panama, per student expenditure is only about US $ 3000 (in 2005 US $ PPP); in El Salvador, Guatemala, Honduras and Nicaragua, it lies between $ 1000 and $ 2000. With these low levels of spending, the quality of tertiary education is likely to be very low. In Costa Rica, on the other hand, per student spending has been rapidly rising since 2005, going from $ 5500 to $ 7500 in just 4 years, but this rise may not indicative of improvements in quality.[26]

[21] The findings of this review are presented in Tertiary Education for the Knowledge Society, published in September 2008. Background reports prepared by 21 countries, Reviews of Tertiary Education in 14 countries and other documents of the review are also available on the OECD website www.oecd.org/edu/tertiary/review.

[22] Data on public spending on education, as noted in the ICEFI (2010) report, are of variable quality. In particular, there are anomalies in the data for Nicaragua, and differences with figures reported in Ministry of Education reports.

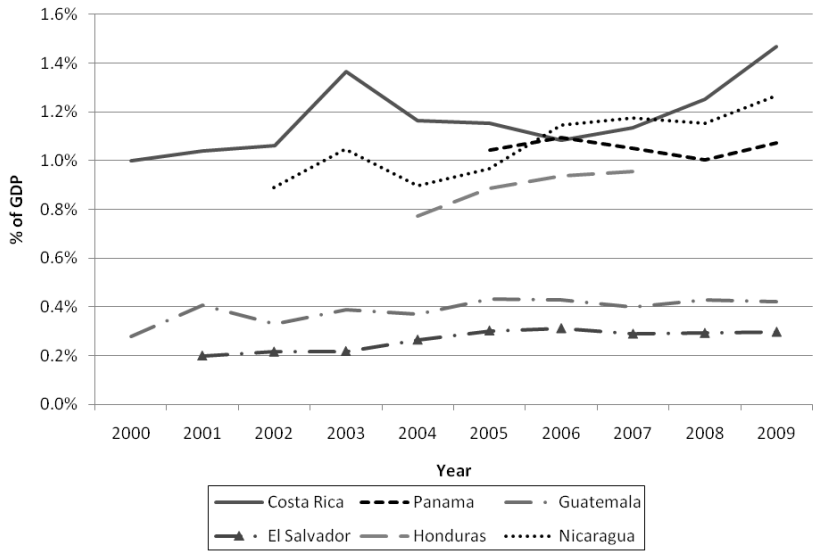
[23] OECD Education at a Glance 2011. Expenditure on educational institutions as a percentage of GDP , by source of fund and level of education (2008)

[24] The high level of public spending on education in Honduras is largely due to the relatively high wages for school teachers.

[25] Author's calculations based on ICEFI, 2010.

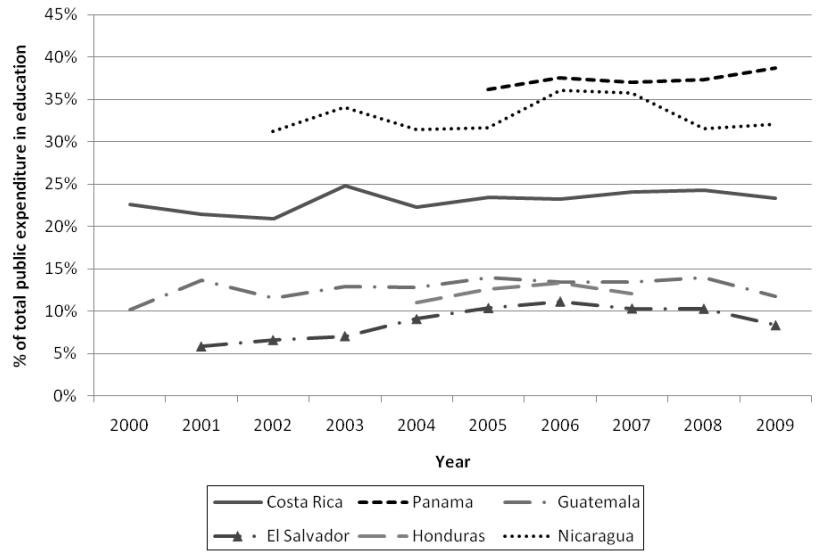
[26] Author's calculations based on ICEFI, 2010. Faculty-student ratios, a possible measure of quality, have not declined in Costa Rican universities and the rise in per student expenditures may be related to a rise in salaries.

Figure 18: Public expenditure in tertiary education as % GDP



Source: Authors' calculations based on ICEFI, 2010.

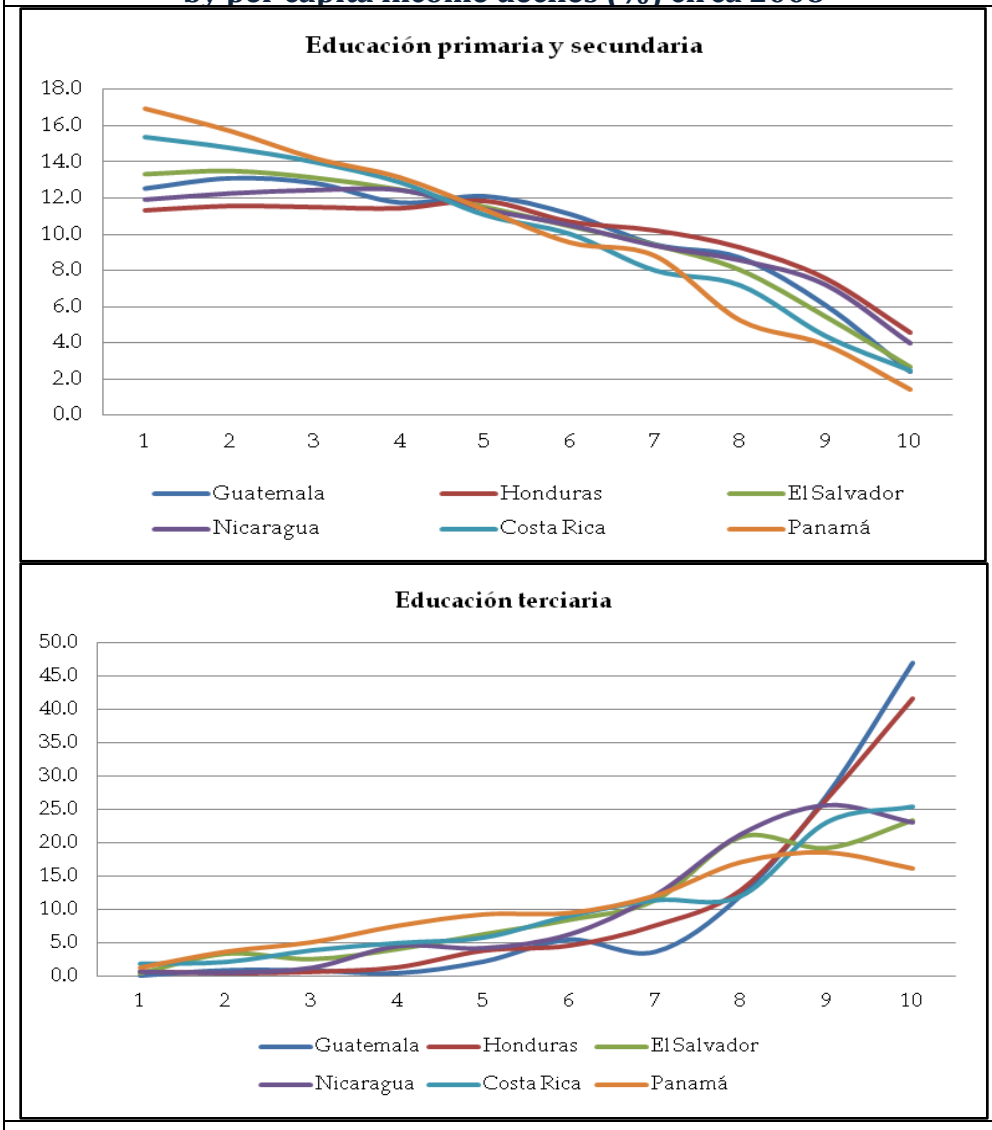
Figure 19: Public expenditure in tertiary education as % of total public expenditure in education



Source: Authors' calculations based on ICEFI, 2010.

Not surprisingly, given the low enrolment ratios of students from poor backgrounds, public spending on tertiary education is regressive in all six countries (Figure 20). The bottom three deciles of the population receive an almost negligible share of public expenditures on this level of education. Even up to the sixth decile, the share of expenditure is less than 10 percent in almost all countries. Costa Rica and Panama show the greatest progressivity. The most regressive patterns of public spending are in Honduras and Guatemala, with the top two deciles capturing almost 65 percent of spending and 50 percent of the bottom deciles getting less than 5 percent of the public spending.

Figure 20: Central America Public Expenditure in Education by per capita income deciles (%) circa 2008



Source: ICEFI, 2010.

Public spending on primary and secondary education is in general progressive, with the poorer sections of the population benefitting proportionately more. The degree of progressivity is greatest in Costa Rica and Panama, while it is smallest in Honduras. Nevertheless, what is important is not just the quantity but also the quality of the spending that goes to the poor. As was clear from the analysis of transition, many poor students simply fail to complete primary education and enter and complete secondary education.

Another way to measure the redistributive effect of the public expenditure on education is the Reynolds and Smolensky (RS) index, which measures the redistributive effect as the reduction in the Gini coefficient due to public expenditure.[27] This is done by assuming that each individual using the education service receives the same amount of benefit which is equal to the mean public expenditure on that service. For example, if the person attends a public primary school then the per student public expenditure on primary education is assigned to him as extra income. This index is presented in Table 8.

These estimations show that while public spending on primary and secondary education has some redistributive capacity in all the countries, expenditure on tertiary education has virtually no effect. For countries with relatively high Gini coefficients - Panama, Guatemala and Honduras - public spending on primary and secondary education is largely equitable: RS indexes are above 2 points implying a large subsidy to families in lower quintiles. In tertiary education, RS indexes are much closer to zero so public spending does not alter income distribution.[28]

Table 8: Redistributive capacity of Public Expenditure in Education (PEE) Circa 2008

	Costa Rica	Panama	Guatemala	El Salvador	Honduras	Nicaragua
	Primary and secondary education					
Gini before PEE	0.510	0.539	0.538	0.475	0.540	0.509
Gini after PEE	0.476	0.515	0.515	0.450	0.515	0.497
Difference -RS index	0.011	0.024	0.023	0.026	0.026	0.011
	Tertiary education					
Gini previous PEE	0.510	0.539	0.538	0.475	0.540	0.509
Gini after PEE	0.514	0.538	0.540	0.476	0.544	0.512
Difference –RS index	-0.003	0.000	-0.002	-0.001	-0.003	-0.003

Source: ICEFI, 2010

[27] Specifically $\pi^{RS} = G_y - G_{y+b}$. Where π^{RS} is the Reynolds Smolesky index, G_y the Gini index based on current income reported (y) and G_{y+b} the Gini index of the current income plus the average expenditure in the public service ($y+b$).

28 The above analysis refers only to the generation currently studying and considers only short term benefits (the actual public expenditure). If those attending and/or completing the tertiary level of education generate further benefits to those in lower quintiles, such as employment generation, larger tax payments or improvements in the education system, long term income inequality could be reduced.

Table 9 provides an assessment of where Central American countries stand with respect to policies that may facilitate entry into tertiary education, based on the OECD framework for reviewing public policies towards equity in tertiary education. Nicaragua's promotion of universities for the Afro-Caribbean population stands out as distinct amongst the Central American countries and may account for the greater equality in access. However, these two universities receive relatively little of public funding. Although information is not readily available for many of the other policies (or they do not exist), they provide the basis for further policy development.

In the short run, a concentrated effort is required to help disadvantaged students who complete secondary to enroll in tertiary, combining financial help with programs to help them prepare for entrance examinations, counseling and social services, along with remedial and extra classes to support them in the first few years of tertiary education, when drop-out rates are high.

Overcoming Financial Constraints

The countries that have higher access in tertiary education, with greater participation of the poor, operate relatively large scholarship programs. Public universities in Costa Rica operate a large number of scholarships at the tertiary level, and this contributes to the relatively large share of poor students who are able to participate; their effectiveness is reduced simply because the pool of poor secondary education completers is so small. Panama has a well-managed system of scholarships run by Scholarships for tertiary education for disadvantaged students run by the *Instituto para la Formación y Aprovechamiento de los Recursos Humanos* (IFARHU), which receives its revenues from a payroll tax. IFARHU also grants scholarships funded by third parties, mainly the Ministry of Economy and Finance for higher education abroad Similarly, Nicaraguan public universities also offer scholarships, again reflected in the improvement in the transition from secondary to university education.

There seems to be scope for encouraging the use of financial incentives to facilitate the transition from upper secondary to tertiary education. In Panama, where the proportions of students completing upper secondary education are the highest, further targeted programs for encouraging entry into tertiary education would seem appropriate. In Guatemala, where the participation of indigenous students in tertiary education is very low, scholarships are offered by aid agencies and reach a few hundred students. Even though the number of indigenous students who reach upper secondary education is very low, it would seem appropriate to provide extra help to most of these students to enable them to enter tertiary education, in the interest of breaking the deep structural inequalities in the society. Overall, as seen earlier, many students have to work while they are studying, and this may have an impact both on quality and on efficiency and well-designed programs to enable students from low socio-economic background to complete their studies on time without having to take a job should be considered.

Finally, a major policy issue is the large proportion of poor students who go to private institutions and who receive no support, while the main beneficiary of public subsidies for tertiary education are the richer students. Central American countries currently lack policies and instruments to provide funding for such students, as public funding is provided to the public universities and there are no over-arching governance mechanisms that steer that entire higher education system.

Overcoming Long-term Constraints

Addressing long term constraints, especially disadvantages imposed by the education background of household and, in the case of indigenous people, additional barriers of exclusion and language, needs a more multi-pronged approach beyond the use of financial incentives alone. As indicated in the section on school transitions, inequitable access to tertiary education starts with high levels of drop out for poor students during the secondary stage in most countries, and at the primary stage for some countries. This in turn is related to cognitive and non-cognitive attributes that are developed early in the educational process, both within the family and at school. Table 10 assesses how well the Central American countries fare in terms of policies to address these constraints.

An important policy issue is whether public authorities track equity indicators in education. From the available information, Costa Rica performs the best in this regard. At the university level, information on student background is collected and equity indicators are tracked, which provide the basis for providing scholarships. This is partly related to the fact that the Costa Rican public universities are governed by a Council of Rectors, which undertakes the planning and development of the system. Other countries lack even the minimum requirements of such a system. This should be an important area of focus.

A positive trend is that addressing inequality in access in earlier levels of education is increasingly receiving greater attention in Central American countries. Again, Costa Rica has been a leader with a long-standing tradition of scholarships targeted to the poor. In addition, the Rica has recently introduced a large conditional cash transfer (CCT) program for secondary students (*Avancemos*) to encourage students of the poorest quintiles to complete secondary education. An innovative feature of this program is that the size of the transfer increases with the grade level to offset the rising opportunity cost. Panama has a well-managed system of scholarships for primary and secondary students, which has been targeted to disadvantaged students since 2006. There is also a CCT program which promotes primary school attendance, targeting the rural and indigenous population. In 2010, Panama also introduced a universal scholarship for secondary students (conditional on obtaining a minimum grade).

Guatemala and Honduras have recently launched large CCT programs, mainly with a focus on primary education, which should increase the population reaching secondary education. While El Salvador and Nicaragua do not operate CCT programs, they have undertaken far reaching reforms to improve access and upgrade quality of lower secondary education.

Table 9 also lists a number of policies that can help the transition from secondary school to tertiary education. Information is not readily available on a number of countries, but clearly Costa Rica stands out as the country with the best set of policies. In particular, Central American countries can take action on some "quick wins", such as providing counseling and advisory services in secondary schools on careers and tertiary education options. Central American countries do not have early tracking of students into vocational/ technical education, a positive feature, which can be strengthened by lowering the barriers of mobility between the "academic" and "technical" tracks, and facilitating entry of students enrolled in technical tracks into tertiary education.

However, there are some policies that will require greater and sustained effort. Among them, the most important is raising the quality and relevance of the secondary and primary education. Costa Rica is a front runner among Latin American countries, while all other countries, including Panama, fare poorly on international achievement tests. Many countries do not have a common secondary school leaving examination that indicates whether a student has the competencies required for pursuing tertiary education. Apart from improving the quality of the academic programs, another approach is to provide additional educational support, enrichment classes and extra-curricular activities to compensate for the disadvantages of the home background, as exemplified by El Salvador's proposed Full time School model for lower secondary education. At the primary level, the effort must be to improve quality for all students, something which is possible to do, as the example of Costa Rica shows. A holistic approach, involving targeted policy interventions at several levels and sustained over a period of time, can bring about the break in the structural inequality in tertiary education that has been the hallmark of Central America.

Table 9: Policies to Facilitate Entry into Tertiary Education

TAKE CULTURAL DIVERSITY INTO ACCOUNT

	Costa Rica	Panama	El Salvador	Guatemala	Honduras	Nicaragua
Adapt tertiary programmes to cater for both school leavers and adults seeking to upgrade their qualifications	No information	No information	No information	No information	No information	No information
Encourage the development of TEIs with diverse cultural foundations (*e.g.* indigenous TEIs)	Does not exist	Does not exist	Does not exist	Does not exist	Does not exist	Two regional universities for regions with high Afro-Caribbean population, but limited state funding
Enhance the partnerships between cultural minorities (and the TEIs run by them) and mainstream TEIs	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	No information
Establish learning centres with remote links to TEIs and regional campuses of urban-based TEIs	No information	No information	No information	University of San Carlos has centres in indigenous areas	No information	No information

OPEN UP ENTRANCE PROCEDURES TO TERTIARY EDUCATION

	Costa Rica	Panama	El Salvador	Guatemala	Honduras	Nicaragua
Give TEIs more autonomy over student admissions and encourage them to base admissions on a wide variety of entrance criteria	Universities have autonomy to decide on student admissions. Entrance exams are based solely on academic merit	Universities have autonomy to decide on student admissions. Entrance exams are based solely on academic merit	Universities have autonomy to decide on student admissions. Entrance exams are based solely on academic merit	Universities have autonomy to decide on student admissions. Entrance exams are based solely on academic merit	Universities have autonomy to decide on student admissions. Entrance exams are based solely on academic merit	Universities have autonomy to decide on student admissions. Entrance exams are based solely on academic merit
Encourage targeted recruitment programmes or the provision of quotas for members of specific under-represented groups	No information	Does not exist	Does not exist	Does not exist	Does not exist	Does not exist
Improve information for students about programmes and transfer possibilities	No information					
Develop a system of course credits valid across the tertiary education system	Does not exist					

PROVIDE EXTRA SUPPORT FOR STUDENTS FROM DISADVANTAGED BACKGROUNDS

	Costa Rica	Panama	El Salvador	Guatemala	Honduras	Nicaragua
Consider special incentives for TEIs to attract less represented groups and to develop initiatives to support students from these groups in their studies progression	Does not exist					
Extend tutoring services for students with academic difficulties	No information					

Table 10: Policies to Address Long Term Constraints

TACKLE EQUITY ISSUES

	Costa Rica	Panama	El Salvador	Guatemala	Honduras	Nicaragua
Assess where equity problems arise through systematic collection of data	Data collection and analysis by CONARE (Council of Rectors of public universities) and individual universities.	No information	Does not exist	Does not exist	Does not exist	Does not exist
Use an empirical performance indicator system to monitor access, participation, retention and success of groups identified as disadvantaged for the equity framework	No systematic information system for system as whole, though student background data are tracked by individual universities	Does not exist	Does not exist	Does not exist	Does not exist	Does not exist
Address inequality of access to tertiary education by intervening at early educational levels	**CCT program i**n **secondary education (***Avancemos)* introduced in 2006 with large coverage, to improve enrollment, attendance and completion rates of secondary education. Program incorporates innovative features, including differential transfers in higher grades. In 2009, over 125,000 students covered (about 40% of enrollment). **Scholarships for children aged 5-19 *(Fondo nacional de becas*)**, since 1997 – covers tuition, transport etc. About 70,000 covered **Nutrition and Early Childhood Programs –** covers about 125,000	**A universal scholarship program**(*Beca Universal)* launched in 2010 (**in all primary and secondary public schools, and private schools with an** annual low fee), conditional on achieving a minimum specified academic achievement. Coverage is expected to reach 800,000 pupils in 2012. **Large scholarship program for primary, secondary and higher education students**, financed mainly by Seguro Educativo, a payroll tax , and administered by Instituto para la Formación y Aprovechamiento de los Recursos Humanos (IFARHU). Starting in 2006, these scholarships were increasingly targeted to disadvantaged students. About 64,000 beneficiaries in 2008. **CCT program for primary education** for poorest households in rural and indigenous areas, introduced in 2005. **ECD and pre-school education programs have large coverage**. Recently rapid expansion in indigenous areas through informal ECD programs	**Inclusive Full Time School Mode**l in order to raise **secondary school completion** to be launched in 2013, which extends the school day and provides an enriched curriculum. **Pre-school education being expanded**	**CCT Program (***Mi Familia Progresa***) for promoting primary education** attendance, launched in 2008. Rapid expansion by 2010 to cover 600,000 households (1.5 million beneficiaries), but may be scaled back in 2012. Scholarship program at **secondary level** (*Becas Solidarias*) has limited coverage. Very limited coverage of ECD programs.	CCT Program (*Bono 10000)* launched in 2010 for promoting **primary education** attendance. Large coverage, currently 200,000 households expected to cover 600,000 in a few years. The Ministry of Education offers scholarships for secondary education, which in general favors students in moderate poverty (third income quintile) since the poorest children do not reach this educational level. Very limited coverage of ECD programs, despite high levels of growth retardation and stunting.	Since 2007, strong focus on **primary completion** with expansion of schools, provision of supplies. In 2008, an umbrella program, called AMOR, aims to provide interventions in early childhood education, nutrition and health to the most vulnerable children. From 2012, emphasis on promoting **pre-school education** and expanding coverage of **lower secondary.**

SMOOTH TRANSITIONS FROM SCHOOL TO TERTIARY EDUCATION

	Costa Rica	Panama	El Salvador	Guatemala	Honduras	Nicaragua
Set up a network of career guidance services at the school level with sufficient and well-trained staff	Academic and career guidance provided from lower secondary stage	No information	No information	No information	No information	No information
Promote exchanges between schools and tertiary education institutions (TEIs) whereby school children are mentored by tertiary students	No information	No information	No information	No information	No information	No information
Expand tracks from vocational upper secondary education to tertiary education	Entry allowed into tertiary education from vocational/ technical tracks	No information	Limited entry	Limited entry	Limited entry	Limited entry

Ensure that school children are not tracked away from tertiary education paths at an early age	Technical/ vocational begins in grade 10	Technical/ vocational begins in grade 10	Technical/ vocational begins in grade 10	Technical/ vocational begins in grade 10	Technical/ vocational begins in	Technical/ vocational begins in grade 10
Lower barriers between the vocational and academic tracks within secondary school	Some mobility	Some mobility	High barriers	High barriers	High barriers	High barriers
Ensure that the number and type of study places in tertiary education accommodate diverse demand	No information	No information	No information	No information	No information	No information
Ensure that secondary curricula and assessment provide a good basis for successful tertiary study	PISA (2009) scores indicate that Costa Rica is highest performer in LAC, but below OECD countries. High stakes public secondary school leaving examination, which many students fail.	Panama scored approximately 150 points below the OECD average on PISA. No common secondary school leaving examination	Secondary education curriculum and pedagogic methods being modernized as part of Full Time School Model Since 2005, all secondary school students have to pass an exam(Prueba de Aptitudes y Aprendizaje para Egresados de Educación Media - PAES). Until 2004, all secondary students had to take it to graduate but there were no minimum passing grades. Scores are also used as admission criteria for some universities	Currently, no initiatives on secondary education A common secondary school leaving examination exists, but there are no minimum passing grades.	Currently, no initiatives on secondary education No common secondary school leaving examination	From 2013, teacher improvement and new textbooks for lower secondary education No common secondary school leaving examination

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