

# School Dropout in Central America

## An Overview of Trends, Causes, Consequences, and Promising Interventions

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## Abstract

School dropout is a growing concern in Central America, and in Latin America as a whole, because of its consequences for economic productivity, the inclusiveness of growth, social cohesion, and increasing youth risks. This paper utilizes more than two decades of household survey data to construct a systematic overview of school dropout at the primary and secondary levels in Central America, including recent trends, causes and consequences, and evidence on what works to reduce dropout. Within each country, poverty, rurality, and indigenous group membership are the strongest correlates of dropout, reflecting

several underlying factors that affect the marginal benefits and costs of staying in school. Global and regional evidence increasingly points to common policy priorities for reducing dropout across Central America, including addressing remaining gaps in access at the pre-primary and secondary levels, improving the quality of education at all levels, and strengthening the coverage, targeting, and coherence of existing programs aimed at improving education outcomes. However, additional rigorous evaluations, including cost data, are needed to identify the most effective specific approaches in each country.

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# **School Dropout in Central America: An Overview of Trends, Causes, Consequences, and Promising Interventions**

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## Introduction

Low education quality on average, inequalities in both access and quality within countries, and risks that affect education for specific subgroups are widely recognized challenges in Central American education systems, and high dropout rates are a reflection of these challenges.<sup>2</sup> Dropout is a growing cause of concern in Central America, and in Latin America as a whole, due to its multiple consequences for economic productivity, the inclusiveness of growth, social cohesion, and increasing youth risks. In particular, as countries look to accelerate their growth, the inadequate skills of their workforces present a key constraint (World Bank 2014, 2015a and 2015b). Compared to countries at similar levels of development, countries in Central America are behind in terms of the educational attainment of their populations. As shown in Figure 1, fewer young adults in Costa Rica have completed secondary compared to structural peers, other upper-middle income countries, and the OECD, while Guatemala, Honduras, and Nicaragua all lag behind the lower-middle income country average.

This paper presents an analysis of school dropout, focusing on secondary dropout, in Central America, with the goal of providing a systematic overview of the dropout phenomenon, including recent trends, potential causes and consequences, and what works to reduce dropout. To do this, we build on substantial recent research in Latin America on dropout and youth idleness (neither attending school nor working), in particular the conceptual framework presented in Behrman, de Hoyos, and Székely (2015), the cross-country cohort analysis by Bentaouet-Kattan and Székely (2015), and the narrative review by Almeida, Fitzsimons, and Rogers (2015).<sup>3</sup>

The paper is divided into five sections. Section 1 presents a simple conceptual framework of the factors involved in dropout as well as the data for the empirical analysis, and discusses the patterns of dropout over the past several decades, comparisons with the rest of Latin America, and differences across subgroups within each country. Section 2 documents the economic consequences of dropping out, while Section 3 turns to the drivers of dropout, presenting empirical correlations and the available causal evidence. Section 4 considers the global evidence on what works to reduce dropout, and how this evidence informs the Central American experience. Section 5 concludes.

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<sup>2</sup> Highlighted for instance by Bruns and Luque (2015) and Cabrol and Székely (2013), among others.

<sup>3</sup> A related study by Bassi, et.al. (2015) focuses on measuring secondary school dropout and graduation rates for the countries in the region, by using snapshots of household surveys up to the late 2000s. These authors conclude that dropout has declined, and point to the increase of school services and in the returns to secondary education as main causes for the reduction. Other related recent studies that analyze school dropout in the region, although not as the central focus of their investigation are Cárdenas, et.al. (2015) and Székely and Karver (2015), who look at the consequences of leaving school prematurely, and particularly the relation between dropout and the percentage of youth that are neither in school nor working. Another useful reference is the study by UNICEF (2013), which focuses on school coverage and attendance rates at the preschool and primary levels, for Central America specifically. The study clearly illustrates that for some of the countries in the sub-region, primary school participation continues to be a relevant challenge. Previous studies on the education sector of Latin America that include secondary dropout as part of their analysis (although not as the main focus) are World Bank (2005), and UNESCO (2008).

# 1. Stylized facts on school dropout in Central America

## 1.1 A simple conceptual framework for understanding the dynamics of dropout

Global evidence suggests that there are multiple, interacting factors that affect learning, progression through grades, and ultimate dropout. Diagram 1 presents a simple framework to organize these factors, built on the lifecycle approach to human capital accumulation. The framework highlights the foundational theory of human capital, in which individuals decide whether to persist or drop out of school by weighing the marginal expected costs of continuing investment in education against the marginal expected benefits of acquiring more years of schooling (Becker 1967; Behrman, de Hoyos, and Szekely 2015). These costs and benefits are determined by proximate indicators, which in turn are shaped by underlying individual-household, community, and macro factors. Early in life, this decision is often taken by parents or other family members, while later on, decision-making shifts more to the individual, particularly in families where youth have little parental oversight or support.

In terms of marginal benefits, learning deficits often begin early and grow over time, and coupled with archaic curricula, contribute to the lack of interest in studying cited by so many out-of-school youth (discussed in Section 3). With relatively weak skill foundations in the early grades, children increasingly struggle as material becomes more complex in the higher grades, reducing their perceived benefit to staying in school. In terms of costs, direct costs are generated by distance to school, lack of seats, and school fees, all of which are issues particularly at the secondary level across Central America. Families in need of unpaid labor (to care for younger siblings, do agricultural work, or other activities) face high opportunity costs to school and may pull children out of school on a regular basis, making it difficult for them to keep up and progress, eventually leading to permanent dropout. Youth may also see opportunities in the labor market that are immediately attainable, and decide that earnings in the short term are preferable to continued investment in schooling. For example, growth in demand for unskilled labor in agriculture, factories, or other areas could pull young people out of school earlier than they would otherwise leave.

Pregnancy, crime and violence, and other risk indicators can affect both the direct costs and the opportunity costs of staying in school. Teenage pregnancy rates are particularly high in Central America, and teen mothers may find it impossible to continue in school due to lack of needed supports such as daycare, while other young women may decide that it is preferable to leave school and start a family early. Similarly, crime and violence are major problems in several Central American countries, with homicide rates for Honduras ranking the highest in the world and those for Guatemala and El Salvador ranking in the top five. Violence in and around a school may make it untenable for youth to continue attending, while illicit activity may offer some youth an attractive alternative to staying in school.

The relative importance of different indicators also shifts over the lifecycle. For example, as children age into early adolescence, risk factors present in the community are more likely to apply to them (Cunningham et al 2008). Recruitment into gangs, initiation of risky sexual behavior, and other risks grow, which can make school itself a more dangerous or unwelcoming place or provide temporarily appealing alternatives to remaining in school. At the same time, the prevalence of

unskilled jobs in the labor market may increase the opportunity cost of continuing in school as youth age.

Underlying factors at the individual-household, community, and macro-aggregate levels help determine the proximate indicators of marginal costs and benefits. For example, household wealth affects both the costs and benefits of schooling. Wealth determines if families can afford both the direct and opportunity costs of children attending school and thereby affect the skills accumulated in school. In terms of benefits, individuals enter the schooling system already endowed with certain human capital, such as cognitive and socio-emotional capacities acquired from their parents and families, upon which further skills are built in school. This concept of dynamic complementarity, that human capital built early makes subsequent investments in human capital more productive, implies that as children get older those who did not build strong foundational skills in early childhood and primary school are likely to benefit less and struggle more as they progress to secondary, reducing the benefits of continuing to attend (Cunha and Heckman 2007). Household wealth also affects individuals' willingness to trade off between today and tomorrow (which may be considered an aspect of socio-emotional skills), and the information and perceptions individuals and their families have about the benefits of completing different levels of education.

Many community-level and macro characteristics also help determine costs and benefits. Access to school, particularly at the upper secondary (US) level, may be very limited in rural communities, while the quality of schooling services available is often low. Social and cultural norms around what levels of educational attainment are acceptable, and for whom, also factor into decision-making, as do the prevalence of teenage pregnancy, early marriage, participation in crime and violence, and migration, all of which may be both causes and consequences of dropout. Beyond the community, economic growth and labor market trends both at the national and international levels affect government budgets and education policies, remittances, and job opportunities, which in turn affect the quality and accessibility of schooling, its affordability, and its opportunity cost.

These underlying factors are likely to interact within each level, and also across levels in important ways. For example, economic growth and strong local labor market conditions may increase household incomes, making more resources available for investing in the human capital of household members. However, the same opportunities might generate the additional effect of pulling youth out of school by increasing the opportunity cost of remaining enrolled and losing out on income generation possibilities. These economic changes may also influence the information set available to youth and their families, shaping their perceptions of the returns to education. The final result depends in part on the skill content of the increasing labor demand.

At all levels, negative shocks can have substantial impacts on schooling decisions. Health shocks to individual family members, major weather events that affect entire communities, and aggregate economic shocks can all impact on the short- to medium-term tradeoff of costs and benefits to staying in school. Importantly, these short-term impacts affect what is often a long-term decision, as most youth who leave school do not return.

## 1.2 Data

As the main source of data for our investigation, we rely on household surveys, which have been systematically held in Central America over the past three decades.<sup>4</sup> As shown in Appendix Table A.1, the country with the most data is El Salvador, where 19 surveys are available between 1989 and 2013. Panama follows with 17 from 1991 to 2013. For Honduras and Costa Rica, 16 surveys are available for the periods 1989-2012 and 1987-2013, respectively, while for Guatemala and Nicaragua, a more limited set of 9 and 7 surveys exist between the 1990s and 2013.

One important advantage of using household survey data is that different education system structures can be accounted for in order to guarantee comparability in cross-country analysis. A crucial variable for comparability is the official age at which individuals are expected to attend each education level, and the number of grades comprising each level. As illustrated in Appendix Table A.2., most Central American education systems include 12 years of formal schooling between primary and graduating from upper secondary, with entry normally at age 6 and expected exit at age 17, in line with the rest of Latin America. Two exceptions are Guatemala and Nicaragua, where both entry and exit are set one year later (as in Brazil). Having access to the original micro data in household surveys allows adjusting the data accordingly, in order to make accurate comparisons in attendance by level and official schooling ages.

The data also allow internalizing differences in the definition of types of secondary schooling and relating dropout to important individual and household characteristics. In all six countries in Central America, the post-primary and pre-higher education cycle—which we generally label as secondary education (secondary) here—is split into two segments. The first segment of lower secondary (LS) has a typical duration of 3 years, followed by another 3-year segment of US. Apart from allowing for consistent comparisons, relating ages with schooling levels is particularly important for normative reasons. While primary education is already compulsory in Central America, there are differences thereafter. The main one is that LS is also compulsory in Costa Rica, Guatemala, El Salvador, and Panama, as well as Honduras as of 2013, but not in Nicaragua (OEI 2010).<sup>5</sup> Another important advantage is that since household surveys incorporate information on a wide set of personal and household characteristics, it is possible to differentiate school dropout patterns for different population subgroups or family situations. Furthermore, the data incorporate other variables such as labor market conditions that are useful for understanding schooling decisions.

Yet another advantage, which will be illustrated in the following sections, is that household surveys include representative samples of all age groups because they are normally structured around the demographics of each country. This allows us to follow the trajectory of different cohorts over time. The case of El Salvador, where 19 observations are available over a 24-year period, illustrates this. If one identifies all individuals ages 1-5 in the first survey of 1989, it is possible to locate the same group six years later in the 1995 survey, when they are ages 7-11,

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<sup>4</sup> An alternative followed by other studies has been to rely on official administrative records from the schooling system itself. However, these types of data bases do not usually include information of those *not* attending education services, which are a key component for our analysis.

<sup>5</sup> Some countries in Latin America with slightly different arrangements are Bolivia, Chile and the Dominican Republic where LS has a 2-year duration, while in Colombia and Peru secondary comprises 5 years and is not divided into two segments.

precisely the ages at which children are expected to be enrolled in primary in the country. It is therefore possible to identify the proportion actually in school to compute the net coverage of education services at this level. Six years later, in the year 2001, the same cohort can be identified again at ages 13-17, which is the age group expected to be attending secondary. Within the cohort, it is also possible to verify whether those ages 13-15 are actually enrolled in LS as expected, and if the older half of the cohort who are ages 16-17 are enrolled in US. With this information, net enrollment in both segments can be determined, as well as the share that is enrolled at a lower level (and therefore overage) and the share that is out of school.

The following sub-sections implement this approach in order to identify patterns of secondary, LS, and US dropout over time in Central America, with comparisons to the rest of the region.

### 1.3 The general context: Progress in education in Central America over six decades

Taking a long-term regional view of the extent and speed of education progress helps to place the current dropout challenge in perspective. This is illustrated in Figure 2, which plots the average years of schooling of individuals belonging to different cohorts across all of Latin America, reported in the latest household survey available for each country (circa 2013). According to these estimations, individuals belonging to the cohort born in 1935-40, and who were ages 78-82 in the year of observation (that is, 2013), attained on average 4.7 years of schooling.<sup>6</sup> When comparing them to the average of 11.5 years of schooling attained by the cohort born 60 years later in 1990-1995, and who were ages 18-23 in 2013, we conclude that there has been an increase of 6.8 years of average educational attainment across generations over the period.<sup>7</sup>

This way of plotting the data is useful for viewing long-term trends, and also for verifying the moment when different benchmarks were reached. For example, as the figure shows, the cohort born around 1950—who turned 18 in 1968 and 63 in 2013—attained 6.5 years of schooling, which is equivalent to having completed the primary level. Our interpretation (subject to the caveats mentioned in footnote 7) is that already in 1968, the new entrants into the labor force in Latin

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<sup>6</sup> The year of birth of each cohort appears at the bottom of the Figure. For illustration, take again the case of El Salvador, where the latest household survey was held in 2013. In these data it is possible to identify, for instance, all individuals in the 78-82 age group, who by definition were born between 1935 and 1940, and thus turned 18 during the period 1953-58 -which is the age at which individuals are expected to have exited US and either continued to tertiary or entered the workforce. Since household surveys report the number of official years of schooling and the maximum level reached for all individuals, it is possible to determine the average schooling level of the cohort. Additionally, since schooling occurs at early ages and typically stops by ages 20-24, it is possible to interpret the result as the education acquired by the cohort during schooling age. The same exercise can be performed for all individuals who were age 18-22 in 2013, and were therefore born in the 1990-1995 period, as well as for all cohorts in between the two extremes. The Figure plots the average years of schooling for subsequent cohorts born between 1935 and 1995 for the 18 Latin American countries for which we have data –the data points correspond to unweighted regional averages.

<sup>7</sup> Evidently, cohorts can change in composition over time and this can affect the averages obtained. Specifically, if there is differential mortality, emigration, or immigration, the averages will not reflect the profile of the same population over time, and can bias the picture. For instance, if those migrating outside of the country at prime age have relatively lower or higher education levels than those remaining in the country, the average years of schooling of those observed in the remaining cohort might be biased upward or downward, respectively. Unfortunately there is not sufficient data to correct for this for the countries included in our analysis, but we believe that the picture is still illustrative. In the case of mortality, if rates are higher the lower the education level, pictures such as that in Figure 2 would be upward biased.



America had reached a first phase of evolution where the average individual had attained basic education. According to the data, a second benchmark was reached in 1993, when the cohort turning 18 completed on average 9.2 years of school, which is equivalent to having completed LS in the education systems of most countries in the region. The value of the last point to the right in the figure shows that the cohort turning 18 in 2013 completed 11.5 years of schooling on average, short of the 12 years that would correspond to completing US. This indicates that across Latin America, the “average” individual age 18-22 has actually obtained some US education, but dropped out before graduating.

The overall trend in Latin America helps to place Central America in context, and to identify the diversity within the sub-region. From this long-term perspective, there are clear differences between Costa Rica and Panama on the one hand, and Guatemala, Honduras, and Nicaragua on the other, with El Salvador somewhere in between. Figure 3a shows that Panama and Costa Rica reached the first benchmark of average primary completion around 15 years earlier than the Latin America average. Costa Rica levelled off with Latin America by reaching the second stage also in 1993, but has recently lost some ground—18 year olds in 2013 had attained an average of only 10.9 years of education. Panama reached the second stage of LS completion around 20 years before the Latin America average, but subsequently levelled off to the point that the latest cohort registers the same average years of schooling as the average for the region. El Salvador shows the opposite pattern, lagging behind the Latin America average by about 10 years in reaching the first two benchmarks, and then increasing faster and almost catching up, to the extent that the latest cohort reaching US exit age falls short only about 0.6 years of schooling with respect to the region—with an average of 10.9 years completed, the same as Costa Rica. Thus, for Costa Rica, Panama, and El Salvador, the US dropout phenomenon is clearly a central challenge.

Guatemala, Honduras, and Nicaragua also face this challenge, but additionally, they are still struggling with the issue of LS completion. As shown in Figure 3b, Guatemala and Honduras reached average primary school completion about 30 and 25 years after the Latin America average, respectively, and have just entered the second phase where the average individual of US exit age completes LS. Nicaragua reached the first benchmark more quickly (10 years later than the Latin America average), but also only recently reached the second benchmark of average LS completion.

For every country, national averages mask large within-country disparities, which will be explored in the subsequent sections. The picture that emerges is one of a sub-region facing new challenges of the 21<sup>st</sup> century, while still dealing with unresolved issues from the past.

#### **1.4 Patterns of secondary dropout**

By following a similar cohort approach, Bentaouet-Kattan and Székely (2015) have shown that higher enrollment and completion rates at the primary and LS levels in Latin America have implied higher dropout rates at the US level. In Figures 4a and 4b, we use the same approach as those authors by following the enrollment trajectories of two cohorts, the first born 1980-1982 and the second born 1994-1996.<sup>8</sup>

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<sup>8</sup> See Appendix Table A.3 for a complementary measure of dropout, specifically looking at the educational attainment of 25-29 year olds in each country’s most recent household survey.

Across Central American countries, a variety of patterns is observed. As shown in Figure 4a, the dropout rate in Costa Rica during LS ages fell by 11 percentage points across cohorts, dropout during the transition ages between LS and US remained practically the same, and dropout during US ages increased by 4 points.<sup>9</sup> Therefore, for secondary education as a whole, there was a decline in dropout by 6 percentage points. Panama in the same figure follows a less similar pattern, with a slight reduction in dropout during LS ages, small changes during transition, and a small increase during US ages. The result is a practically unchanged overall secondary dropout rate between cohorts.

The trajectories of the same two cohorts for El Salvador are shown in Figure 4b. Here, dropout during LS ages and during transition remained practically the same, but there is a considerable increase in dropout at US ages of 10 percentage points, which results in an increase from 20 to 30 points in the overall dropout rate of youth of secondary school age. In Guatemala and Honduras, the overall secondary dropout rate declined, as greater declines at LS ages and transition compensated for increases at US ages. In Nicaragua, overall secondary dropout remained practically constant, although with a pattern opposite to that observed in the other five countries. In Nicaragua, LS and transition dropout both increased slightly, but the effect was counterbalanced by a reduction in dropout at US ages of 3 percentage points.

Table 1 summarizes the results for the latest cohort for Central America, and allows characterizing the different country patterns currently observed. In Costa Rica, Panama, and El Salvador, the majority of secondary dropout occurs during US ages. In Guatemala, Honduras, and Nicaragua somewhat similar proportions drop out during LS and US ages. In these last three countries, the emerging US dropout challenge is combined with still significant shares of youth leaving school prematurely during LS. In these same countries, it is important to note that about 20 percent of the younger cohort (those born 1994-1996) was out of school by the age of transition to LS, meaning that primary dropout, and in some cases even initial participation, also remain a challenge in these countries.

A similar analysis can be performed separately for each gender. Figure 5 summarizes the change in attendance at each stage for males and females separately, and shows that dropout is slightly lower for females than for males during LS, with the exceptions of Guatemala and El Salvador. In the transition between LS and US, female dropout is also lower in Costa Rica and Panama, while in the other four countries practically the same rate is observed for both genders. For dropout during US, a somewhat different picture emerges. In Costa Rica, Guatemala, and Honduras dropout rates across gender are basically equivalent, while in Panama and El Salvador female dropout rates are higher. Nicaragua is the only country where male US dropout is considerably higher, with a 5 percentage point difference between the two.

## 1.5 Between and within country differences in school enrollment

Cohort analysis such as that presented above helps to clarify the dynamic aspects of dropout that underlie the long-term changes shown in Figure 3. In order to complete the picture in terms of differences across and within countries, we also describe current levels of enrollment at different

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<sup>9</sup> In this section, enrollment and dropout are considered from the perspective of what schooling level a child *should* be attending given their age – the issue of overage is examined in Section 1.6 below.

ages. Figure 6 plots the proportion of individuals ages 7-18 who were enrolled in the schooling system circa 2013. The main feature of the figure is that between ages 7 and 11, relatively small differences of around 10 percentage points are observed across the six Central American countries, with Nicaragua at the lower end of the spectrum, and Costa Rica and Panama at the upper end.<sup>10</sup>

However, at age 12, when secondary entry is generally expected to occur, considerable and expanding disparities arise, to the extent that by age 17 the difference between the highest enrollment rates observed in Costa Rica and Panama (75 percent) are practically 30 percentage points higher than that observed in Honduras (46 percent). In between is El Salvador with an enrollment rate of 65 percent of 17 year olds, followed by Nicaragua with 60 percent, and Guatemala with 51 percent.

As already mentioned, one advantage of household surveys for the present analysis is that they allow identifying within-country differences. Figure 7 plots the average differences in enrollment rates for 12-17 year olds between females and males, indigenous and non-indigenous groups, rural and urban areas, and individuals belonging to households in the poorest and richest quintiles of the household income distribution.<sup>11</sup> These underlying factors, as presented in the conceptual framework, affect the marginal costs and benefits of staying in school, and therefore are expected to be correlated with dropout.

The largest differences in enrollment rates in Costa Rica, Panama, El Salvador, and Guatemala are observed between youth belonging to households in the richest and poorest quintiles. In Honduras and Nicaragua, more pronounced differences are observed when the population is classified by its urban/rural location, which in addition to relating to income, is likely related to the supply of secondary school services. Disparities across indigenous and non-indigenous groups are sizable in Panama, Guatemala, and Honduras. An important result is that gender differences are relatively small, with females generally showing slightly higher enrollment rates than males across the secondary age group, with the exceptions of El Salvador and Guatemala where males show slightly higher rates.

In most Central American countries, schooling enrollment disparities across the household income distribution are relatively small in primary and start to expand in LS. As Figure 8 shows, at the primary level (first panel in the left) more than 90 percent of children in the relevant age group are actually enrolled in primary across the income distribution in most countries. The exceptions are Guatemala and Nicaragua, where enrollment rates for the poorest four deciles are between 80 and 90 percent. Enrollment rates reach over 95 percent in all countries as household income levels rise. In contrast, LS enrollment rates among individuals in the poorest decile of households are about 30 percentage points lower than those in the richest decile, with extreme cases like Honduras registering a distance of more than 50 points. By US, differentials between the poorest and richest decile reach 40 percentage points in most countries, with Panama showing the largest gap of 55

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<sup>10</sup> Some recent studies for Nicaragua (see for instance Ministerio de Educación de Nicaragua (2014)) and Guatemala (Ministerio de Educación de Guatemala (2014)) have argued that education coverage rates at the primary level after 2010 have declined, although there is controversy about the data sources from which this conclusion emerges. In particular, the calculations are based on school attendance rates from the administrative records of the Education Ministry while data on the number of individuals in the relevant age group (the denominator in the equation) is from extrapolations based on Census data. We do not find the same pattern in our household survey data.

<sup>11</sup> Country-specific plots are in Appendix Figures A.1 to A.4.

points. These results are consistent with the framework, as poorer children may estimate lower benefits from continued enrollment, and face relatively higher direct and opportunity costs particularly at the secondary level.

Access to public education services reflects these same differences.<sup>12</sup> As shown in Figure 9, of all individuals enrolled in primary public schools, a majority live in households at the bottom of the income distribution. Between 12 and 17 percent of public primary students are from households in the first decile, while only 6 percent or fewer are from the richest 10 percent of households. These results would suggest that, in general, primary services are progressive, benefitting the poor more than the rest. Along the same lines, public LS services could be characterized as focusing on the poor and middle classes, since the shares of students living in households in deciles 1 to 7 are somewhat similar, while fewer than 6 percent of those enrolled belong to households in the richest decile. In contrast, US services appear to be regressive, since the proportion benefitting from these services generally increases along the income distribution up to decile 9. Extreme cases are Nicaragua and Honduras, where the proportion of students enrolled in public US services is three times larger in decile 9 compared to decile 1. In Costa Rica and El Salvador, where the differentials are less pronounced, the proportion of all US public students that belong to the poorest and richest households, respectively, is practically the same. The role of access in dropout will be discussed further in Section 3 below.

## 1.6 Net coverage rates and overage

The previous discussion described school participation based on which levels individuals would be expected to be enrolled in at each age. Figure 10 summarizes the data on “net coverage” rates from the most recent household surveys, which refer to the proportion of individuals actually enrolled at the level that corresponds to their age, according to the structure of each country’s education system. In general, these rates are quite high in primary, but decline at LS and especially at US. For US, the highest rate is observed in Panama, where 53 percent of youth in the 15-17 age group is actually enrolled at this level. In Honduras and Guatemala, only 27 and 20 percent of this age group, respectively, are enrolled in US.

These results reveal that there are considerable numbers of US age youth in Central America who are still enrolled in school but overage, and not enrolled at the US level as would be expected. This is illustrated in Figure 11, where each country is compared to the average of Latin America, where at US age, 24 percent are already out of the schooling system, 6 percent are still attending primary, 37 percent are attending LS, and only 33 percent are actually attending US as expected. The only country in Central America with better indicators is Costa Rica, where overall enrollment is higher: only 17 percent are out of school, and the proportion of US age individuals actually attending the expected level is 40 percent—7 points above the Latin America average. Panama shows a similar rate of overage as the Latin America average, but has lower proportions out of school and enrolled in US. El Salvador shows a different picture. In this case, overage is lower (at 26 percent) and enrollment in US is higher (37 percent), but the proportion out of school (38 percent) is significantly above the Latin America average. Honduras, Guatemala, and Nicaragua show a

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<sup>12</sup> Data for Panama is not presented here, since the household survey does not allow identifying whether attendance is in public or private schools.

similar pattern of net coverage rates below the regional average, combined with significantly higher shares out of school that reach between 43 and 47 percent, twice as high as the Latin America average. Thus, in these countries, coverage is lower, but only because more youth have already left the schooling system by age 17.

Students who are overage due to starting late and/or repeating grades are more likely to drop out, as demonstrated with administrative data by Manacorda (2006) in Uruguay and Branson et al (2014) in South Africa. This relationship may exist because the same factors that drive late school entry or poor performance also drive later dropout, because the opportunity costs of remaining in school rise as children age, because overage and poorly performing students are pushed out of the system rather than supported, or any combination of these and other factors. Regardless of the underlying drivers, the existence of a correlation suggests that the results in Figure 11 are an indication of the prevalence of dropout in Central America in the near future.

## **2. Consequences of dropout in Central America**

The previous section documented the patterns of school enrollment and dropout at the critical ages where individuals would be expected to be in secondary school. In this section, we explore some of the consequences of prematurely leaving school.

Leaving the schooling system before US completion can have a wide array of effects. Here we explore some of its labor market consequences, which depend on the interaction between the accumulation of human capital acquired through education, and the characteristics and evolution of the productive sectors of the economy that generate the conditions for its use. For instance, if there are restricted employment opportunities, the actual effect of early exit on economic well-being might be lower than expected.<sup>13</sup>

The probabilities of working, and of working in the formal sector, are strongly related to educational attainment throughout individuals' working lives. As shown in Table 2, unemployment rates among 25-45 year olds are higher among individuals who did not complete US, as compared to the population average and to those who attained 13 years of schooling or more. The largest differences are found in Costa Rica, where individuals with 13 years of schooling have unemployment levels 5.4 percentage points lower than those who attained fewer years. Informality is also more prevalent among workers with lower education levels. In Panama, Guatemala, Honduras, and Nicaragua the rate of informality among workers who only reached LS is over 32 percentage points higher than for workers with at least some higher education. The extreme case is Honduras, where the difference is 46 percentage points.

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<sup>13</sup> In Central America, and across Latin America more broadly, there are some signs that although education can make an important difference, its potential is not being fully capitalized precisely because of the slow generation of opportunities to put it to work. One clear illustration of this is that the proportion of youth in Latin America who are out of the schooling system and are not employed, is high and has been persistent over the years -this has been illustrated by Cardenas et.al. (2015) and Székely and Karver (2015).

There are also important differences in wage levels, especially for individuals who are able to graduate from US and enter higher education. Table 3 presents estimates of relative returns to completing a full course of secondary education, and to entering higher education, with respect to primary. In the case of the relative returns to secondary completion, the most recent data show that with the exception of Guatemala, all Central American countries register higher levels than the Latin America average. However, only Panama and Guatemala –and Costa Rica to a more limited extent—share the regional declining trend in this variable since circa 2000.<sup>14</sup> This suggests that in most of Central America, secondary completion continues to generate substantial income dividends on average, making it costly to leave before completing US.

The relative returns to higher education in Central America show that completing US and continuing to the next level also has substantial economic rewards. In El Salvador, and to a more limited extent Panama, such rewards are substantially larger than what is observed in Latin America. Even though Costa Rica, Guatemala, and Honduras register a declining trend during the 2000s that is more pronounced than the slight reduction in the regional average, returns to this level continue to be significant. In El Salvador and Panama, relative returns to higher education have continued to rise substantially during the past decade.

An interesting result for Central America is that the economic gains of completing US are considerable compared to completing only LS. Figure 12 illustrates this by plotting the difference in average wages at ages 19-24 that result from completing each segment of secondary. For example, when comparing wages for those who only completed primary versus those who completed LS, differences range from only 2, 5, and 6 percent in Nicaragua, El Salvador, and Honduras, to 15 and 25 percent in Guatemala and Costa Rica. However, when comparing the average wages of those who completed US versus those who reached a maximum of LS, differentials go from 22-24 percent in El Salvador and Guatemala, to between 39 and 46 percent in Panama, Nicaragua, and Honduras, and reach 75 percent in Costa Rica.

While average returns to completing US and beyond remain substantial, within each country there may be a wide dispersion of returns that depends on many factors. Individuals who receive a higher quality and more labor-market relevant education, who live in areas with stronger labor markets, who have stronger social networks, and so on, are likely to reap larger rewards from their human capital investment. For example, in Costa Rica, tertiary training graduates receive on average anywhere from *negative* 6 percent to positive 9 percent returns depending on the institution attended and controlling for individual characteristics (World Bank 2015a). Similarly, Gonzalez-Velosa et al (2015) find that substantial shares of tertiary graduates in Chile and Colombia receive a negative return on their investment, reaching a disturbing 59 percent of graduates from technical and technological institutions in Colombia. This dispersion of returns likely informs young people’s decisions about whether to persist in school, and reflects (at least in part) variation in quality within each country’s education system, an issue discussed further below.

Beyond individual labor market consequences, dropout can have other important consequences. A growing body of evidence primarily from the United States indicates that higher levels of

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<sup>14</sup> Returns to secondary and tertiary completion in Costa Rica rose substantially between 2007 and 2013, potentially reflecting post-crisis improvements in the economy (World Bank 2015a).

educational attainment causally impacts health, parenting, and other aspects of life, producing both private and social benefits (Oreopoulos and Salvanes 2011). Across several countries where studies have been completed, perpetrators of crime, mostly men, have lower levels of completed education than the general population, and in a cross-country panel analysis, the rate of secondary completion in particular is strongly negatively correlated to violent crime rates (Chioda 2013). Chioda (2013) reviews the evidence from well-identified studies of the effects of increased schooling on crime, showing that measures that increase time spent in school, years of schooling, and the quality of schooling can all reduce crime in the short and long run.

### **3. Exploration of the causes of dropout before completing upper secondary school**

As shown in Table 1, countries in Central America differ in the segment of secondary where dropout takes place. Therefore, as discussed in the conceptual framework above, the reasons for dropout are likely to vary from country to country, as well as along the schooling trajectory. A relevant source of information for understanding the causes of dropout is found in the same household surveys used so far, as most of them directly ask youth who have left the education system to register the main reasons why they decided to leave school.<sup>15</sup>

Figure 13 summarizes the self-reported causes for individuals of secondary school attendance age for the five Central American countries for which household surveys report this indicator. We have grouped the answers into five categories, comprising *economic* factors (related to having to work, insufficient family or personal income for investing in education, not enough resources for travelling to school or to purchase materials, etc., and poverty), *personal* factors (sickness, having to perform household responsibilities, pregnancy, marriage, etc.), *not interested* in studying (which includes categories such as “dislikes school”, “considers what schools teach to be irrelevant”, “thinks that what is learned in school is not relevant”, etc.), *no access* to education services, and *other* reasons that are not included in the previous categories.

In four of the five countries, the reason that most youth indicate as the primary cause for having dropped out is that they were not interested in studying: 37, 40, 41, and 47 percent report this as the main cause in Costa Rica, El Salvador, Nicaragua, and Panama, respectively. The second leading cause cited by youth is the lack of economic resources to continue attending school, with percentages around 25 percent in all five countries. Honduras stands out as the only country where the majority of youth reports economic causes as the main factor, with 53 percent, while only 29 percent express that lack of interest in studying is the main reason.

The importance of personal reasons varies from 11 percent in Costa Rica, to 20-21 percent in Panama and El Salvador. Access to education services is reported as the main cause by a relatively low share: in Nicaragua, 8 percent of youth out of school report that the reason why they do not attend is because the service is not available, while in Costa Rica, Panama, El Salvador, and

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<sup>15</sup> It should be mentioned that these are self-reported causes, and that a multiple choice format with pre-defined alternatives is provided for the answer. All possible reasons for dropout are not included, and the response is based on each young person’s perception of the cause of dropout, and also on their understanding of the meaning of the multiple choices provided for the answer.

Honduras the proportions are 6, 5, 4, and 2 percent, respectively. However, it is possible that this reason is correlated with economic factors, since access to education services can be associated with the economic capacity of individuals and households for financing transport costs to where the service is provided.

The declared reasons for dropping out also differ by gender. For males, economic reasons are most often cited, while females are more likely to cite personal reasons, including having to perform household tasks (see Figure 14). In most countries, a larger share of males declare lack of interest as the main cause for having left school, although this category is highly relevant for females as well. In order to go beyond these individual perceptions, the following sections examine empirical correlations and causal evidence on dropouts, utilizing the structure of the conceptual framework presented above.

### 3.1 Empirical correlations: Personal and household characteristics

Rigorous assessment of the causal relationships suggested by the conceptual framework requires data that is unfortunately not readily available in Central America. In particular, long-term and detailed longitudinal data that follows individuals from early life through at least adolescence would allow researchers to link early indicators, such as primary learning outcomes, to eventual dropout. This type of data has not been collected. However, several natural experiments, caused by weather shocks in particular, have been exploited in Central America, the broader Latin America region, and globally – insights gained from these will be mentioned below. In Section 4, evidence from randomized evaluations of interventions aimed particularly at reducing dropout will be discussed.

Given the limited causal evidence, we focus in this section on verifying the existence and magnitude of correlations between dropout and the factors identified by the conceptual framework. In particular, we estimate the marginal effect of variables captured in household surveys on the probability of being enrolled in school in each country for youth ages 15 to 17.<sup>16</sup> We estimate a probit regression for each country using the latest household survey available, first focusing on individual (X), household (H), and community (Z) characteristics:

$$\text{enrolled}_i = \alpha + \beta_1 X_i + \beta_2 H_i + \beta_3 Z_i + \varepsilon_i \quad (1)$$

Figure 15 plots the values of the marginal effects of gender and belonging to an indigenous group on the probability of attending, while controlling for all variables included in the specification, and confirms that in general, being female is positively correlated with being enrolled at secondary ages.<sup>17</sup> In El Salvador and Guatemala, however, the opposite is the case. This result is consistent with evaluation results from conditional cash transfer programs that have found that the gender gap in school enrollment has virtually disappeared in Latin America (Fiszbein, et.al. 2009).

Belonging to an indigenous group is in all cases negatively correlated with enrollment, with significant and sizeable effects in Guatemala, Honduras, Nicaragua, and Panama, with marginal

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<sup>16</sup> This is an approximation for dropout, as a small share of the youth who are not enrolled were never enrolled, and another small share may return to the schooling system in the future.

<sup>17</sup> The (\*) in this and the following figures denotes that the marginal effect is statistically significant at the 90 per cent level or above. Table A.3 presents the regression coefficients and standard errors depicted in Figures 15 through 17.



negative values of 6 percent and below. This result can be signaling several different underlying relations, but since it results from controlling for household income and rural location, it may reflect other elements not included in the equation, such as the relevance and quality of education, including access to bilingual education or the adaptation of national curriculums to local contexts, which are important issues in Panama and other countries (World Bank 2014a).<sup>18</sup>

The marginal effects of the second set of variables related to household characteristics is presented in Figure 16. In all countries, household poverty, an unemployed household head, and the youth playing the role of main breadwinner, are each negatively correlated with enrollment, but statistical significance varies. The negative effect of poverty is significant across countries, and is larger in Guatemala, Honduras, and Nicaragua.

We include in the estimation the share of household income that originates through remittances, in order to capture one of the channels through which migration, a particularly relevant factor in Central America, can influence enrollment. Among the five countries (all but Panama) for which data are available, remittances are significantly positively correlated with the probability of youth being enrolled in school at ages 12 to 17 in all but Costa Rica. The effects are particularly large in Honduras and El Salvador, with positive values of 11 and 9 percent, respectively.

The marginal effects of additional characteristics of the household are plotted in Figure 17. In particular, we include a dummy variable for single-parent households which may relate to the amount of family support youth receive and what they are responsible for in the household. This may also be a mechanism through which migration affects dropout, since when an important breadwinner leaves the family unit, responsibilities are likely reassigned, with new demands on income-earning activities or household-related chores that may impose constraints on time use by secondary age youth, which can affect school attendance.<sup>19</sup> The marginal effect on school enrollment of being in a single-parent household is negative in every country and significant in most cases.

If single-parenthood is associated with migration, the value of the marginal effect for this variable should be added to the positive effect of remittances to obtain a more complete sense of the overall effect. When doing so, we find that the positive effect of remittances on enrollment is canceled out in Costa Rica and Guatemala (although marginally). In the other countries where both effects can be measured, the positive effect prevails. These positive correlations, however, have not held up in research for El Salvador that attempts to control for a more complete set of factors that may affect both remittances and school participation through various techniques (Propensity Score Matching, Instrumental Variables, etc.) and by using panel data (Acosta 2011a; Acosta 2011b). In these papers, the author finds that both the gender of the migrant and the gender of the remaining youth matters – for example, while male migration does not significantly affect enrollment, female migration reduces it even though women send more remittances, potentially in line with the discussion of reassignment of household duties discussed above.

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<sup>18</sup> Indigenous group status is also self-reported, which may affect how these correlations are interpreted.

<sup>19</sup> Evidently, there are other reasons why a household can be of single parent, but due to the high migration rates in some CA counties it is likely that an important source is precisely the exit of one parent that seeks employment in another region or country.

In general, we find that higher education levels of the household head tend to have a positive marginal effect on enrollment, but, holding other factors constant, is not significant in most countries.<sup>20</sup> This variable is of interest for several reasons. One is that parental education can influence how much parents invest in their children's human capital development from the beginning of life onwards. Additionally, as in the case of household income, it can be an indicator of the level of economic mobility in society, where a lower influence of parental education on children's schooling would be an indication of greater mobility. To explore this further, we compute the unconditional correlation between parent's education and the value of the schooling gap, measured as the difference between the number of years of schooling expected given the age of an individual and the actual number of years completed, for all individuals in the 12-17 age range (Ferreira et al 2012).

Table 4 presents the results for each Central American country for circa 2000, 2005, and 2012. For each of these periods, the Latin American average is below the result for Central America, which suggests that in general, (schooling) mobility is lower in Central America. The countries with the highest correlation coefficients are Honduras and Nicaragua with values of 51 percent, suggesting that these two countries have the lowest educational mobility in the sub-region. Guatemala, Panama, and El Salvador follow with values of 47, 46, and 44 percent, respectively, and Costa Rica registers the lowest value with 40 percent. As for the evolution of these relationships, Guatemala is the country with the largest decline over time, followed by Panama, El Salvador, and Costa Rica. In contrast, Honduras and Nicaragua, show constant correlations since the year 2000, suggesting no progress in mobility.

The last set of marginal effects in Figure 17 focuses on the location of households in rural versus urban areas. The estimates show that in all countries, living in a rural area is significantly correlated with the probability of being enrolled during secondary age, and notably, this is the marginal effect with the greatest magnitude in El Salvador, Guatemala, Honduras, and Nicaragua, where living in a rural area is associated with a reduced probability of enrolment of 13, 15, 16, and 14 percent, respectively. There are several channels through which geographic location can influence school attendance, and given that this effect results from an estimation that controls for personal and household characteristics, it is possible that this is capturing the effect of access to services, especially at the US levels. For example, in Honduras, analysis finds that over 1,000 additional secondary schools in rural areas would be needed to provide access for all secondary-age youth who are currently out of school, compared to the fewer than 200 that are currently operating today (World Bank 2014b).

The correlation of service supply with enrollment can be directly examined in the case of El Salvador, where we have access to detailed information at the municipality level on the number of schools of each level from the 2011 National School Census, which we merge with the household survey. Table 5 presents our results and compares them with the base estimation from which the coefficients in Figures 15-17 are derived. Two additional estimations are presented. The first includes only the number of schools for each level in the municipality of reference, and its effect is not statistically significant. However, in the second estimation (third column of the table) we

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<sup>20</sup> The lack of significance is not entirely surprising given how many other variables related to household head's education are being controlled for, including household poverty and single-parent status

compute the number of schools per number of individuals of the relevant school age in each municipality, and the result is that the marginal effect is statistically significant and quite relevant in magnitude.<sup>21</sup> According to our estimates, there is a negative marginal effect of almost 14 percent from having fewer schools per school age individuals, and it is notable that the magnitude of the coefficient for rural location falls significantly –to about one half of its value- when incorporating this variable. In this estimation, the marginal effect of the supply of education services actually shows the largest influence on school attendance as compared to the rest of the variables considered. This suggests that the availability of services is still an important determinant of enrollment, at least in countries like El Salvador and Honduras.

As discussed in the conceptual framework, shocks at the household, community, or macro level can also play an important and lasting role in schooling decisions. In an assessment of global evidence, Baez and Santos (2010) find that natural disasters impact educational attainment through multiple channels, and have negative and durable net effects. Disasters can reduce household income and assets, destroy productive infrastructure, and change local labor markets, all of which directly impact on educational choices. In Central America, the 2001 earthquakes in El Salvador, Hurricane Mitch in Nicaragua, and Tropical Storm Agatha have been associated with higher rates and intensity of child labor following the disasters, and, in the case of Agatha, removal of children from school to facilitate this work and/or cut back on schooling-related expenditures (Santos 2007; Baez et al 2007; Baez and Santos 2008; Baez et al 2015). Depending on the context, effects may be heterogeneous across children within a family: Bustelo (2015) finds that young adolescents (ages 13-15) increased their workload while younger children did not, and that only boys' school participation was affected after Tropical Storm Stan hit Guatemala. Importantly, Baez and Santos (2010) find that the largest impacts are often on the poor.

### 3.2 Empirical correlations: The role of macro variables

The paper by Bentaouet-Kattan and Székely (2015), referred to earlier, implements the conceptual framework in Behrman, de Hoyos, and Székely (2015) by focusing on macro variables, which complements the picture presented above.<sup>22</sup> Specifically, the authors estimate a model where changes in school enrollment across each cohort for which they have data are correlated with a set of variables characterizing the macro environment in which human capital accumulation decisions are taken. The authors present a base regression estimated through differences in differences which accounts for potential problems of omitted variables bias and endogeneity, among other issues, that can be used here for further exploration. The general specification used is:

$$\Delta enrolled_{i,t,t-1,c} = \alpha + \beta_1 \Delta D_{i,c,t} + \beta_2 \Delta E_{i,c,t} + \beta_3 \Delta L_{i,c,t} + \beta_4 \Delta R_{i,c,t} + \varepsilon_i \quad (2)$$

Where changes in enrollment for cohort  $i$  between periods  $t$  and  $t-1$  for country  $c$  are a function of a set of independent variables observed for each cohort for each period of time, for each country. Four groups of variables are considered. The first group (D) includes the population fertility rate

<sup>21</sup> The population data is taken from the National Population Census of 2007 and extrapolated to 2012.

<sup>22</sup> For a larger list of references on analysis of the causes of school dropout see Bentaouet-Kattan and Székely (2015). Other related analysis focusing on specific aspects of early dropout are Cardoso and Vermer (2007), South, et.al. (2005), Ingram, (2006), Marcotte (2013), Dearden, et.al. (2008), Mo, et.al. (2014), Bentaouet-Kattan and Székely (2015b), Chioda (2013), Ibañez, et.al. (2013), and Munyo (2013). Useful references that are specific to CA countries are Jimenez and Gaete (2010) for Costa Rica, Marshall, et.al. (2014) for Honduras, and PREAL (2014) for Nicaragua.

in the year of birth of each cohort and the share of LS students belonging to the poorest 40 percent of the population, which are classified as “demand” variables, since they intend to capture to some extent the pressure on education services stemming from population growth and from the increase in the number of entrants from poorer backgrounds into the schooling system. The second group (E) includes the rate of growth of per capita Gross Domestic Product (GDP) and the rate of inflation in the economy, as indicators of general economic and stability conditions. The third group (L) incorporates estimates of the returns to secondary and higher education, relative to primary, as measures of the expected marginal benefits for continuing in the education system until at least US completion. Finally, the fourth group (R) captures labor market opportunities through the average employment rates and wage levels of individuals age 25-45.

Bentaouet-Kattan and Székely’s results support the conclusion that the lack of progress in reducing school dropout at the US level in Latin America is the product of countervailing forces. Increases in the share of poorer youth accessing the schooling system combined with reductions in the relative returns to education, especially at the US level, have had a dropout-increasing effect. However, this effect has been counteracted to a large extent by the positive effects on enrollment from lower fertility rates, greater economic stability, higher wages, and more employment opportunities, which could be promoting increased human capital investments through an income effect.

In order to explore the predictions of the model across Central America, we use the regression coefficients in the base regression of Table 3 in Bentaouet-Kattan and Székely (2015), and apply the changes in the independent variables of each of the six countries to verify the influence of each on the change in the rate of enrollment within each cohort over time, by using all the data available for each country, estimated at the mean. Table 6 presents the trend in each of the relevant variables, by country, as well as the Latin American average for comparison.

Across Central America, the reduction in fertility is generally lower than what is observed in the Latin America region as a whole, which suggests that the demographic pressure on schooling systems remained at relatively higher levels in the sub-region.<sup>23</sup> However, the incorporation of individuals belonging to households in the poorest 40 percent is lower in Central America, which may have limited the extent of additional strain on education systems.<sup>24</sup> The macroeconomic context also seems to have provided a favorable environment in Central America, as was the case for Latin America, although economic growth rates were below the regional average (with the exception of Panama, where GDP growth almost doubled that of Latin America). Inflation rates were also at or below the Latin America average, with only Costa Rica standing out with a higher than average rate.

The performance of labor markets in Central America in the two dimensions considered is mixed, since average wages increased at a lower rate than in Latin America, with declines in El Salvador and Guatemala. The exception is Costa Rica, where average wages increased 11.5 percent. However, employment rates across Central America increased relatively faster than the Latin America average, with the exception of El Salvador. For the returns to education, a mixed picture

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<sup>23</sup> Honduras and Nicaragua show greater reductions in fertility than the Latin America average.

<sup>24</sup> Costa Rica has incorporated a greater share of students from the bottom 40 percent than the Latin America average.

also emerges, with greater declines in the returns to higher education in Costa Rica, El Salvador, Guatemala, and Panama relative to the Latin America average, but considerable increases in Honduras and Nicaragua. The relative returns to US declined more than the Latin America average in El Salvador, Nicaragua, and Panama, but increased considerably in Honduras.

Across Central America, then, the negative effects of demand variables are counterbalanced by the positive effects of labor market variables, with marginal impacts from macroeconomic changes and fluctuations in the returns to schooling. El Salvador stands out as an exception, where changes across all variable groups would imply negative effects on enrollment. The results of this decomposition of the change in secondary enrollment rates across cohorts for each country, estimated by multiplying the changes in the independent variables by the coefficients from the base regression, are summarized in Figure 18. Focusing specifically on labor market opportunities, one very interesting piece of causal information comes from a natural experiment exploiting the increase in demand of unskilled workers from the growth of factories in Mexico in the late 1980s and 1990s. Atkin (2012) finds that this increase caused a rise in secondary dropout rates, as the opportunity cost to staying in school rose.

Young people in Central American countries with high rates of out-migration are also likely to consider not only their domestic labor market, but also opportunities in international labor markets when weighing both the opportunity costs and expected returns to persisting in school. While changes in international labor markets are not accounted for in the model, we look at a snapshot of the education of migrants to the United States for suggestive evidence. In particular, we look at the schooling participation and attainment of young people in the United States from the highest Central American migrant-sending countries (El Salvador, Guatemala, and Honduras), compared to their counterparts at home. As shown in Table 7, over 90 percent of youth ages 12-17 are in school, meaning that relatively few young migrants of LS and US ages are in America and working. At the same time, young adults ages 18-25 who migrated to the United States at age 18 or later (so were likely to have completed any secondary schooling at home) have higher educational attainment than their counterparts at home. These results suggest that migrants are positively selected on education, and that labor market opportunities in the United States may not be a major factor influencing dropout in Central America. However, population data in the United States undercounts unauthorized migration, and further research would be needed to understand the decision-making processes behind migration in order to provide a more thorough assessment.

### **3.3 Trends in education quality**

An important community or macro level factor not mentioned so far in the empirical analysis is education quality. As discussed in the conceptual framework, the endowments with which children enter school are further expanded depending on the strength of the educational services provided. Low-quality education creates learning deficits in children that build up over time, reducing the benefit of persisting in school. Using a unique dataset from Egypt, Hanushek, Lavy, and Hitomi (2008) provide empirical evidence of this phenomenon – students attending lower quality schools (measured by expected learning gains over time) are more likely to drop out, even when controlling for students' own abilities. While data on learning outcomes in Central America is not available over a substantial time series, nor at a micro level in recent years, regional exams of the past decade do provide an informative snapshot.

Recently released summary results from the application of the TERCE (Third Regional Comparative and Explanatory Study) exam in 2013 across Latin America show that Central American students underperform the Latin America average, with the clear exception of Costa Rica (UNESCO 2015). A first snapshot of summary results is presented in Figure 19, for all the Central America countries participating (all except El Salvador). At both 3<sup>rd</sup> and 6<sup>th</sup> grades, students in Nicaragua, Honduras, Guatemala, and Panama underperform the Latin America average, and 30-40 percent are projected to fall into the lowest two performance levels (of five) in each country (compared to 26 percent across Latin America). Costa Rica stands out as a strong performer, with only 11 percent of students projected to fall into the lowest two levels (UNESCO 2015). Compared to SERCE (Second Regional Comparative and Explanatory Study) results from 2006, learning outcomes have improved in Guatemala, Panama, and to a lesser extent in Nicaragua. Performance in Costa Rica has declined (Figure 20).

In a global context, education quality and learning outcomes in Central America are also low. In Honduras, 6<sup>th</sup> grade students taking the 4<sup>th</sup> grade TIMSS 2011 (Trends in International Mathematics and Science Study) mathematics assessment scored well below the international average. In the 2012 PISA (Program for International Student Assessment), Costa Rica's 15 year-old students performed near the bottom of the international distribution. In math, Costa Rica ranked 55 of 64 countries, and 51 of 64 in sciences. These results suggest that, while the quality of primary education in Costa Rica (as measured in SERCE and TERCE) is relatively strong, secondary education is weaker. They may also suggest that other Central American countries would have even weaker outcomes at the secondary level on the global scale, given Costa Rica's outperformance in the regional exams.

These weak results corroborate negative perceptions held by citizens of the quality of public education and the value of education in improving labor market outcomes across Central America, as measured in the 2011 Latinobarometro surveys (World Bank 2014b and 2014c). For example, in Honduras, citizens give their public education system one of the lowest rankings in Latin America. At the same time, there is also substantial variation in quality within countries; as is the case with access, outcomes for youth at the top of the socioeconomic distribution are much better than for those at the bottom. For example, in Costa Rica, a 1 standard deviation increase in a socioeconomic index correlates to a 0.3 standard deviation increase in SERCE scores (World Bank 2014d). Low average educational quality in many cases masks large disparities, whereby strong results at the top of the socioeconomic distribution co-exist with very weak ones.

### **3.4 How dropout decisions are actually made, and evidence from qualitative research**

Taken together, human capital theory, the limited causal evidence available, and the empirical correlations presented above show that a host of factors affect the marginal costs and benefits of staying in school, and ultimately the decision to persist or drop out. From a public policy perspective, this could be viewed as promising, in that there are many “levers to pull” or opportunities for policy to impact on the dropout decision. At the same time, neither theory nor empirics provide clear guidance on which factors may be the most important and therefore should be the priorities for policy interventions.

In addition to the evidence already presented, recent developments in behavioral economics also help shed light on the decision-making process that leads to dropout. As described in the 2015 World Development Report, individuals more often make decisions based on mental models, drawing on information in their immediate social contexts and recent experiences, rather than a careful weighing of all costs and benefits. Individuals also differ in what they even consider as being choices within their own power to make. Some recent qualitative research on youth and particularly on dropouts helps to highlight these factors and their potential policy implications.

Dropping out of school is often not a discrete decision, but the culmination of an ongoing process of disengagement. Rich administrative data from the United States and other high-income countries has shown that students who will eventually drop out prior to completing secondary school can be reliably identified in primary school, based on their attendance, behavioral records, and course performance (Gardner Center 2011; Frazelle and Nagel 2015). Interviews with youth in Central America who have dropped out reflect these early origins of their ultimate decision. In Costa Rica and Panama, many dropouts report having had trouble passing courses in the past and sometimes repeating grades (Programa Estado de la Nacion 2013; UNICEF 2015). Students with unaddressed learning deficits may get stuck at a grade level while their peers move on, or they may be promoted to higher grades but unable to follow overly rapid curricula – in either case, they are likely to eventually give up, or to be pushed out by school policies (Pritchett and Beatty 2015).

Poor or excluded youth may lack the agency to actively make the decision to drop out. In contexts of poverty, individuals may suffer from excessive cognitive burdens in navigating the challenges of daily life, leaving them little room for long-term planning (Mullainathan and Shafir 2013). Living in conditions of poverty or social and economic exclusion also affects individuals' attitudes about themselves and their place in the world: they have lower aspirations and lower self-confidence, reducing their propensity to deliberately plan for the future (World Bank 2015c). Interviews with adolescent girls in Nicaragua reflect this. Among the middle class, adolescent girls articulate specific and concrete aspirations and plans for their own futures, and directly connect educational achievement to achieving these plans. In contrast, poor girls are more focused on short-term survival and, while generally believing in the value of education, do not apply it directly to themselves (World Bank 2015d).

Adolescence itself is a turbulent time cognitively and socio-emotionally, when decision-making may be lead to sub-optimal outcomes. While all individuals deviate substantially from the purely rational model, adolescents deviate in particular ways which can influence their decisions about human capital investment (O'Donoghue and Rabin 2001). In particular, teenagers have been shown to overestimate their medium-term risk of death, underestimate the consequences of their actions, and have a stronger taste for both risk-taking and peer conformity more than adults. These factors can contribute to decision-making that is myopic and/or time-inconsistent, and lead to sub-optimal outcomes like dropping out of school too early.

Adult support and guidance, or the lack of it, is an important factor in the dropout process for many adolescents. In addition to the ways in which parents influence the human capital investments of youth discussed in previous sections, adults more broadly can have important impacts. Dropouts surveyed in Panama cited negative experiences with teachers, and many “dropped out” because they were ultimately denied registration or expelled. In addition, students with similar academic histories who persisted in school tend to describe having more support from parents or other adults

in their personal lives. Relatedly, nearly half of teachers surveyed in the same communities cite students' lack of motivation, poor academic performance, and lack of support at home as drivers behind student dropout (UNICEF 2015). For youth who do not receive adequate support and guidance at home nor in school, making poor decisions such as dropping out may be the “path of least resistance” and the easiest choice to make in the short term.

These aspects of adolescent decision-making and dropout can help inform policy and program interventions, as discussed in the next section.

## **4. What works to reduce dropout? Global evidence and Central American experience**

A growing evidence base points to promising options for reducing dropout, but many challenges remain for researchers and policy makers, including estimating costs, and improving targeting and coordination across interventions to achieve the largest and most cost-effective impacts. In a recent narrative review, Almeida, Fitzsimons, and Rogers (2015) assess the small but growing body of global evidence from rigorously evaluated programs and policies to reduce dropout, with a focus on secondary dropouts.<sup>25</sup> In this section, we summarize their insights, and link them to the Central American experience. Table 8 lists the main types of policies and programs that have been implemented throughout the world that address underlying factors linked to the marginal benefits and costs of dropout, broadly grouped by the level at which they act (individual/household versus community or macro). Given the lifecycle nature of the dropout decision, we also attempt to generally distinguish between interventions aimed primarily at preventing dropout by making improvements that benefit entire student populations, or are aimed at ages prior to when substantial dropout occurs, versus those aimed at intervening particularly for those youth who are at risk of dropping out in the near future. In many cases, this distinction is not clear-cut. For example, broad programs are often targeted in their implementation, due to budget constraints and need, and in these targeted schools or communities, youth face many risks, including dropout.

### **4.1 Building human capital before youth consider dropping out**

High-quality early childhood interventions have shown promising results for disadvantaged youth.<sup>26</sup> A handful of randomized evaluations from the United States, Jamaica, and other countries demonstrate that early interventions, including nutritional supplementation, psychosocial stimulation, and high-quality preschool can have lasting impacts on at-risk individuals, through increased attainment (and therefore less dropout), higher wages, and better mental health. As discussed earlier, these interventions are particularly appealing because they are preventative, and increase the productivity of later human capital investments.

In Central America, preschool coverage remains limited, particularly among the poor. In Costa Rica, where there is no public spending on preschool, only 25 percent of 3-5 year olds in the bottom quintile are enrolled, compared to 53 percent in the top quintile (World Bank 2014d). In Panama, where an early childhood development plan was adopted in 2009 and is currently waiting

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<sup>25</sup> The authors define rigorous evaluations as those that employ a plausible counterfactual, including randomized control trials, difference-in-difference, regression discontinuity, and other empirical designs.

<sup>26</sup> All evidence described in this section that is not cited here is cited in detail in Almeida, Fitzsimons, and Rogers (2015).



refinement, only 32 percent of 4 year-olds in the bottom quintile are in school, compared to 72 percent in the top quintile (World Bank 2014c). At the same time, while early intervention programs targeting different risk groups may have been tried across countries, we were not able to identify any that had been rigorously evaluated or brought to national scale.

## **4.2 Household wealth and individual motivation: Providing financial and non-financial incentives**

Given that economic factors are one of the main reasons cited by dropouts in Central America, programs and policies to counteract the financial opportunity costs of remaining in school and increase the immediate benefits may be particularly important. Programs that have been rigorously evaluated around the world generally find substantial and significant positive impacts on school participation, attendance, and persistence at the primary and lower secondary levels. At the upper secondary level, evaluations of transfer and scholarship programs find that the existence of other support programs (reducing the marginal benefit of additional cash) and the timing of transfers may be particularly important for determining impacts. The impacts of changing the timing of transfers in particular reflects in part the value of addressing individuals' time inconsistent preferences, by facilitating savings for them to pay for up-front costs associated with re-enrolling (Barrera-Osorio et al 2011).

Every Central American country except Nicaragua currently has a conditional cash transfer program which includes education conditionalities. In El Salvador, Guatemala, and Honduras, the programs' education conditionalities cover only youth up to either 15 years old or 6<sup>th</sup> grade (Cecchini and Madariaga 2011). In Panama, *Red de Oportunidades* includes youth up to 17, while *Beca Universal* includes all students in public schools and private schools charging fees below a certain amount. In Costa Rica *Avancemos* covers all youth attending secondary school.

Targeting, coverage, and verification of conditionalities are major challenges that limit the impacts of some programs. Panama and Costa Rica's universal scholarship programs (*Beca* and *Avancemos*) are, by their nature, not well-targeted. In Panama, the majority of *Beca* beneficiaries are in the middle income deciles (3<sup>rd</sup> to 9<sup>th</sup>) rather than among the poorest, while in Costa Rica, only 29 percent of eligible students in the bottom quintile reporting receiving *Avancemos* compared to 8 percent in the top quintile (World Bank 2014c and 2014d). These programs have not been rigorously evaluated, and their impacts on school outcomes are not clear. Even well-targeted programs with strong evaluation results, like El Salvador's *Comunidades Solidarias Rurales* do not cover all or most eligible households: in El Salvador, fewer than 12 percent of households in the poorest quintile are beneficiaries (World Bank 2014e). Other programs providing materials, food, and other inputs to school could also be better targeted in some cases. For example, only 24 percent of students in the bottom quintile in Costa Rica benefit from the school meal program, compared to 12 percent in the fourth and 6 percent in the fifth.

Other types of incentives, such as performance-based financial rewards for students and school vouchers, have shown some promise around the world. Evaluations of merit scholarships and achievement-based financial rewards have found mixed results, and Almeida, Fitzsimons, and Rogers suggest that these interventions may be successful in increasing learning and reducing dropout at the secondary level in contexts where other constraints, such as motivation and teacher quality, are not binding and where other financial incentives are not already in place. Similarly,

school vouchers appear to benefit students who are motivated enough to apply, in contexts where voucher-accepting schools are available and of significantly higher quality than the alternatives. This may be an approach to consider in urban settings in Central America, where the market for schools is sufficiently “thick” to give students options.

### **4.3 Providing information**

Information interventions that provide young people with facts about how different levels of educational attainment are rewarded in the labor market have been tried in several countries, with mixed results. As discussed earlier, youth may have inaccurate or incomplete information about the returns to education, due to limited exposure in their families and communities to highly educated individuals who have been very successful in the labor market. Providing them with information may also make the value of education more salient in the short-term, or facilitate their ability to make the connection between their own choice to persist and their later life outcomes. Evaluations in this area have found that the poorest students may not benefit due to other binding constraints, and that sharing this information with parents as well as students may be needed to have impacts, at least at the primary and lower secondary levels (Nguyen 2008; Jensen 2010; Fryer 2013; Avitabile and de Hoyos 2015).

### **4.4 Increasing access to school**

Compulsory schooling policies, as well as policies regarding grade failure and repetition, have important effects on access. Very few evaluations on extension of grades covered by compulsory schooling laws exist, but those that do find substantial increases in educational attainment in the United States, Turkey, and Taiwan, China. In Central America, as mentioned earlier, LS is not compulsory in Nicaragua and was just made compulsory in Honduras in 2013, while the complete cycle of US is not compulsory in any country (OEI 2010). Therefore, access is not guaranteed, and the expectations of many educators are likely that most students will eventually drop out. A lack of seats or even schools clearly represents a major barrier to continued participation, as suggested by the correlational results from El Salvador in the previous section. In addition, policies and practices related to grade failure and repetition may limit access for poorly performing students and lead them to dropping out. Attendance below certain levels, behavioral infractions, and failing a certain number of courses are grounds for grade failure and repetition in most Central American countries. While specific policies on how many times students are allowed to repeat a grade are usually not articulated, qualitative research, as discussed above, suggests that students only get a limited number of second chances before schools refuse to allow them to continue (UNICEF 2015).

On the intensive margin, students already enrolled may spend more time in school through policies that extend the school day. As fertility rates have fallen and reduced pressure on school infrastructure and personnel, several Latin America countries have implemented a form of school day extension, including El Salvador’s full-time school program. A recent review of such extension programs finds that the majority of impacts measured in rigorous evaluations are positive and significant, and particularly substantial for at-risk students (Holland, Evans, and Alfaro 2014). The evaluations that look at persistence in school find significant increases in graduation rates.

## 4.5 Increasing the quality and supportiveness of education services

Increasing the overall quality of schooling at primary, LS, and US levels can reduce dropout by increasing the marginal benefit of remaining in school in the form of greater learning. Evaluations of school-based management initiatives, whereby decision-making authority over budgets, teachers, and materials is devolved to principals, parents, and stakeholders, show that such approaches may have small, positive effects on dropout at the primary and secondary levels, potentially through improvements in learning outcomes. El Salvador has been a leader in implementing a school-based management approach in the Latin America region, but the model's impacts on learning and retention have been limited in part by a lack of effective empowerment of the key stakeholders. Principals, teachers, and parent committees have not been sufficiently trained to fulfill their pedagogical, management, and leadership roles, and data are not effectively utilized for decision-making (World Bank 2014e). Countries are now focusing on these shortcomings, including in El Salvador, where teacher training as part of the full-time schooling model will be rigorously evaluated, and in Mexico, where an evaluation of management training for school principals is also underway.

A second area for broad quality improvements is teacher policy. Bruns and Luque (2014) provide a comprehensive overview of how teacher recruitment, training, and incentive policies fail to maximize teacher performance across Latin America. In Honduras, as in several other countries in the region, even basic indicators such as class time used for actual instruction show substantial opportunity for improvement – the equivalent of one day of school per week is lost to teachers socializing or conducting management activities during class rather than teaching. A growing number of randomized evaluations find that performance-based monetary incentives for teachers can increase student learning, and presumably reduce dropout, under the right circumstances. Almeida, Fitzsimons, and Rogers identify a pre-program lack of accountability and low levels of teacher professionalism, coupled with relatively large incentives based on clear, recent, and fair metrics as some of the needed circumstances.

In addition to system-wide efforts to improve quality, several countries have addressed the quality of education provided to specific sub-groups. In particular, in Central America, bilingual and culturally adapted education for indigenous peoples has shown positive impacts on learning, grade progression, and ultimate educational attainment (Dutcher and Tucker 1994). Patrinos and Velez (2009) show, for example, that bilingual education in Guatemala increases learning and reduces dropout rates, and provides a substantial net benefit to the system.

Many different types of programs directly target youth considered at risk of dropping out to try and build their cognitive and socio-emotional skills. As discussed earlier, since dropout is the culmination of a process, identifying students who are most at-risk may be possible early on, if accurate and detailed administrative data is available. To date, however, only one rigorous evaluation has been conducted on the impacts of implementing such “early warning systems”, along with targeted interventions, on dropout rates – the USAID-funded School Dropout Prevention Pilot Program, whose initial results show limited effects on dropout across the four countries involved in the study (Cambodia, India, Tajikistan, and Timor-Leste). Among students lagging behind in terms of learning, individual academic tutoring has been shown to improve learning at the primary level in India. On the other hand, a range of programs have used information and computer technology to supplement instruction at the primary and secondary

levels – the bulk of the evidence finds that these programs have little to no effect on learning, and therefore probably not on dropout either, because the technology is not well-utilized for instruction and learning.

At the secondary level, programs combining cognitive-behavioral therapies with academic tutoring and other supportive interventions for adolescents are starting to show substantial effects on dropout for students in at-risk communities (where dropout rates are high) in the United States and Canada. At the same time, new research shows that the optimal period for developing many socio-emotional skills is primary school ages (roughly 6-11 years old) – incorporating the building of such skills into primary curricula could help improve decision-making and reduce later dropout (Guerra, Modecki, and Cunningham 2014). In the Latin America region, Peru has been in the forefront of incorporating socio-emotional skills into curricula, and could provide valuable lessons learned for Central America.

#### **4.6 Increasing the labor market relevance of school**

While little rigorous evidence exists on the impacts of technical and vocational education tracks at the secondary level, Almeida, Fitzsimons, and Rogers conclude that technical and vocational (TVET) tracks are often seen as inferior, dead-end options compared to academic tracks. Being pushed into such a track early on may limit how much students learn, and lead them to drop out. In Costa Rica, for example, dropout rates are higher in technical compared to academic tracks, but this may very well be due to different types of students selecting or being directed into each track (Estado de la Nacion 2013). TVET programs that are well-integrated with academic programs, high quality, and relevant may hold promise for reducing dropout and improving ultimate labor market outcomes, but this is an area in need of substantial research.

#### **4.7 Addressing key risk factors in the community**

Teenage pregnancy is correlated with dropout, as discussed earlier, but the causal pathways are complex and multidirectional. The average adolescent fertility rate across Latin America is on par with South Asia and far above all regions except Sub-Saharan Africa, and within Latin America, Nicaragua has the highest rate, while Guatemala, Honduras, El Salvador, and Panama are all in the top 10 (Azevedo et al 2012). Given the many negative consequences of early motherhood, reducing teenage pregnancy is an important goal itself, but Almeida, Fitzsimons, and Rogers find that there is limited rigorous evidence on programs directly aimed at reducing pregnancy, and the evidence that does exist does not find significant impacts. One interesting natural experiment exploited the expansion of family planning centers in Colombia, finding that the availability of such services did increase young women’s educational attainment (Miller 2010). At the same time, a review of programs aimed at keeping teen mothers in school finds that they are successful in reducing dropout among these young women (Steinka-Fry, Wilson, and Tanner-Smith 2013).

Crime and violence are also correlated with dropout, and may increase direct risks faced by students every day, the opportunity costs of staying in school, or other aspects of the dropout decision. As discussed above, evidence from several countries supports the idea that increased schooling has a causal impact on crime in the short and long run. In comparison, less is known about whether crime reduction can independently reduce dropouts – in some sense, this may be a more difficult question to answer convincingly, as natural experiments tend to provide temporal variation in crime and violence, while dropout rates may only change slowly over time as they are

the outcome of a longer-term process. There is growing evidence that crime and violence have a causal impact on student attendance, which can lead to lower attainment and dropout, and also that large-scale violent conflict substantially reduces educational attainment for affected youth (Smith 2003; Bruck, Di Maio, and Miaari 2014).

#### **4.8 Outstanding questions and challenges for Central America**

Many approaches have shown some success in reducing dropout at different levels, but the knowledge base is far from complete. In Central America, many programs and policies that have shown success globally have been tried, and some in the region have been rigorously evaluated. However, additional information is needed to inform program design going forward. As discussed by Almeida, Fitzsimons, and Rogers, dropout is an outcome that is often not included in many evaluations, and when it is, it is often only measured over the course of 1-2 years. This is likely because dropout is a medium to long-term outcome, while evaluations have limited time horizons, and repeated data collection from the same individuals over time is costly. Certain aspects of promising interventions are in need of additional research, including how to accurately identify those most at risk of dropping out early on; how to maximize the impacts of cash transfers at the lower and upper secondary levels; and what programs work in local contexts that combine academic, socio-emotional, and labor market-relevant supports.

While the knowledge base on what works is growing, much less is known about which approaches to reducing dropout are most cost-effective. This is hugely important for governments in Central America, where education spending relative to GDP is generally low, and resources available to target this particular group are limited (World Bank 2014b, 2014c, 2014d, and 2014e). Some programs have been costed and are known to be relatively inexpensive with light implementation requirements, such as information campaigns, while others are much more costly and demanding in terms of implementation, such as extending school hours (Holland, Evans, and Alfaro 2014). However, we are still far from having systematically comparable cost data across different types of programs and contexts, which would facilitate decision-making for policy makers (Evans and Popova 2014).

Across all six Central American countries, there are common policy priorities which would likely contribute to reducing dropout, including improving the quality of education at all levels, addressing remaining gaps in access at the preprimary and secondary levels, and strengthening the coverage, targeting, and coherence of existing programs aimed at improving education outcomes. Beyond this broad set, each country's particular circumstances can inform specific priorities – initial ideas are discussed below in the concluding section.

### **5. Conclusions**

While substantial progress in educational attainment has been made in Central America over the last several decades, dropout remains a major challenge to building the skills of the workforce and human capital of the population. As detailed in Section 1, each country has a unique history of education progress, but today the sub-region faces some similar dropout problems. In Panama and Costa Rica, most youth remain in school through US ages, but many are over age for their grade, and most drop out before completing US. In Honduras, Guatemala, and Nicaragua, only a minority

of youth will reach US, with most dropping out at earlier stages. In El Salvador, the dropout profile of the most recent cohorts is in between these two descriptions.

Within each country, large inequalities in dropout rates and therefore educational attainment outcomes are evident. Poverty, rurality, and indigenous group membership are the strongest correlates of dropout, likely reflecting several underlying factors that affect both the marginal benefits and costs of staying in school. On the benefits side, these factors influence human capital built early in life, the quality of schooling services available, and labor market opportunities. They also affect the direct and opportunity costs of persisting, including the actual accessibility of schools.

The consequences of dropout are felt at the individual and aggregate levels. As described in Section 2, youth with less education have worse labor market outcomes, in terms of employment, informality, and wages. Evidence from around the world also finds that educational attainment is correlated with many other life outcomes, including health and the well-being of the next generation. In aggregate, workforces that lack the skills demanded in the labor market constrain growth at all stages of development, as has been pointed out in the Systematic Country Diagnostics of Costa Rica, El Salvador, and Panama (World Bank 2014, 2015a, and 2015b). Youth lacking skills and labor market opportunities are also likely to be more vulnerable to becoming involved with crime or getting pregnant early.

Substantial progress has been made in understanding the drivers of dropout and identifying interventions to reduce it. A range of factors influence the process that leads to eventual dropout, and most of these factors can be affected by policy, as discussed in Section 3. Despite recent growth in the knowledge base of what works to reduce dropout, the challenge of detailed prioritization remains. As described in Section 4, the cost-effectiveness of different interventions, as well as potential interactions across interventions, are not well-understood. In addition, the design details of individual interventions may matter a great deal for impacts. Despite these limitations, several conclusions can be drawn for Central America.

Across all six countries, there are common priority policy areas which would contribute to reducing dropout, with different specifics depending on each country's context and dropout challenge. To prevent dropout from occurring in the long-term, building human capital from early childhood onwards is critical, and requires coordination across sectors to address health, nutrition, and parenting in the years before children enter the education system. Specific approaches will vary by country, but could include targeting the most disadvantaged communities where early life outcomes are known to be weakest. Within school systems, both *de jure* and *de facto* access are in need of attention. In Nicaragua, making LS compulsory and expanding supply accordingly are necessary first steps, while in Honduras, El Salvador, and possibly Guatemala, expanding supply is needed to fulfill existing compulsory schooling laws. In Panama and Costa Rica, where US participation rates are highest, the focus may need to be more on practices within schools, in terms of increasing support for poorly performing students and changing school cultures to make universal completion the expectation.

The quality of education provided, on average and in particular to lower socioeconomic groups, is also a priority area which would contribute to preventing dropout. While learning outcomes at the primary level in Costa Rica are relatively strong on average, large differences across

socioeconomic groups persist, and learning at the secondary level appears to be much weaker. In all other Central American countries, average learning outcomes at the primary level are low, and a host of promising reforms to increase autonomy, assessment, and accountability are at various stages of implementation in several countries. To the extent possible, rigorous evaluations of these efforts, such as the ones of teacher and principal trainings in El Salvador and Mexico, should be conducted and should include cost data to help inform policy making in the region and beyond.

To directly intervene among youth at high risk of dropping out, countries can consider developing early warning systems, and piloting comprehensive support programs for identified youth. Such an approach would be most promising in countries with strong administrative data, and would need to be targeted to the levels where dropout starts to occur at substantial rates. Given that dropout rates are so high, school or community-level programs might make more sense than individual-level programs.

Reforming the targeting, coverage, and coherence of existing programs would also help. As discussed above, some conditional cash transfer and other support programs are not well-targeted, while others are well-targeted but are too small to cover the majority of the eligible. In addition, there may be opportunities to improve the design of existing programs to increase their impacts, based on insights from behavioral economics, for example by structuring the timing of transfers to maximize impacts on the decision to persist in school. Given that most countries have multiple social protection and school support programs aimed at overlapping populations, rationalizing and coordinating across programs may provide both increased impact and cost savings. Finally, based on the evidence that child labor is commonly used as a coping strategy in response to shocks in the region, rapid scale-up mechanisms for existing programs, in terms of expanding coverage or increasing support following shocks, could also play a role in reducing dropout.

## Bibliography

- Acosta, Pablo. 2011a. "Female Migration and Child Occupation in Rural El Salvador." *Population Research and Policy Review* 30 (4).
- Acosta, Pablo. 2011b. "School Attendance, Child Labour, and Remittances from International Migration in El Salvador." *Journal of Development Studies* 47 (6): 913-936.
- Ambler, K., D. Aycinena and D. Yang. 2014. "Channeling Remittances to Education: A Field Experiment Among Migrants from El Salvador." NBER Working Paper 20262. NBER: Cambridge, MA.
- Atkin, David. 2012. "Endogeneous Skill Acquisition and Export Manufacturing in Mexico." NBER Working Paper 18266. NBER: Cambridge, MA.
- Avitabile, Ciro and Rafael de Hoyos. 2014. "Heterogeneous Effects of Information about the Returns to Schooling on Student Learning: Evidence from a Randomized Control Trial in Mexico." World Bank Working Paper. World Bank: Washington, D.C.
- Azevedo, Joao Pedro, Marta Favara, Sarah Haddock, Luis Lopez-Calva, Miriam Muller, and Elizaveta Perova. 2012. *Teenage Pregnancy and Opportunities in Latin American and the Caribbean*. World Bank: Washington, D.C.
- Baez, Javier and Indhira Santos. 2007. "Children's Vulnerability to Weather Shocks: Natural Disasters as a Natural Experiment." Unpublished Working Paper.
- Baez, Javier and Indhira Santos. 2008. "On Shaky Ground: The Effects of Earthquakes on Household Income and Poverty." United Nations Development Program: New York, NY.
- Baez, Javier, Alejandro de la Fuente, and Indhira Santos. 2010. "Do Natural Disasters Affect Human Capital? An Assessment Based on Existing Empirical Evidence." IZA Working Paper 5164.
- Baez, Javier, Leonardo Lucchetti, Maria Genoni, and Mateo Salazar. 2015. "Gone with the Storm: Rainfall Shocks and Household Wellbeing in Guatemala." World Bank Working Paper. World Bank: Washington, D.C.
- Barro, Robert and Jong-Wha Lee. 2010. "A New Dataset of Educational Attainment in the World, 1950-2010." *Journal of Development Economics* 104: 184-198.
- Bassi, M., M. Busso, Sergio Urzúa and J. S. Muñoz. 2013 "Is the Glass Half Empty or Half Full? School Enrollment, Graduation and Dropout Rates in Latin America." IDB Working Paper Series No. IDB-WP-492. Inter-American Development Bank: Washington, D.C.
- Bentaouet-Kattan, R., and Székely, M. 2015b. "Patterns, Consequences and Possible Causes of Dropout in Upper Secondary Education in Mexico." *Education Research International*, Volume 2015, Article ID 676472.
- Bentaouet-Kattan, R., and Székely, M. 2015. "Analyzing the Dynamics of Upper Secondary Schooling in Latin America: A Cohort Approach." World Bank Working Paper. World Bank: Washington, D.C.



- Branson, N., C. Hofmeyr, and D. Lam. 2014. "Progress through school and the determinants of school dropout in South Africa." *Development Southern Africa* (31) 1: 106-126.
- Bruck, Tilman, Michele Di Maio, and Sami Miaari. 2014. "Learning the Hard Way: The Effect of Violent Conflict on Student Academic Achievement." Households in Conflict Network Working Paper 185. University of Sussex: Brighton, England.
- Bruns, Barbara and Javier Luque. 2015. *Great Teachers: How to Raise Student Learning in Latin America and the Caribbean*. World Bank: Washington, D.C.
- Bustelo, Monserrat. 2015. "Bearing the Burden of Natural Disasters: Child Labor and Schooling in the Aftermath of Tropic Storm Stan in Guatemala." World Bank Working Paper. World Bank: Washington, D.C.
- Cárdenas, M., de Hoyos, R., y Székely M. "Idle Youth in Latin America: a persistent problem in a decade of prosperity." *Economia*, forthcoming, 2015.
- Cardoso, A.R., and D. Vermer. 2007. "School drop-out and push-out factors in Brazil: The role of early parenthood, child labor, and poverty." World Bank Working Paper WPS4178. World Bank: Washington, D.C.
- Cecchini, Simone and Aldo Madariaga. 2011. *Conditional Cash Transfer Programmes: The Recent Experience in Latin America and the Caribbean*. UN ECLAC: Santiago, Chile.
- Chioda, Laura. 2013. *Crime and Violence over the Life cycle in Latin America and the Caribbean*. World Bank: Washington, D.C. Cox Edwards, A., and M. Ureta. 2003. "International migration, remittances, and schooling: evidence from El Salvador." *Journal of Development Economics* 72: 429– 461.
- Cunha, Flavio and James Heckman. 2007. "The Technology of Skill Formation." *American Economic Review* 97(2): 31-47.
- Cunningham, Wendy, Linda McGinnis, Rodrigo García Verdú, Cornelia Tesliuc, and Dorte Verner. 2008. *Youth At Risk in Latin America and the Caribbean: Understanding the Causes, Realizing the Potential*. World Bank: Washington, D.C.
- Dearden, L., C. Emmerson, C. Frayne, and C. Meghir. 2008. "Conditional Cash Transfers and School Dropout Rates." *Journal of Human Resources* 44 (4).
- Dutcher, N. and G. Tucker. 1994. "The Use of First and Second Languages in Education." Working paper. World Bank: Washington, D.C.
- Estado de la Nación. 2013. *Estado de la Educación Costarricense*. Estado de la Nación: San José, Costa Rica.
- Ferreira, Francisco, Julian Messina, Jamele Rigolini, Luis-Felipe Lopez-Calva, Maria Ana Lugo, and Renos Vakis. 2012. *Economic Mobility and the Rise of the Latin American Middle Class*. World Bank: Washington, D.C.
- Fiszbein, Ariel, Schady, Norbert Rüdiger, & Ferreira, Francisco HG. 2009. Conditional cash transfers: reducing present and future poverty. World Bank: Washington, D.C.
- Frazelle, Sarah and Aisling Nagel. 2015. *A Practitioner's Guide to Implementing Early Warning Systems*.

- Fryer, Roland. 2013. "Information and Student Achievement: Evidence from a Cellular Phone Experiment." NBER Working Paper 19113.
- Gardner Center. 2011. Using Early Warning Systems to Predict and Prevent Dropout: Youth Data Archive Policy Factsheet. Stanford University: Palo Alto, CA.
- Hanushek, Eric, Victor Lavy, and Kohtaro Hitomi. 2008. "Do Students Care About Quality? Determinants of Dropout Behavior in Developing Countries." *Journal of Human Capital* 2(1): 69-105.
- Ibáñez, A.M, C. Rodríguez, and D. Zarruk. 2013. "Crime, Punishment, and Schooling Decisions: Evidence from Colombian Adolescents." IDB Working Paper IDB-WP-413. Inter-American Development Bank: Washington, D.C.
- Ingrum, A. 2006. "High School Dropout Determinants: The Effect of Poverty and Learning Disabilities." *The Park Place Economist*, Volume XIV.
- Jensen, Robert. 2010. "The (Perceived) Returns to Education and the Demand for Schooling." *The Quarterly Journal of Economics* 125 (2): 515-548.
- Jimenez, W. and M. Gaete. 2010. "Abandono (deserción) escolar en la enseñanza secundaria en Costa Rica, 2009-2010." Ministerio de Educación Pública, Costa Rica.
- Manacorda, M. 2006. "Grade Failure, Drop out and Subsequent School Outcomes: Quasi-Experimental Evidence from Uruguayan Administrative Data", Mimeo, STICERD, London,
- Marcotte, D. 2013. "High school dropout and teen childbearing." *Economics of Education Review* 34: 258–268.
- Marshall, J.C. Aguilar, M. Alas, R. Castellanos, L. Castro, R. Enamorado, and E. Fonseca. 2014. "Alternative Education Programmes and Middle School Dropout in Honduras." *Int Rev Education* 60:51–77.
- Ministerio de Educación de Nicaragua. 2014. "Reporte de Implementación hasta 2013, Plan Estratégico de Educación (PEE) 2011-2015." Ministerio de Educación, Managua.
- Ministerio de Educación de Guatemala. 2014. "Informe de revisión nacional de la educación para todos, Guatemala 2000 – 2013." Guatemala.
- Mo, D., L. Zhang, H. Yi, R. Luo, S. Rozelle, and C. Brinton, 2014. "School Dropouts and Conditional Cash Transfers: Evidence from a Randomised Controlled Trial in Rural China's Junior High Schools." *Journal of Development Studies* 49 (2): 190-207.
- Mullainathan, Sendhil and Eldar Shafir. *Scarcity: Why Having Too Little Means So Much*. Picador.
- Munyo, I. 2013. "Youth Crime in Latin America: Key Determinants and Effective Public Policy Responses." The Brookings Institution.
- Nguyen, Trang. 2008. "Information, Role Models, and the Perceived Returns to Education." Unpublished manuscript.
- O'Donoghue, Ted and Matthew Rabin. 2001. "Risky Behavior among Youths: Some Issues from Behavioral Economics." In *Risky Behavior among Youths: An Economic Analysis*, editor Jonathan Gruber. University of Chicago Press: Chicago, IL.

- OEI. 2010. “2021 Metas Educativas: La Educación Que Queremos para la Generación de los Bicentenarios.” Organización de Estados Iberoamericanos para la Educación: Madrid, Spain.
- Oreopoulos, Philip and Kjell Salvanes. 2011. “Priceless: The Nonpecuniary Benefits of Schooling.” *Journal of Economic Perspectives* 25(1): 159-184.
- Patrinós, Harry and Eduardo Velez. 2009. “Costs and benefits of Bilingual Education in Guatemala: A Partial Analysis.” *International Journal of Education Development* 29: 594-598.
- PREAL. 2014. “Calidad y Equidad para el Desarrollo Humano: Nicaragua.” Nicaragua.
- Pritchett, Lant and Amanda Beatty. 2015. “Slow Down, You’re Going Too Fast: Matching Curricula to Student Skill Levels.” *International Journal of Education Development* 40: 276-288.
- Santos, Indhira. 2007. “Disentangling the Effects of Natural Disasters on Children: 2001 Earthquakes in El Salvador.” Dissertation. Harvard University: Cambridge, MA.
- Smith, Darci. 2003. “The Impact of Neighborhood Violent Crime on School Attendance.” Dissertation. The University of Cincinnati: Cincinnati, Ohio.
- South, S., D.L. Haynie, and S. Bose. 2007. “Student Mobility and School Dropout.” *Social Science Research* 36: 68–94.
- Székely, M. and J. Karver. 2015 “Out of School and Out of Work Youth in Latin America: A Cohort Approach.” World Bank Working Paper. World Bank: Washington, D.C.
- UNESCO. 2015. “Primera Entrega de Resultados TERCE.” UNESCO: Oficina de Santiago de Chile.
- UNICEF. 2013. “Completar la Escuela en Centro América: Los Desafíos Pendientes.” UNICEF y Coordinación Educativa y Cultural Centroamericana.
- UNICEF. 2015. “Factores Asociados al Abandono del Sistema Educativo en la Transición Escolar.” Panama.
- World Bank. 2005. *Central America Education Strategy: An Agenda for Action*. World Bank: Washington, D.C.
- World Bank. 2014a. *Panama Systematic Country Diagnostic: Locking in Success*. World Bank: Washington, D.C.
- World Bank. 2014b. *Central America Social Expenditures and Institutional Review: Honduras*. World Bank: Washington, D.C.
- World Bank. 2014c. *Central America Social Expenditures and Institutional Review: Panama*. World Bank: Washington, D.C.
- World Bank. 2014d. *Central America Social Expenditures and Institutional Review: Costa Rica*. World Bank: Washington, D.C.
- World Bank. 2014e. *Central America Social Expenditures and Institutional Review: El Salvador*. World Bank: Washington, D.C.
- World Bank. 2014f. *Romania: Draft Strategic Framework to Reduce Early School Leaving*. World Bank: Washington, D.C.

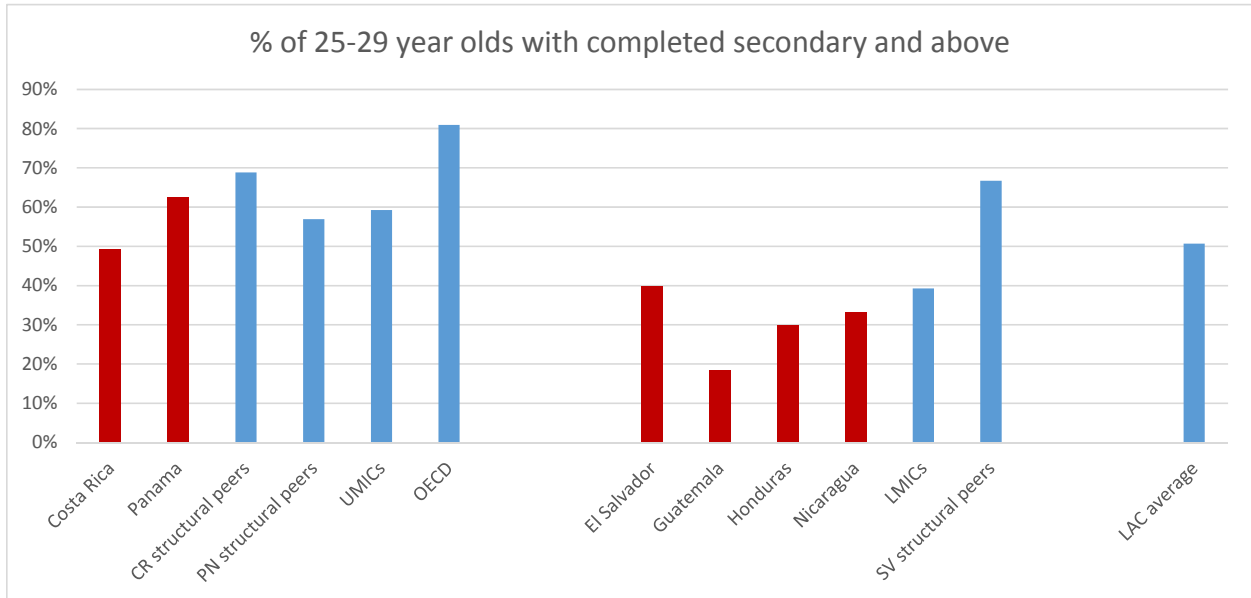
World Bank. 2015a. *Costa Rica Systematic Country Diagnostic*. World Bank: Washington, D.C.

World Bank. 2015b. *El Salvador Systematic Country Diagnostic: Building on Strengths for a New Generation*. World Bank: Washington, D.C.

World Bank. 2015c. *World Development Report 2015: Mind, Society, and Behavior*. World Bank: Washington, D.C.

World Bank. 2015d. *Qualitative Study on Teenage Motherhood in Nicaragua: Overview*. World Bank: Washington, D.C.

**Figure 1**



Note: Structural peers are defined in each country's Systematic Country Diagnostic. Costa Rica: Chile, Croatia, Dominican Republic, Lithuania, Panama, Uruguay. Panama: Bulgaria, Costa Rica, Croatia, Dominican Republic, Uruguay. El Salvador: Armenia, Bosnia and Herzegovina, Dominican Republic, Georgia, Serbia, and Tunisia.  
Source: Barro and Lee 2010

**Figure 2**

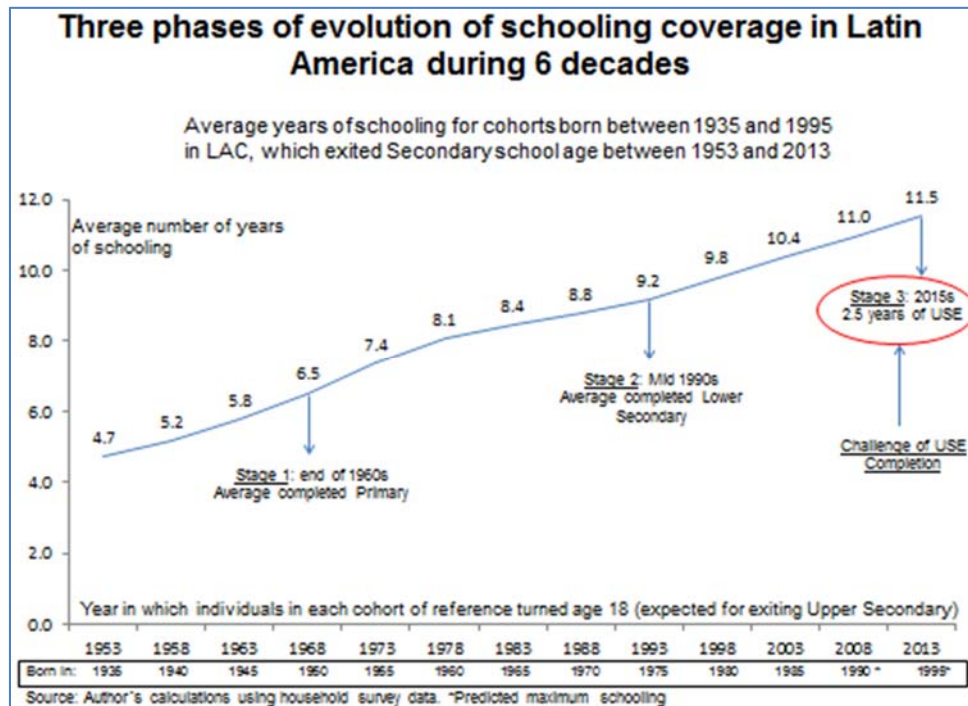


Figure 3a

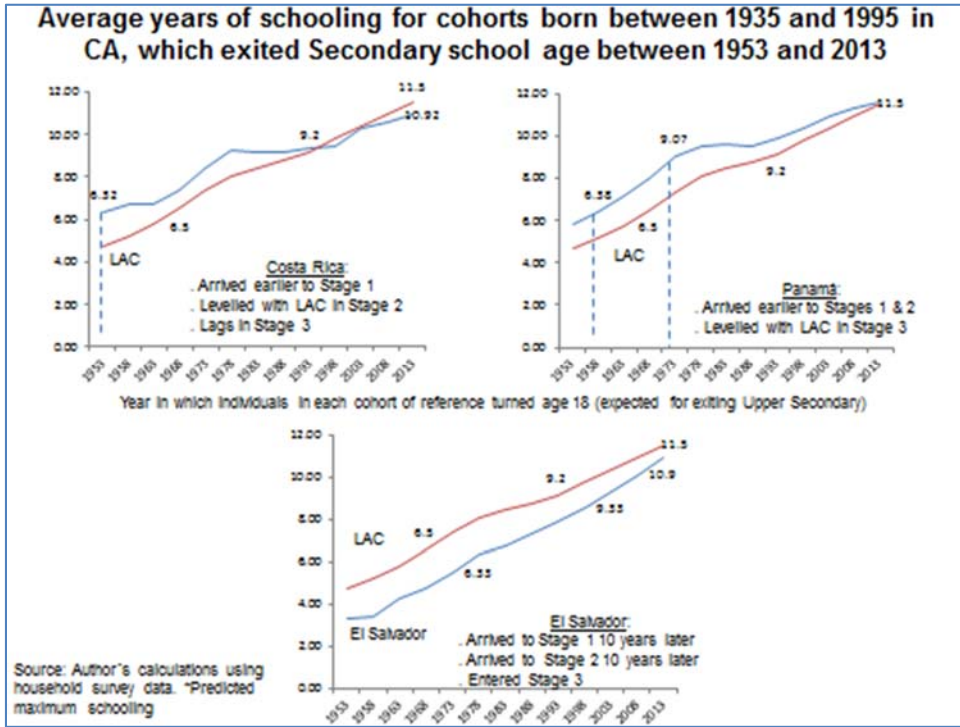


Figure 3b

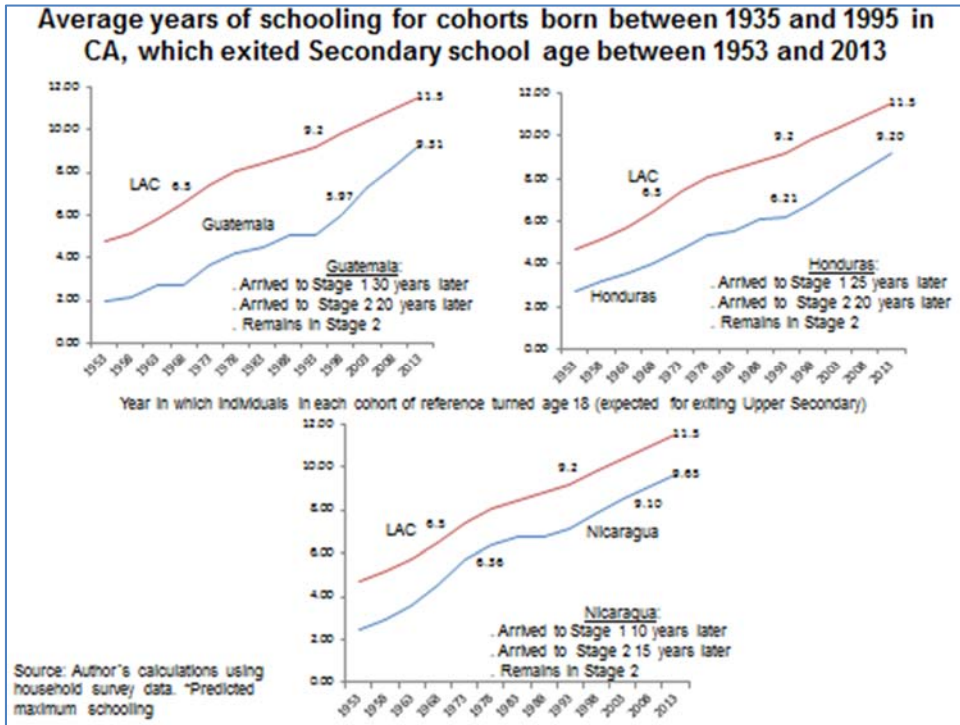


Figure 4a

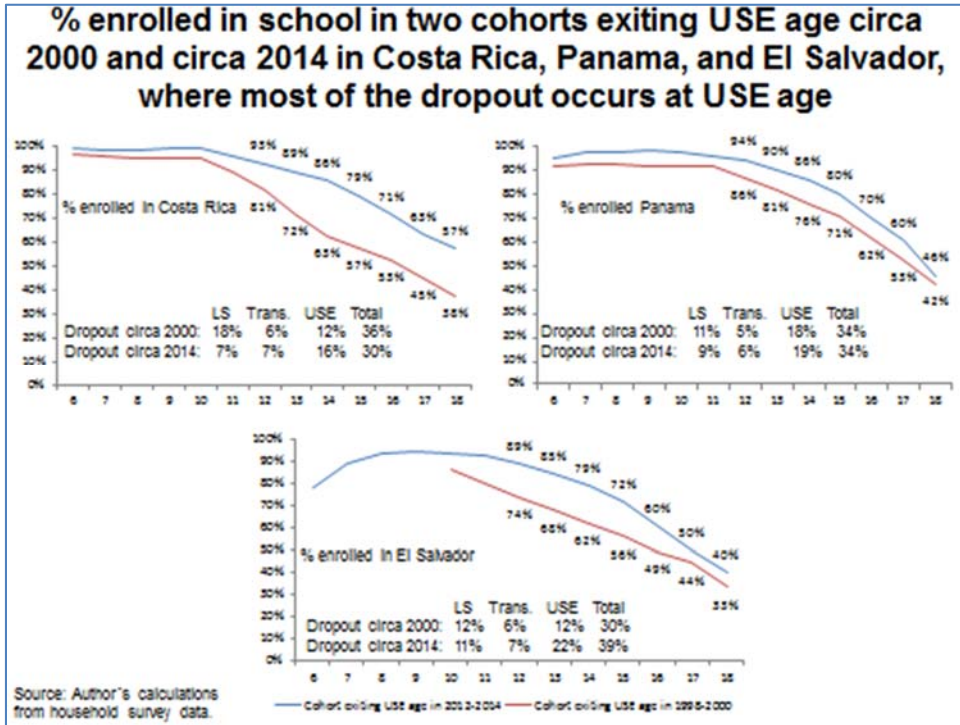


Figure 4b

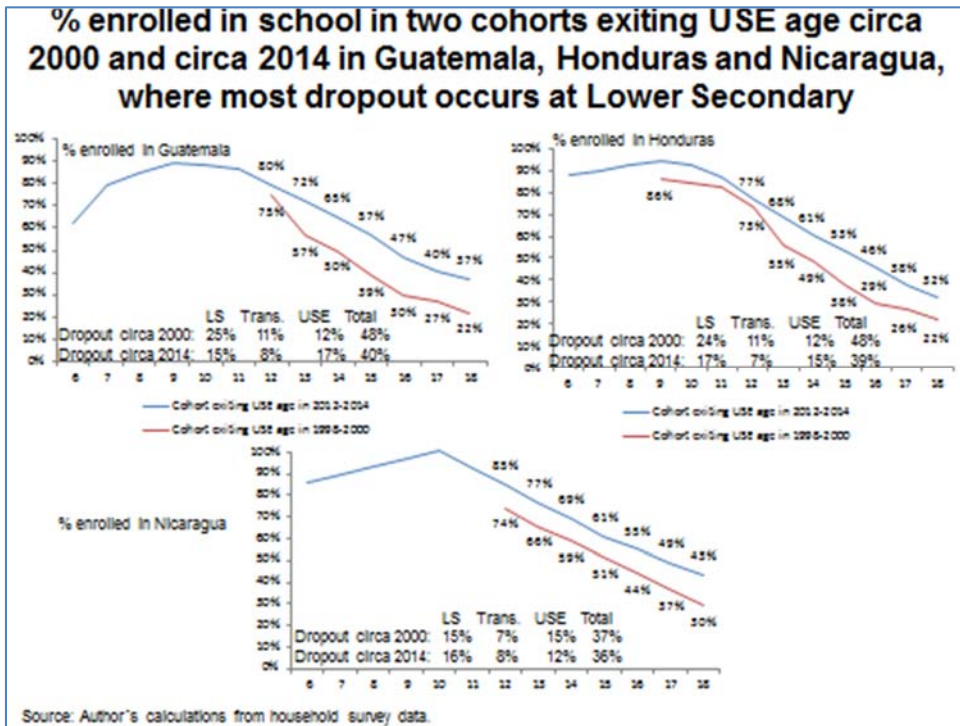


Figure 5

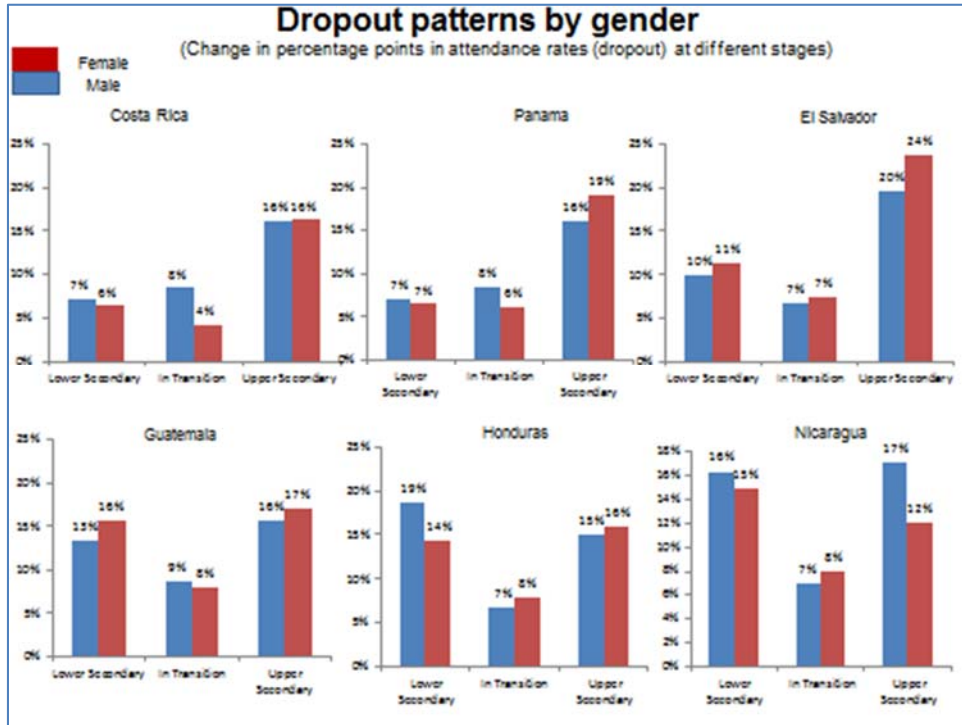


Figure 6

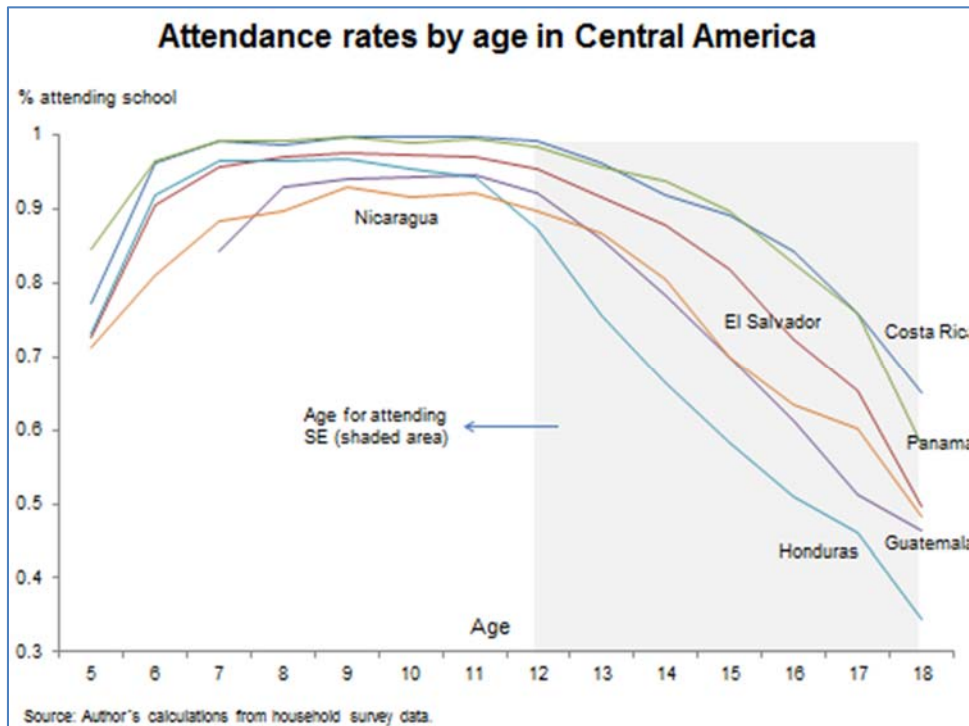




Figure 7

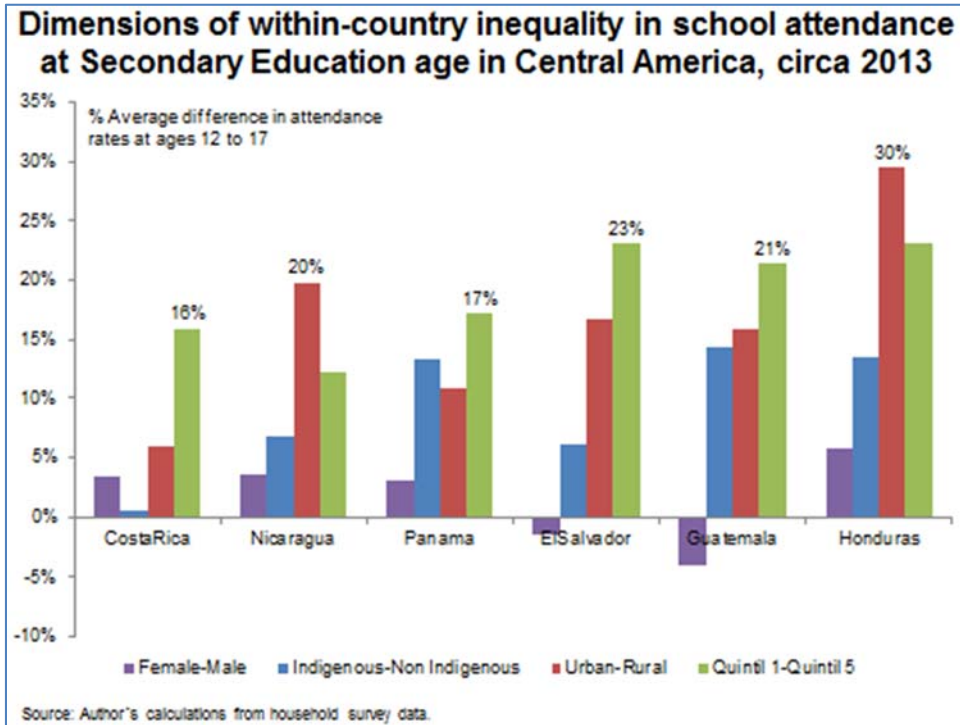


Figure 8

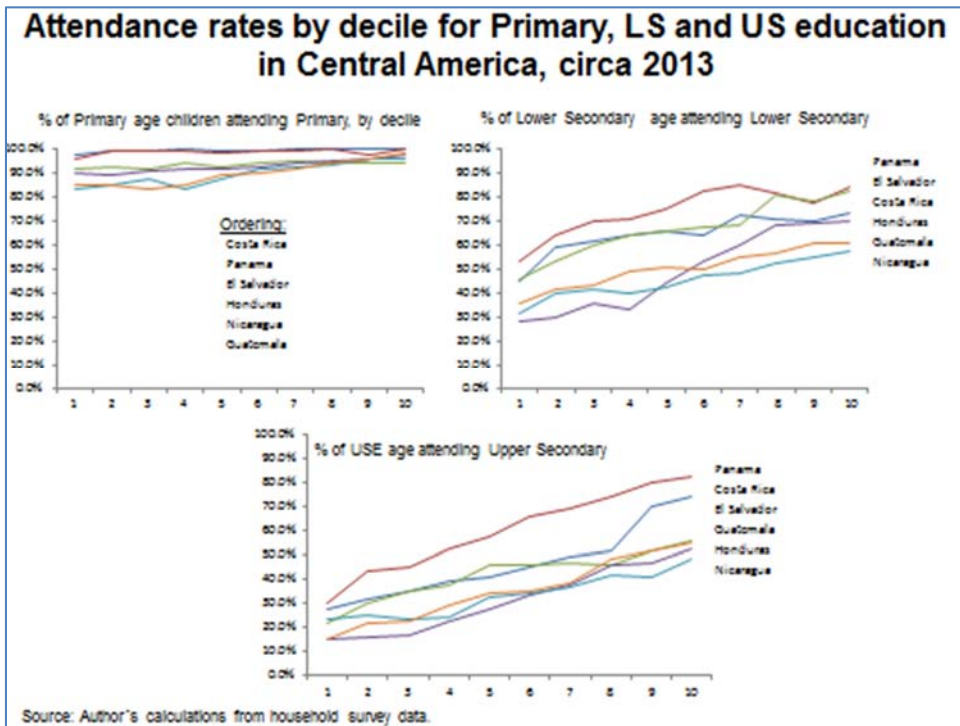


Figure 9

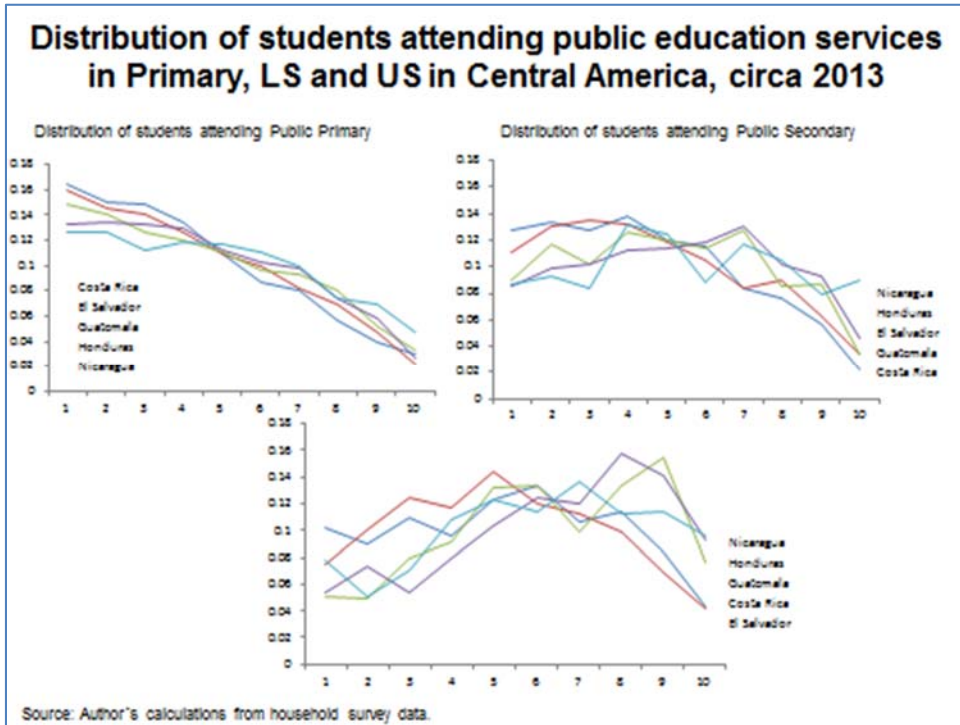


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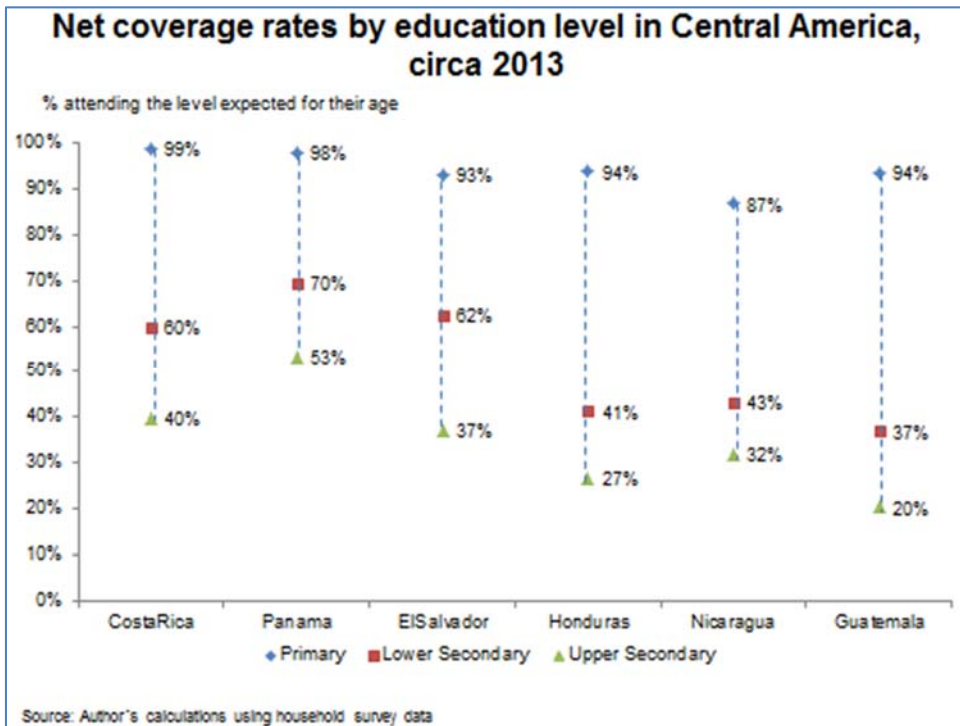


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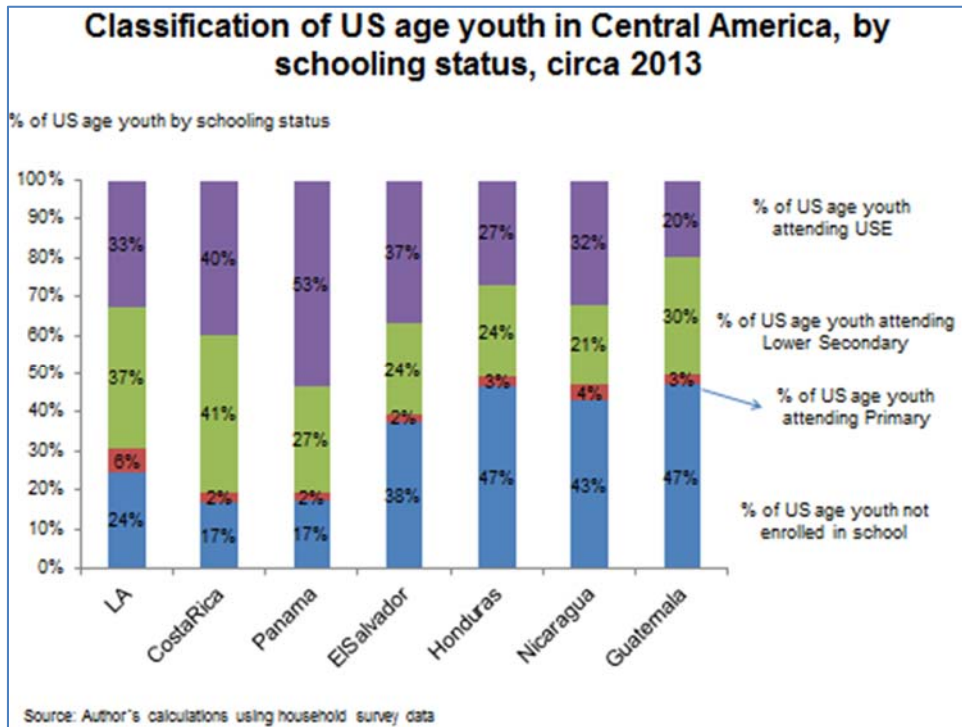


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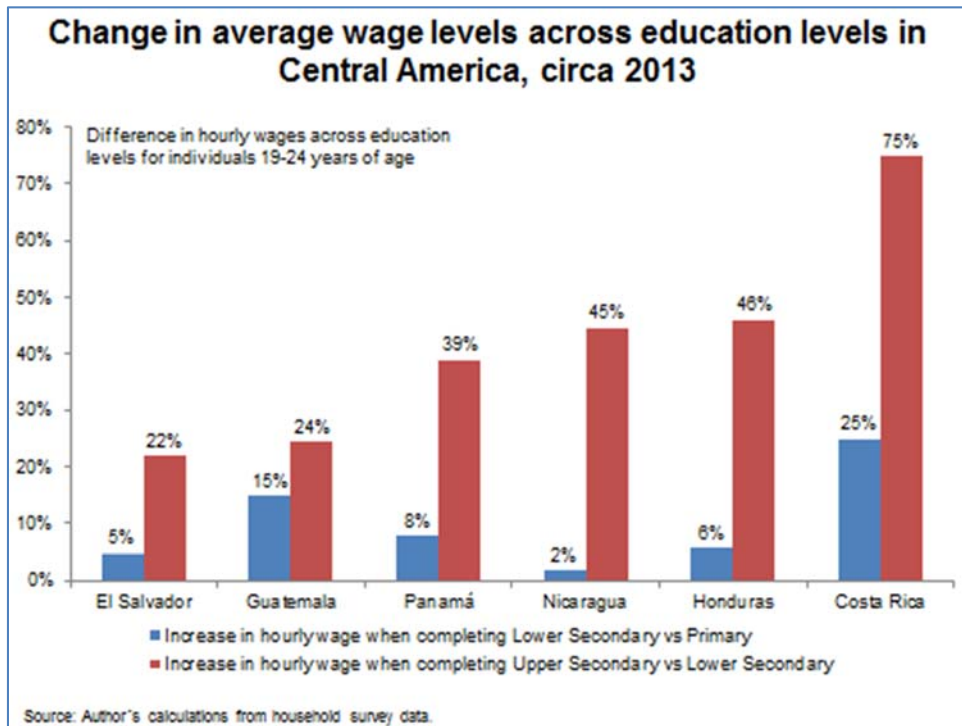


Figure 13

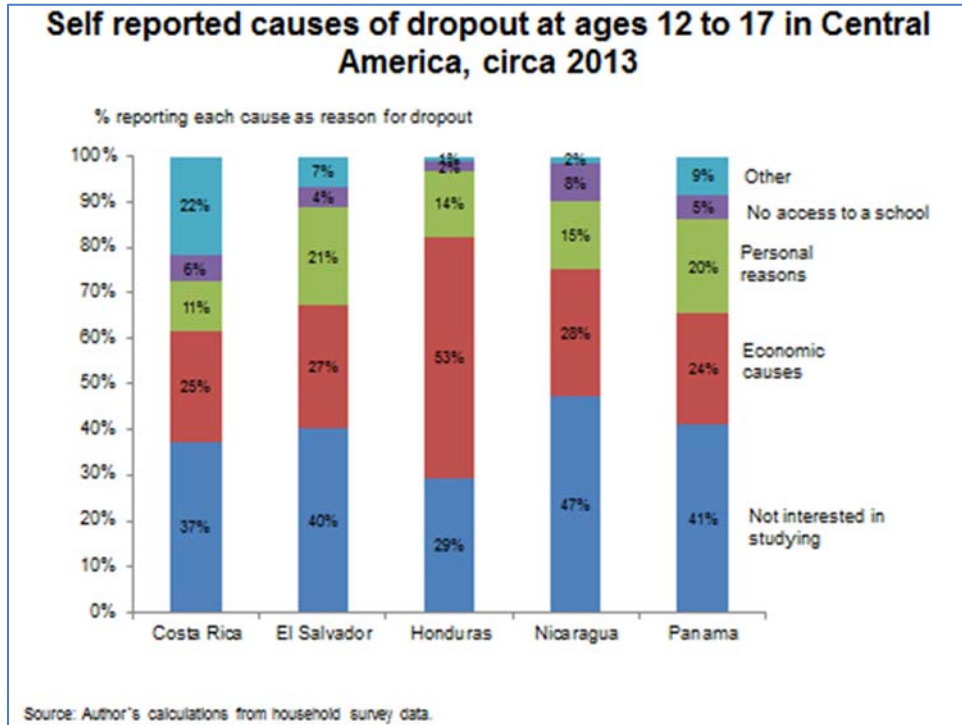


Figure 14

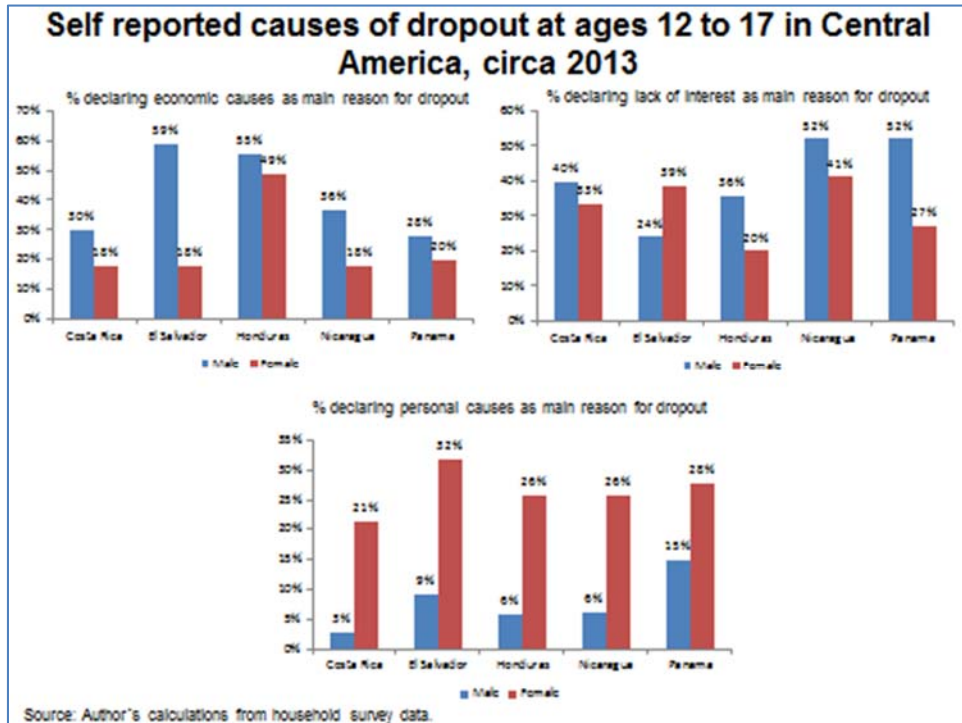


Figure 15

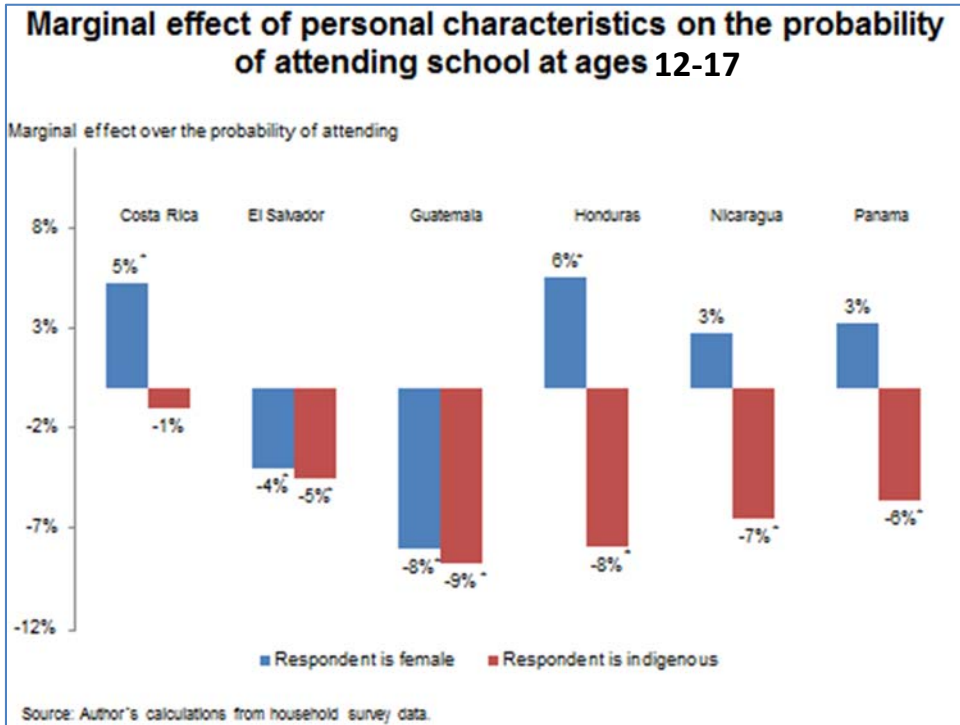


Figure 16

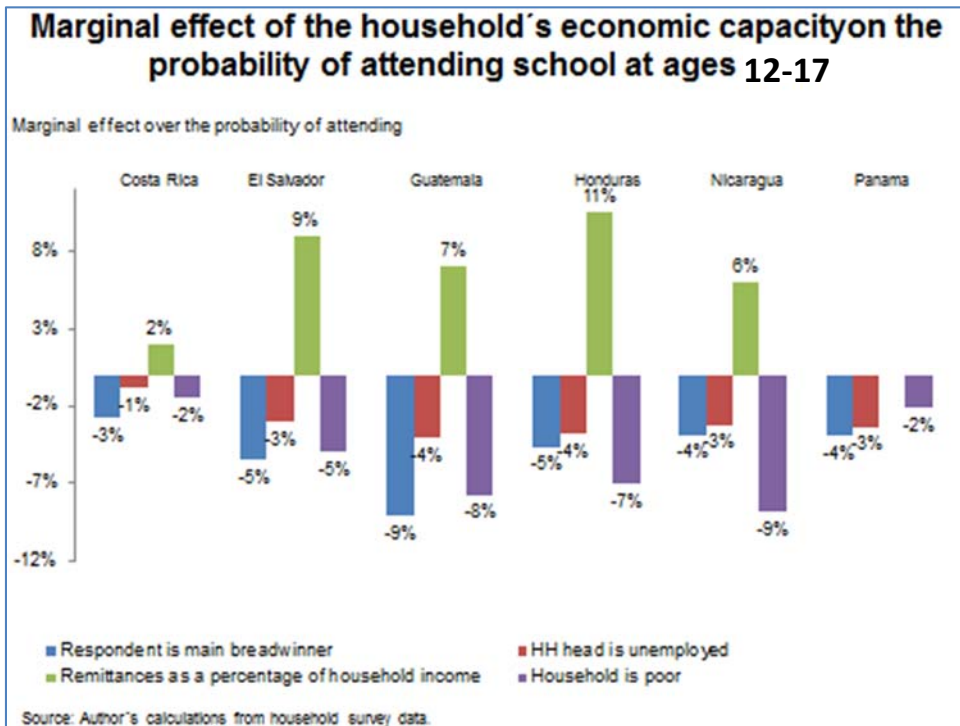


Figure 17

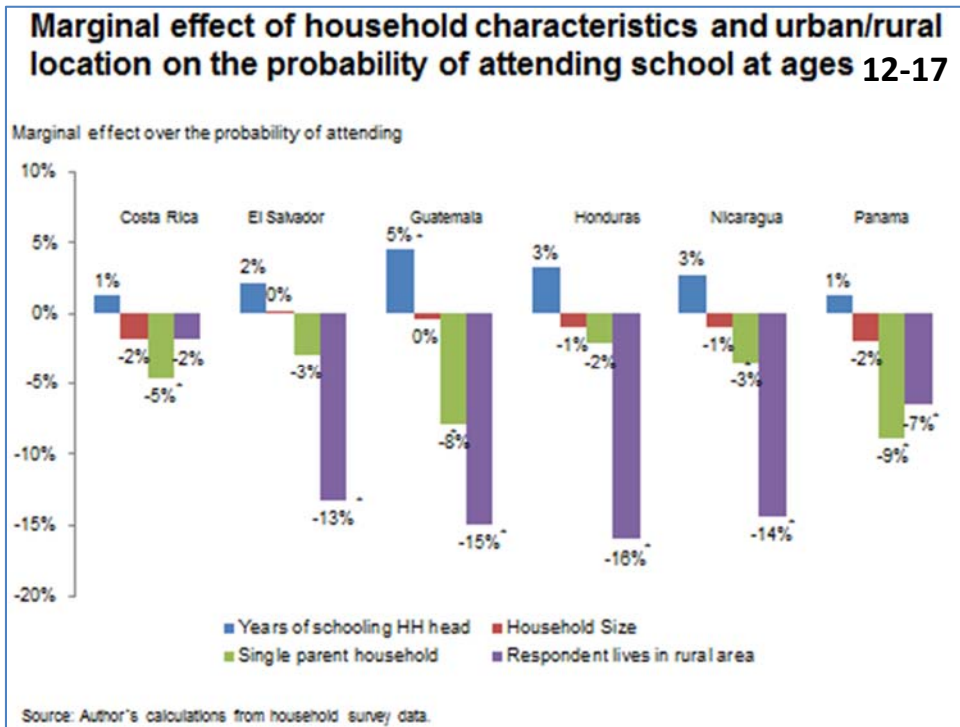


Figure 18

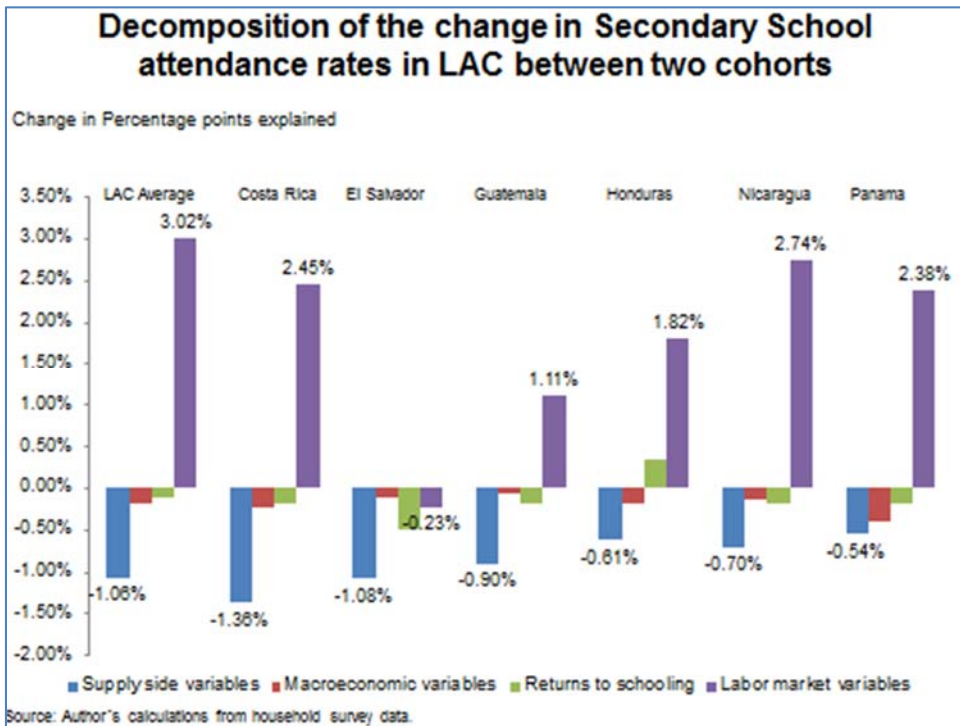


Figure 19

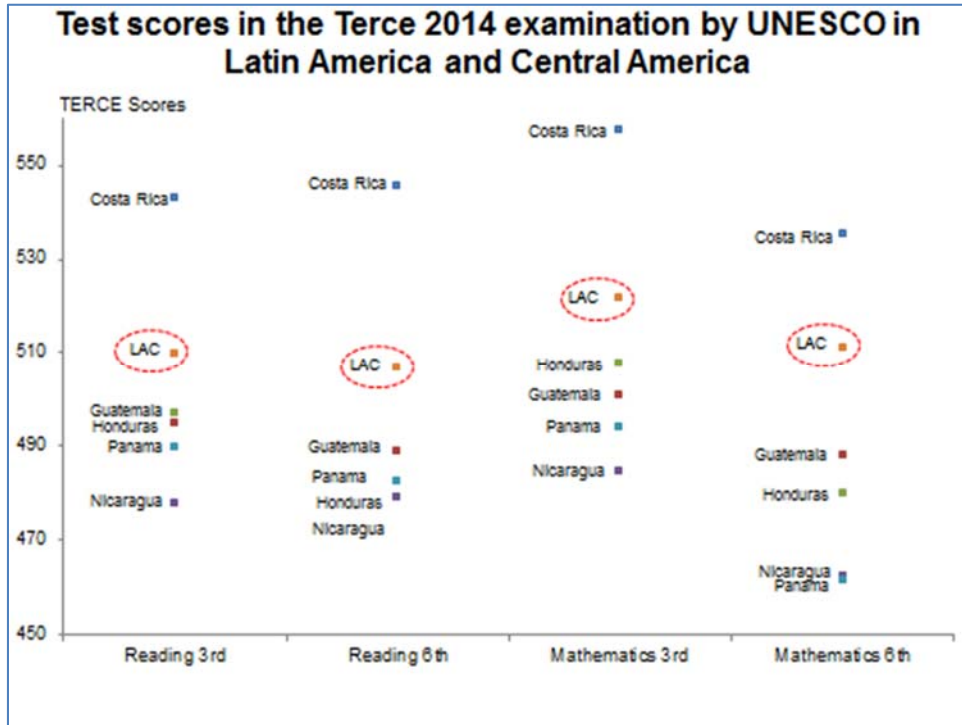


Figure 20

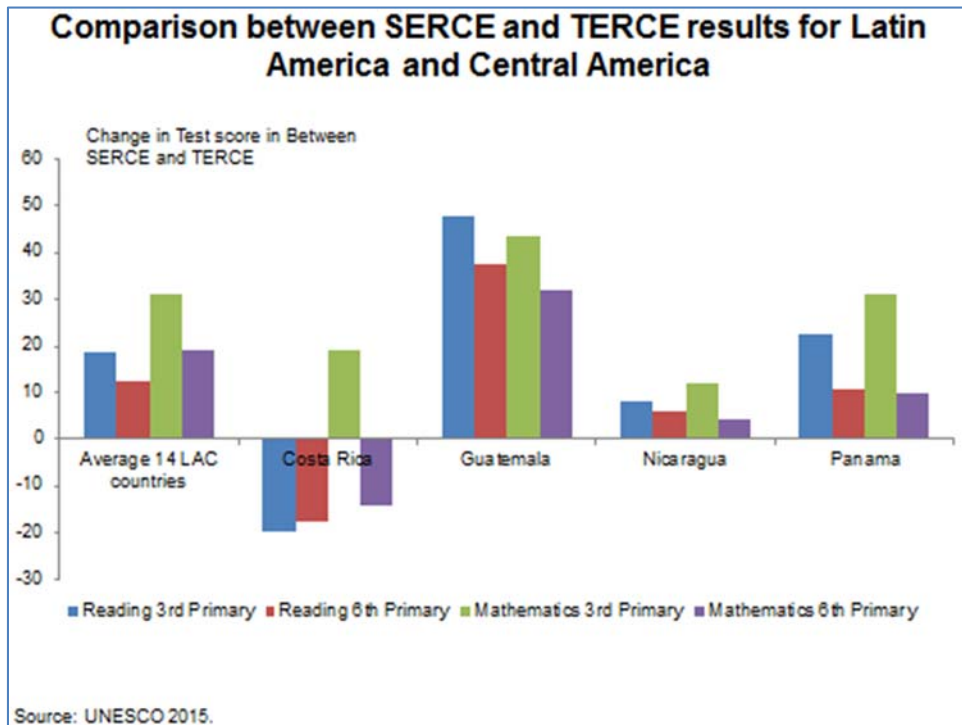
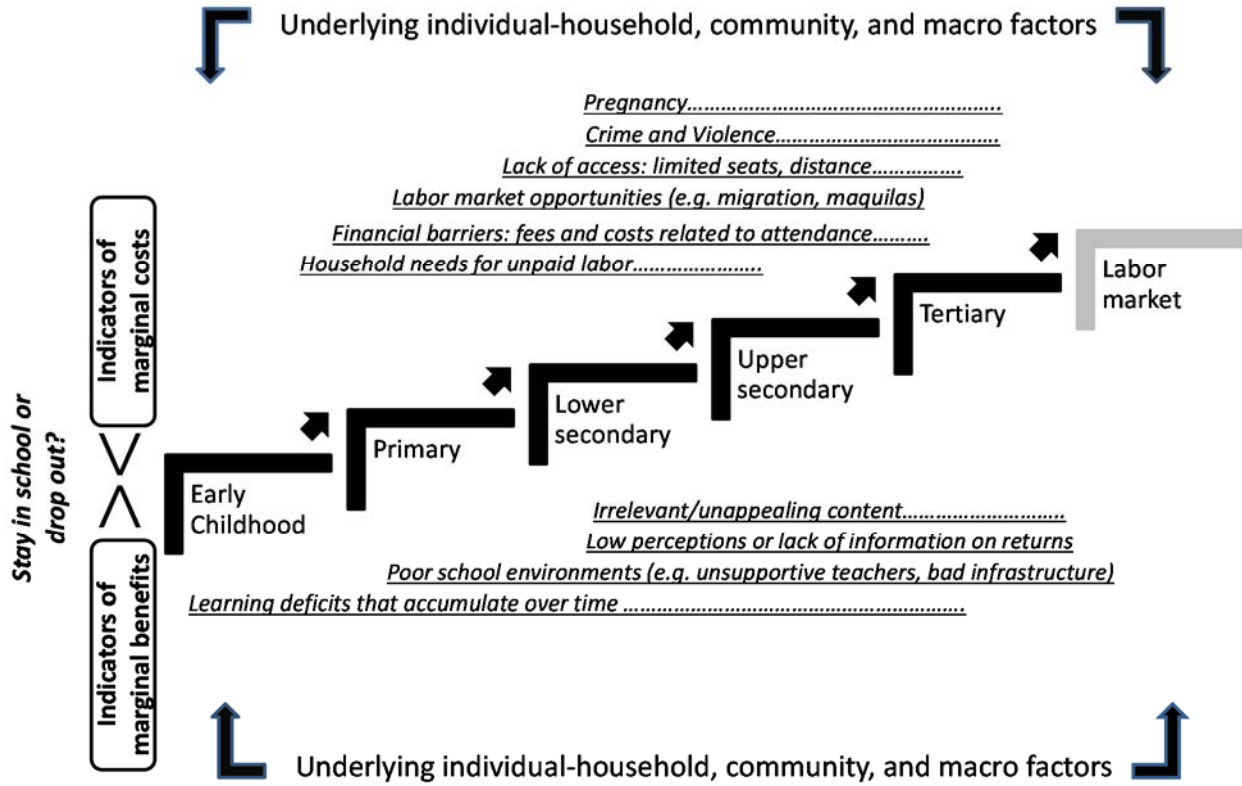


Diagram 1



Adapted from adapted from STEP framework, Cunningham et al 2008, and Behrman, de Hoyos, and Szekely (2015)



**Table 1**

% of dropout that occurs at each stage of secondary  
education for the cohort exiting US age circa 2012-2014

Country	% of dropout occurring at			
	Lower Secondary	In transition	Upper Secondary	Total
Costa Rica	23%	23%	53%	100%
Panama	25%	18%	57%	100%
El Salvador	27%	18%	55%	100%
Guatemala	37%	21%	42%	100%
Honduras	42%	19%	39%	100%
Nicaragua	43%	22%	34%	100%

Source: Author's calculations from household surveys.

**Table 2**

Labor Market Conditions and Schooling Level in Central America  
at ages 25 to 45, circa 2013

Country	Rate of Unemployment			% of informal workers by education level			
	Average	With 10-12 years of schooling	With 13 or more years of schooling	Primary	Lower Secondary	Upper Secondary	Higher Education
Average LAC	6.5	7.8	5.9	62	54	44	33
Costa Rica	8.2	9.6	4.2	32	28	20	10
El Salvador	5.6	7.7	5.6	84	72	64	59
Guatemala				87	74	54	38
Honduras	6.5	9.7	7.8	92	82	66	36
Nicaragua	8.4	9.4	8.8	87	76	64	43
Panamá	4.7	5.9	3.9	71	56	38	20

Source: Author's calculations from household survey data circa 2013.

**Table 3**

## Returns to schooling in Central America at ages 25-45

Country	Returns to Secondary relative to Primary			Returns to Higher Educ. relative to Primary		
	1990s	2000s	2010s	1990s	2000s	2010s
Average LAC	1.81	1.93	1.82	2.31	2.54	2.50
Costa Rica	1.89	2.00	1.96	2.85	3.16	2.54
El Salvador	1.62	1.70	1.97	2.08	2.15	2.80
Guatemala	1.98	2.25	1.56	2.30	2.80	2.45
Honduras	2.06	1.78	1.76	2.45	2.94	2.36
Nicaragua	1.83	1.88	1.89	2.45	2.58	2.57
Panamá	2.27	2.27	1.85	2.76	2.47	2.62

Source: Author's calculations based on household survey data. The returns are estimated through standard Mincer regressions with correction for sample selection bias. Please see Table A.4 for additional details.

**Table 4**

## Correlation coefficient between schooling gap for individuals between 12 and 17 years of age, and the number of years of schooling of the household head

Country	Circa 2000	Circa 2005	Circa 2012
Average LAC	-44%	-43%	-37%
Costa Rica	-51%	-44%	-40%
El Salvador	-54%	-48%	-44%
Honduras	-51%	-50%	-51%
Nicaragua	-52%	-52%	-51%
Panama	-52%	-48%	-46%
Guatemala	-63%	-50%	-47%

Source: Author's calculations with household survey data. Schooling gap is calculated as the value of expected years of formal education for a given age, and the actual years attained

**Table 5**

Marginal effect of household and school access variables in El Salvador,  
2012

Variable	Marginal Effects			
<i>Economic</i>				
Respondent is main breadwinner	-	0.054 *	-0.055 *	-0.056 *
HH head is unemployed	-	0.031 *	-0.030	-0.030
Remittances as a percentage of household income	-	0.090 *	0.087 *	0.081 *
Household is poor	-	0.050 *	-0.046 *	-0.045 *
<i>Personal characteristics</i>				
Respondent is female	-	0.040 *	-0.038 *	-0.041 *
Respondent is indigenus	-	0.050 *	-0.045 *	-0.048 *
<i>Household characteristics</i>				
Years of schooling HH head	-	0.022 *	0.011 *	0.01 *
Household Size	-	0.002	-0.001	-0.001
Single parent household	-	0.029 *	-0.025 *	-0.028 *
Respondent lives in rural area	-	0.132 *	-0.109 *	-0.075 *
<i>Supply of education services</i>				
Number of schools in the Municipality	-	0.0219		
Schools per school age individuals in the Municipality	-	0.139 *		

Source: Author's calculations from household survey data.

\*Statistically significant at the 90% level or higher.

**Table 6**

Change in the value of independent variables explaining school dropout during 2000-2012

Country	Demand side variables		Macro variables		Labor market variables		Change in returns to schooling	
	Change in	Change in the %	Annual		(Ages 25-45)		(Ages 25-55)	
	Fertility	of poor	Growth of	Inflation	Change in	Change in	Higher Educ.	US
	Rate across	youth graduating	GDP per	Rate	Real Average	Employment	Relative to	Relative to
	Cohorts	from LS	capita		Wages	Rate	Primary	Primary
Costa Rica	-1.33	15%	2.6%	15.0%	11.50%	7.0%	-19.6%	-2.0%
El Salvador	-1.69	12%	1.4%	4.0%	-6.40%	3.0%	-12.5%	-30.7%
Guatemala	-1.61	10%	0.8%	8.0%	-1.90%	8.0%	-19.7%	-1.1%
Honduras	-1.99	7%	2.1%	10.0%	0.00%	11.0%	13.6%	17.4%
Nicaragua	-2.12	8%	1.7%	11.0%	8.20%	11.0%	6.1%	-18.5%
Panama	-0.53	6%	4.9%	3.0%	3.50%	12.0%	-9.7%	-8.9%
Total Latin America	-1.90	12%	2.5%	11.5%	9.30%	6.0%	-3.5%	-6.7%

Source: Betauet-Kattan and Székely (2015).

**Table 7**

Educational status of youth migrants compared to non-migrants

	<b>El Salvador</b>	<b>Guatemala</b>	<b>Honduras</b>
<b>%12-17 year old migrants in school</b>	95%	90%	91%
<b>% 18-25 year old migrants:</b>			
w/ incomplete US	46%	61%	55%
w/ complete US	30%	23%	28%
w/ some higher education	24%	16%	17%
<b>% 18-25 year olds in home country:</b>			
w/ incomplete US	60%	75%	71%
w/ complete US	23%	15%	20%
w/ some higher education	17%	10%	9%

Sources: 2013 Author's calculations from the American Community Survey and country household survey data

**Table 8**

Dropout prevention policy typology

Level	Factors affecting private marginal benefits and costs	Relevant policies and programs		
		Prevention	Intervention	
Family/ individual	Human capital endowment	Early childhood development		
	Household wealth	Abolishing school-related costs		
		Financial and non-financial incentives		
	Motivation			
	Information set and value for the future	Information campaigns on the returns to education		
Community or Macro	Access to school	Infrastructure and transportation programs		
		Compulsory schooling laws		
		Full-time or extended day schools		
	Quality and supportiveness of schooling services	Teacher policies		
		School-based management		
		Socio-emotional skill building and other curricular reforms		
		Early warning systems		
			Tutoring and comprehensive support programs	
	Labor markets	High-quality TVET track		
	Social norms	Risk awareness, prevention, and social campaigns		
Early pregnancy and/or marriage				
Crime and violence				

Adapted from Almeida, Fitzsimons, and Rogers (2015) and World Bank (2014f)

# Appendix

## Table A.1

### Household survey data

Country	Years for which household survey is available																			Total
El Salvador	1989	1992	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2007	2008	2009	2010	2011	2012	2013	19
Panamá	1991	1995	1996	1997	1998	1999	2001	2002	2003	2004	2006	2007	2008	2009	2010	2012	2013			17
Honduras	1989	1992	1996	1997	1998	1999	2001	2002	2003	2005	2007	2008	2009	2010	2011	2012				16
Costa Rica	1987	1989	1991	1993	1995	1997	1998	2000	2001	2002	2003	2004	2009	2010	2012	2013				16
Guatemala	1998	2000	2004	2006	2009	2010	2011	2012	2013											9
Nicaragua	1993	1998	2001	2005	2009	2010	2012													7

Source: Extended data bank of household surveys.

**Table A.2**

Official age for attending different schooling levels

Country	Pre-school	Primary	Lower Secondary	Upper Secondary
Argentina	3-5	6-11	12-14	15-17
Bolivia	4-5	6-11	12-13	14-17
Brazil	4-6	7-10	11-14	15-18
Chile	3-5	6-11	12-13	14-17
Colombia	3-5	6-10	11-14	15-16
Costa Rica	5	6-11	12-14	15-17
D. Republic	3-5	6-11	12-13	14-17
Ecuador	4-5	6-11	12-14	15-17
Guatemala	3-6	7-12	13-15	16-18
Honduras	3-5	6-11	12-14	15-16/17
Mexico	3-5/6	6-11	12-14	15-16/17
Nicaragua	4-6	7-12	13-15	16-17/18
Panama	4-5	6-11	12-14	15-17
Peru	3-5	6-11	12-14	15-16
Paraguay	4-5	6-11	12-14	15-17
El Salvador	4-6	7-12	13-15	16-18
Uruguay	3-5	6-11	12-14	15-17
Venezuela	3-5	6-11	12-14	15-16/17

Source: ICSED 1997, UNESCO, and country level official data for Costa Rica, Ecuador, and El Salvador.



**Table A.3**

Share of 25-29 year olds by schooling level at which they exited

	Before completing primary	Primary completed	Before completing lower secondary	Lower secondary completed	Before completing upper secondary	Upper secondary completed	Beyond upper secondary
Costa Rica	4%	9%	13%	13%	18%	4%	39%
Panama	3%	4%	11%	14%	24%	9%	34%
Honduras	5%	12%	15%	20%	19%	2%	27%
El Salvador	2%	7%	11%	21%	23%	3%	33%
Guatemala	9%	1%	20%	33%	17%	4%	15%
Nicaragua	9%	2%	22%	27%	17%	6%	17%

Source: Latest household survey for each country (2012-2014)

**Table A.4**

Marginal Effect of Different Characteristics over the probability of attending school

Independent variable	Costa Rica	El Salvador	Guatemala	Honduras	Nicaragua	Panama
<i>Economic causes</i>						
Respondent is main breadwinner	- 0,028 <i>0,021</i>	- 0,054 <i>0,026</i>	- 0,091 <i>0,041</i>	- 0,047 <i>0,020</i>	- 0,039 <i>0,016</i>	- 0,040 <i>0,017</i>
HH head is unemployed	- 0,008 <i>0,006</i>	- 0,030 <i>0,018</i>	- 0,041 <i>0,027</i>	- 0,038 <i>0,026</i>	- 0,032 <i>0,021</i>	- 0,033 <i>0,027</i>
Remittances as a percentage of household income	0,020 <i>0,009</i>	0,090 <i>0,020</i>	0,070 <i>0,030</i>	0,105 <i>0,032</i>	0,060 <i>0,020</i>	
Household is poor	- 0,015 <i>0,010</i>	- 0,050 <i>0,041</i>	- 0,077 <i>0,035</i>	- 0,070 <i>0,029</i>	- 0,088 <i>0,030</i>	- 0,022 <i>0,016</i>
<i>Personal characteristics</i>						
Respondent is female	0,053 <i>0,019</i>	- 0,040 <i>0,014</i>	- 0,080 <i>0,035</i>	0,056 <i>0,023</i>	0,028 <i>0,019</i>	0,033 <i>0,027</i>
Respondent is indigenous	- 0,010 <i>0,006</i>	- 0,045 <i>0,013</i>	- 0,087 <i>0,023</i>	- 0,079 <i>0,020</i>	- 0,065 <i>0,015</i>	- 0,056 <i>0,019</i>
<i>Household characteristics</i>						
Years of schooling HH head	0,013 <i>0,008</i>	0,022 <i>0,013</i>	0,045 <i>0,023</i>	0,032 <i>0,019</i>	0,027 <i>0,016</i>	0,012 <i>0,008</i>
Household Size	- 0,018 <i>0,015</i>	0,002 <i>0,003</i>	- 0,004 <i>0,003</i>	- 0,009 <i>0,007</i>	- 0,009 <i>0,008</i>	- 0,019 <i>0,017</i>
Single parent household	- 0,046 <i>0,017</i>	- 0,029 <i>0,017</i>	- 0,079 <i>0,027</i>	- 0,021 <i>0,013</i>	- 0,035 <i>0,011</i>	- 0,088 <i>0,026</i>
Respondent lives in rural area	- 0,019 <i>0,011</i>	- 0,132 <i>0,041</i>	- 0,149 <i>0,041</i>	- 0,160 <i>0,044</i>	- 0,144 <i>0,034</i>	- 0,065 <i>0,015</i>

Source: Author's calculations by using household survey data. The coefficients for marginal effects derived from a Probit estimation, are presented. Standard errors are shown in italics below the marginal effects.

**Table A.5**

Country	Average value of Coefficient for Primary			Average value of Coefficient for Secondary			Average value of Coefficient for Higher Education		
	1990s	2000s	2010s	1990s	2000s	2010s	1990s	2000s	2010s
Costa Rica	0,16	0,29	0,21	0,31	0,59	0,41	0,46	0,93	0,53
El Salvador	0,66	0,41	0,35	1,07	0,70	0,70	1,37	0,89	0,99
Guatemala		0,35	0,43		0,79	0,68		1,93	1,06
Honduras	0,25	0,22	0,68	0,51	0,38	1,19	0,85	0,63	1,60
Nicaragua	1,23	0,81	0,45	2,25	1,51	0,86	3,01	2,08	1,16
Panamá	0,13	0,23	0,34	0,29	0,52	0,62	0,48	0,80	0,88

Note: The above table contains the average value of the coefficient of the standard Mincer regression where the dependent variable is the log hourly wage of each worker, and the independent variables are dummies for Primary, Secondary (including lower and upper), and Higher education. The reference variable is no schooling, so the coefficient reflects the additional income that is obtained when having certain education level, with respect to having no schooling. The standard Heckman correction was used to account for labor participation potential bias in the regression. The figures reported in the text refer to the *relative* returns between two different levels (the Secondary over the Primary coefficient and the Higher Education over the Primary coefficient). Average coefficients are included for brevity (which are the coefficients actually used to calculate the relative returns mentioned in the text), since the full estimations include one regression per country/year – that is, 84 different regressions. In these base regressions it is observed that all coefficients are statistically significant.

Figure A.1

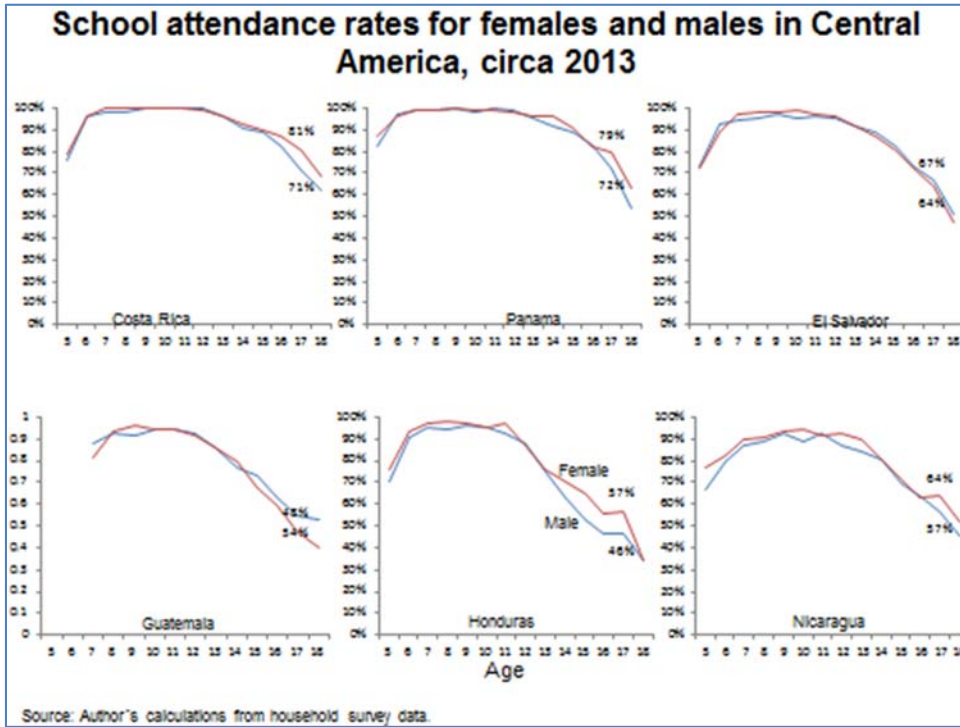


Figure A.2

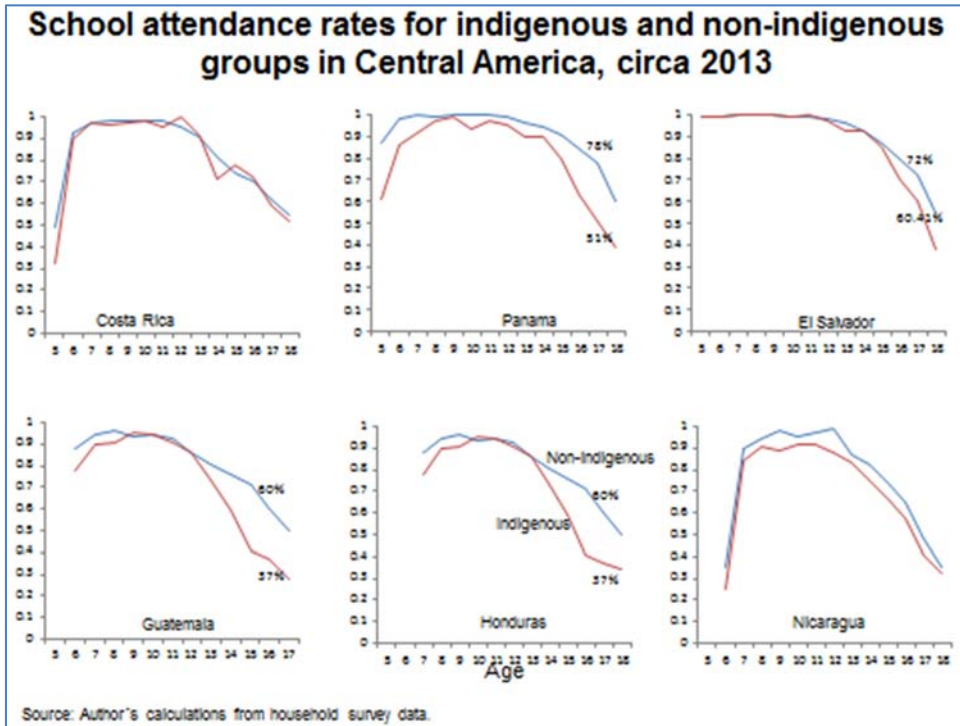


Figure A.3

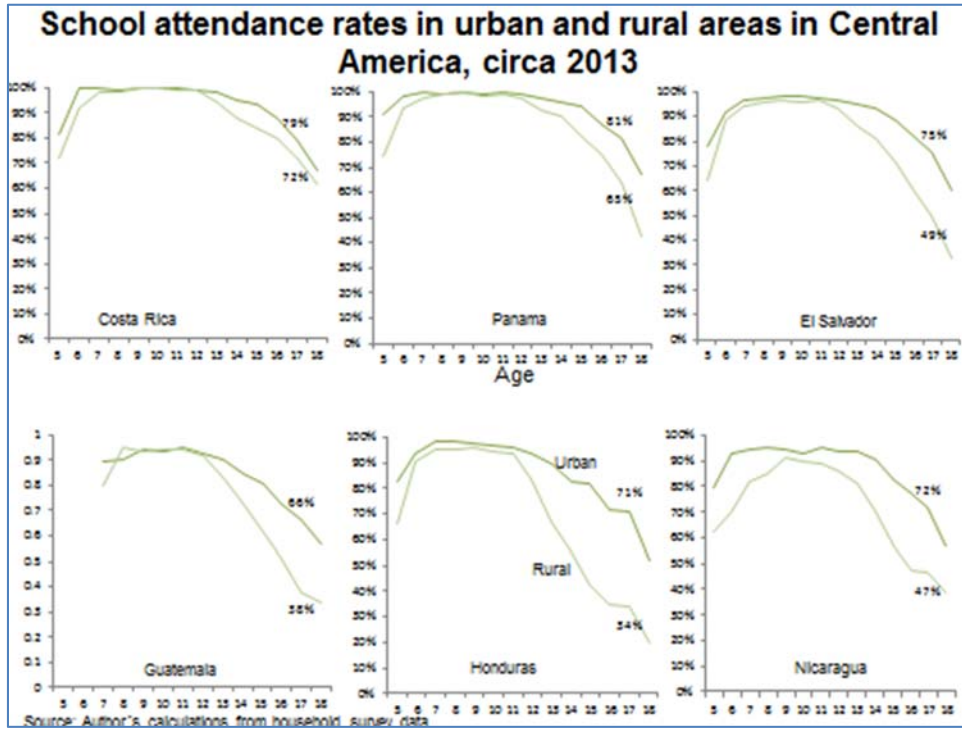


Figure A.4

