MDG 2:
Achieve universal primary education

Target 3: To ensure by 2015 that children everywhere will complete a full course of primary schooling

Perhaps the second most important of the MDGs is to achieve universal primary education, one of the most recognised pillars of human development. The priorities contemplated by the MDGs are comprehensive and mutually reinforcing, so while enhancing education is a development goal by itself, it is also widely recognised as the main avenue of social mobility and, therefore, of escaping poverty (MDG 1).

The previous chapter demonstrated the importance of education as an intermediate factor in the poverty differentials that set apart some racial and ethnic groups in the LAC region. Education must not be discriminatory and should always promote equality and specifically gender equality (MDG 3). This is why the MDG gender indicator is focused on education, even though this is less relevant in LAC than in other regions, given the fact that in most of the LAC region the educational indicators of women are similar to or even surpass those of men. Finally, education has important and often ignored ramifications for MDG 4, in that maternal education has consistently been demonstrated to constitute one of the most important determinants of infant and child mortality.

The regional MDGR by ECLAC states the primacy of education and its promotion through a human rights-based approach, according to which education should be considered a human right and therefore a State obligation.

> *"Education is more than a right associated with full personal development. It is also a key factor in determining the opportunities and quality of life accessible to individuals, families and communities. There is a wealth of evidence which demonstrates that education has a positive impact on income and health, family structure (in terms of fertility and its members' participation in the economy, etc.), the promotion of democratic values and civilized co-existence and the autonomous and responsible pursuits of individuals." (ECLAC, 2005 a: 82)*

The objective of achieving universal primary education, as the entire Millennium Declaration itself, is a product of international consensus, which establishes priorities for the different countries of the world. Primary education is regarded as a universal minimum for all countries to guarantee for their children.[1] In the LAC region, however, it is thought

[1] General Comment no. 02/90 and 13/99 UN Committee on Economic, Social and Cultural Rights.

that universal primary education has essentially been achieved (ECLAC 2005)[2] and many countries consider, in their national MDGR, matters such as quality of primary education and racial and ethnic inequality in education, whereas others consider more ambitious goals, such as secondary education (also advocated by ECLAC and UNESCO in the region).

The average completion rate of primary education in the LAC region is 88.3%. While the countries with high levels of human development, such as Argentina (97%), Chile (96.5%) and Uruguay (96.6%), are approaching universality, some other countries of the region are still lagging behind, with completion rates just above 50%: Guatemala (59%), Nicaragua (61.2%) and Honduras (64.2%).

> *"The progress made in the 1990s notwithstanding, secondary-school coverage in the region remains very low. In 2001, the average net enrolment ratio in secondary education in the region was 65%. There are also sharp differences across countries: Argentina, Chile and Cuba have achieved rates of around 80% or above, whereas the Dominican Republic, Guatemala and Nicaragua have rates of about 40% or lower." (ECLAC, 2005 a: 101)*

With respect to the literacy rate in the population aged 15 years and over, the 2002 statistics show a LAC average of 87.4%. There is an important inequality in the region with countries such as Argentina (97%), Chile (95.7%), Costa Rica (95.8%), Uruguay (97.7%) and Cuba (96.9%) on one hand and other countries with not so promising numbers like Haiti (51.9%), Guatemala (69.9%) and Nicaragua (76.7%).[3] There are also major differences between population groups. Primary education completion rates in Bolivia, for example, are only 68.4% for indigenous women, compared to 86.3% for non-indigenous women. In Guatemala, these percentages are 30.0% and 72.7%, respectively, and in Mexico 65.0% and 90.2% (Del Popolo & Oyarce, 2005).

The following pages discuss how population affects education, at the primary and secondary, based on the schedule below:

2.1. The link between macro-demographic trends and potential investments in education
2.2. The link between educational achievement and reproductive patterns in the families of origin
2.3. The link between educational outcomes and the SRH of adolescents
2.3.1. Adolescent pregnancy and educational achievement
2.3.2. Sexual and life skills education
2.4. Brain drain and brain gain

Educational planners throughout the LAC region are increasingly aware of the macro effect associated with the demographic bonus, which is reducing the demographic pressure

[2] According to ECLAC, the simple average indicator for net enrolment ratio in primary education for the region was 93% in 2002, a notable progress since the last decades NER, around 1990, was 86%.

[3] Data gathered from ECLAC (2005 a), 2002 Statistics.

on educational systems, as enrolment rates are no longer increasing or may even start to decline (Bella, 2004). Of course, this phenomenon has different grades of importance in the countries of the region. Consequently, the chapter divides the region into groups and provides analysis on the effects it has on each of them.

Another important question is to what extent the size of the families influence children's educational outcomes in the region. According to the evidence discussed below, children from large families do less well in school than children from small families, even though there are econometric issues with respect to the correct model specifications to measure the strength of these relationships. By ensuring that families have only the children they want, SRH therefore contributes to universal primary education.

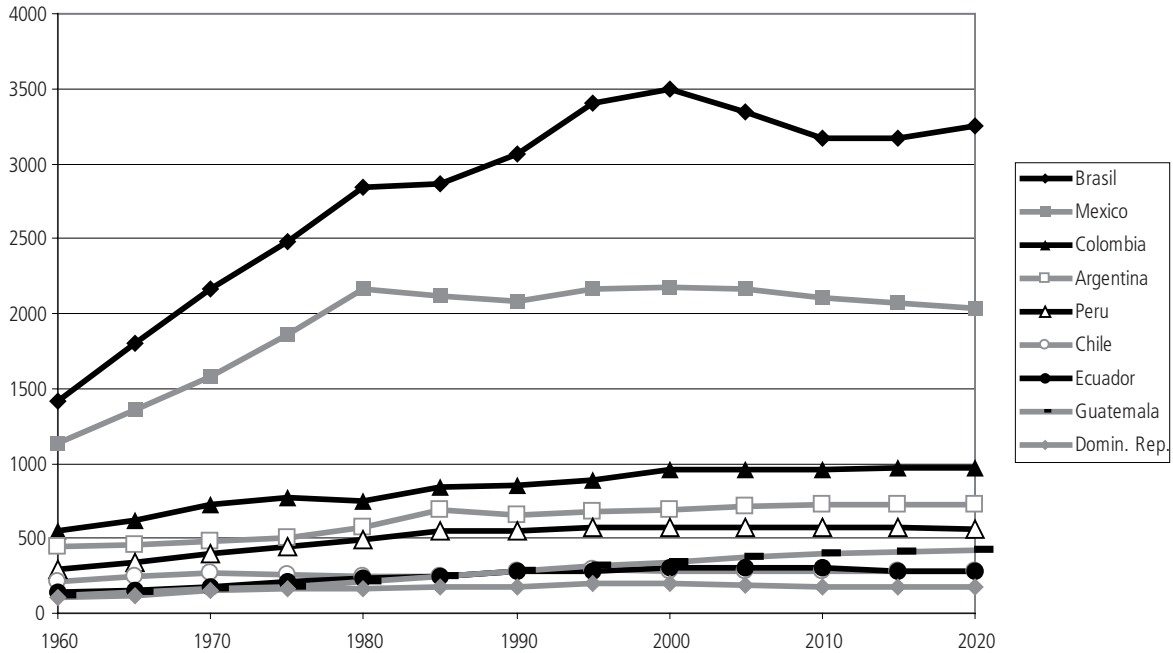
In secondary education, SRH issues present new challenges to guaranteeing the completion of education of the 12-18 year-olds. Unplanned pregnancies affect the educational outcomes of adolescent mothers, although so far there has not been a lot of scientific research on the precise strength of the effects. This issue is quite important, given the region's high adolescent fertility rates and the contemporary need to further education to provide the skills needed by the work environment. In order to tackle these problems, the text emphasizes the importance of sexuality education and its potential effects on improving schooling outcomes.

Finally, migration is also related to education and its influence takes shape through processes such as *brain drain* and *brain gain*. Brain gain is a theoretically possible outcome of the migratory process, but in Central America and the Caribbean it results mostly in brain drain. Consequently, migration may leave the sending countries without the skills needed to promote development, as is already becoming evident in the case of the health and the education sectors of some countries of the region, particularly in the Caribbean.

2.1. The link between macro-demographic trends and potential investments in education

Aggregate demographic trends in the LAC region during the next 2-3 decades have two important implications for investments in education. On the one hand, the size of the school age population in most countries of the region is stabilising. In some countries, such as Brazil, it is even starting to decline. Only high fertility countries like Guatemala still face increasing school age populations in the near and medium future. This slowdown is the effect of the demographic bonus, as it applies to education. Figure 2.1 depicts how the situation varies from country to country in the LAC region. As the need to keep up with constantly increasing school age cohorts gradually disappears, countries are now in a position to invest in the coverage and quality of education.

Figure 2.1: Demographic pressure on educational systems in the LAC region measured in terms of the size of the cohort of 6 year-olds

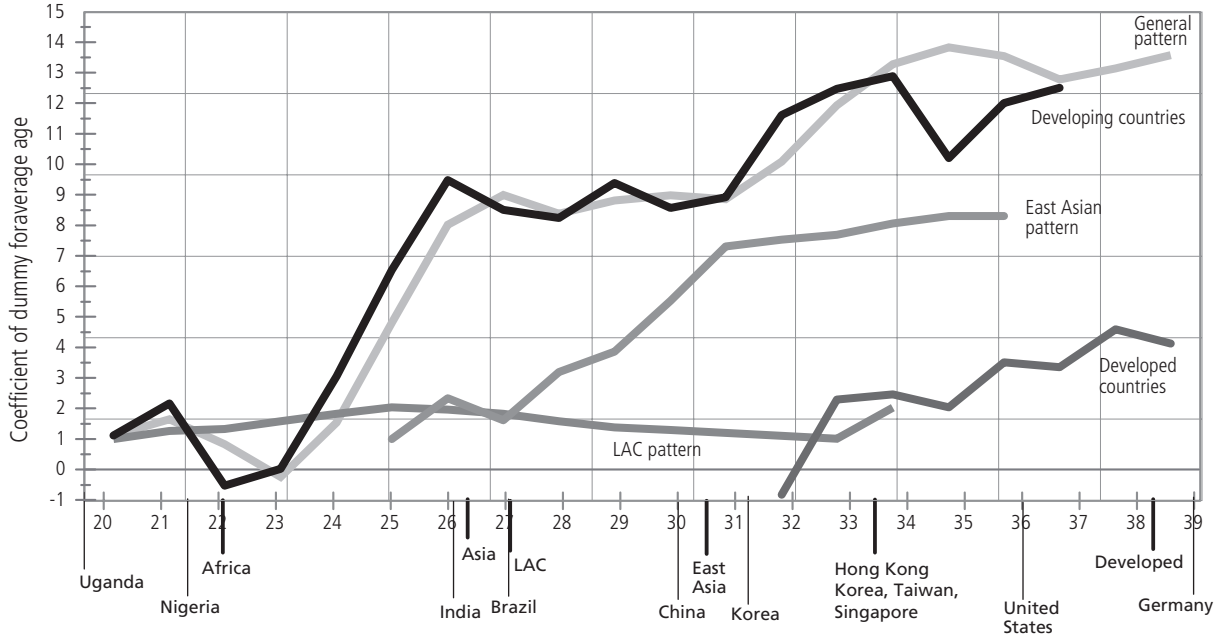


Source: Reelaborated based on Cabrol, 2002: Gráfico 7

The potential benefits of reduced cohort sizes and hence reduced "crowding-out" on enrolment rates and completed years of education have not been extensively analysed. A large scale study based on household surveys in the LAC region, combined with census and macro-economic data, was carried out by Behrman, Duryea and Székely in 1999. Although they did find a negative correlation between educational achievement and cohort sizes, the effects were weak in comparison with those of the macro-economic variables, particularly the adverse effects of the economic downturn of the 1980s which, in their appreciation, will haunt the LAC region in decades to come, in the form of missed schooling opportunities of the cohort that entered the labour force in the 1990s.

In a later article (Behrman, Duryea & Székely, 2001), they depict the relationship between the average age of the population (a measure of the degree of advance in the demographic transition) and the age pattern of progression to grade 4. This graph is displayed in Figure 2.2, which plots the country average age coefficient estimates for schooling progression - the probability that a student belonging to the cohort that is of school age in the year of reference, progresses to grade 4. They chose this variable in order to capture the "crowding out" effect that would be expected to occur when large proportions of a population demand a service. The probability of progression to grade 4 is low at young country average ages, and then increases as country average age increases, with relatively steep slopes for the country average age ranges of 23-27 and 31-35. This pattern is consistent with the crowding out argument, and is also consistent with another of their results (not shown here), namely that public education expenditures per child (which presumably have an effect on the quality of education) are initially low, and start increasing when a country ages.

Figure 2.2: Age pattern of progression to grade 4 in different regions



Source: Behrman, Duryea & Székely, 2001: Figure 14

It would appear from Figure 2.2 that on average the LAC region has already benefited from the positive effect for the 23-27 age range, though with potential in the future for the gains from the 31-35 age range. East Asia on average is poised to benefit from the gains for the 31-35 age range. The four fast-growing East Asian economies on average apparently already have benefited from most of the latter age range. When the profiles are separated by regions, it appears that the nature of the relationship is different in LAC than in other regions. While the pattern for developing countries, East Asia and developed countries is in line with the general pattern, the relation between country average age and the probability of progressing to grade 4 in LAC is much flatter. The reason why LAC diverges from the other regions does not seem to be that the region was subject to a shock in a specific decade. In fact, the decade effects for the 1990s and 1980s are significantly higher than those observed in the 1960s, even after controlling for country and year fixed effects and country average age. This suggests that, on average, the region has not been able to benefit from the demographic opportunity to improve its education prospects.

Soares (2006 b), who analysed census data on population and enrolment by age from 11 Latin American countries collected between 1971 and 2001, paints a more optimistic picture.[4] He decomposed the change in enrolment for grade *k* in the following manner:

$$\Delta M_k = m_k n_k \Delta P + P m_k \Delta n_k + P n_k \Delta m_k$$

The first term, $m_k n_k \Delta P$, represents additional enrolment resulting from total population growth. If the population is growing, this term will be positive and, if shrinking, it will be

[4] For 5 countries – Bolivia, Brazil, Costa Rica, Uruguay, and Venezuela – 3 census years were used; for the remaining 6 countries – Argentina, Ecuador, Guatemala, Honduras, Mexico, and Panama – only 2.

negative. The second term, $Pm_k \Delta n_k$, represents growth in enrolment resulting from changes in the relative weight of age group k, given total population growth. This means that if the school age population is growing more slowly than the adult population, $Pm_k \Delta n_k$ will be negative, indicating a so-called *relative demographic bonus*. The sum of the first two terms is the *absolute demographic bonus*. It can also be written simply as $m_k \Delta P_k$. The only country with a sizeable absolute demographic bonus in the 30-year period considered here is Brazil. The final term, $Pn_k \Delta m_k$, represents the enrolment[5] created that led to more educational inclusion, as it is the only term in which the net enrolment rate changes.

The same methodology can be applied to any country for which data on population and enrolment by age are available. When this is done, the data suggest that the 11 countries can be classified into four groups. The first group is the classical demographic bonus group and has only one country – Brazil –, which accounts for a large percentage of the Latin American population. In Brazil, the demographic slowdown facilitated an increase in enrolment rates. In Mexico and Panama there is no absolute bonus of the kind found in Brazil, but there is a substantial relative bonus. The third group is composed of countries that have been going slow for a while – Uruguay and Argentina. This situation also seems to apply to Ecuador. Decomposing change that did not occur is not very useful so there is not much to be said about this group. The final group is composed of Bolivia, Honduras, Guatemala and, to a lesser extent, Venezuela and Costa Rica. These countries showed increases in enrolment rates, sometimes to very high levels, as in Costa Rica, in spite of high demographic growth. Even more impressive is that three out of five of these nations are among the poorest in Latin America, showing that while demographic change can help or hamper, it is certainly not the only determinant of educational attainment. Three cases illustrate typical paradigmatic patterns from which the others can be inferred.

Table 2.1: Demographic bonus and education in Latin American countries

Group 1	Group 2	Group 3	Group 4
Brazil	Mexico, Panama	Uruguay, Argentina, Ecuador	Bolivia, Honduras, Guatemala, Venezuela, Costa Rica
Demographic slow-down facilitated increase in enrolment rates	Substantial relative bonus	No substantial changes	Increases in enrolment rates, sometimes to very high levels, as in Costa Rica, despite high demographic growth

Source: Soares, 2006 b

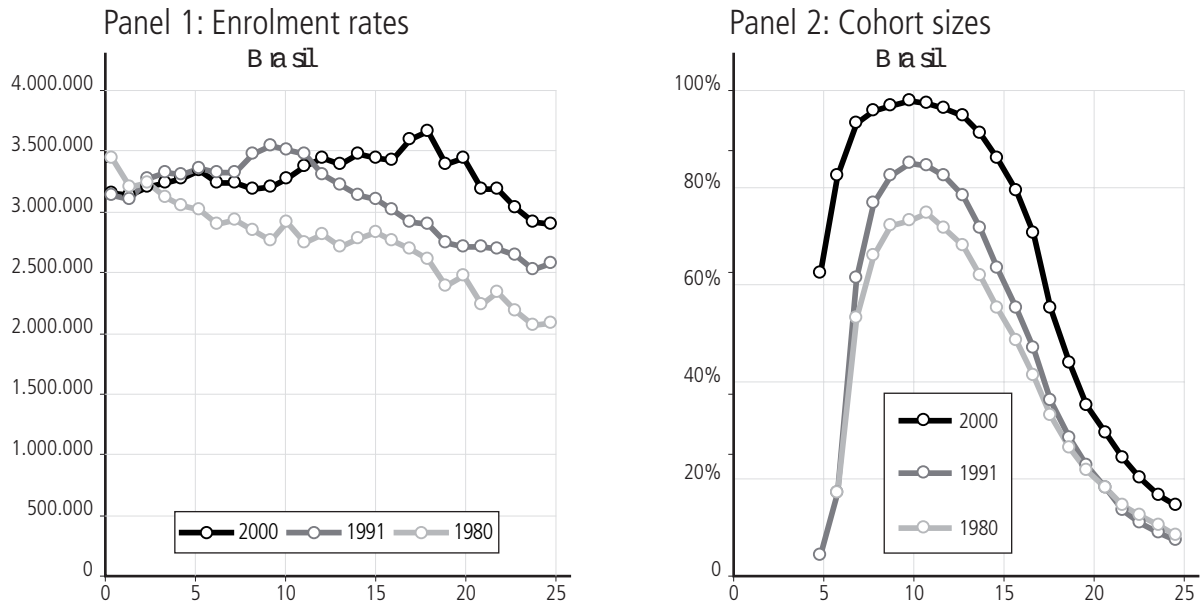
Group one: Brazil, the only case of absolute demographic bonus

Figure 2.3 shows that, from 1980 to 1991, the population of almost all ages increased, the only exception being those with one or no years of age. Differences of up to half a million children show that the population increase was considerable for age groups under 15. The comparison of 2000 with 1991 tells a different story: while from age 12 onwards the population increase is quite large, there is a considerable drop in the population aged 5-11.

[5] This assumes that no vacancies are left unfilled and thus that the total enrolled population and the total number of places offered are always the same.

Panel 2 shows that net enrolment did not increase very much from 1980 to 1991, but quite a bit from 1991 to 2000. The demographic and enrolment stories appear to coincide. Calculating the three effects from the decomposition using the 1991-2000 period yields Table 2.2, which shows that the largest part of the extra enrolment capacity created in the period allowed greater access. Since there was population growth from 1991 to 2000, the total population growth component is always positive – i.e. it shows a demographic burden. However, for ages 6-11, the relative bonus is greater than the total population growth component, yielding a positive absolute bonus and allowing considerable space for increases in net enrolment rates.

Figure 2.3: Cohort size and enrolment rates for Brazil, 1980, 1991 and 2000



Source: Soares, 2006 b

Table 2.2: Enrolment created by age, Brazil 1991-2000

Age	Better access	Absolute demographic bonus		Relative demographic bonus
		Total	Total population growth	
5-9	112.1%	-12.1%	29.2%	-41.3%
10-14	91.9%	8.1%	77.6%	-69.5%
15-19	68.9%	31.1%	27.0%	4.0%
20-24	73.9%	26.1%	20.7%	5.4%

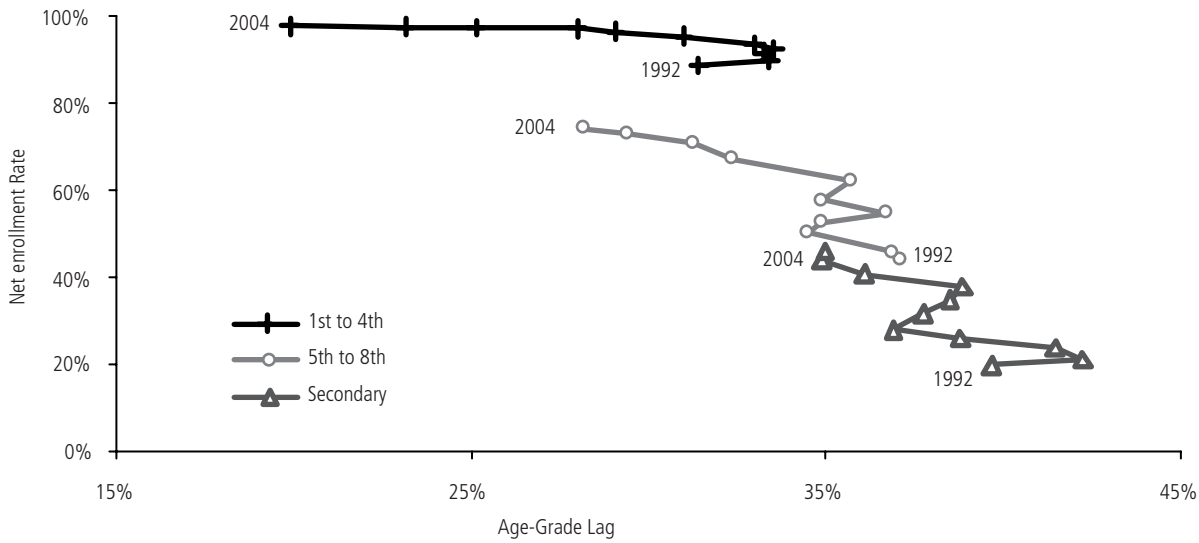
Source: Soares, 2006 b

Using a completely different kind of analysis of Brazilian enrolment data by municipality, based on hierarchical regression with or without spatial correlation, Riani and Rios-Neto (2006) show that for children aged 7-14 (but not for those aged 15-17), the relative size of their age cohort in the municipality is the primary determinant of enrolment rates. If the same age cohorts in neighbouring municipalities are taken into

account as well, the importance of this factor diminishes and the availability of local school teachers becomes a more important factor, but it continues to be significant, implying that decreased demographic pressure in the relevant age group does indeed improve the prospects for children to enroll in primary education.

In another paper, Soares (2006 a) presents the phase diagram in Figure 2.4, which shows that the educational lag, a measure of quality, has also gone down, particularly at the primary level. Instead of "vertical" growth (to keep up with an expanding school age population), the thrust of the growth is now directed towards the "left", i.e. bringing down the number of years that children are delayed with respect to their normal grade level. A slightly different angle is taken by Vélez, Medeiros and Soares (2002), who investigated the challenge of reducing schooling inequality in Brazil. They conclude that there is indeed a window of opportunity, some of which has already been lost, but that, given the slow nature of demographic change, this window is wide open and that there is still ample time to take advantage of it.

Figure 2.4: Phase diagram of net enrolment by percentage of educational lag for Brazil, 1992-2004



Source: Soares, 2006 a: Figura 5

There is, however, a trade-off. While it is true that declining demographic pressure on the educational system makes it easier for young people to prolong their education, such a prolongation is also becoming more and more necessary, as today's young people face stiffer competition from older workers than in the past, due to the same demographic bonus that is also responsible for lower demographic pressure on the educational system. In financial terms, Turra and Rios-Neto (2001: Table 2) show that the effect of savings in education as a consequence of fertility changes between 1995-2000 and 2015-2020 over the course of the life cycle is in the order of 19%, plus another 3% resulting from lower mortality. While this is substantial, it should be borne in mind that in absolute terms these savings are relatively

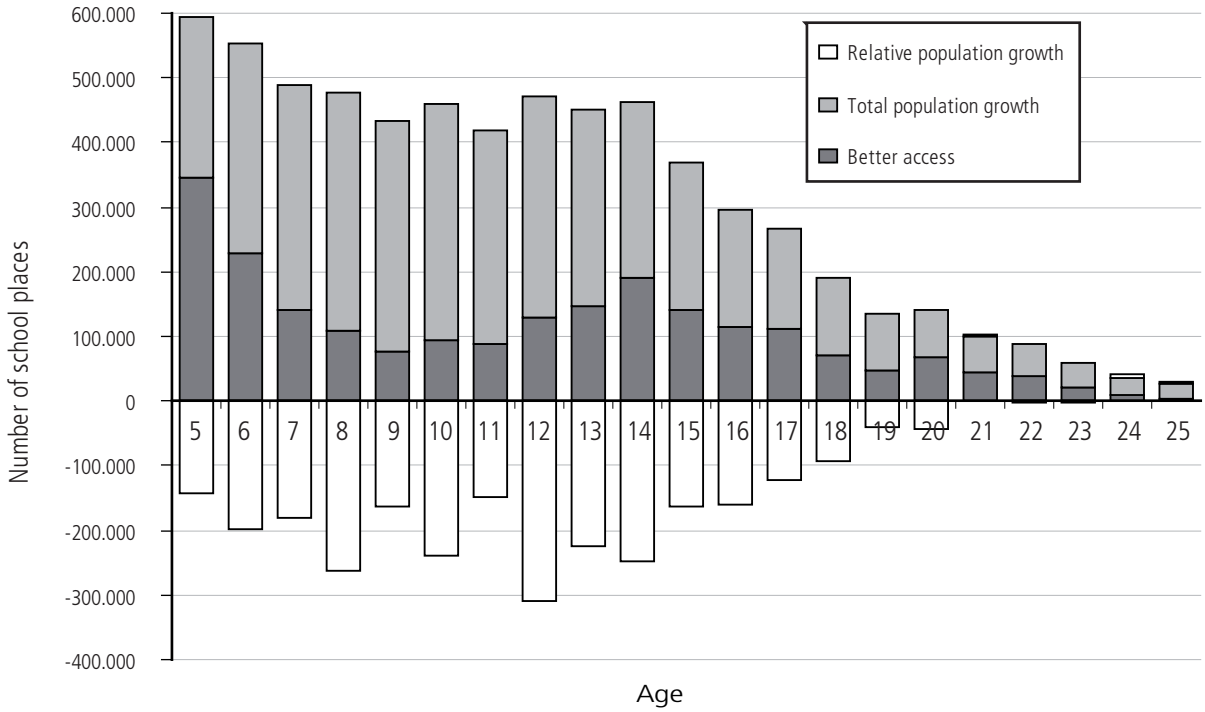
modest compared to the much higher expenditures that Brazil will incur with its costly pension system (see 1.2.7.3.).

Brazil is perhaps the classical case of demography lending a hand to attaining near universal enrolment. Among the eleven countries analysed here, Mexico shows a similar, although weaker, pattern.

Group two: Mexico and Panama, substantial relative bonus

Mexico, as seen in Figure 2.5 shows the enrolment capacity created between 1990 and 2000, by age, for students with ages between 5 and 25. The solid grey bars show the part of this enrolment that contributed to better access, 345,000 children in the case of 5 year-olds. The bars coloured with slanted lines show the size of enrolment keeping up with total population growth, a 248 per 1000 burden in the case of 5 year-olds. The white bars show the relative demographic bonus due to more adults per child – a 143 per 1000 bonus in the case of 5 year-olds. Note that the total amount of enrollmment created corresponds to the sum of all three bars (e.g. 450,000 in the case of 5 year-olds), not to the top of the shaded bars. Table 2.3 shows the same data in percentage terms, with subtotals for age 5-15 and 5-25.

Figure 2.5: Enrolment created in Mexico, by age (1990-2000)



Source: Soares, 2006 b

Finally, a graph can be created to show the counterfactual[6] contribution on net enrolment rates of each term of the decomposition above. Figure 2.6 shows net enrolment rates in

[6] The term "counterfactual" refers to simulated scenarios of things that did not actually happen but whose hypothetical outcomes – under certain theoretical assumptions – can be plausibly predicted.

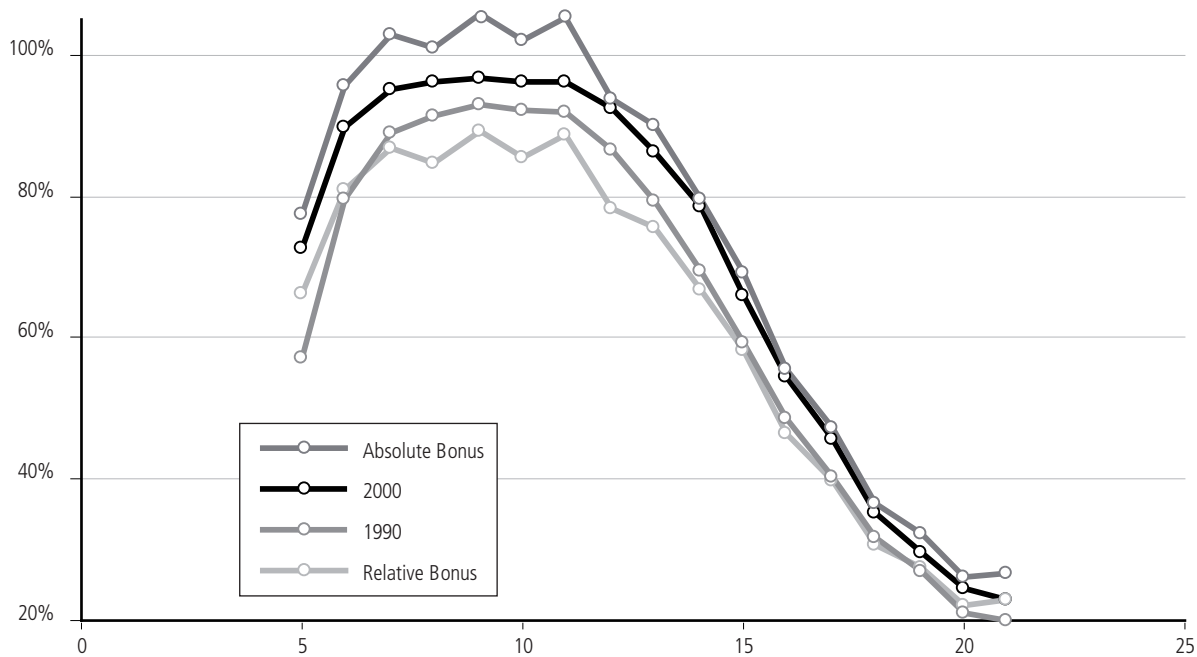
1990 and 2000. The difference between the curves represents, evidently, increased access to schooling by age. The highest curve shows what would have happened had there been no population growth at all for each age: net enrolment rates would have gone above 100% as schooling capacity would have been created for nonexistent children. This shows the absolute demographic burden. It should be kept in mind, however, that potential resources also grow with total population. The counterfactual represented by the lowest curve shows the relative demographic bonus.

Table 2.3: Enrolment created by age, Mexico 1990-2000

Age	Better access	Absolute demographic bonus		Relative demographic bonus
		Total	Total population growth	
5-9	56.2%	43.8%	103.1%	-59.2%
10-14	59.1%	40.9%	148.2%	-107.3%
15-19	72.1%	27.9%	113.3%	-85.4%
20-24	46.5%	53.5%	64.4%	-10.9%

Source: Soares, 2006 b

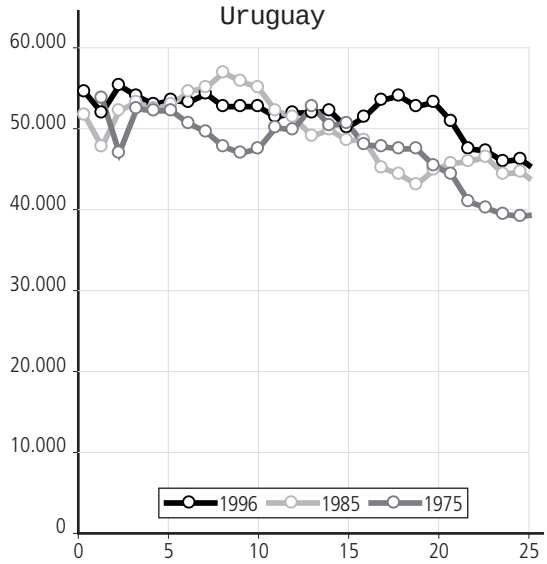
Figure 2.6: Counterfactual net enrolment rates for Mexico, 1990-2000



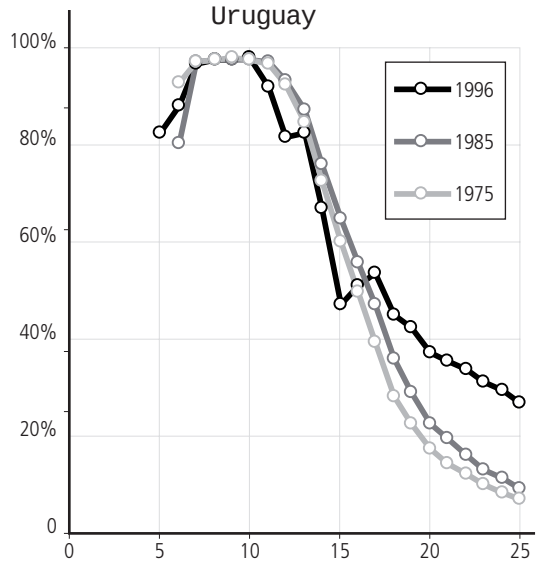
Source: Soares, 2006 b

Figure 2.7: Cohort size and enrolment rates for Uruguay, 1975, 1985, and 1996

Panel 1: Cohort Size



Panel 2: Enrolment Rates



Source: Soares, 2006 b

Group three: Uruguay, Argentina and Ecuador, not much demographic or enrolment change

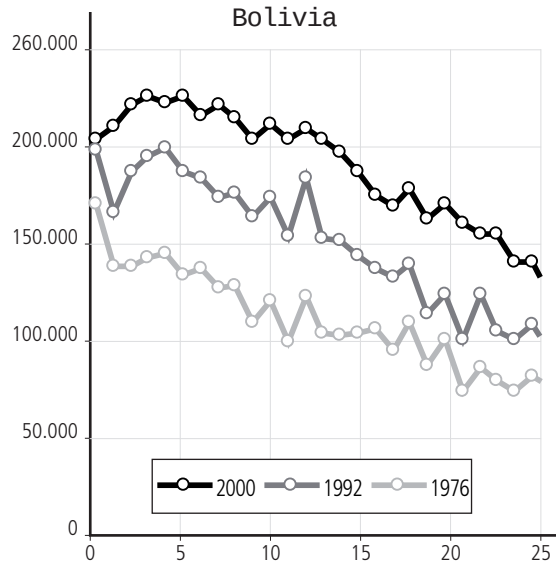
The case of Uruguay is similar to that of Argentina, and to a lesser extent, Ecuador. It is the case of "not much happening". Panel 1 of Figure 2.7 shows that cohort size is more or less constant: population size by age did not change much from 1985 to 1996, and neither did it change much from 1975 to 1985. Panel 2 tells the same story in terms of enrolment rates from 1975 to 1985. From 1985 to 1996, there is a drop in enrolment from 10 to 15 and an increase in the 16 to 25 age group. This is quite curious, but appears to bear little relation with demographic change.

Group four: Bolivia, Honduras, Guatemala, Venezuela and Costa Rica, no relief in sight

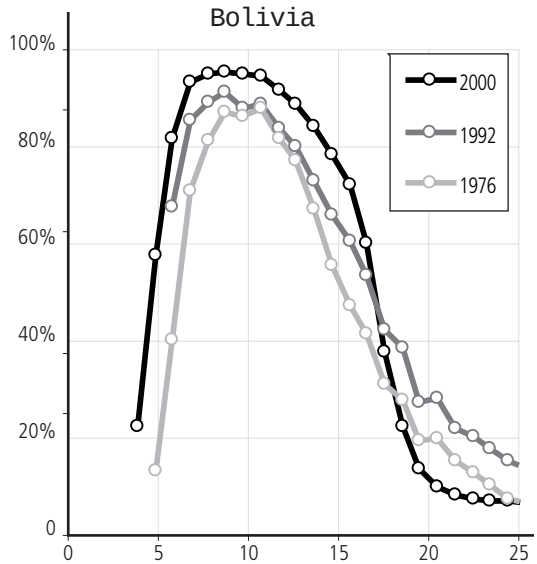
Bolivia is perhaps the polar opposite of Uruguay. The census data for 1976, 1992 and 2000 show constant and unceasing increases in school age population. The population increases appear to be about 50 thousand children per one year age group, which entails growth of 25-50% from one census to the next. In spite of the demographic pressure, Bolivia has been able to increase net enrolment rates, at least in primary school, by a considerable amount. Between 1992 and 2000, net enrolment rates for six to 15 year-olds increased by between 5 and 10 percentage points, coming close to near universal enrolment. Since this had little relation with demographic change, what was responsible for these increases in net enrolment?

Figure 2.8: Cohort size and enrolment rates in Bolivia, 1976, 1992, 2000

Panel 1: Cohort Size



Panel 2: Enrolment Rates



Source: Soares, 2006 b

Table 2.4 shows that only 17-41% of the enrolment in the 7-18 year-old range led to increased access. This contrasts to more than 100% in the case of Brazil and over 60% for Mexico. The only explanation is that an extraordinary enrolment capacity has been created by the Bolivian school system so that, in spite of its heavy demographic burden, enrolment has increased and is situated at levels close to that of its wealthier neighbours.

Table 2.4: Enrolment created by age, Bolivia 1992-2000

Age	Better access	Absolute demographic bonus		Relative demographic bonus
		Total	Total population growth	
6-9	31.2%	68.8%	83.6%	-14.8%
10-14	29.4%	70.6%	78.4%	-7.7%
15-19	15.0%	85.0%	80.9%	-4.1%
20-24	162.6%	-62.6%	-44.9%	-17.7%

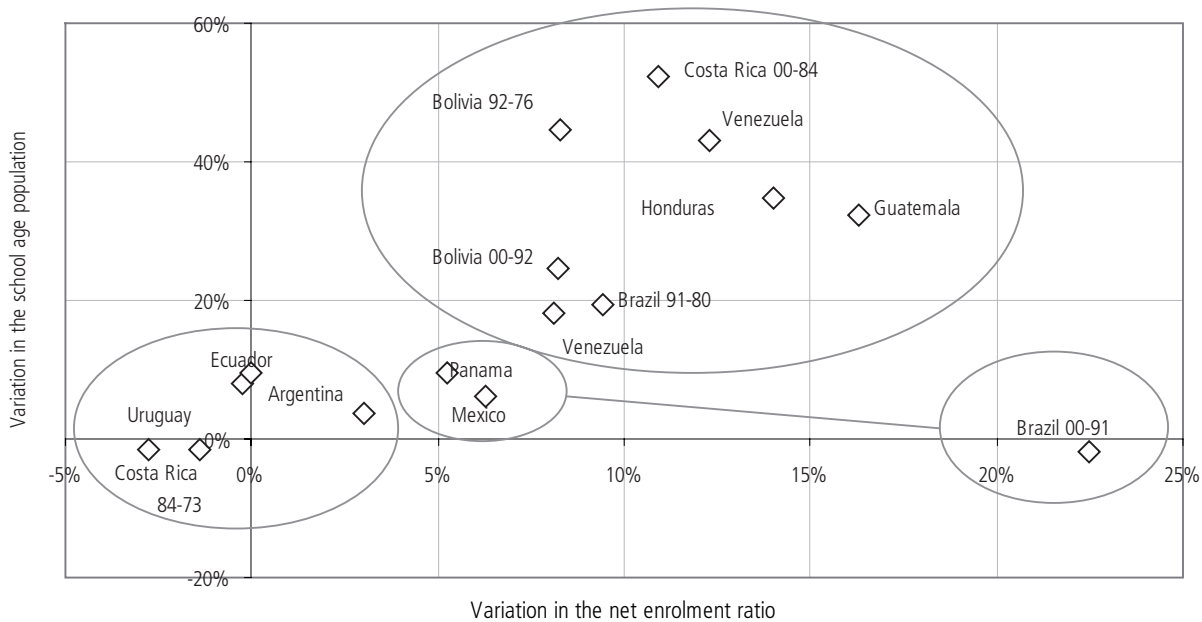
Source: Soares, 2006 b

Table 2.5: Summary measures of the educational bonus in 11 Latin American countries

Country	Years	Percent of enrolment leading to				Total	Change in	
			Demographic bonus or burden					
		More access	Total	Pop. growth	Relative bonus		Net enrolment	School age population
		Demographic bonus group						
Absolute								
Brazil	2000- 1991	107%	-7%	57%	-63%	100%	22.5%	-1.7%
Large relative								
Mexico	2000-1990	53%	47%	135%	-88%	100%	6.3%	6.1%
Panamá	2000-1990	39%	61%	133%	-71%	100%	5.2%	9.7%
		Nothing to decompose group						
Argentina	2001-1991	46%	54%	153%	-99%	100%	3.0%	3.8%
Uruguay	1996-1985	60%	40%	-545%	585%	100%	-2.8%	-1.6%
Ecuador	2001-1990	1%	99%	252%	-154%	100%	0.0%	9.6%
		Small bonus group						
Bolivia	2000-1992	30%	70%	81%	-11%	100%	8.2%	24.5%
Venezuela	2001-1990	35%	65%	93%	-28%	100%	8.1%	18.3%
Costa Rica	2000-1984	24%	76%	83%	-6%	100%	10.9%	52.2%
Honduras	2001-1988	40%	60%	71%	-12%	100%	14.0%	34.7%
Guatemala	2002-1994	46%	54%	57%	-3%	100%	16.3%	32.4%

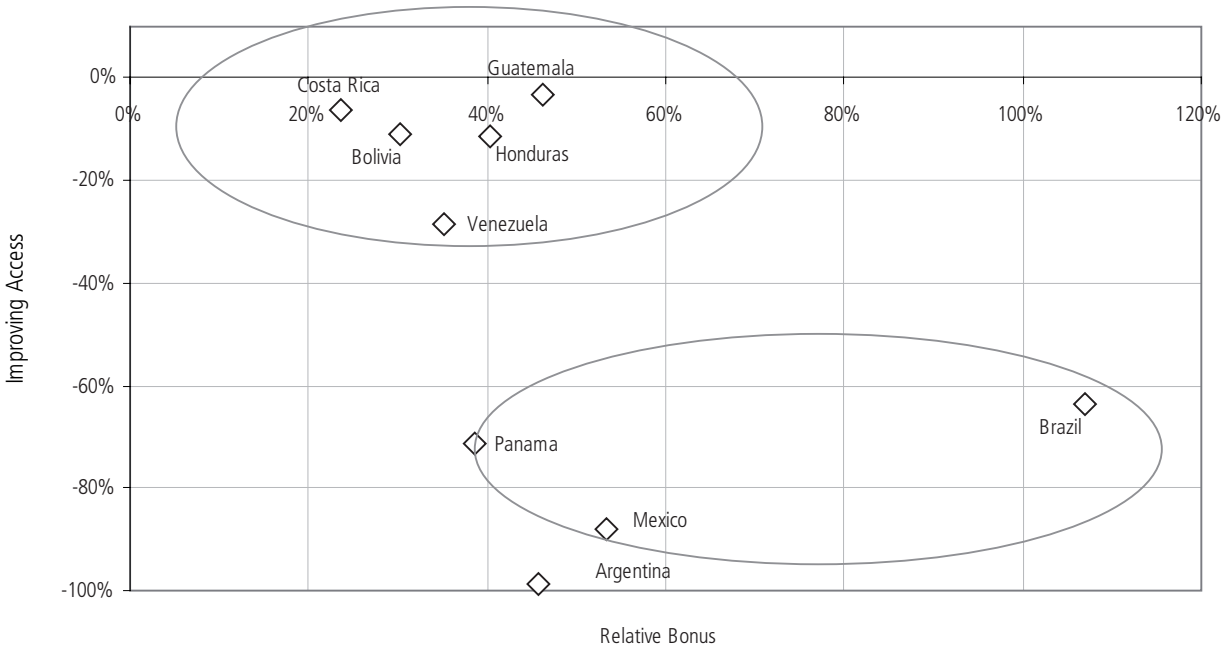
Source: Soares, 2006 b

Figure 2.9.A: Changes in net enrolment rates versus school age population



Source: Soares, 2006 b

Figure 2.9.B: Improvement in access versus relative bonus



Source: Soares, 2006 b

The case of Bolivia is interesting as it shows that it is possible to swim against the tide. It is particularly interesting that a poor country can achieve these results. Guatemala, Honduras, and, to a lesser extent, Venezuela and (surprisingly) Costa Rica exhibit similar behaviour.

2.2. The link between educational achievement and reproductive patterns in the families of origin

> *"Smaller families allow more investment in each child's health and education…. Large numbers of children in poor families mean that some children get no education. For others, education may be delayed, interrupted or shortened." (UNFPA, 2002 a: Ch. 1)*

> *"One reason for a poverty trap is a demographic trap, when impoverished families choose to have lots of children. These choices are understandable, yet the results can be disastrous. When impoverished families have large numbers of children, the families cannot afford to invest in the nutrition, health, and education of each child. They might only afford the education of one child, and may send only one son to school. High fertility rates in one generation, therefore, tend to lead to impoverishment of the children and to high fertility rates in the following generation as well." (Sachs, 2005: 65)*

That families with fewer children tend to invest more in the education of each of them is confirmed by a number of empirical studies from both developed and developing countries. In the UK, for instance, Iacovou (2001) found that, even when controlling a large number of socioeconomic variables of the families, the results of reading tests for 16 year-olds diminished almost linearly with family size: the results of children from families with 8 siblings fell 0.85 standard deviations short of those of children without brothers or sisters.

In the case of the highest educational qualification of 23 year-olds, the differences were less pronounced, but still substantial. By and large, Iacovou also found that younger children tend to have an inferior educational performance with respect to their older brothers and sisters. Other important effects are the better performance of children born during a later phase of the life of their parents and of children from families with longer spacing between births (Powell & Steelman, 1993).

In developing countries, most empirical studies on educational attainment have found that on average children from large families attain less schooling than children from smaller families (King, 1987; Knodel & Wongsith, 1991; Marteleto, 2001; Patrinos & Psacharopoulos, 1997). This is usually explained by the dilution of resources, so that less financial and inter-personal resources can be allocated to each child in larger families. In addition, unintended pregnancy can undermine investments in schooling by disrupting parents' plans for investing in children already born. Knodel et al. (1990) report that Thailand's rapid fertility decline contributed to increased school enrolments. Using simulations based on survey data, they estimated that proportions going on to lower and upper secondary school would almost double as a result of smaller family sizes. They caution, however, that the findings depended on the socio-cultural context of Thailand, where most of the burden of education for children falls on parents. According to the Alan Guttmacher Institute and UNFPA (Singh et al., 2003), as quoted in the Introduction, "families with fewer children, and children spaced further apart, can afford to invest in each child's education." Therefore, achieving universal access to SRH services is bound to contribute to the attainment of universal primary education, as SRH helps to reduce the number of children per household and allows more educational resources for each child.

Some studies have found a positive association between family size and education (Chernichovsky, 1985; Hossain, 1988), possibly because of the existence of large economies of scale in human capital production within families. Surveys by Lloyd (1994) and Kelley (1996) conclude that the effects are generally negative, although modest in size, and that they are often mediated by contextual factors such as the level of economic development, government expenditure on education, and phase of the demographic transition. In the more developed countries of Latin America and in Southeastern Asia, larger negative impacts of family size were found than in Southern Asia or Sub-Saharan Africa. Some studies have also found larger effects in urban than in rural areas. In countries where education is mostly public and free of charge, enrolment rates are less sensitive to family size, but educational attainment is still significantly linked to it, as older children are increasingly exposed to the risk of being pulled out of school to contribute to household responsibilities.

Foster and Roy (1997) developed a multi-period model in which parents repeatedly face a trade-off between childbearing and providing education to school-age children, and showed that a family-planning programme can influence education by reducing fertility in a low-income rural environment in Bangladesh (1978). The family-planning effect accounted for a 15% increase in mean schooling for girls, and a 12% increase for boys. In addition they found that:

- An increase in the number of school-age and older children lowers subsequent fertility and raises educational attainment;
- The primary mechanism by which the number of school-age and older children affect schooling is through their effect on fertility;
- Short-run estimates of family-planning programmes that do not account for the indirect effects operating through changes in family size and composition tend to over-estimate reductions in fertility and under-estimate increases in schooling.

Apparently, this methodology has not been replicated in the LAC region.

The case of Brazil

In Brazil, two studies have examined the role of family size on children's education and have showed an overall negative relationship. Psacharopoulos and Arriagada (1989) found small overall negative impact of number of siblings on school enrolment and attainment, but no effect on school dropout rates. Marteleto (2001) found negative effects of number of siblings on mean years of schooling and schooling enrolment for cohorts of children born pre- and post-demographic transition. Two older studies, on Colombia (Birdsall, 1980) and pre-revolutionary Nicaragua (Wolfe & Behrman, 1982; Behrman & Wolfe, 1987), also found significant effects of the number of siblings. Lam and Marteleto (2005 did an extensive study on the Brazilian household surveys over the 1977-1999 period, in which they considered both the aggregate demographic effect discussed in the previous section and the micro-level effect of being raised in a household with more or fewer siblings. Both of these effects turned out to be significant, although the former was stronger than the latter. School enrolment was shown to be negatively affected by the growth rate of the populations aged 7-14, with the most negative effects on older males from poorer households, who may be most sensitive due to the trade-off between work and school. The effect of having siblings in the 0-6 age group was found to be more negative than the effect of the number of siblings aged 7-17 and slightly more negative in the case of girls than in the case of boys. Increasing parental education was an even more important determinant.

Andersen (2000) found a relationship between the number of siblings and the educational achievements of children aged 13-19 residing in their parents' household in most of the countries of the region, but in some countries, such as Bolivia, the relationship was not significant. This author also notes that the schooling gaps depend on the child's birth order and on the sex of his or her siblings. Finally, she notes that the outcomes are more favourable for girls than for boys and in some cases favour children living in female headed households. In Mexico, Mier y Terán and Rabell (2001: 802) found (through a multinomial regression model that controlled the sex of the child, maternal education, and other contextual variables) that in low-income families, children aged 12-14 had an 85% chance of being in school at the adequate level if household crowding was low or medium, but only 66% if crowding was high; in families with up to 4 children, the probability was 79%, but in larger families it fell to 67%.

The National Household Survey of Venezuela (2000) provides some analytical elements, as it contains information on the schooling situation of children aged 10-14. Table 2.6 shows the results of a regression in which the schooling gap was related to a series of socioeconomic variables, including the total number of children of the woman interviewed. The control variables were chosen not so much based on their theoretical relevance, which may be remote in the case of variables such as the presence of a refrigerator in the home, but in order to reduce as much as possible any spurious relationship that might be due to other factors than the actual impact of numbers of siblings on educational performance.

Table 2.6: Venezuela – Results of a multivariate regression of the schooling gap of children aged 10-14 with respect to several socioeconomic variables

Explanatory variables	Coefficients	Significance
Children aged 0-4 in household	0.080	0.0%
Children aged 5-9 in household	0.094	0.0%
Children aged 10-14 in household	0.158	0.0%
Female head of household	-0.085	14.4%
Household head aged 15-29	0.088	30.1%
Household head aged 30-39	-0.030	46.7%
Household head aged 40-49	0.015	70.2%
Incomplete family	0.116	4.5%
Education of household head	-0.061	0.0%
Child's age	0.234	0.0%
Child is female	-0.377	0.0%
Mother works	0.016	62.3%
Bedrooms per person	-0.217	1.3%
Earthen floor	0.646	0.0%
Telephone in the household	-0.278	0.0%
TV in the household	-0.375	0.0%
Refrigerator in the household	-0.596	0.0%
Per capita income	-0.00000061	4.9%
Log (per capita income)	0.018	13.9%

Source: Computed from National Household Survey, first semester of 2000

Even with this wider set of controls, including the age and sex of the child and per capita income, the numbers of children in the household aged 0-4, 5-9, and 10-14 are all highly significant determinants of the schooling gap of the 10-14 year-olds. This means that children aged 10-14 do less well in school to the extent that they have more siblings in any of these age groups, but particularly siblings of about the same age. Surprisingly, some indicators of household infrastructure score much higher in significance than income per capita per se, which is just barely under the 5% level. Incompleteness of the family has a negative influence on educational performance, as would be expected, but the effect is also barely significant, whereas work outside the home of the mother has no discernable effect. Children in female headed households do slightly better than those in male headed households, but the effect is not significant. Girls, on the other hand, do significantly better in school than boys.

Despite the statistical significance of the relationship between numbers of siblings and school performance, the actual aggregate effect of a different household composition on the schooling gap would be moderate, but not dramatic. Applying the model coefficients above,

one may infer that the gap would diminish by about 0.1 years if all children aged 10-14 lived in households with at the most one sibling under age 15. Considering that the mean schooling gap of children in the 10-14 age group, according to the 2000 National Household Survey of Venezuela, was 0.76 years, this implies a reduction of about 13-14%.

The case of Nicaragua

Based on the 1998 LSMS of Nicaragua, it has been attempted to quantify the educational impact of reproductive patterns using not the education gap, but the actual number of completed years of education by age 20 as the dependent variable (Hakkert & Martine, 2002). To this end, a censured data estimation procedure[7] had to be used. The results suggest that the association between higher education levels and family sizes persists even if the numbers are standardised, to eliminate the bias resulting from the fact that the poorer households tend to have more children. However, the effect is more pronounced among non-poor than among poor households, thus reducing the prospects of escaping from poverty by adapting reproductive patterns. Girls do better than boys, although there are some exceptions. No consistent relationship was found between the number of years of schooling and the sex of the head of household.

Table 2.7 shows the regression results obtained by Andersen (2000), which relate the educational gaps of adolescents with a series of explanatory variables, including the presence of older or younger brothers or sisters in the household. Her method is based on Fields' decomposition.[8] Summing up the Fields coefficients for the variables related to family structure (presence of older or younger siblings), the result is 0.0296 in the urban area and 0.0162 in the rural area. Although this is less than the influence of family income and father's and mother's education, which sums 0.1824 in the urban area and 0.1122 in the rural area, the effects are significant: with the exception of the presence of an older sister, the presence of other siblings always reduces the educational achievements of the child.

Finally, reference should be made to the study prepared by Aldaz-Carroll and Moran (2001) on 16 Latin American countries, which used a logit regression[9] methodology to control various intervening factors. The latter included the educational level of both parents, gender (which indicated a strong advantage of girls over boys), household income, urban-rural residence, and, in some countries, single or adolescent motherhood and mother's work status. As shown in Table 2.8, the coefficients for the number of siblings were negative and strongly significant in all countries, with the exception of Costa Rica,

[7] The term "censured data estimation" refers to a situation in which not all information of interest (e.g. age when leaving school) can be observed (e.g. because some interviewees are still in school). By making certain assumptions about the process (e.g. the expected age at leaving school of a child who is still in school is the same as that of all children with ages greater or equal to that child) it is still possible to derive reasonable estimates through so-called "censured data procedures".

[8] Fields decomposition method breaks down the contribution of each explanatory factor of inequality into a coefficients effect, a correlation effect, and a standard deviation effect, for more details see Fields (2003).

[9] For a short explanation of logit analysis/regression, see the corresponding footnote in section 1.3.

where it was significant only at the 10% level. In some countries, such as Paraguay, El Salvador, Bolivia and Mexico, they found, however, that the detrimental effect on the probability of completing secondary education of the number of siblings disappeared in the case of children of high-income households.

Table 2.7: Nicaragua – Regression results for the urban and rural education gap of adolescents aged 13-19 years, by different explanatory variables

	Coefficients		t Values		Fields Coef.	
	Urban	Rural	Urban	Rural	Urban	Rural
Log (Household income)	-0.3716	-0.1765	-7.47	-5.23	0.0470	0.0130
Highest education of parents	-0.2264	-0.3181	-10.97	-11.60	0.1354	0.0992
Age of head at childbirth	-0.0301	-0.0067	-4.21	-0.65	0.0031	-0.0018
Female headship	-0.1051	-0.3198	-0.38	-1.71	-0.0007	0.0008
Incomplete family	-0.1426	-0.2155	-0.59	-1.06	-0.0005	-0.0006
Has younger sister	0.4327	0.4749	3.45	4.37	0.0136	0.0079
Has younger brother	0.4611	0.3886	2.42	2.48	0.0139	0.0071
Has older sister	0.0061	-0.0986	0.05	-0.76	0.0000	0.0012
Has older brother	0.2990	0.3751	2.39	2.79	0.0021	0.0000
Female sex	-0.6239	-0.7475	-5.50	-9.00	0.0143	0.0177
Age	0.5158	0.7720	12.45	23.01	0.1126	0.2344
Adopted	0.5077	0.9899	3.24	4.68	0.0002	0.0091
Head works as independent	0.4317	0.6967	1.75	1.43	0.0014	0.0038
Log (Mean income Province)	1.0228	1.4983	2.19	2.86	-0.0211	-0.0363
Mean schooling Province	-0.5064	-1.2965	-2.84	-8.12	0.0348	0.1309
Income partly imputed	-0.6432	0.1686	-2.44	0.91	0.0026	0.0014

Source: Andersen, personal communication

Table 2.8: Coefficients of a multivariate logit analysis expressing the effect of the number of siblings on the probability of completing secondary education in 16 Latin American countries, around 1995

Country and year	Logit coefficient
Argentina (Urban), 1996	- 0.244 ***
Bolivia (Urban), 1995	- 0.167 ***
Brazil, 1995	- 0.227 ***
Chile, 1994	- 0.180 ***
Colombia, 1995	- 0.111 ***
Costa Rica, 1995	- 0.084 *
Ecuador,1995	- 0.191 ***
El Salvador, 1995	- 0.142 ***
Honduras, 1994	- 0.295 ***
Mexico, 1996	- 0.229 ***
Nicaragua, 1994	- 0.133 ***
Panama, 1995	- 0.266 ***
Paraguay, 1995	- 0.252 ***
Peru, 1996	- 0.104 ***
Uruguay (Urban), 1995	- 0.353 ***
Venezuela, 1995	- 0.163 ***

* Significant at the 10% level;
*** Significant at the 1% level
Source: Aldaz-Carroll & Moran, 2001

All of the preceding analyses share one methodological weakness, namely that they do not consider the possibility of what econometricians call endogeneity bias. What this is is briefly explained in footnote 68, in the previous chapter. A way to control for this possibility is by analysing families whose size was clearly determined by chance. Rosenzweig and Wolpin (1980), for instance, used data on twins from India to create a natural experiment and confirmed that exogenous increases in fertility reduce investments in schooling: by 17% if it occurs at first pregnancy and by 34% if it occurs at the third or fourth pregnancy (Rosenzweig, 1990), which amounts to a smaller effect than the one found in simple cross-sectional studies that do not control the endogeneity bias. Apparently no studies based on this methodology exist for the LAC region, although it would be fairly easy to design one.[10]

There is some evidence that the degree to which mothers wanted the birth of their children also contributes to their educational achievement. Unfortunately, there is not more evidence due to the fact that the DHS and other fertility surveys in developing countries have not given much attention to educational variables and particularly to the educational achievement of the children of the mothers interviewed. Nevertheless, Montgomery and Lloyd (1999) managed to identify four countries where the DHS do contain relevant information on this topic: the Dominican Republic, Egypt, Kenya, and the Philippines. In the case of the Dominican Republic, they demonstrated that children from families that have had one or more unwanted child births during the past 5 years performed significantly worse in terms of completed years of education than children from families where all births were wanted, even after a wide range of other family characteristics were controlled for.

A longitudinal study in Finland of women who said they did not want to be pregnant at the time at which pregnancy occurred similarly shows that unwanted children are less likely than wanted children in the same cohort to progress beyond 9 years of schooling (Myhrman et al., 1995). Mistimed children, on the other hand, did no worse than planned children with regard to education. Interaction between large family size and unwantedness showed an increased risk of low educational attainment among the children, even after adjusting for family background. A review of the literature suggests that the unwantedness effects for a specific child may be masked by the fact that *average* education is pulled down by unwantedness in low-income households (Acharya, 2004).

Similarly, in the US, Gruber, Levine and Staiger (1999) found that unwanted pregnancies carried to full term result in less education for the unwanted children, who are less educated even when all other factors such as income and education of parents are taken into account:

> *"The average living circumstances of cohorts of children born immediately after abortion became legalized improved substantially to preceding cohorts, and relative to places where the legal status of abortion was not changing. Our results suggest that the marginal children who were not born as a result of abortion legalization would have systematically been born into less favorable circumstances if the pregnancies had*

[10] At present, efforts are underway at IPEA to replicate the methodology for the case of Brazil and possibly other countries of the LAC region.

not been terminated: they would have been 60% more likely to live in a single-parent household, 50% more likely to live in poverty, 45% more likely to be in a household collecting welfare, and 40% more likely to die during the first year of life." (Gruber, Levine & Staiger, 1999: 265).

Among other determinants, Gertler et al. (2004) investigated the effect of parental death and disability on investments in child human capital using panel data sets from Indonesia and Mexico. Their results from Mexico show a higher probability of school dropout and child mortality for children with a deceased mother. Their analysis suggests that these outcomes are due more to behavioural factors (in particular, the loss of the mothers' influence in decisions about household investments in children) than on the economic impact of mothers' deaths. Morrison and Orlando (1999) also document some impact of domestic violence on the school performance of children in Chile and Nicaragua. Although they did not find a significant effect on grade progression, they did encounter a relationship with problematic school behaviour, particularly disciplinary problems, in the case of Chile.

2.3. The link between educational outcomes and the SRH of adolescents

In its standard format, the second MDG refers to the universal attainment of primary education as a minimum. However, in line with the declarations of the former UN Secretary General, mentioned in the second chapter of this document, several middle income countries in the LAC region are now moving beyond this goal, to the universalisation of secondary education. This poses new challenges from the viewpoint of financial and human resources, but also from the viewpoint of the students themselves. Secondary education typically takes place between the ages of 12 and 18, a period during which young people are initiating their transition to adulthood in more than one way, but particularly with respect to sexuality and reproduction. This raises the possibility that events pertaining to the realm of sexuality and reproduction, and specifically early pregnancy, may interfere in the educational process, so that adolescents, and particularly adolescent girls, may abandon their education prematurely. On the other hand, interventions from the education sector itself, in the form of comprehensive sexual and life skills education programmes, can contribute significantly to minimise the potential adverse effects of these problems.

2.3.1. Adolescent pregnancy and educational achievement

The number of years of education lost to early abandonment of schooling as a consequence of pregnancy is actually not easily estimated. Adolescent fertility rates in the LAC region are rather high, varying between about 40 per thousand in some Caribbean countries to as much as 140 in some parts of Central America. That, however, is not sufficient to conclude that early pregnancy must have a decisive influence on school drop-out rates. Adolescents drop out of school for more than one reason which jointly determine the number of years of education that will be lost. Estimating the effect of any of these processes in isolation from the others is not particularly easy. As a first approximation, the reproductive health surveys

in the region started in the 1990s to ask young women aged 15-24 about their current enrolment status and reasons for having dropped out of school. Table 2.9 summarises some of these results.

Table 2.9: Percentage distribution of reasons declared for school abandonment of women currently aged 15-24 for selected countries of the LAC region

	Bolivia, 1998	Brazil, 1996	Colombia, 2005	Peru, 2000	Dom. Rep., 1996
Currently in school	52.5	47.7	42.4	47.2	32.6
Got pregnant	3.8	4.9	7.6	6.5	3.4
Married or started union	5.9	6.0	2.9	3.2	17.1
Had to take care of children	2.1	2.2	1.8	2.2	1.9
Family needed help	11.6	2.5	2.9	4.8	1.4
Could not pay studies	1.7	2.8	19.2	9.9	5.1
Needed to earn money	9.1	9.9	0.7	1.2	8.3
Graduated / studied enough	2.5	2.9	6.6	10.5	0.1
Did not pass exams	0.5	0.8	3.0	3.2	-
Did not want to study	2.9	8.1	0.7	0.9	15.7
School distant from home	2.6	6.6	8.4	4.9	4.2
Parents did not want it	-	-	1.2	1.3	-
Medical reasons	-	1.1	0.1	0.1	-
Other reasons	2.5	3.7	2.3	3.1	9.3
No information	0.5	0.6	0.1	1.0	0.8

Source: DHS Country reports

Hence, one may conclude that the percentage of young women (15-24) not currently in school who abandoned their education because of early pregnancy varies between about 5% in the Dominican Republic (1996) and 13% in Colombia (2005). For young women with incomplete secondary education, which is the group primarily of interest here, the percentages are slightly higher, e.g. 15% in Colombia (2005). Similarly, the percentages reported by Lloyd (2006) for the LAC region are rarely above 10%, with an average of about 7%.

However, the percentages in Table 2.9 are affected by a number of interpretational difficulties. It is not clear, for instance, if the categories "married or started union" and "had to take care of children" do not contain additional cases of school drop-outs due to pregnancy. But more importantly, it is likely that the reasons may be highly correlated, making it difficult to decide which was the one that caused the woman to drop out. For instance, an adolescent girl may do badly in school, neglect her school duties in favour of the relationship with a boyfriend, become pregnant, and thereby cause her parents to decide that they no longer want to pay for her education. Interactions of this kind led Trussell (1998) to the conclusion that the final level of education attained by adolescent mothers may be lower not because of early pregnancy as such, but because in many cases they performed badly in school and would probably have dropped out for other reasons, if it were not for the pregnancy. In support of this thesis, the analysis of data from the ENPOFAM of Venezuela (1988) demonstrates that young women who later became adolescent mothers were almost 3 times more likely to have dropped out of school between the ages of 14 and 16, *before* they became pregnant, than girls who had their first birth after the age of 20. *After* they had become pregnant, that factor increased from slightly under 3 to just under 5 (Guzmán et al., 2001).

There are very few systematic studies in the LAC region which estimate the educational effects of teenage pregnancy reliably, making the appropriate controls for intervening variables. Buvinic's (1998) study on Mexico, Guatemala, Chile, and Barbados, which did apply multivariate analyses, comments on education only indirectly, as one of the causal pathways to the entrenchment of poverty (see also Section 1.2.7.1). Bailey and Bruno (2001) compared young women in northeastern Brazil who had sought abortions or prenatal care when they became pregnant in adolescence. They found that women who continued their pregnancies were more likely than the others to drop out of school, whereas those who had abortions were experiencing low self-esteem due to conditions surrounding abortion, which is illegal and therefore stigmatised in this setting.[11]

Table 2.10.A: Impact on average educational attainment of Bolivian women currently aged 25-34 that would have been obtained by postponing the first birth from under 20 to age 20

Area of residence / Poverty quintile	Average educational attainment of women with first birth <20		Average educational attainment of women with first birth 19-21	
	Average	N *)	Average	N
Urban				
Poorest	3.74	2,831	2.87	1,172
Second poorest	5.21	19,210	4.66	9,390
Middle	6.21	42,760	6.78	28,851
Next-to-richest	7.66	45,918	8.56	33,599
Richest	10.86	24,165	11.81	22,353
Rural				
Poorest	3.50	38,910	3.55	26,055
Second poorest	4.64	27,029	5.41	18,494
Middle	6.15	9,549	7.06	5,989
Next-to-richest	6.61	2,094	8.13	1,848
Richest	7.96	358	12.00	261
Total	6.24	212,824	7.08	148,011

*) The quintiles are of unequal size due to the fact that this is a sub-sample, consisting only of women aged 15-24, whereas the quintiles were defined based on the full sample.
Source: Analysis on micro-data of 2003 DHS survey Bolivia

Despite the lack of detailed education data in the DHS[12], it is possible to get a reasonable idea about the potential impact of postponing first births by analysing the birth histories of women in the 25-34 year age category, most of whom have already had their first birth and nearly all of whom have completed their education. The data displayed in Table 2.10.A, based on the Bolivian DHS of 2003, refer to a simulation in which first average educational attainment (in single years) of these women was computed in terms of their age at first birth, urban-rural residence, and poverty stratum.[13] The latter variables were included to avoid spurious results because of the correlation of both educational attainment and the age at first birth with poverty and area of residence. Subsequently, a simulation was carried out

[11] It is not known if this study applied the necessary controls to eliminate the influence of intervening variables.

[12] The reproductive health surveys carried out with the use of the CDC methodology in several countries, such as Honduras, El Salvador, and Ecuador, are more complete in this respect.

[13] Ideally, one would like to control a larger set of socioeconomic factors, but unfortunately the options available in the DHS are somewhat limited.

in which it was assumed that women who had their first birth before the age of 20 would instead acquire the mean educational attainment of women in the same poverty quintile and area of residence who had their first births when they were exactly 20 years old.[14]

Table 2.10.B: Impact on the proportion of Bolivian women currently aged 25-34 with complete secondary education that would have been obtained by postponing the first birth from ages under 20 to age 20

Area of residence / Poverty quintile	Percent of women with first birth under 20 who finished sec. education		Percent of women with first birth 19-21 who finished sec. education	
	Average	N *)	Average	N
Urban				
Poorest	3.34	2,831	3.07	1,172
Second poorest	4.35	19,210	6.67	9,390
Middle	6.79	42,760	13.60	28,851
Next-to-richest	22.30	45,918	36.35	33,599
Richest	59.51	24,165	73.47	22,353
Rural				
Poorest	2.06	38,910	2.51	26,055
Second poorest	3.31	27,029	5.89	18,494
Middle	12.46	9,549	16.34	5,989
Next-to-richest	13.11	2,094	27.23	1,848
Richest	3.04	358	100.00	261
Total	14.86	212,824	24.80	148,011

*) The quintiles are of unequal size due to the fact that this is a sub-sample, consisting only of women aged 15-24, whereas the quintiles were defined based on the full sample.
Source: Analysis on micro-data of 2003 DHS survey Bolivia

By computing weighted averages of the differences between the two columns of Table 2.10.A, it can be estimated that, on the whole, postponement of first births to age 20 would result in 0.27 years of additional education. It should be noted, however, that the improvement is concentrated in the highest three strata, particularly the next-to-richest, where it is as high as 0.42 years. For the two poorest strata, the improvement is only marginal. The same pattern emerges from Table 2.10.B, which analyses the proportion of women with complete secondary education. Overall, the effect is more significant in this case, with the proportion increasing by 3.5%, but again the improvement is much greater in the highest strata than among the poorest two, where it is only in the order of just over half a percent.

In three other countries where the same experiment was performed, the results were slightly different. In the case of Colombia (2005), the mean length of education increased by 0.44 years, without much difference between quintiles, with the exception of the highest, where the increase was only 0.25 years. The expected increase of secondary completion rates was 5.3%, mostly concentrated in the third and fourth quintiles. In the case of Brazil (1996), the mean length of education increased by 0.33 years, i.e. almost the same increase as in Bolivia. However, in this country the benefit to the two poorest income quintiles was more substantial: 0.41 and 0.50 years, respectively. This is puzzling, considering the fact

[14] Actually, in order to increase the number of cases, the results refer to women who had their first birth between age 19 and 21.

that the original mean lengths are similar to those found in Bolivia. These results should also be contrasted with those obtained by Núñez and Cuesta (2006), obtained from the same 2005 DHS. Based on a different, more sophisticated econometric methodology (instrumental variables to correct endogeneity bias), they found substantially larger effects between women who did or did not have their first birth before age 20: 4.6 years for those currently aged 22-24 or 25-27 and 5.3 years for those aged 28-30. Two explanations come to mind: 1. They used a less stringent criterion for comparison by including all women who had their first birth after age 20 and not only those whose first birth was at ages 19-21; and 2. The analysis in Tables 2.10.A and 2.10.B does not consider that the poverty quintile of women may have changed as a result of their teenage pregnancy.

The effect on the percentage concluding secondary education was smaller in Brazil: it increased by only 2.2 percentage points, and with respect to this indicator the advantage was slightly greater among the highest income strata. In Nicaragua (1998), the overall increase of the length of education was larger, namely 0.68 years, with the greatest benefit (1.09 years) accruing to the middle income stratum. The overall percentage concluding secondary education increased by 4.8%, and here the advantage was clearly more pronounced among the better-off. In the two highest income quintiles, for instance, the rise was 7.4% and 6.3%, respectively.

In the case of Venezuela, it was possible to impose more controls because the 1998 ENPOFAM, unlike the DHS, did ask about the age of the woman when she left school. This allows the inclusion of a variable that indicates whether the woman was delayed (age at school abandonment in excess of the number of completed years of education plus 8) or not currently enrolled when she left school. The other control variables used were the area of residence (Metropolitan Area, other cities with over 25,000 inhabitants, rest of the country) and the social stratum (I = highest, V = lowest). With these controls in place, it was estimated that the number of years added to the average education of women currently aged 25-34 would have been 0.31 years if all those who had a first child before age 20 would have waited until they were 20 years old. Unlike what was found in Bolivia, this effect was stronger in the lowest social strata. Apart from stratum I, where the number of cases was insufficient to estimate an effect, the differences were the following: 0.05 years in stratum II, 0.28 years in stratum III, 0.34 years in stratum IV, and 0.44 years in stratum V.

Using a different methodology, based on educational life table analysis, Eloundou-Enyegue and Stokes (2004) have also estimated relative gains in the secondary education completion rates of girls to be expected if all pregnancy related dropouts, as declared in the DHS reports of 7 Latin American countries, were eliminated. According to this analysis, the relative increase of female completion rates would have been 14.1% in Bolivia (1998), 15.1% in Brazil (1996), 11.8% in Colombia (1995), 8.4% in the Dominican Republic (1996), 6.3% in Guatemala (1998-99), 18.0% in Nicaragua (1997-98), and 18.7% in Peru (1996).

2.3.2. Sexual and life skills education

Education enables young women and men to make informed decisions about all aspects of their bodies and sexual and reproductive lives. Investing in the sexuality education of adolescents must be a priority, since adolescence is a formative period between childhood and adulthood, also consisting a time when interventions can dramatically alter subsequent life outcomes.

> *"Promoting gender equality and respect for human rights together with building skills (including self-esteem, self-confidence and negotiation skills, particularly for young women) is important for protecting young people and developing their capacities. Mass media, folk media, and other information outreach approaches must be expanded to reach the larger number of out-of-school young. Working with existing institutions, parents, parent groups, and cultural leaders, can make information and services more effective for young people." (Bernstein et al., 2005: 17).*

Accurate and comprehensive gender-sensitive sexuality education not only provides young people with the skills and knowledge they need to protect themselves from unwanted pregnancy and sexually transmitted infections (STIs), including HIV, but also promotes deeper empowerment.

> *"Education must serve as the vehicle for transforming attitudes, beliefs, and entrenched social norms that perpetuate discrimination and inequality. All interventions taken to promote gender equality in education must, therefore, be transformational in nature." (UN Millennium Project, 2005 b)*

Educational processes play a determinant role in the acquisition of indispensable health-related competences, taking decisions about sexual and reproductive life, the enjoyment of rights, including the right to make use of health services, especially when they derive from people's learning. These processes have a progressive role, systemic and scientific, and can be fulfilled at school and through informal activities. When these educational modalities integrate and treat different audiences within a same geographic coverage and are accompanied by information and communication, they show great efficacy in general empowerment of their subjects.

Evidence demonstrates that sexual education programmes promote the capacity to take responsible and informed decisions, with a positive effect on the delay of sexual initiation, the reduction of number of partners, as well as unwanted pregnancies, abortions and the incidence of STIs and HIV (UNFPA, 2005 e).

Throughout the LAC region, a comprehensive sexuality education model has been advocated as a social instrument to promote individual human development. Comprehensive sexuality education of this kind promotes health and SRRs, gender equality, not only in matters of sexuality, but also relating to more general issues of social interaction, empowerment, and a comprehensive development of the person. This model has a formative orientation; encouraging the development of values inspired in universal human rights and in SRRs, such as justice, social and gender equality, respect, tolerance, solidarity, freedom of choice and responsibility.

Most of the formal programmes developed in different countries of the world are oriented towards formation within an explicit ethical framework; in addition to presenting scientific contents about human sexuality, they promote the development of individuals capable of choosing their own way of life, with freedom of conscience, thought and belief, and respect for other cultures and the life options that other people have chosen. In various countries of the region, such as Colombia, sexuality education is even viewed within the framework of citizenship education (UNFPA, 2005 e: 15).

When viewed in this manner, comprehensive and ethical sexual education contributes to the fulfilment of human rights, with a holistic approach, as mentioned by different human rights international treaties. The Universal Declaration of Human Rights recognises that:

> *Art .26:*
> *"1. Everyone has the right to education. Education shall be free, at least in the elementary and fundamental stages. Elementary education shall be compulsory. Technical and professional education shall be made generally available and higher education shall be equally accessible to all on the basis of merit.*
>
> *2. Education shall be directed to the full development of the human personality and to the strengthening of respect for human rights and fundamental freedoms. It shall promote understanding, tolerance and friendship among all nations, racial or religious groups, and shall further the activities of the United Nations for the maintenance of peace."*

It must be noted that this article also inspired the view on the Right to Education by the International Covenant on Economic, Social and Cultural Rights.[15]

Educational curricula have gone through a transformation in that they are no longer seen as a mere content programming, but as an educational global project, with the main goal of achieving the highest level of development of children and young people's potential. This way, curricula nowadays have a systemic, integral, open, flexible and contextualised attention to the needs and demands of societies.[16] In various countries, sexual education has been integrated in the formal educational curriculum as a transversal issue. Contemporary education tries to answer the demands through a humanistic integral formation of the student. The transversality of sexual education means it is approached by different dimensions of education, through various subjects and not an issue limited to only one discipline, rather it crosses all curricular activities.

Within this context, sexual education has, therefore, a broad and comprehensive approach, in order, not only to touch different issues or school disciplines, such as biology and sociology, but also to provide the students with the needed (health and ethical) tools to live in a complex world.

---

[15] "Art. 13: The State parties to the present Covenant recognise the right of everyone to education. They agree that education shall be directed to the full development of the human personality and the sense of its dignity, and shall strengthen the respect for human rights and fundamental freedoms. They further agree that education shall enable all persons to participate actively in a free society, promote understanding, tolerance and friendship among all nations, and all racial, ethnic or religious groups, and further the activities of the United Nations for the maintenance of peace."

[16] For a more detailed analysis of sexual education in Latin America, see "*La educación de la sexualidad*" by Castellanos and Falconier de Moyano.

2.4. Brain drain and brain gain

The brain drain is the issue most commonly pointed out as the negative counterpart of the positive contribution made by international remittances. However, the outcomes of the flight of specialised professionals further demonstrate the ambivalence of migration, as it can be at the same time harmful to one country that is left shy of qualified professionals, while bringing benefits to another, turning itself in fact into a brain gain. The upside of the brain drain is known as *brain gain*. Brain gain – or human and social capital gain – applies both to internal and international migration since it is related to the permanent or temporary return of individuals to their places of origin who bring with them human capital, savings, techniques, skills, knowledge, attitudes and behaviours acquired while living abroad or in another region of the country (Martin, 2004; Martin-Guzman, 2004). Under the right circumstances, migrants can help foster innovation, facilitating the transfer of knowledge and technology to the migrant's countries of origin. The impact is not completely straightforward and measurable instantaneously, but in the long run scientific and technological upgrades may pose a very relevant qualitative difference to the promotion of sustained development. Additionally, migrant communities often play an important role in developing new markets and creating trade links between sending and receiving countries (Usher, 2005 b).

Recent research (e.g. Mountford, 1997; Beine, Docquier & Rapoport, 2003; Lowell, Findlay & Stewart, 2004; Stark, 2004) advances the notion of an optimal brain drain, i.e. the idea that an increase in the emigration of skilled migrants may actually benefit the source country in some cases. Some countries with a broad, flexible human resource base, and low levels of both adult education and emigration, such as Brazil and China, would actually benefit from increased skill emigration. Lessons suggested by an analysis of Taiwan, Province of China (where the brain drain was eventually transformed into gain) include: subsidise education only up to the level actually demanded by the national economy; use migration as a "brain reserve" in terms of advice and returning skills; support diaspora networking and recruitment; and build a critical mass of returnees (O'Neil, 2003). More in general, the brain gain literature points out that the possibility of international migration raises the expected return on education, thereby inducing additional investment in education (Stark & Wang, 2002). These results are disputed, however, by authors like Faini (2005) and Schiff (2006), who have found that in some countries the benefits can be small or non-existent.

Curiously, as a rule, the national reports on the progress of the MDGs prepared in the LAC region do not mention the words "brain drain" or "brain gain". The only exception to this rule, the Guyana report, simply describes the phenomenon and suggests strategies to curb its negative effects. Nevertheless, brain drain is clearly identified as a problem to Central America and the Caribbean, although not so much to South America. It is estimated that between a third and half of the developing world's science and technology personnel now live in the developed world (Barré et al., 2003; Lowell et al., 2004; Sriskandarajah, 2005 a). However, a World Bank study (Adams & Page, 2003) concludes that for "22 of the 33 countries in which educational attainment data can be estimated, less than 10% of the

best educated (tertiary-educated) population of labour-exporting countries has migrated." Researchers observe that small, less developed countries, particularly in Africa and in the Caribbean, are most likely to suffer the effects of brain drain (Thouez, 2005: 46). For example, in 2000, over 70% of the highly educated population of Guyana, Haiti, Jamaica, and Trinidad and Tobago were living in OECD countries (United Nations, 2006) and 75% of Jamaicans with higher education lived in the US (Newland, 2003). Since 2001, both the UK and the US have been recruiting Caribbean teachers directly out of high school and college. This has had an adverse effect on the quality of education in Jamaican schools (Thomas-Hope, 2005).

On the whole, however, the educational level of migrants from the LAC region in the US is relatively low compared to that of groups such as the Indians and Philippinos; only 18% have at least a college degree (Özden, 2005), with slightly higher proportions in the case of Argentina, Brazil, and Chile. A more meaningful measure for the losses brought about by the brain drain may be the size of the total labour force with higher education from the LAC region in relation to the size of this population in their home countries. Using this criterion, Özden found that a large portion of the college educated population from countries in the Caribbean and Central America is living in the US. These percentages are close to 80% of college educated people born in Jamaica, Haiti, Guyana, Belize, and Grenada. In the case of the Central American countries, the percentages are in the range of 30%. For Brazil, Argentina, Chile, Costa Rica, and Venezuela, the percentages are much lower, in the order of 5%. Docquier and Marfouk (2006), among others, have found that the loss of higher educated individuals was about 15% in Central America and the Caribbean, 6% in Africa, 5% in Asia, and 3% in South America.

About 80% of all emigrants from the LAC region have the US as their destination, but among the highly educated this percentage increases to almost 100%. Brazil and Jamaica are the main exceptions, since some of their highly educated emigrants can be found in Europe and in Japan. Undocumented migration may have doubled in the US between 1990 and 2000. Recent estimates indicate a total of 11.5 million unauthorised migrants living in the US in 2005, about one third of the foreign-born population in that country. Mexico accounts for 57% of the unauthorised migrants living in the US while 24% come from other LAC countries (Passel, 2005). US unauthorised migrants are more likely to be working and to earn an average annual income half of that made by natives; 56% have less than a high school degree and only 10% are college graduates.

All analysts are unanimous in pointing out two distinct realities of the brain drain in the LAC region: one for Central America and the Caribbean and one for South America. In the latter, the outflows are not large enough to seriously deplete the national stock of highly educated individuals. In the former, however, the loss may be quite significant (Hintzen, 2004; Stubbs & Reyes, 2004), whereas Mexico represents an intermediate case. Lowell and Martin (2005) estimate that 9% of the Mexican born population with a bachelor's degree and 36% of those with a doctorate live in the US.

The brain drain may hamper the combat of poverty, as the outflow of professionals at a rate faster than that of replacement would likely result in a shortage of available skills in the sending country, even more if it is a small developing nation.

> *"The depletion of the human resource base can present a challenge to development efforts in some countries, potentially contributing to impoverishment." (IOM, 2005 b: 3)*

In fact, there is evidence for 21 countries, including Mexico, that countries that have gone through high emigration rates of their best educated inhabitants tend to have a slower pace of GDP growth (Lowell, 2001; Lowell & Martin, 2005).

In some Caribbean countries such as Jamaica, the health sector is severely affected by the pull of more attractive employment opportunities for physicians and especially nurses in the US. The effect on *poverty* is twofold in the sense that health care may be more difficult to obtain because of the scarcity of health personnel, and where it is available, it may be more expensive. While the net impact of the loss of the highly educated and skilled may vary between regions and countries, a critical factor will always be whether there is something for the educated to return to in their economies of origin. Where there is little to return to, a brain drain is more likely to occur, but where origin economies are more dynamic, a *brain gain* may be the result. That is why the out-migration of specialised personnel is examined closely from both the brain drain and brain gain perspectives.

Aggressive recruitment policies on the part of developed countries seeking to address skills shortages in their own health work forces are partly responsible (UNFPA/IMPP, 2004). The growing demand as much as the better salaries in the developed world act as vigorous attracting factors for those professionals from developing countries. For instance, the US and UK solely will, by the year 2010, have a demand for extra 600,000 health professionals.

According to Dovlo (2005), the lack of health personnel affects developing countries in different ways. In some cases, the migration of health professionals is consistently incorporated into main national policies, with the expectation of returns in the form of improved qualification and monetary benefits like remittances, enhancing wealth and entry of capital. Cuba, India and the Philippines are examples in this way. On the other hand there are countries that suffer bitterly with the exit of specialised health professionals that often aspire to better salaries and standards of living in developed countries. Once established, these professionals start a process of integration in the receiving societies and, whenever possible, try to reunite their families therefore reducing drastically the remittances. In this group we find many Caribbean countries (GCIM, 2005, 2006). In some countries, the supply of nurses and doctors has been severely depleted. In 2003, Jamaica and Trinidad and Tobago reported nursing vacancies of 58 and 53%, respectively (Hewitt, 2004). The major concern about migration and brain drain is that for the achievement of all MDGs related to health, prevention and access to health advisement is crucial.

Brain drain and brain gain: the issue of nurse migration

Nurse migration and depletion of skilled health personnel is becoming gradually an important issue to governments and preoccupations are giving space to laudable initiatives to address the problem. Initiatives with support of the Regional Nursing Body, PAHO, CARICOM and the Commonwealth of Nations are taking place, to promote nursing and to retain qualified professionals and encourage their return. An important document was issued at the Caribbean Conference on Temporary Movement, in Barbados, entitled "Draft Framework of Action for a programme of Temporary Movement of Nurses". In the document, health, trade and development issues were linked to a holistic view of the impact migration takes upon those themes and of the role nurses play in migration. Some recommendations are bilateral agreements between countries that lose skilled health labour and those who demand them; incentive to return and inclusion in government health-sponsored programmes and temporary return for training of young health personnel.

The phenomenon has become so important in recent years that there is now an NGO specialised in the study and formulation of policy recommendations on this issue, the International Centre on Nurse Migration (ICNM). There is also a significant accumulation of literature on the subject, e.g. Adams & Stillwell (2004), Aiken et al. (2004), Buchan (2001), Bucha & Kalman (2004), Buchan, Kingma & Lorenzo (2005), Buchan, Parkin & Sochalski (2003), Buchan & Sochalski (2004), Kingma (2001, 2004, 2005), Mullan (2005), Schmidt (2003), Stillwell et al. (2004), Tjadens (2002), Van Eyck (2004), Vujicic et al. (2004), and WHO (2004 c). It was also extensively analysed in Chapter 9 of the Report of the Caribbean Commission on Health and Development (2003).

More in general, Schiff (2006) suggests that the size of the brain gain and its impact on welfare and growth are significantly smaller than indicated by most previous analyses. According to this author, the smaller and poorer countries of the LAC region, particularly in Central America and the Caribbean, can expect less than nothing as a return for their brain drain. Some immigrant groups, such as the CALDAS network of Colombian migrants, function as an internet-based means of contact for nationals of that country around the world, aimed at the diffusion of knowledge and information. The impact of such networks, however, appears to be minor.

Retention policies are very difficult and expensive to pursue (Wickramasekara, 2002). In the absence of a strong research and development environment or in a scenario of a rapid economic growth, skilled workers and professionals tend to migrate. Since those conditions are very hard to find in developing countries, retention will be very difficult to achieve. Even when possible, the possibility that brain drain happens is also significant. Despite these facts, an interesting case of retention is pointed by the author regarding the Philippines, where the use of internet allowed specialist to perform high skill work for abroad at home. Return is also seen as important by Wickramasekara (2002), although it is not an ideal policy.

He shows that in most cases initiatives such as the UNDP TOKEN programme and RQNLA (Reintegration of Qualified Latin American Nationals), the costs faced are enormous and the marginal gain of a returnee insufficient.

Governments should encourage temporary migration programmes, such as short-term and project-related migration, as a means of improving the skills of nationals of the countries of origin, especially developing countries and economies in transition.

> *"The 1990s upsurge in the movement of high skilled professionals such as IT specialists and nurses, for example, is viewed by most economists as providing benefits to individual migrants as well as to receiving countries that increase their stock of educated workers. The emigration of professionals may [inspire] more young people to get educated, not all of whom will migrate." (Martin, 2004: 8)*

This last point deserves attention as some level of migration of skilled professionals may stimulate people to get schooling and qualification in the attempt to move overseas in the future and repeat the steps of those who have succeeded and returned better off. In other words, some level of migration (or brain drain) might stimulate a brain gain not only by the return of even more specialised staff and their role in special training programmes, but also because people feel motivated to study harder and longer in order to migrate bearing better chances of thriving, even if in the end of the day they do not feel the need to move overseas.

NAFTA has made provisions for the free movement of college graduates in more than 60 professions. CARICOM and MERCOSUR have also announced ambitious goals toward the regional movement of skilled persons, but so far these have not been implemented. At the bilateral level, there have also been initiatives to facilitate the free movement of labour, such as the Canadian Commonwealth Caribbean and Mexican Agricultural Seasonal Workers programme, which provides incentives to Canadian farmers to hire temporary workers from Mexico and the Caribbean for up to four months to work on fruit, vegetables, and tobacco farms.

Apart from the brain drain, international migration may also have other negative effects on education. Using probit analysis[17] on historical migration rates for Mexico, disaggregated by state, to instrument for current migration, McKenzie and Rapoport (2006) found evidence of a significant negative effect migration on schooling attendance and attainments of 12-18 year-old boys and of 16-18 year-old girls. Living in a migrant household lowers the chances of boys completing junior high school by 22% and of boys and girls completing high school by 13-15%. This is consistent with migration increasing the opportunity cost, and lowering the expected return to education. However, the negative effect of migration on schooling is somewhat mitigated for younger girls with low educated mothers, which is consistent with remittances allowing to relax credit constraints on education investment at the lower end of the wealth and income distribution. They also examined what children are doing instead of attending school and found that living in a migrant household significantly

[17] Like logit regression, probit analysis is a statistical technique that relates the probability of experiencing a certain event to a set of explanatory variables.

increases the chances of boys migrating themselves at all school ages and of older (16-18 year-old) girls doing housework.

Comparison of the marginal effects of migration on school attendance and on participation to other activities showed that the observed decrease in schooling of 16-18 year-olds is more than accounted for by current migration of boys and increases in housework for girls. This is at an age where work is also an important form of human capital accumulation, so it appears that Mexican females in migrant households are losing out on both schooling and work. To the extent that this reduction in education is a conscious choice of individuals in the face of better opportunities abroad, it should be less of a policy concern than a restriction on schooling due to financial constraints. However, given the large literature on positive externalities of education, there may still be some concern at this effect of potential migration on schooling incentives. One possible policy solution would be to take measures to increase the return to schooling in the US, which is likely to occur if migrants have better access to legal jobs.

These conclusions strongly contrast with the ones reached by Duryea et al. (2005), who found that children from migrant-sending families in Mexico completed between 0.7 and 1.6 more years of schooling than children from families without any migrants abroad. They also found that an increase in the share of households receiving remittances in a municipality led to both better health and schooling. Positive results regarding child education in Mexico were also found by Hanson and Woodruff (2003). Similarly, in a small town in El Salvador a study found that children in remittance-receiving families were healthier and stayed in school longer. Indeed, the effect of remittances on urban school retention was estimated to have been ten times higher than the effect of other sources of household income and 2.6 times higher in rural areas (Cox-Edwards & Ureta, 2003). In Guatemala, households receiving international remittances were found to spend 58% more on education than households that do not receive any (Adams, 2006). Households that were recipients of internal remittances spent 45% more on education, as compared to households without remittances. Wahba (2000) notes that households with migrants are more likely to invest in education and less likely to send their children to work.

MAIN IDEAS ON MDG 2:

General conclusions

- While enhancing education is a development goal by itself, it is also widely recognised as the main avenue of social mobility and, therefore, of escaping poverty (MDG 1).
- Education must not be discriminatory and should always promote equality and specifically gender equality. On the other hand, as was discussed in the previous chapter, much of the social disadvantage of minority groups (but not of women, at least not in the LAC region) can be attributed to educational disparities which may be related to discrimination of access to education.

- *Education has important and often ignored ramifications for MDG 4, in that maternal education has consistently been demonstrated to constitute one of the most important determinants of infant and child mortality.*
- Educational planners throughout the LAC region are increasingly aware of the macro effect associated with the demographic bonus, which is reducing the demographic pressure on educational systems, as enrolment rates are no longer increasing or may even start to decline.

1. The link between macro-demographic trends and potential investments in education

- Aggregate demographic trends in the LAC region during the next 2-3 decades have implications for investments in education. As the need to keep up with constantly increasing school age cohorts gradually diminishes or disappears, countries are now in a position to invest in the coverage and quality of education.
- While it is true that declining demographic pressure on the educational system makes it easier for young people to prolong their education, such a prolongation is also becoming more and more necessary, as today's young people face stiffer competition from older workers than in the past, due to the same demographic bonus that is also responsible for lower demographic pressure on the educational system.
- Demographic change can help or hamper, but it is certainly not the only determinant of educational attainment. The case of Bolivia, for instance, shows that it is possible to swim against the tide. It is particularly interesting that such a poor country can increase its enrolment rates to very high levels, in spite of high demographic growth. Guatemala, Honduras, and, to a lesser extent, Venezuela and (surprisingly) Costa Rica exhibit similar behaviour.

2. The link between educational achievement and reproductive patterns in the families of origin

- Families with fewer children tend to invest more in the education of each of them, as has been confirmed by a number of empirical studies from both developed and developing countries.
- In developing countries (here Brazil, Nicaragua, and Venezuela are analysed in some detail), most empirical studies on educational attainment have found that on average children from large families attain less schooling than children from smaller families, even after appropriate controls are introduced.
- In countries where education is mostly public and free of charge, enrolment rates are less sensitive to family size, but educational attainment is still significantly linked to it, as older children are increasingly exposed to the risk of being pulled out of school to contribute to household responsibilities.
- There is some evidence that the degree to which mothers wanted the birth of their children also contributes to their educational achievement. In the Dominican

Republic, children from families that have had one or more unwanted child births during the past 5 years performed significantly worse in terms of completed years of education than children from families where all births were wanted. A longitudinal study in Finland of women who said they did not want to be pregnant at the time which pregnancy occurred similarly shows that unwanted children are less likely than wanted children in the same cohort to progress beyond 9 years of schooling. Similarly, in the US, it has been found that unwanted pregnancies carried full term result in less education for the unwanted children.

- Children from large families do less well in school than children from small families, even though there are econometric issues with respect to the correct model specifications to measure the strength of these relationships. By ensuring that families have only the children they want, SRH therefore contributes to universal primary education.

3. The link between educational outcomes and the SRH of adolescents

- Education enables young women and men to make informed decisions about all aspects of their sexual and reproductive lives.
- Accurate and comprehensive gender-sensitive sexuality education provides young people with the skills and knowledge they need to protect themselves from unwanted pregnancy and sexually transmitted infections (STIs), including HIV.
- Sexuality education programmes promote the capacity to take responsible and informed decisions (empowerment), with a positive effect on the delay of sexual initiation, the reduction of number of partners, as well as unwanted pregnancies, abortions and the incidence of STIs and HIV. There is little evidence to support claims that sexuality education stimulates sexual experimentation among adolescents.
- Adolescents drop out of school for more than one reason which jointly determine the number of years of education that will be lost. Estimating the effect of any of these processes in isolation from the others may generate spurious results.
- In secondary education, SRH issues present new challenges to guaranteeing the completion of education of the 12-18 year-olds. Unplanned pregnancies affect the educational outcomes of adolescent mothers, although so far there has not been a lot of scientific research on the precise strength of the effects. Unfortunately, the data generated on this issue by the DHS surveys is rather limited, but a somewhat crude estimation of the effects suggests that the average education of women in the LAC region would increase by 0.3-0.6 years if all women had their first birth after age 20.
- Most of the formal programmes developed in different countries of the world are oriented towards formation within an explicit ethical framework; in addition to presenting scientific contents about human sexuality, they promote the development of individuals capable of choosing their own way of life, with freedom of conscience, thought and belief, and respect for other cultures and the life options that other people have chosen.

- In various countries, sexual education has been integrated in the formal educational curriculum as a transversal issue. Contemporary education tries to answer the demands through a humanistic integral formation of the student.

4. Brain drain and brain gain

- The outcomes of the emigration of specialised professionals demonstrate the ambiguous nature of migration, as it can be at the same time harmful to one country that is left shy of qualified professionals, while bringing benefits to another, turning itself, in fact, into a brain gain.
- Recent research promotes the idea of "optimal brain drain"— that is, that an increase in the emigration of skilled migrants may actually benefit the source country in some cases, but much depends on the particular circumstances of the country. Positive outcomes have been found in some Asian countries, but in the LAC context the outlook is less promising.
- In the absence of a strong research and development environment or in a scenario of a rapid economic growth, skilled workers and professionals tend to migrate. Since those conditions are very hard to find in developing countries, retention will be very difficult to achieve. Even when possible, the possibility of a brain drain is also significant.
- Some researchers state that the brain drain represents the loss of a high proportion of a country's total educated population, which implies adverse economic consequences to it.
- Some level of migration (or brain drain) might stimulate a brain gain not only by the return of even more specialised staff and their role in special training programmes, but also because people feel motivated to study harder and longer in order to migrate bearing better chances of thriving, even if in the end they do not move overseas.
- All analysts are unanimous in pointing out two distinct realities of the brain drain in the LAC region: one for Central America and the Caribbean and one for South America. In the latter, the outflows are not large enough to seriously deplete the national stock of highly educated individuals. In the former, however, the loss may be quite significant, whereas Mexico represents an intermediate case.
- The brain drain may hamper the combat of poverty, as the outflow of professionals at a rate faster than that of replacement would likely result in a shortage of available skills in the sending country, even more if it is a small developing nation.
- Governments should encourage temporary migration programmes, such as short-term and project-related migration, as a means of improving the skills of nationals of the countries of origin, especially developing countries.