Evidences of further decline of fertility in Latin America – Reproductive behavior and some thoughts on the consequences on the age structure[1]

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Abstract Recent evidence on fertility suggests that the decline trend did not decelerate and stabilized at the replacement level as expected and a number of countries have TFR already below replacement level. The adolescent fertility showed constant and relatively high rates until around 2000, but it shyly shows some decline now. The question is whether this decline is homogeneous or the gap between highest/lowest social classes is broadening. Given the young fertility age patterns and the awareness that, in general, adolescent fertility is a social burden, one can expect meaningful changes in the teenagers' reproductive behavior. Vulnerable adolescents may continue to present high risk of unwanted pregnancies, since unfortunately this is how it has been up to now, even among most developed settings. However, if the average adolescent delays age at maternity, the TFR will significantly fall in the short/medium run. If and when women will make up for the postponed maternity is a matter of deep research and guesses. The desire for fewer children, important proportion of unwanted fertility and high incidence of abortion also point out to a further fertility decline in Latin America. In addition, although incapability to implement reproductive preferences is frequently related to a higher number of actual children than the desired, it is also related to having fewer children than the desired number. Both are matters of concern on the subject of reproductive rights. A natural consequence of acute reduction in the size of new generations will be heavily felt when these generations enter the labor force to support the economy and the older population. Elderly Dependency Ratio will then grow more proportionally in 20 years time from now, assuming that fertility has fallen more than expected. Steeper fertility decline will make the demographic bonus to last longer, but the burden may be heavier.

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… As countries get richer, their population's age and their birthrates plummet. And this is not just a problem of rich countries: the developing world is also getting older fast. Falling birthrates might seem beneficial, but the economic and social price is too steep to pay. The right policies could help turn the tide, but only if enacted before it's too late" Longman (2004: 1).

Introduction

Several decades of research on the Latin American demographics has been barely enough for policy-makers to notice the great age structure transition that the Region is going through. This change, as it is known, is due fundamentally to an impressive fall in the number of children that women have.

One of the demographic challenges related to the fast fertility decline and the great age structural transition is the absolute size diminution of new cohorts. This change, we know, will destabilize intergenerational relations in the short, medium and long run and bring demographic, socioeconomic and political consequences and challenges that are not yet well understood.

We present recent evidence of the fast fertility decline experienced throughout the continent and suggest that TFR will soon end up well below the replacement level for almost all Latin American countries regardless of any socioeconomic constraints[3].

The paper shows firstly, the impact of fertility decline in the size of the new generations in Latin America (2010-2050). Next sections present recent estimates and some aspects of the reproductive behavior in the continent, namely, the young fertility age pattern and early motherhood trends and patterns of contraception and reproductive preferences. Levels of incidence of unsafe abortion are also mentioned. After an overview of reproductive behavior, we explain why very low fertility levels in Latin America are expected. Finally, the paper includes some comments on the consequences of further decline of fertility in the age structure.

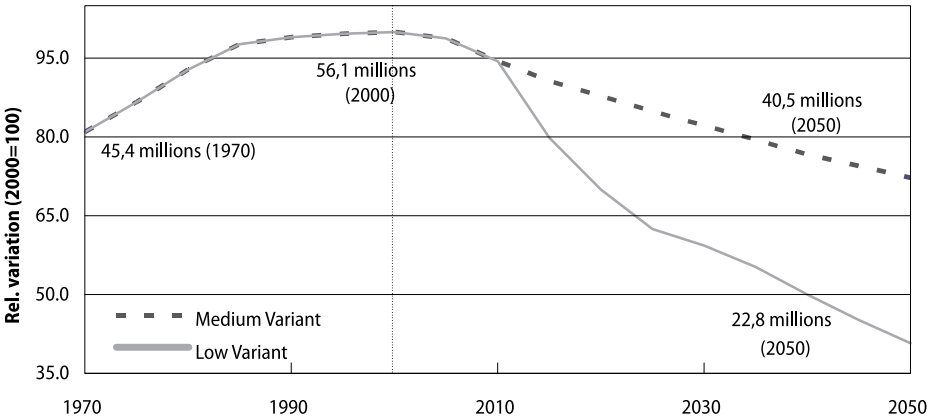
The Size of the New Generations in Latin America (2010-2050)

Reduction in the absolute number of births is more evident now due to two demographic circumstances. Firstly, there is the current age structure: the relative small size of cohorts currently in reproductive ages born in the seventies and eighties, when fertility started to decline in Latin America. Secondly, there is the continuation of this trend more accentuated perhaps over the recent years, mostly since 2000.

[3] Table in Annex 1 with data on Human Development Index, Gini Indexes for income and fertility levels gives a picture of the socio-economic condition and degree of disparity in the Region.

Data from the United Nation Population Division, Figure 1, shows children at age 0-4 in the whereabouts of 45 millions in Latin America in 1970. The number increased by 25% approximately and tended to stabilize around the nineties. By 2000, this age group had 56 million children at its peak. After that, the annual growth rate (r) became negative for the first time since reliable statistics were available (r = -0.2 % for the period 2000-2005). A further lost is expected over the following quinquennium (r=-0.9% for the period 2005-2010). Thus, this age group would have 3.1 million less children in 2010 than in 2000 if fertility implied in the UN forecast prevails.

Figure 1. Relative variation of the size of population aged 0-4 according to two fertility variants (1970=100%), Latin America and the Caribbean (1970-2050)



Source: 2009 - UN Population Division http://esa.un.org/unpp/index.asp.
Numbers refer to the population aged 0-4.

Different reproduction levels hypotheses implicit in the forecast produces important difference in the expected cohort size of new generations coming in to define the population age composition. Despite any assumptions, however, the size of this population group is expected to shrink. According to UN estimates, by 2050 the medium variant will produce 15.6 million less than in 2000, or about half of its size whether low variant hypotheses is considered. In this case, in the short term, next generation sizes will sharply shrink thus the 1970 size will be reached again perhaps before 2015. This trend is similar among sub regional groups; number of live births in South America that shares two thirds of the total population of the Continent may reach 1970 values sooner than other groups under the low variant hypothesis (Annex 2).

Generations already born, as we know, will vary its original size due to mortality and migration, whose impacts –keeping *normal and current* patterns– have minor role. The age structure of the future population in Latin America then, will change due to a quite large extent to the size of the generations to be born. What remains unclear is whether fertility will accentuate its downwards trend, thus new generations size will be even smaller than the figures considered in the current forecast.

The next section will present some characteristics of the reproductive behavior associated with the further decline of the fertility levels that occurred recently despite expectations on deceleration of such decline.

Fertility Estimates

Before entering the second decade of the XXIth century, Latin America will probably have a Total Fertility Rate (TFR) around the replacement level with relatively small gaps among sub-regions and countries (Table 1).

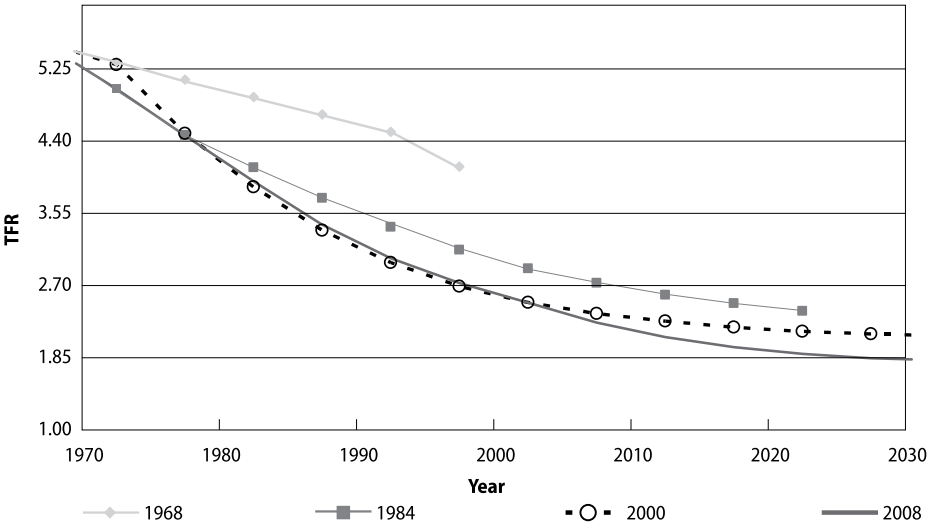
Related to previous trends, it is well recognized now that most demographers did not foresee the dramatic downward trend that fertility levels registered in the developing world after onset of fertility transition (Bongaarts and Bulatao, 2000; Carvalho and Brito, 2005). Fertility projections made from the late 1960s onwards, particularly for developing countries, were generally higher than the subsequent trends. Forecasts did expect some changes in Latin American, but they were quite conservative. Using the 1968 United Nation publications for instance, the medium-variant hypothesis expected the TFR to be 4.1 children per woman in 2000, well above actual values (Figure 2). After that, forecast made in 1984 incorporated most evidences of fertility decline in the Region observed from specific surveys from late seventies, but also failed to catch the 2000 reality.

More recently, comparison of the 2000 and 2008 forecast also suggests that after having the former incorporated all evidence of continuous fertility decline in the Region, it did not predict further decline as suggested by the latter whose ultimate average TFR stabilizes at 1.85 after 2025[4]. Similar comment applies to the 2009 estimates by the Population Reference Bureau (PRB, 2009).

[4] Last UN revisions on fertility for the period 2000-2005 are more attached to reality since they incorporate evidences given by the censuses from the 2000 wave.

Recently, evidence from other sources than demographic censuses suggests that fertility decline in Latin America is sharper perhaps than the implicit in the 2008 United Nation Revision (United Nations, 2009) if medium variant hypothesis is considered.

Figure 2. Total Fertility Rate according to forecasts made in selected years, Latin America, 1950-2030



Source: UN (1973; 1986; 2001; 2009) - In all cases, medium variant hypothesis is considered.

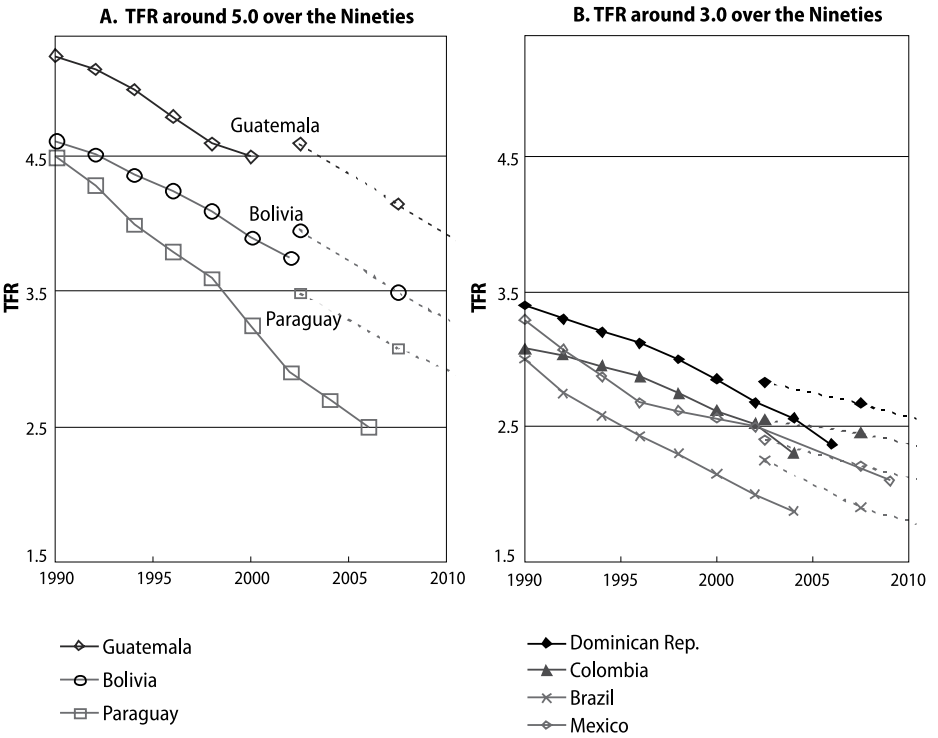
Figure 3 compares TFR from several countries using recent estimates produced by specific surveys and those produced by the UN Population Division (2009) considering only the medium variant hypothesis. Panel A presents selected countries with relatively high fertility levels over the nineties while Panel B present countries with lower fertility. Both clearly show dramatic changes, but trend somehow differs if sources are considered.

Guatemalan survey produced a TFR around 4.5 for the year 2000. The forecast suggests that average level for the period 2000-05 would be 4.6. Similarly, Paraguay recent HRS estimates that TFR is around 2.5 for the year 2005 while UN forecast is 3.5 for the period 2000-05.

On panel B, the comparison pattern is similar. Dominican Republic Survey for instance, produced a TFR of 2.6 and 2.4 for the years 2004 and 2006, respectively; however UN TFR is 2.8 for the quinquennium 2000-05. According to this forecast, values below 2.5 are expected to be reached after 2010. Greatest discrepancy appears when comparing Brazil and Colombia, having the latter a TFR below 1.9 for 2006 according to the last Brazilian specialized survey (Berquó et al., 2008). The

Population Reference Bureau also seems to overestimate TFR for these three cases (PRB, 2009).

Figure 3. Total Fertility Rate according to different sources, selected Latin American countries, 1990-2010



Note on Sources:
Dot lines refer to 2009 UN Population Division estimates (http://esa.un.org/unpp/index.asp).
Otherwise, figures were collected from the Health and Reproductive Surveys (HRS) project http://www.cdc.gov/reproductivehealth/surveys; Demographic and Health Survey project http://www.measuredhs.com ; Ministério de Saúde; Encuesta Nacional de la Dinámica Demográfica Mexicana[5] , Cavenaghi and Alves, 2009.

Also, when comparing values resultant from reliable vital statistics, differences remain. Three examples are given: TFR after year 2005 is said to be 1.9 in Chile (Chile, 2006); 2.04 in Uruguay (Peri and Pardo, 2008) and 1.4 in Cuba (ONE, 2008). According to the UN forecasts, the values mentioned for Chile and Uruguay would be reached after 2010. In the case of Cuba it will never be.

[5] Mentioned in Juárez et al. (2009).

Diversity of fertility decline in Latin America is well documented elsewhere thanks to a large extent to the efforts of international community supporting the DHS and RHS projects and good use of 2000 national censuses data[6].

In South America, countries with relatively different socio-economic backgrounds like Brazil, Mexico, Chile and Uruguay are below replacement level already, though Brazil like most other countries started the fertility decline trend before the seventies, when their TFR was over 5 children per women and Uruguay was more like a European-look-alike country with low fertility levels since 1950 or before. In Central America and the Caribbean onset of fertility transition took longer and remained above the Continent average. Two peculiar exceptions are Costa Rica, where decline trend emerged quite early, and Cuba with already low levels by 1950. There is no country in the Caribbean or Central America with constant fertility levels by now.

As seen before, recent fertility surveys for several countries indicate that after decades of decline, the downward trend has steeped with fertility around the replacement level over the recent years. There are also strong evidences that urban areas –specifically, capital and metropolitan cities have by the end of this decade TFR around 1.5 or below (Rosero, 2004; Wong and Bonifacio, 2008).

In general, it is enough to say that with the exception of six countries with TFR above 3 cpw by 2005[7], the average level for Latin America by 2010 will probably be around 1.85 – the values considered in the low variant hypothesis, instead of 2.1, considered in the medium alternative. The below replacement level will probably be reached due to a further and sharper decline as suggested by trends in Figure 3 that included the most recent evidence. Different from a preannouncement stall as it has been the case for about two thirds of sub-Saharan countries (Bongaarts, 2007).

Divergence between most recent evidence from the fertility surveys and forecasts suggests that, again, foreseen decline trend and estimates of cohorts to be born have been rather conservative. Thus, it looks plausible that fertility levels in Latin America could be nearer to the so-called *low-variant hypothesis* than the medium variant (Table 1). In support of this understanding we can see Brazil's TFR of 1.85 –the most populate and highly unequal socio-economic country– and Cuba's

[6] See as a primary example, reports available at:
DHS: http://www.measuredhs.com
HRS: http://www.cdc.gov/reproductivehealth/surveys
CEPAL/CELADE - Serie Población y Desarrollo:
http://www.eclac.cl/cgi-bin/getProd.asp?xml=/celade/agrupadores_xml/aes4.xml&xsl=/agrupadores_xml/agrupa_listado.xsl

[7] The countries are Haiti, Paraguay, Bolivia, Honduras, French Guyana and Belize. They represent all together 5.7% of the total population of Latin America in 2005.

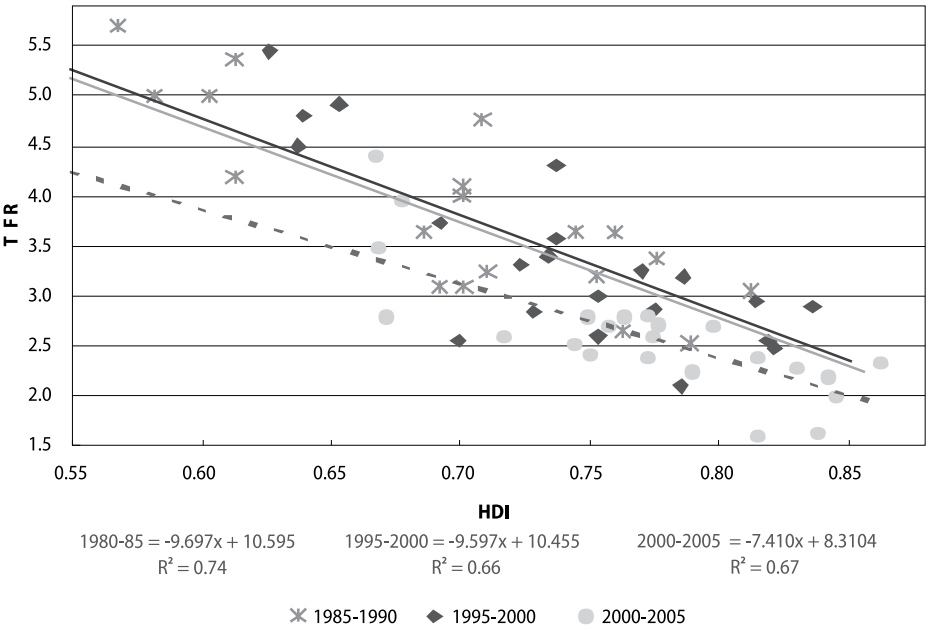
TFR of 1.5 – a country which endured long economic hardship periods. Whether values predicted under this hypothesis (TFR near 1.3) will prevail until 2020 will need to be given further attention.

Table 1. Total Fertility Rate considering Medium and Low Variant Hypothesis from the UN Population Division estimates, Latin America and the Caribbean, selected periods between 2000 and 2050

Period	TOTAL		Caribbean		Central America		South America	
	TFR according to variant:							
	Medium	Low	Medium	Low	Medium	Low	Medium	Low
2000-2005	2.50		2.51		2.66		2.43	
2010-2015	2.09	**1.85**	2.30	**2.05**	2.27	**2.02**	2.00	**1.75**
2020-2025	1.85	1.40	2.15	1.65	2.04	1.54	1.81	1.31
2045-2050	1.82	1.32	1.90	1.40	1.85	1.35	1.80	1.31

Source: 2009 - UN Population Division http://esa.un.org/unpp/index.asp

Figure 4. Total Fertility Rate (TFR) and Human Development Index, Latin America and the Caribbean (1985 - 2005)



Note: Straight lines refer to a linear adjustment. Dot line corresponds to period 2000-2005.
Source: PNUD - Human Development Index - http://hdrstats.undp.org/buildtables/rc_report.cfm - UN-Population Division (2008 Revision) - DHS and HRS Surveys (Data in Annex 1).

It is also sensible to expect the Continent to continue on the convergence trend with relatively small deviation as Shawn (2007) has found for other regions in the world. One further support for this prognosis is the evolution of the association between socio-economic development and the reproduction levels expressed through the Human Development Index and TFR, for instance. Figure 4 shows the negative correlation between HDI and TFR for the eighties and nineties, which is consistent with the significant proportion of decline in fertility that very often had been attributed to social progress. For the recent period however, although relationship remains (See R^2) the contribution is less evident as TFR interval tends to narrow.

Reproductive Behavior and Perspectives of Change in Fertility Trends in Latin America

Previous items demonstrate that in general terms, fertility levels have steeped declining trend in most of Latin American countries after 2000. Either the pattern applies to countries that were already at low levels, like Brazil and Colombia, which were supposed to stabilize around the replacement level, or to countries that entered the fertility transition later than sooner, such as Guatemala and Paraguay did.

This section considers some relevant aspects that may have important contribution in the insurgence of the fertility decline trend. To this purpose, some specific aspects of the reproductive behavior such as young fertility and implementations of reproductive preferences are considered.

The young fertility age pattern and early motherhood trends

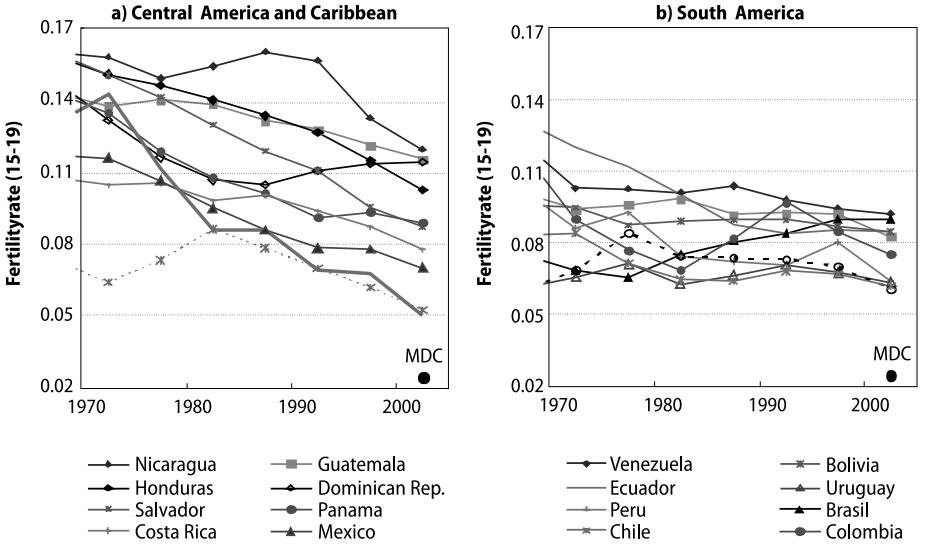
An important trace of Latin America demographics is that fertility decline did not delay onset of childbearing, as one would expect given historic experiences. Simultaneously, recent evidence analyzed by Rosero et al. (2009) shows a somehow paradoxical increased trend of motherlessness among women below age 30 in most Latin American countries. Both aspect are considered next in order to understand the sharper fertility decline after 2000.

Adolescent Fertility

Fertility below age 20 did not reach the same intensity as other ages and it is considered a social burden. Teenagers reluctance to adhere to the general declining trend was evident in the comparative analysis of data from reproductive surveys for the nineties (Rutstein; 2002) when most Asian countries had lower adolescent fertility rates than those from Latin America.

Review of specific rates for ages 15-19 over the period 1970-2005 shows no clear downward trend (Figure 5). As for Central America, relatively high fertility rates decreased in most countries up to the eighties, when values become somehow erratic. In any case, if Cuba and Haiti are set aside fertility decreased around 20% over the period in this set of countries. By the beginning of XXIth century, these countries had a fertility teenager rate oscillating between 120 to 60 live births per 1,000 women aged 15-19.

Figure 5. Total Fertility Rates for women aged 15-19, Latin America (1970-2005)



Source: Data from CELADE (Latin American and Caribbean Center of Demography) http://www.eclac.cl/celade/proyecciones/basedatos_BD.htm (Accessed 06/09/2009 - At 21:43).

In South America –with the exception of Ecuador with the highest adolescent fertility in the seventies– values were downwards up to the eighties and increased afterwards. This is the case, for example in Brazil, Colombia and Peru where the population share is nearly 70% of this sub-region. More specifically, increase took place frequently among the youngest young. Data for the nineties analyzed by Rodriguez-Vignoli (2003) shows that parity among girls aged 17 or less increased in Bolivia, Brazil, Chile, Ecuador, Panama, Paraguay and Uruguay[8].

Altogether, the interval where adolescent fertility moves is rather constant over the period, between, say 100 to 70 live births per 1.000 women aged 15-19; far from

[8] In Uruguay, parity at age 16 in 1996 was twofold the value from 1985. At age 15 it was fivefold (Rodríguez-Vignoli (2003: 24-27).

levels present in more developed context where fertility rate for this age group is around 20 °/oo and very often well below 10 °/oo.

Because of this behavior and the dramatic fall at other ages, share of young fertility in the whole reproductive process became prominent. It increased from less than 10% to nearly 20% once older women diminished fertility rates up to ten times or more in less than three decades. As noted then by many authors, the whole process characterizes Latin American as a Region with a quite young age fertility pattern. In fact, a comparison of age fertility distributions among the nearly 200 countries of the UN projections shows Cuba with the fifth youngest pattern in the world (25.2 years). Six countries of important population share in the Continent are among the 10% of countries[9] with the youngest age fertility pattern (Mean age of 27 years or less)[10].

The extremely young age fertility pattern caused great concern among researchers and social institutions given the undergoing fast fertility decline throughout the Continent that reached almost all social classes by 2000-05. In fact, if fertility decline is a general phenomenon, then constant trend among young women, already an average indicator, would imply very high fertility among important population segments inside this age group. Also, if they are already a vulnerable population because of the their age and high fertility levels are typically from those at the lowest social stratum, one can only expect extremely high reproductive patterns among poor adolescents[11]. A number of authors confirmed that most vulnerable populations by socioeconomic criteria present higher teenager fertility than any other population segments[12] education being the most accusing indicator of such discrimination. The main reason would be that access to reproductive health care is the most difficult for them. The last Nicaraguan survey conducted in 2007 gives a typical example of the gap considering education background: adolescent fertility in the highest quintile of wellbeing is 46°/oo. The counterpart rate for the lowest quintile is nearly four times (159 °/$_{oo}$) (INIDE, 2008). However when considering young women with higher education, the rate falls to 22°/$_{oo}$ against those without education whose rate is ten times higher (221°/$_{oo}$)[13]. Brazilian data for 2006 also shows that the wider gap considering several socio-economic indexes corresponds

[9] According to data from the 2008 Projections (UN, 2008) those countries are: Brazil and Colombia (South America) and Panama, Costa Rica, Salvador, and Dominican Republic (The Caribbean and Central America).

[10] It is important to say that the distribution of age at childbearing, because of the relatively young age distribution of the population at reproductive ages, is also slightly younger than the average for the LDC.

[11] Characterization of young Latin American population at risk of high fertility can be seen in: Rodriguez-Vignoli (2008); Di Cesare (2007), and Guzmán el al. (2001).

[12] Rodriguez-Vignoli (2008) makes a comprehensive review on this issue.

[13] Data published in: Encuesta Nicaraguense de Demografía y Salud (2008: 94).

to education (Berquó et al, 2008). Although inverse association between education and teenager fertility was widely documented, (See for instance Gupta and Leite, 1999) it is striking that the relationship shows no changes up to now.

Theories about young's failure to react to the classic socioeconomic determinants for dropping their risk of having a live birth run from truncated modernization (Rodriguez Vignoli, 2008) to early sexual initiation (Di Cesare, 2007) and family values supporting adolescent maternity (Fussell and Palloni, 2004). In general, they point out the negative implications for the girl such as missing opportunities for better education and skills and the impotence for breaking the vicious circle of generational poverty. In addition, it is widely recognized that adolescent pregnancy is a multifactorial phenomenon with individual, psychosocial and socio-cultural dimensions even in developed contexts. Narring and Sharma, (2006), for instance mention as an important lost link to incorporate adolescents in the low fertility regime the socio-cultural barriers not yet understood by policy makers. It has been found in both developed and developing contexts that sexually active girls may neglect contraception because the opposite would imply gender and generational conflicts. The use of contraception would be indicative of an active sexual life where they are expected to either keep abstinence in respect of parental values or play a passive role in their partner relationship (Szasz, 2008).

Finally, recent data signals that fertility may have fallen significantly also in this age group having perhaps, important role in the sharper fall of general fertility mentioned before. Recent evidences for the accentuated undergoing young fertility pattern are from El Salvador (2008), Paraguay (2008) and Brazil (2006). In the Brazilian case, household surveys report teenager fertility around 50°/$_{oo}$ over four consecutive years now (2004 to 2007)[14], against the constancy values around 80-90°/$_{oo}$ during the eighties and nineties.

If the most recent evidence signals downwards trend, it is worth evaluating whether a sound convergence to low levels or a wider gap is on the way. It is also worth remembering that even in developed countries high fertility levels among adolescents from the most socially vulnerable populations did not respond to social policies intended to postpone or avoid early pregnancies. In the current Latin American context, where the age of the first intercourse is constantly reducing, cultural gender and generational relationships do need to be considered if a change is desirable. The perverse consequence of mishandling such policies would be increments in unwanted pregnancies among teenager and young women. Social

[14] Estimated from PNAD (*Pesquisa Nacional por Amostra Domiciliar*) for years 2005-06-07. (http://www.ibge.gov.br/home/estatistica/populacao/trabalhoerendimento/pnad2007/default.shtm)

inequalities, says Rodriguez-Vignoli (2008), are more pronounced in the case of early childbearing than in total fertility.

Motherhood trends

Despite unchanged teenager fertility at least until 2000 and in accordance with the general downward trend, a relevant study by Rosero et al., (2009) found that the proportion of women under age 30 having a first child, i.e., that become mothers dropped significantly in most Latin American countries over the inter-census period 1990-2000. The trend is confirmed by the authors' usage of updated information that is also supported by most recent data (Annex 3). The proportion of women with no live births at ages 25-29 and 30-34 for countries with data around 2005 indicated – with the exception of Dominican Republic – an increment over the inter-surveys period. Colombia and Brazil show increase that is more significant for ages 25-29. Furthermore, the latter group shows that nearly a third of these women do not have children. In addition, it should be remembered that in this country, teenager fertility appears to be downwards.

The increase in childlessness at central ages of the reproductive spam (quoting Rosero et al., 2009) deserves attention on at least two dimensions. First, its impact on the total fertility and on the total population. Second, whether this has to do with ideational attitudes and therefore with second demographic transition patterns (since motherhood is still an almost universal value in Latin America and its low prevalence is an indicator of the Second Demographic Transition). Both dimensions are related since postponement of age at motherhood may contribute to a further decline of fertility either as a tempo or quantum effect. Delaying the onset of childbearing may imply an instantaneous fall in the period TFR. If we take the case of Cuba, where both low total fertility levels and high young fertility are matters of national concern, postponement of motherhood at early ages would imply a TFR of say 1.1 - 1.3 in the very short time[15]. The same simulation for Brazil gives a TFR of 1.5.

Assuming that postponement is just a period behavior without changes in the cohort decisions, i. e. a woman will end up with the number of children she was supposed to have – only at a later age – then an increase in the period-fertility in the medium run may be expected. As there will be cases where women cannot catch up their delayed pregnancy, which would be the case if postponement takes too long a fall in the cohort-fertility should then be expected as well. Rosero et al. (2009),

[15] TFR in Cuba, for 2007 is 1.43 children per women. ASFR at ages 15-19 is around 40/50 per thousand. Assuming that social programs induce the rate to a fall of about 10/15 per ‰ TFR would be just above 1.0

quoting Rindfuss and Bumpass (1976) regarding developed context remind us the well-documented fact that, in general, "later means fewer" children if any.

Contraception and reproductive preferences

Implementation of reproductive preferences and access to contraception are reproductive rights very clearly established in the Program of Action approved at the International Conference on Population and Development in 1994. Most Latin American governments adhered to these principles with more or less emphases and important support from development agencies (ECLAC, 1998). This attitude made possible to reduce number of children that women have and so the gap between actual and desired fertility, a result that is more perceived, perhaps, by the end of current decade. This section describes general trends of both contraception and reproductive preference as main components of recent fertility changes.

Contraceptive prevalence

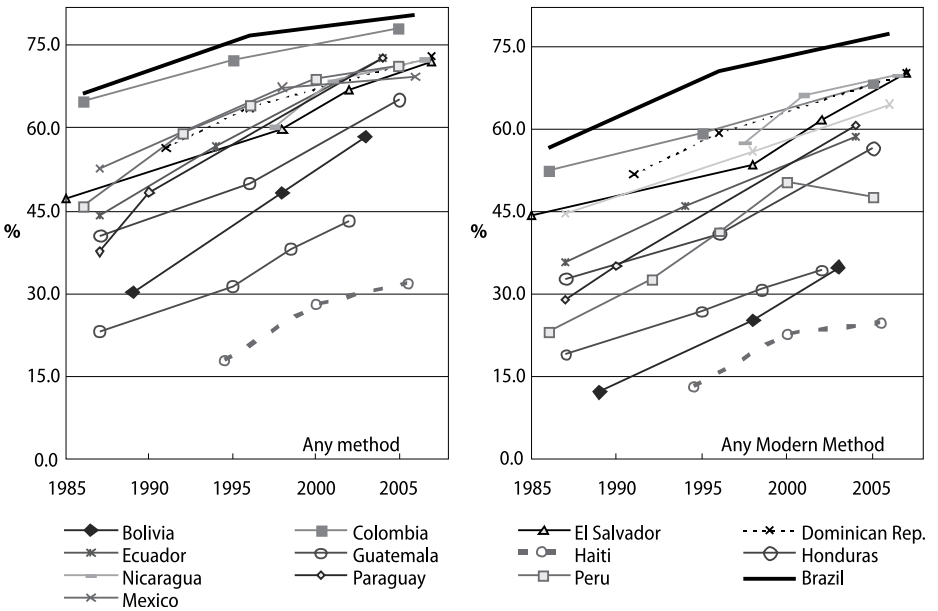
The use of contraception is accepted as one of the most important proximate determinants of fertility decline (Bongaarts, 1982) and for Latin America, its prevalence is relatively high by the end of the current decade. Comparison across time, showed, at least since the eighties, accentuated increase trend in the use of modern contraceptive methods (Figure 6). While contraception prevalence was about 60% among married women before 2000, information available for periods after 2005 shows prevalence near to 75% for a significant number of Latin American countries[16]. This group includes both large-size countries (Brazil, 2006; Colombia, 2005; México, 2006) and those with previous low prevalence (Salvador, 2007; Paraguay, 2008; Nicaragua, 2007).

Important to note, on the one side, that the gap observed for the nineties tends to narrow, although it is still considerably wide and persistent. Brazil and Colombia have had high prevalence of contraception since the beginning and countries like Bolivia, Guatemala and Haiti remain at the lowest levels. The existence of a convergence trend is also supported by preliminary analyses done by Stupp et al. (2009). Albeit focusing only Central America, they find that heterogeneity in contraception use is explained by the heterogeneity in the socio-economic context among the countries considered (Salvador, Guatemala, Honduras and Nicaragua). Their preliminary results also find that recent evolution towards convergence at better social conditions

[16] Data were collected from http://www.cdc.gov/reproductivehealth/surveys (Reproductive and Health Surveys); http://www.measuredhs.com (Demographic and Health Surveys; Brazil: PNDS, 2007 – Ministério da Saúde; Cavenaghi, and Alves, 2009; Juarez et al., 2009.

explains fast increase, and convergence, in the contraception prevalence. In any case, the upwards trend is determined by increment in both traditional and modern methods; contribution from the latter, however, is always slightly higher than from the former with the exception of Peru (Figure 6).

Figure 6. Percentage of married women using any contraceptive methods and any modern methods, Latin American and Caribbean countries (1985-2005)



Source: From table published by Cavenaghi and Alves (2009) and Rodríguez-Vignoli (2008).

As it is usual when a large set of populations is considered, a large degree of diversity is expected. Share of effective methods like sterilization and hormone-based method represents almost all married women of reproductive age in the case of Dominican Republic, Brazil and Mexico. Countries with important share of traditional methods are basically those of the Andean Region, which in turn, are among the poorest countries in the Continent.

Another important aspect of the Latin American contraceptive pattern is the difference according to socioeconomic status among countries. Social inequalities, using years of education, may not be a strong determinant for contraception access as figures presented by Cavenaghi and Alves (2009) suggest: Brazil, widely recognized for its excessive unequal income distribution does not reflect such inequality in contraception use; although less educated women use less contraception than the most educated, proportions are similar ranging from 75% for the former to 82%

for the latter. Poorest countries like Bolivia, on the other hand, show important disparities: the proportion of less educated women using contraception may be half of those more educated, although all together, prevalence in Bolivia was quite low in 2005 (below 60%). Similar pattern corresponds to Haiti. It is worth noting that being poor countries have important proportion of women with no education.

In addition, there are countries with high prevalence of effective contraceptive methods, which may explain recent further decline of the TFR thanks to adequate access to reproductive health care despite presence of unequal income distribution. Again, Brazilian case is worth remembering: there was an important homogenization process in several social strata and better quality of the contraception use that included both men and women; male contraception use *"reached the two digits"* (Perpetuo and Wong, 2009), a quite exceptional fact in the *macho* Latin American society. Homogenization is also the case in Mexico according to Mendoza (2009): contraceptive practice increased proportionally more in rural areas and among women with no education and indigenous population, thus gap between groups at the extremes of the social scale narrowed by 2006. As increment was due mostly to use of modern contraception, gaps in fertility should be expected to narrow.

Convergence of contraception use at relatively high level is also supported by findings in Central America. Siow (2009), by reviewing governs plans and based on data presented by Stupp et al. (2009), concludes that "*Family planning improvements made over the past two decades by Central American countries have enabled the poorest segments of the population greater access to contraceptives and family planning services. Further efforts in strengthening existing programs would help ensure contraceptive security and further close the equity gap*".

On the other hand, there are also populations where lack of adequate access to contraception is an important deterrent for fertility decline. Concerning traditional methods, as highest prevalence is found among poorer countries, population in the most vulnerable social stratum have high fertility and high failure rates given the weak effectiveness of traditional methods. Two Andean countries (Bolivia and Peru) show the highest prevalence in traditional methods in the Continent (23 and 24% respectively). Symptomatically, in both countries, TFR for a woman from the lowest quintile is 3.4 times higher than her counterpart in the highest quintile, which is one of the widest gaps in the Region.

Finally, Rodriguez-Vignoli (2008) points out two population segments in high need of contraception due to hard breaking socio-cultural obstacles: adolescents from low social stratum and indigenous population.

In fact, teenagers have not reduced fertility despite the increase in contraceptive. The causes of this paradox, as already pointed before, are of behavioral nature that

explain, for instance, the inadequate or mistimed contraceptive use (adolescents may be excluded from sexual and reproductive health services or accepted in family planning programs only after having their first pregnancy) (ECLAC, 2005). In addition, supply shortages tend to hit young women first. Mendoza (2009) explains that due to fiscal constrains in Mexico over the period 1997-2006, family planning did not considered new clients – basically young women. As for indigenous women, high fertility continues to be a hallmark, which is greatly related to the socio–economic disadvantages among these groups, such as extreme poverty and low levels of formal education, but also to cultural patterns that are reflected in reproductive behavior (ECLAC, 2004). There is no recent evidence at national levels; however, localized studies show that the need of indigenous women for modern contraception is very often unmet due to cultural clashes (Rodriguez, 2008).

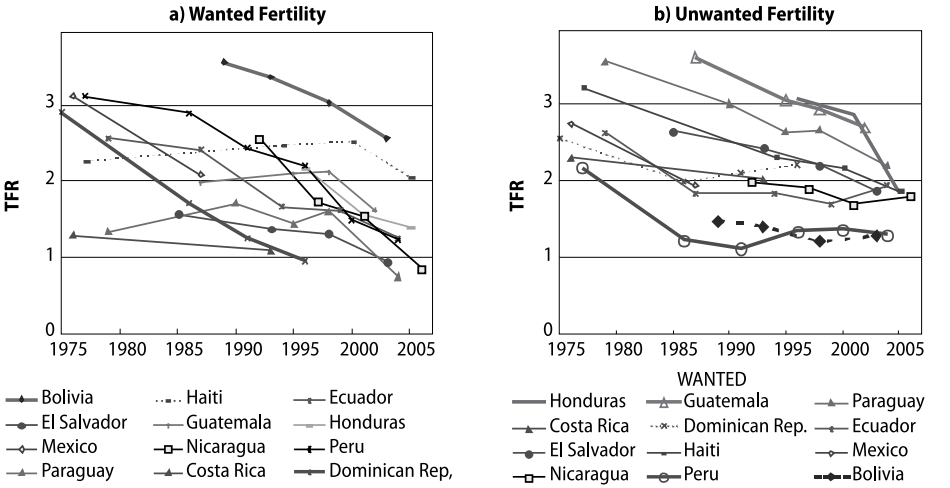
Reproductive Preferences - Unwanted Fertility

Estimates of wanted and unwanted fertility are of high interest because they indicate the extent to which fertility would be reduced/increased if women were completely successful in implementing their reproductive preferences. They are important inputs in the public health organization, particularly for the provision of family planning services. Above all, knowledge of these dimensions of fertility may help to close the gap between reproductive aspirations and outcomes which is a worthy policy goal in its own right (Bongaarts, 1990; Casterline and Mendoza, 2009).

The recent paper by Casterline and Mendoza (2009) gives a comprehensive review of magnitude of unwanted fertility in 12 Latin American countries using DHS and HRS data and covering as much as three decades[17]. Levels of unwanted fertility may vary independently of the total fertility level, although there has been a generalized fall in both wanted and unwanted fertility (Panels A and B in Figure 7). The overall figure suggests that at the end of the period women would have an unwanted fertility rate tending to stabilize around 1 child. In that way, one could say that TFR would tend to stabilize around 2 children per women with similar proportions of wanted and unwanted fertility.

[17] In an innovative way, they estimate unwanted fertility using an "aggregate prospective preference" approach. The method "does not classify individual births as wanted or unwanted, rather generates a birth-order-specific estimate of the proportion unwanted , with an estimate of the overall incidence of unwanted births calculated as a weighted average of the order-specific-estimates.

Figure 7. Wanted and Unwanted Total Fertility Rates, Selected Latin American Countries (1975-2005)



Source: Data from Casterline, and Mendoza (2009: 26).

In fact, actual estimates for the last period available show virtually no country with a wanted fertility above the replacement level, Guatemala being the isolated exception (Figure 8). Although share of unwanted fertility in the past may have been as high as 60%, recent figures are still important. The lowest share corresponds to Paraguay where 25% of the total fertility is unwanted. Very often, however, unwanted fertility is more than 40% with Haiti's unwanted fertility higher than the wanted, the latter representing only 48% of the total fertility.

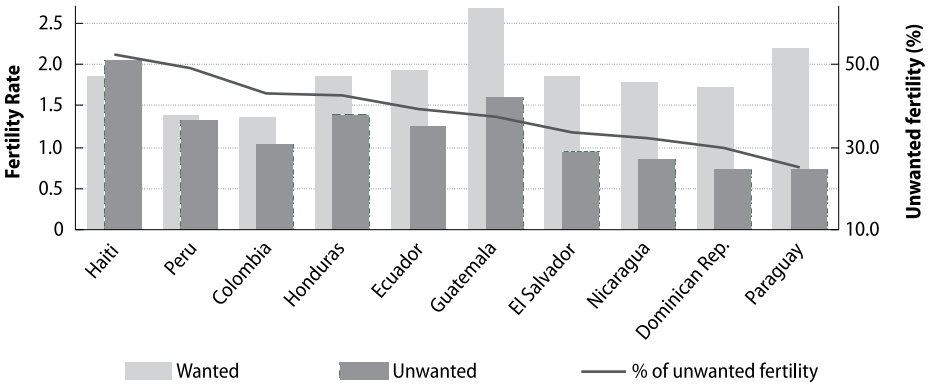
The burden of unwanted fertility will not be discussed here, despite important issues behind, mainly the lack of means to implement reproductive preferences and discrimination according socio-economic stratum once it is known that most vulnerable women very often will have a larger proportion of unwanted pregnancies over passing their desired family size. Haiti is the typical example of how expressive is the unmet need of sound family planning.

Another aspect related to implementation of reproductive preferences to be considered in a context of such fast fertility decline is the no-correlation between the ideal family size and the actual number of children ever born. Women at ages 40-49 are considered because they are closing her reproductive period.

Figure 9 allows us to compare those indexes for women classified according their socioeconomic condition defined by Household Wealth Index (HWI). Ideal number of children as it is known, is a complex concept that may include social religious and/or community values in the interviewees' responses and according to Hagewen and

Morgan (2005) it may be interpreted as the preferred number of children for some hypothetical family. Also, variations in this indicator, very often are smaller across social classes than actual fertility, whether because of the globalization of socio-economic relationships or due to the uniformity of cultural messages (ECLA, 1998).

Figure 8. Wanted and Unwanted fertility rates, Selected Latin American Countries (circa 2005)



Source: Data from Casterline, and Mendoza (2009:29).

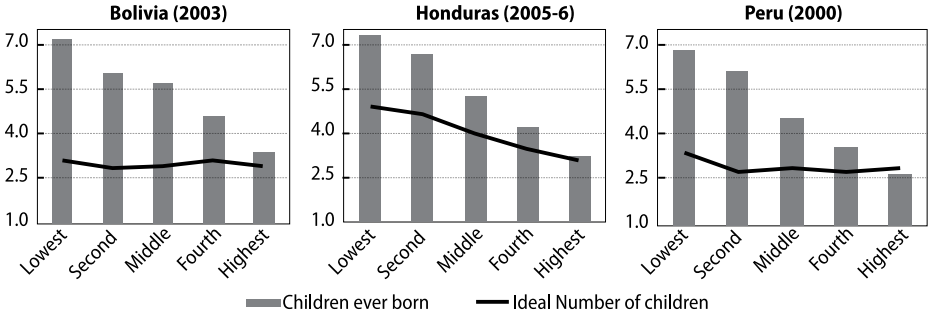
Panel A considers three countries of relatively high fertility and Panel B allow us to compare a temporal trend. In the first case, Honduras is the only country presenting a relationship between socio-economic stratum, parity (mean number of ceb) and ideal number of children. In Bolivia and Peru, parity varies according socio-economic situation but ideal number of children does not. It is almost constant, slightly over 2.5 regardless of the HWI. Furthermore, in the case of Peru, women at the highest position had lower parity than the number of children reported as ideal.

Panel B shows evolution in time of this relationship using countries with a different timing of their fertility transition. Colombia started fertility decline well before Dominican Republic and Haiti is among the countries with an incipient decline[18]. Changes in ideal number of children is clearly less obvious but it shows lower values for more recent periods. There are also several cases where ideal number of children is higher than reported parity. Most of them are related to women at the highest stratum; in the Dominican Republic in 2007, however, this is true for almost all strata, being the only exception, the lowest stratum.

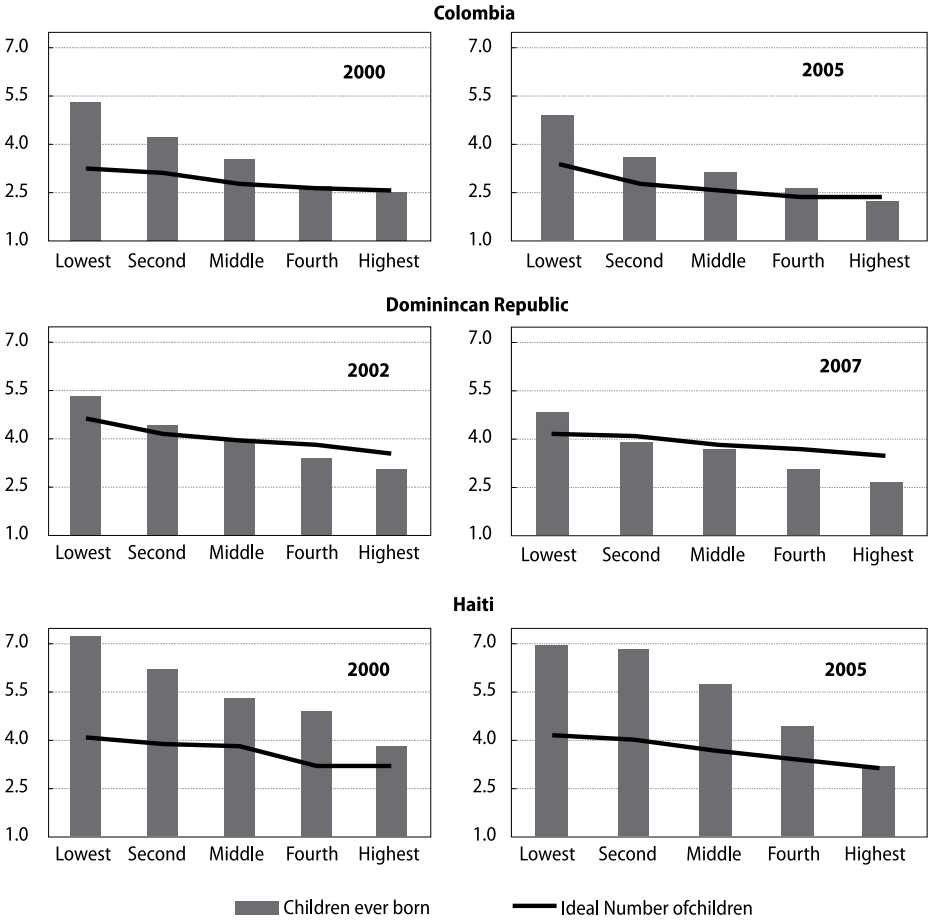
[18] Evolution of fertility transition in Latin America can be seen in Chackiel and Schkolnik (1992; 2004)

Figure 9. Mean number of children (ever born and ideal) from women aged 40-49 in selected countries according to household wealth index

A) Countries with High TFR



B) Comparison over time



Source: Macro International Inc, 2009. MEASURE DHS STATcompiler. http://www.measuredhs.com, September 19 2009.

Outside the reproductive surveys sources, a desired number of children lower than the actual number of children, among high and middle class women, is found in Uruguay (Perí and Pardo, 2008).

While among poorer groups this discrepancy translates into a larger number of children than those desired, conversely, the actual fertility of wealthier groups are lower than the desired number of children. As ECLAC (1998) recognized, reproductive rights may be vulnerable in both poor and rich segments, although for different reasons and with different consequences.

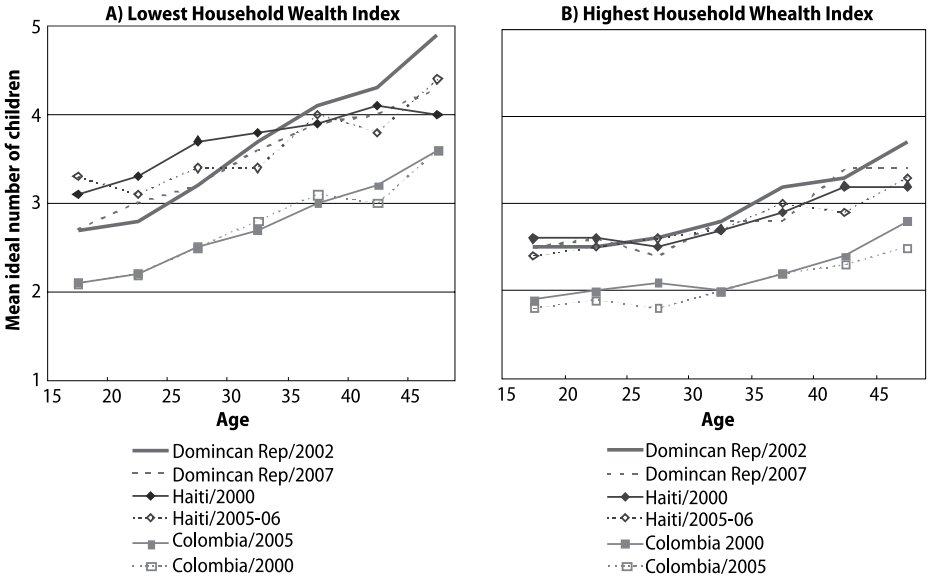
This type of discrepancy appears in the most recent Latin American estimates and it has been recognized in post-transitional societies using data collected since, at least, early nineties (Boongarts, 2001). In that context –including USA (Hagewen and Morgan, 2005) – desired family size is typically two children while fertility is well below replacement. The three cases used to illustrate differences between desired and actual fertility neither are developed countries nor are highly positioned in the HDI Latin American ranking.

Data on ideal number of children in this case are for women at the end of their reproductive period, thus whatever the concept of wanted fertility behind the answer on desired number of children, the process is over. Such discrepancy, though, suggests either those women in Latin America have started to have less children than the number considered ideal or the indicator we are using is misleading.

On the other side, it can give insights for what to expect from fertility behavior in the short or medium run when consider younger women. This indicator plotted in Figure 10 shows the recognized age-related-pattern, much of this, explained by the rationalization factor.

Besides, in times of changing fertility, older women tend to have more children either because they have been exposed to the risk of having a child more often or because attitudes towards low fertility are more intense among younger women. Specifically in these cases, we noticed, firstly, that desired number of children is different according to social stratum. Women with the lowest HWI (Panel A) report systematically higher number of desired children than those at the highest position (Panel B). Secondly, the set of parallel curves indicates that increase in the number of desired children by age is similar whatever the stage of the fertility transition in these countries and the social stratum. Thirdly, there is no obvious change over the five-year period that separates surveys in each country. In addition, despite differences in timing of fertility transition and TFR, ideal number of children is quite similar inside the socio-economic classes in Dominican Republic and Haiti. The notion of cultural values behind this index is reinforced because these are neighboring countries.

Figure 10. Desired number of children in the lowest and the highest household index by age, Dominican Republic, Haiti and Colombia (circa 2005)



Source: Macro International Inc, 2009. MEASURE DHS STATcompiler. http://www.measuredhs.com, September 19 2009.

Table 2. Desired number of children for cohorts with indicated age at the time of earliest survey according to lowest and highest Household wealth index, selected countries, in two periods

Household Wealth Index	Cohort's age at earliest survey	Colombia		Dominican Rep.		Haiti	
		Year of the survey		Year of the survey		Year of the survey	
		2000	2005	2002	2007	2000	2005.5
Total Average		2.3	2.2	3.1	3.1	3.1	3.1
Lowest	15-19	2.1	2.1	2.7	3.0	3.1	3.1
	20-24	2.2	2.2	2.8	3.2	3.3	3.4
	25-29	2.5	2.4	3.2	3.6	3.7	3.4
	30-34	2.8	2.6	3.7	3.9	3.8	4.0
	35-39	3.1	3.0	4.1	4.0	3.9	3.8
	40-44	3.0	3.6	4.3	4.3	4.1	4.4
Highest	15-19	1.9	1.9	2.5	2.6	2.6	2.5
	20-24	2.0	1.8	2.5	2.4	2.6	2.6
	25-29	2.1	2.0	2.6	2.8	2.5	2.7
	30-34	2.0	2.2	2.8	2.8	2.7	3.0
	35-39	2.2	2.3	3.2	3.4	2.9	2.9
	40-44	2.4	2.5	3.3	3.4	3.2	3.3

Source: Macro International Inc, 2009. MEASURE DHS STATcompiler. http://www.measuredhs.com (19/09/2009).
Note: estimates in bold indicates cohorts with no increment or diminution in the desired number of children five years later.

Finally, despite variation by age, when number are considered in detail, we find that, although it is true that this index tends to increase as woman ages, when looking at the cohort, behavior by age is somehow different (Table 2). In a number of ages, the cohorts report the same (or less) desired number of children reported when they were five years younger. This is the case in Colombia, notably in almost all cohorts with lowest HWI and youngest cohorts in the wealthiest stratum. This behavior is also present in the other two countries. Another important fact is that, despite changes (or not) of mind about the report of desired fertility, a number of young cohorts reports less desired number of children than their counterparts at same ages but five years earlier. Take the case of the lowest stratum in Dominican Republic. Cohort at ages 25-29 in 2002, for instance, reports 3.2 desired children. Five years later, being at ages 30-34, this cohort reports a higher number (3.6). This number, however, is smaller than the reported by women also aged 30-34, but five years early (3.7).

In short, the information presented in this section suggests that trends in wanted/desired fertility are consistent with recent evidences of steeped fertility decline. Policy makers in development societies may have no consensus yet on whether desired/wanted fertility should be considered as important input in policies oriented to increase fertility levels[19]. The trend of this variables in Latin America though, might be warnings that current fertility could reach even lower levels, then deep research on this issue is indispensable.

Evidences presented here indicate that wanted and unwanted fertility showed a decreased trend. Behavior comparing cohorts appears to be a strong support for the hypothesis that number of children desired is also falling. Again, as in the case of total fertility figures consistently suggest that after 2000, decrement was perhaps sharper than immediately before 2000. In addition, it is suggestive that women from different social classes, not just at the highest levels, report having fewer children than those desired.

Unsafe Abortion

Levels of induced abortion in Latin America is and will be a real challenge while legal, cultural and moral aspects interfere on the decision / action of interrupting

[19] For instance, related to recent evidence of increase in intended parity among young women Hagewen and Morgan (2005:524) say: "Only additional data can determine whether recent data are an aberration or the beginning of a trend that portends appreciably lower fertility in the United States (USA). Constancy in this social indicator for a substantial period of time suggests that while yearly monitoring may not be crucial, periodic (say on a two- or three-year cycle) monitoring of fertility intentions should be given high priority".

pregnancy[20]. Considering what is understood by unsafe abortions, by year 2000, their absolute number was estimated to be around 3.7 millions in the Region[21]. Those abortions caused 3.7 thousand maternal deaths. Recent reviews reveal that the corresponding figures for 2003 are 3.9 millions unsafe abortions and 2.0 thousand maternal deaths (WHO, 2004; 2007).

Despite methodological accuracy implicit in WHO researches, it is hard to tell the real trend due to improvements in the quality of data. Thus, the figures may not indicate decrease or even stagnation on unsafe abortion incidence. The increment of nearly 1.8 % per year is, in fact, very similar to the annual increment of the female population at reproductive ages from which abortions were traced[22]. On the other hand, when compared to the annual number of births, levels of incidence of unsafe abortion might have increased if we consider that number of live births is shrinking[23].

Unsafe abortion in Latin America, related to women at reproductive age or number of live births, has relatively high incidence. WHO statistics reveals a ratio of above 30 unsafe abortions to 100 live births. It corresponds to South America the highest level, where nearly 40% of pregnancies seems to be at risk of interruption. As for women of reproductive age, rate of unsafe abortion is 30 for every 1.000 women aged 15-44. Again, South America has the highest rate. The study by Sedgh et al. (2007) endorses figures for South America and there are national evidences also backing WHO estimates. Brazilian data for the years 2005 to 2006 indicate around one million induced abortions (Adesse and Monteiro; 2005; Vieira and Monteiro, 2008), equivalent to nearly 35-40% the number of live births. In Mexico, correspondent figures oscillate between 37and 52 or one induced abortion for every 2.3 live births. (Juárez et al., 2009). In Argentina an estimated 37% of pregnancies may probably result in induced abortion, while other studies go as far as one abortion to every live birth (Steele and Chiarotti; 2004).

It is worth noticing that those three countries (Brazil, Mexico and Argentina) represent nearly 60% of the total Latin American population and estimates are

[20] A comprehensive overview on ethical and socio cultural dimensions on induced abortion in Latin America can be seen in Vigoya M. (1997).

[21] Unsafe abortion is defined as "a procedure for terminating an unintended pregnancy either by individuals without the necessary skills or in an environment that does not conform to minimum medical standards, or both. The legality or illegality of the services, however, may not be the defining factor of their safety" (WHO, 1992:3). In general, according to WHO reports on unsafe abortion, all induced abortions outside national legal frameworks are considered unsafe. Induced abortion relates to abortion brought on intentionally by drugs or mechanical means; usually the reference period of up to 20 weeks is included.

[22] According to 2008 UN estimates, annual increment between 2000 and 2005 was 1.90 % for women aged 15-44 or 1.75% for the age interval 15-39, the age group where nearly 85% of the unsafe abortion happens.

[23] UN population estimates are given for 5-year periods. For 1995-2000, 2000-2005 and 2005-2010 number published about live births show a decreasing trend: 10.6 and 10.9 million, respectively.

subsequent in time to those by WHO that refers to approximately 2003. Thus, national evidence indicates increment on the ratio of unsafe abortion.

Latin American levels are the highest in the world even when compared to regions with relatively lower reproductive health care standards (Annex 4). Unsafe abortion ratio in South America for instance is nearly three times[24] the average registered in Middle African Countries[25]. Similarly, rates for women in reproductive ages are higher in Latin America.

Despite the indispensable efforts by WHO on data comparability, one can always argue that levels are higher in South America due to a relatively better coverage. However, there are two reasons for disadvantage favoring the African continent: the small number of live births per women in Latin America and the demographic momentum. As mentioned, current fast age structural transition in this continent resulted in less absolute number of new generations. As fertility decline started several decades ago, current cohorts of women at reproductive age have now lower growth rates than their African counterpart. This explains the low increment in the number of unsafe abortions even when its ratio is higher than the average in the African continent.

On the other hand, regarding maternal mortality, the huge decrease in the number of deaths due to unsafe abortion over the period (more than 40% between 2000 and 2003, approximately), signals improvements in health care services. Post abortion care (PAC), specifically, might have improved as findings by Billings and Benson (2005) and Billings and Vernon (2007) suggest. PAC, however, could do more to save more lives. Although it has indeed saved women's life, its expansion could also help to prevent interruption of future unwanted pregnancies by offering sound contraceptive counseling and, more importantly, actual access to contraception. Most of interventions for improving PAC followed by Billings and Vernon (2007) failed to link women with services of reproductive health. According to them, the strategies to link the community with reproductive health services were notably absent.

Towards very low fertility levels in Latin America -Summing up evidences

It is well document that fertility levels in Latin America have sustained a decline trend that started by early seventies in most of the countries in the Region. Recent evidences suggest that the decline trend did not decelerate and stabilized at the

[24] Ratio of unsafe abortion in South America is 38 to 100 live births. Corresponding average ratio for countries of Middle Africa is 12. (WHO, 2007: 13).

[25] Countries from Middle Africa are: Angola, Cameroon, Central African Republic, Chad, Congo, Democratic Republic of the Congo, Equatorial Guinea, Gabon and Sao Tome and Principe

replacement level. On the opposite, before finishing the first decade of current century, a number of countries have TFR already below replacement level.

Adolescents' fertility, whose rates where constant and relatively high until, say 2000, signals some decline. The question is whether this recent decline is homogeneous or is coming to broaden the gap between highest and lowest social classes. Also given the multi-causal approach, another hypothesis to workout is how strong is the relationship between contraception misuse (lack of access, side effects, prejudice, etc.) and abortion, considering that incidence of the latter at these young ages is higher than other ages.

Given the young pattern of the fertility distribution and the awareness that, in general adolescent fertility is a social burden, one can expect meaningful changes in the teenagers' reproductive behavior. Vulnerable adolescents may continue to present high risk of unwanted pregnancies, since unfortunately this is how it has been up to now, even in the most developed settings. However, if the average adolescent delays her age at maternity, the TFR will significantly fall in the short/medium run. Thus, fertility levels in Latin America will probably coincide with those predicted in the low variant UN hypothesis. When women will make up for the postponed maternity is a matter of deep research and guesses.

Desired number of children and unwanted fertility indicators also point out to a further decrease of the TFR. Unwanted fertility is important in the Region, regardless of how low the country TFR is. Unmet need for family planning, unintended pregnancy, and unsafely performed abortion –all of them relevant in the Region– are recognized to be linked to each other (Zuehlke, 2009).

The simultaneous increase in both modern contraception and abortion apparently does not make sense once there is wide evidence that this is an inverse relationship. In Europe, for instance, according to Marston and Cleland (2003) the abortion rate is related to the level of modern contraceptive method use. This is also the case in places like the Republic of Korea, where fertility has now stabilized, contraception has continued to increase and abortion has fallen. The authors also find that in the context of fertility decline, as it is the case of Latin America, when both phenomena increase there is another aspect to consider: variation in the wanted/desired fertility. According to these authors the counterintuitive parallel rise in both abortion and contraception is that desired family sizes were changing rapidly so "*the increase in modern contraceptive use alone was probably not sufficient to reach this low level of fertility; therefore, women likely still resorted to induced abortion*" (Marston, and Cleland, 2003: 10). Thus, what is probably happen in Latin America is that demand for implementation of fertility preferences defined by smaller families is increasing and it is met through abortion.

The aspiration to a small family has strengthened, the unwanted fertility have an important share in the total fertility, ratio of unsafe abortion is between 30-40 abortions to 100 live births. The message they deliver is just a cry for more and better sexual and reproductive health services.

Finally, although incapability to implement reproductive preferences, most of the times is related to a higher number of actual children than the desired it is also related to have fewer children than the desired. Society is failing to provide the former with the means to match actual fertility to desired fertility. Demands that this same society imposes on the latter, in terms of what they have to do to maintain a standard of living that is compatible with their qualifications, tend to make it difficult for them to have children. In this case, the decision to have a smaller number of offspring than desired is a result of pressure exerted by the economic and sociocultural context in which this decision is made (ECLAC, 1998). In both cases, the reproductive right to have the number of children a couple wants is missing.

Conclusion - Variations in the Age Structure as Consequence of lower Fertility Levels

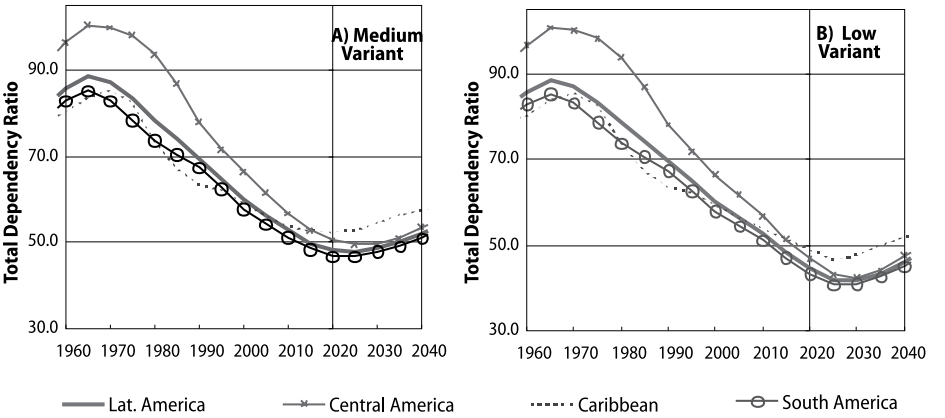
Variations in the size of generations to be born according to different fertility levels are shown on item 1. It was said that regardless any hypothesis on the future of fertility, next generations will be of smaller size. If it is assumed that fertility may fall as predicted in the low variant hypothesis as previous evidences suggest, then what is important to know is how much the age structure will change.

The magnitude of change can be seen through the changes in the relationships between the age groups that define the dependency ratios (Figure 11). As a natural consequence of steeper fertility decline, the Total Dependency Ratio (TDR) decline that is expected to stop by 2020 according to the Medium Variant hypothesis will probably continue the decline because one of the components of this ratio, the volume of population up to 15 years old will shrink even more. In addition, recovery of the TDR would slow down. If fertility falls as implied in the low variant, this ratio would be less than 40 per cent thus lessening the burden on the economically active population.

As intense fertility decline has opened what is called a *demographic window of opportunities* it is also worth to consider how long a further decline in fertility –this time, with countries having a TFR well below replacement level– will let this window to remain open. This window, broadly defined, opens when increase of the TDR stops and initiates a downwards trend, thus burden of the population at working ages also decrease, creating what it is also known as a *demographic bonus*. Additionally, both

onset timing and intensity of fertility decline determine this trend. As it is known, they had largely varied in Latin America. The window would close when the TDR starts recovery due to the increment in the volume of the elderly population.

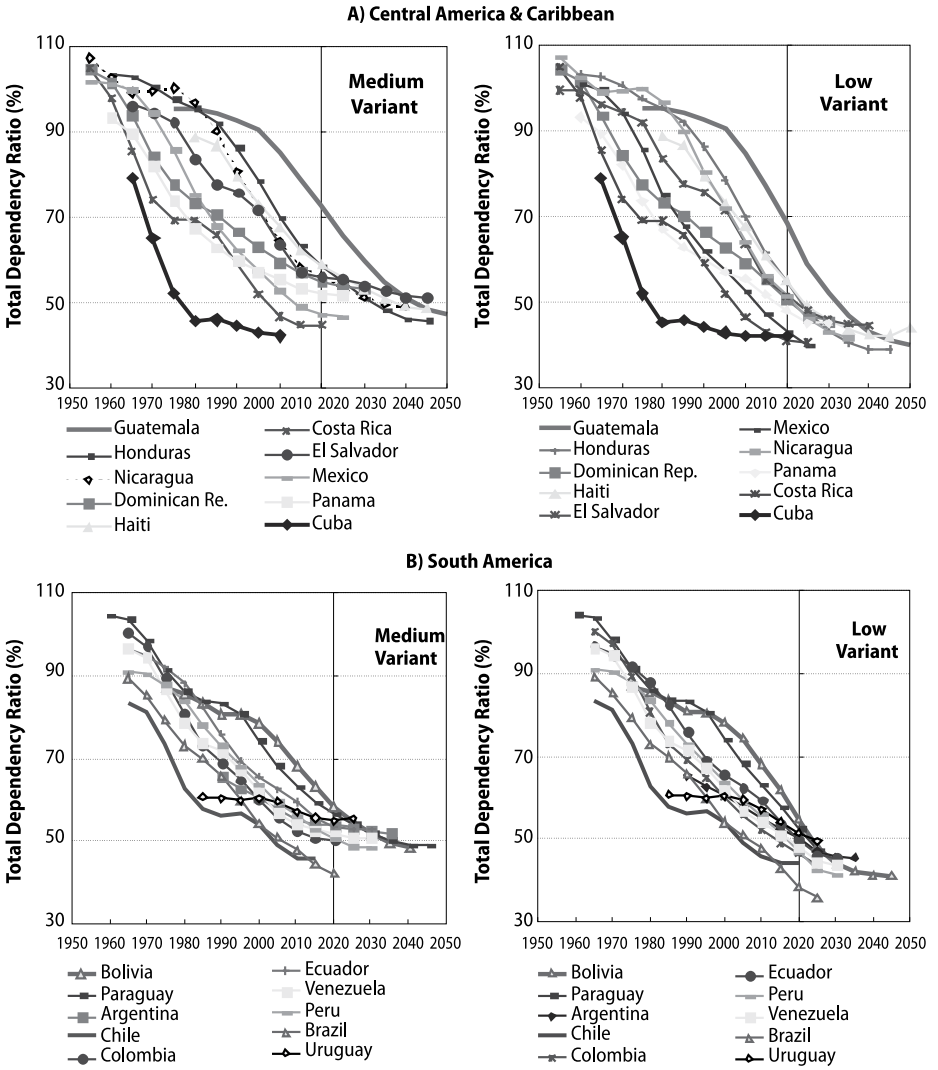
Figure 11. Total Dependency Ratio estimated from the UN estimates considering Medium and Low variant hypothesis, Latin America and the Caribbean (1960-2040)



Source: 2009 - UN Population Division http://esa.un.org/unpp/index.asp.

Demographic bonuses and burden of this Age Structural Transition in Latin America are widely discussed elsewhere, being an important reference, the research developed, for instance, by Celade (2008). Thus, it is illustrative just to compare *duration* of changes. Figure 12, shows for a set of countries in the Region, the initial moment of that window, which is the first year at which TDR starts lessening. It shows the final year of this trend and, it also shows the variety of intensity in the TDR. Considering, for instance, the process corresponding to the Medium Variant, for Central America and the Caribbean (Panel A), one can notice that Guatemala was among the last countries to enter this window. Figure 12 also shows that Cuba is the first country where the window will close once the TDR will start to increase before 2010. When considering the low variant, the TDR will remain longer with the window open: up to around 2020. The same process is shown for South American countries. Considering the low variant, aside from the TDR to remain longer with a decreasing trend, their levels would be also lower before start the way upwards than in the case of the medium variant. Is it not the objective of this article to discuss whether a further decline in fertility brings positive or negative socio economic consequences for the entire population. It is enough, however, to say that having more time experiencing low TDR due to the lessening in the volume of live births is an opportunity to optimize use of resources, whatever they may be.

Figure 12. Total Dependency Ratio estimated from the UN estimates considering Medium and Low variant hypothesis, Latin American and Caribbean Countries (1960-2040)(*)

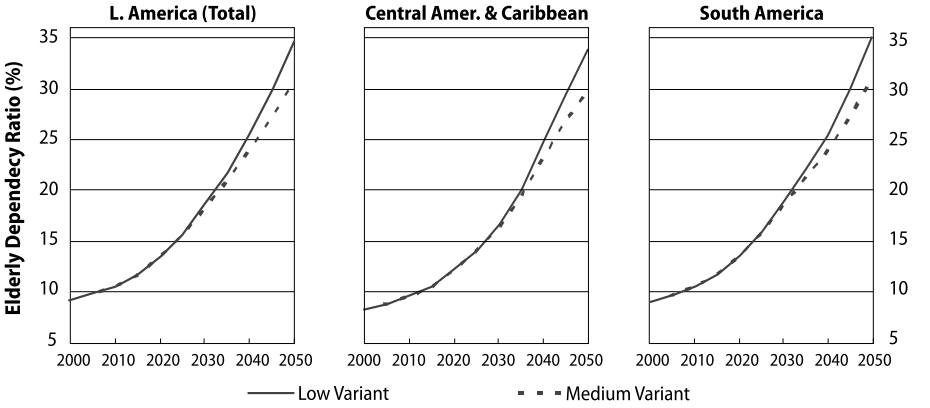


Source: 2009 - UN Population Division http://esa.un.org/unpp/index.asp.
(*) Last value corresponds to the point when the TDR stars to increase.

Finally, possible effects of a steeper fertility decline can be also evaluated in the dependency ratio that considers only the elderly population (EDR) (Figure 13). A natural consequence of acute reduction in the size of new generations will be heavily felt when these generations enter the labor force to support the economy and the older dependent population. EDR will then grow more proportionally in 20

years time from now, assuming that fertility has fallen more than what was predicted in the medium variant. Steeper fertility decline after 2000 will result in a bonus that lasts longer, but the burden may be heavier.

Figure 13. Elderly Dependency Ratio estimated from the UN estimates considering Medium and Low variant hypothesis, Latin American and Caribbean Countries (1960-2040)



Source: 2009 - UN Population Division http://esa.un.org/unpp/index.asp.

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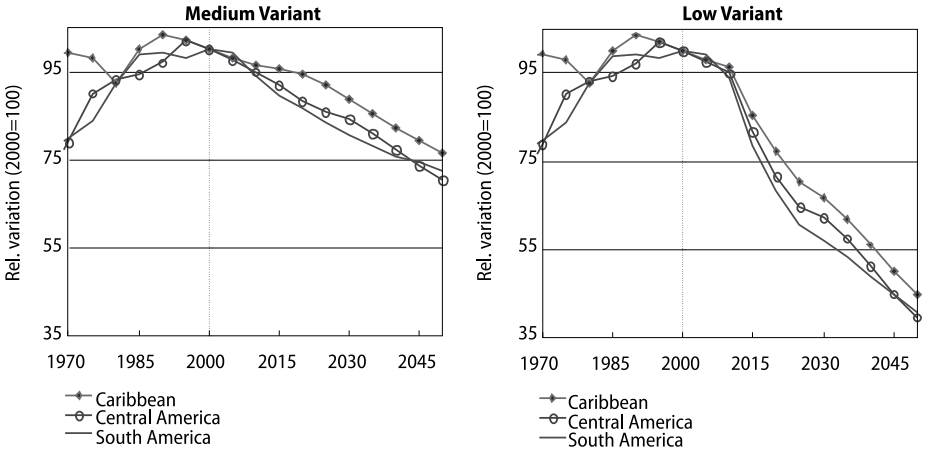
Annexes

Annex 1. Latin America and The Caribbean, 1985 -2005 - Human Development Index (HDI) , Total Fertility Rate and Gini Index

Country	Human Development Index			Total Fertility Rate			Gini Index (2005) (*)
	1985	1995	2000	1985-1990	1995-2000	2000-2005	
Argentina	0.811	0.836	0.862	3.05	2.90	2.35	51.3
Chile	0.761	0.819	0.845	2.65	2.55	2.00	54.9
Uruguay	0.787	0.821	0.842	2.53	2.49	2.20	44.9
Cuba	--	--	0.838	1.85	1.85	1.60	--
Costa Rica	0.774	0.814	0.830	3.37	2.95	2.28	49.8
Mexico	0.758	0.786	0.814	3.63	3.19	2.40	46.1
Trinidad &Tobago		0.785	0.814	3.22	2.10	1.61	38.9
Panama	0.751	0.775	0.797	3.20	2.87	2.70	57.0
Brazil	0.700	0.753	0.789	3.10	2.60	2.25	56.1
Venezuela	0.743	0.770	0.776	3.65	3.25	2.72	48.2
Suriname	--	--	0.774	3.00	2.60	2.60	58.6
Colombia	0.709	0.753	0.772	3.24	3.00	2.40	51.6
Ecuador	0.699	0.734	0.772	4.00	3.40	2.82	..
Peru	0.699	0.737	0.763	4.10	3.57	2.80	52.0
Dominican Rep.	0.684	0.723	0.757	3.65	3.31	2.70	53.6
Guyana	--	0.699	0.750	2.70	2.55	2.43	58.4
Paraguay	0.707	0.737	0.749	4.77	4.31	2.80	..
Jamaica	0.690	0.728	0.744	3.10	2.84	2.53	45.5
El Salvador	0.611	0.692	0.716	4.20	3.73	2.60	52.4
Bolivia	0.580	0.639	0.677	5.00	4.80	3.96	43.1
Nicaragua	0.601	0.637	0.671	5.00	4.50	2.80	53.8
Honduras	0.611	0.653	0.668	5.37	4.92	3.50	60.1
Guatemala	0.566	0.626	0.667	5.70	5.45	4.40	55.1
Haiti	0.462	0.487	0.529	5.70	5.15	4.00	59.2

Source: PNUD - Human Development Index - http://hdrstats.undp.org/buildtables/rc_report.cfm
UN- Population Division (2008 Revision)
DHS and HRS Surveys
(*) Colored cell indicates the highest values for Gini Index

Annex 2. Relative variation of the size of population aged 0-4 according two hypothesis (1970=100%), The Caribbean, Central America and South America (1970-2050)



Source: 2009 - UN Population Division http://esa.un.org/unpp/index.asp

Annex 3. Selected Latin American Countries: Proportion of childless women at ages 25-29 and 30-34 (Circa 2000-2005)

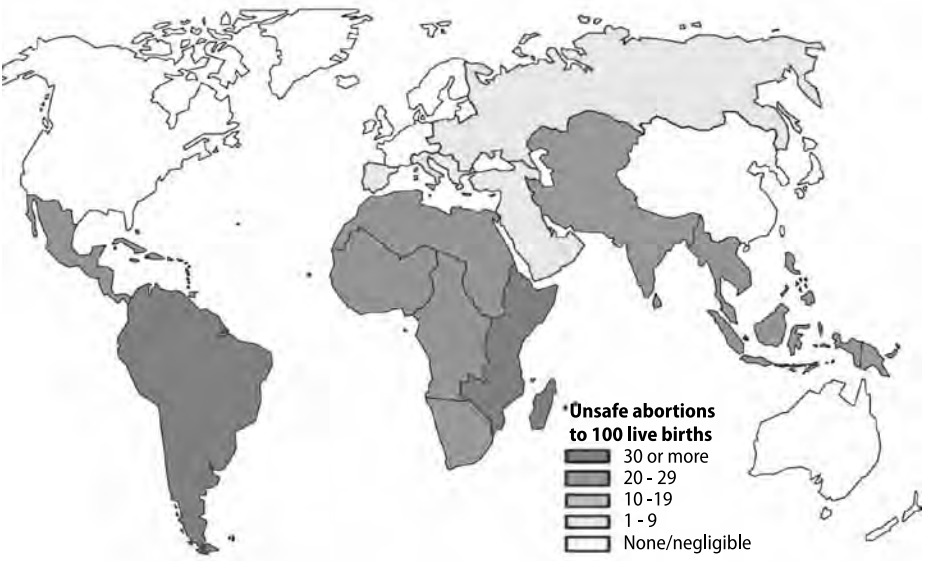
Country	Survey year	Age Group	
		25-29	30-34
Nicaragua	2001	14.1	7.1
	2007	15.1	8.4
Dominican Republic	2002	16.8	8.4
	2007	16.8	7.5
Colombia	2000	23.1	14.7
	2005	26.1	12.8
Brazil	1996	26.2	12.2
	2006	32.3	16.9

Source: http://www.measuredhs.com; http://www.cdc.gov/reproductivehealth/surveys
Berquó et al. (2008)

Annex 4. WHO estimates of annual incidence of unsafe abortion (circa 2003)

a) Unsafe abortions to 100 live births

b) Unsafe abortions per 1,000 women aged 15 - 44



Source: Reproduced with permission from: WHO (2003) Unsafe abortion: global and regional estimates of incidence of unsafe abortion and associated mortality in 2003. -- 5th ed. p. 10-11. (http://whqlibdoc.who.int/publications/2007/9789241596121_eng.pdf), accessed on 05/Set/2009.