2008 | Thirty-second session of ECLAC
Santo Domingo, Dominican Republic, 9-13 June 2008

Distr.
GENERAL

LC/G.2378(SES.32/14)
4 June 2008

ENGLISH
ORIGINAL: SPANISH

DEMOGRAPHIC CHANGE AND ITS INFLUENCE ON DEVELOPMENT IN LATIN AMERICA AND THE CARIBBEAN

2008-271

UNITED NATIONS

ECLAC

SIXTY YEARS WITH LATIN AMERICA AND THE CARIBBEAN

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INTRODUCTION

The Economic Commission for Latin America and the Caribbean (ECLAC), at its thirty-first session held in Montevideo, Uruguay, from 20 to 24 March 2006, recommended that the ECLAC sessional Ad Hoc Committee on Population and Development should, at its 2008 meeting, analyse the issue of demographic changes from a gender perspective and their influence on development, as well as their impact on poverty and inequality; the secretariat was also tasked with preparing the necessary substantive documents in conjunction with the United Nations Population Fund (UNFPA).

In accordance with the above, the Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC has produced this document on past trends, the current situation and possible future scenarios in terms of regional population dynamics, and to present the information to the governments of the region's countries.

Policymaking must be based on a knowledge of the dimensions, characteristics and any changes relating to the groups to be targeted. In practice, however, access to such information is limited, and decision-makers are surprisingly not always the most common users of demographic data. As a result, it falls to ECLAC (through CELADE) to provide information to diagnose the current situation and offer guidance on the main processes expected to occur, given the characteristics and trends of the region's population dynamics.

Although certain groups of countries share characteristics in common, there is undeniable heterogeneity within and among countries. This makes it necessary to identify the main demographic challenges that are emerging so rapidly and intensely that they will require different and even innovative and unconventional responses or solutions, in the context of the economic liberalization policies prevalent in the region.

This document aims to present demographic information in a way that is in keeping with the development approach advocated by ECLAC, one which promotes the adoption of a human-rights-based approach to development and public policy, as part of a framework including the gender perspective, the expansion of social protection and the fostering of social cohesion.

The first of the four chapters relates to the demographic transition, the various stages of the region's countries within that process and factors in their population growth or decline: mortality, fertility, international migration and growth potential of the age structure. The chapter also studies some consequences of demographic trends on the age structure and population size of Latin American and Caribbean countries.

The second chapter attempts to complement that information through an analysis of indicators relating to population growth, changes in age groups, ageing, the dependency ratio and the demographic dividend. Those indicators illustrate the main consequences of demographic change on the population's age structure and the lack of uniformity among the region's countries.

Chapter three discusses the economic and social implications of demographic trends, with special emphasis on education, health and pension systems, and on how to use the opportunity to build a more inclusive society by investing in the universalization of secondary education, improving access to productive and quality employment for men and women, and expanding and improving pension systems to provide an adequate income for older adults and their families.

To highlight the fact that demographic change has happened alongside economic and social development, the final chapter refers to the context surrounding such changes, and the way in which development is occurring in an environment characterized by high and persistent inequity in all aspects of economic and social life —a situation that could affect the future demographic development of countries.

Chapter I

TRENDS IN POPULATION DYNAMICS

A. STAGES OF DEMOGRAPHIC TRANSITION

Demographic transition is defined as a process of change from low population growth with high levels of mortality and fertility, to another dynamic of low population growth, but with low levels of mortality and fertility. The intermediate stage is characterized by high rates of population growth, due to the gap between the initial fall in mortality and the reduction in fertility.

With a view to comparing Latin American countries in terms of demographic transition, the Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC has come up with typologies of the stages of transition, based mainly on levels of and changes in birth and mortality rates (ECLAC, 1993). The typologies are based on the comparison between gross birth and mortality rates, as these indicators also reflect the growth situation of the population. The process of change in this variable is a result of changes in levels of fertility and mortality, but there is a gap due to inertia in the population's age structure (Chackiel, 2004). Indeed, while the change in the age structure was not particularly striking and its impact on birth and mortality rates was fairly limited, these indicators made it possible to identify differences among countries.

Given the major changes currently under way in age structures, particularly the process of population ageing, comparing birth and mortality rates makes it difficult to identify the demographic situation of countries and can conceal major differences between countries. One example of this is that, in the period 2005-2010, Argentina, Cuba and Uruguay would appear to have similar mortality rates to Bolivia and Haiti if the gross mortality rate is the measurement used. In the first three countries, however, life expectancy (which measures mortality without the effect of the age structure) is actually over 75 years, whereas life expectancy in the latter two countries is 60 years and 65 years, respectively.

This document therefore uses the total fertility rate and life expectancy at birth as indicators to identify the stages of demographic transition. Not only are these indicators free from the effect of the age structure, but they also offer a more accurate indication of the challenges faced by countries in these two vital areas.

The first step was to define the main categories for each variable. Table I.1 shows the levels of the total fertility rate in the region's countries for the period 2005-2010, and the corresponding life expectancy. The category boundaries were determined in the light of approximate regional averages, such that the "high" and "low" categories are in reference to those average figures.

The true categories are the shaded boxes where the two variables meet. Boxes to the left show countries where (according to the categories used) fertility fell more quickly than mortality.

Table I.1
LATIN AMERICA AND THE CARIBBEAN: COUNTRIES ACCORDING TO TOTAL FERTILITY RATES, LIFE EXPECTANCY AT BIRTH AND RATES OF NATURAL INCREASE, 2005-2010

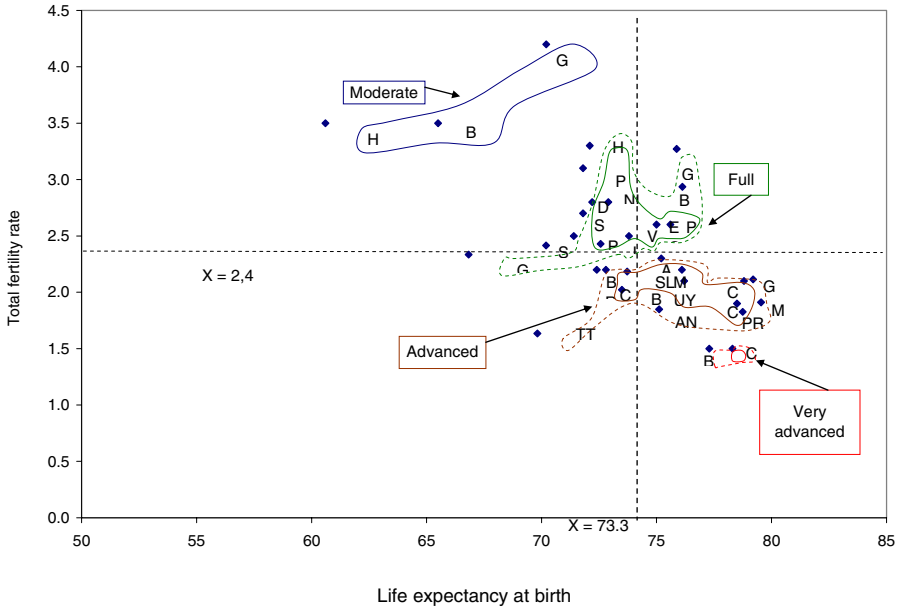
Fertility	Mortality				
	High Eo<66	**Moderately high 66=<Eo<71**	**Intermediate 71=<Eo<76**	**Low 76=<Eo<81**	**Very low Eo=>81**
High TFR=>4.5					
Moderately high 4.5>TFR=>3.5	Haiti 1.85	Guatemala 2.76 Bolivia 2.01			
Intermediate 3.5>TFR=>2.5			Honduras 2.27 Nicaragua 2.02 French Guyana 2.02 Paraguay 1.92 El Salvador 1.77 Dom. Rep. 1.75 Venezuela (Bol. Rep. of) 1.63 Ecuador 1.62 Panama 1.57 Peru 1.47	Belize 2.14	
Low 2.5>TFR>1.5		Suriname 1.26 Guyana 0.87 Trinidad and Tobago 0.67	Colombia 1.32 Brazil 1.28 Jamaica 1.28 Argentina 0.97 Saint Lucia 1.25 Netherlands Antilles 0.46 Bahamas 0.11	Mexico 1.44 Costa Rica 1.36 Chile 0.96 Guadeloupe 0.84 Uruguay 0.57 Puerto Rico 0.57 Martinique 0.48	
Very low TFR=<1.5				Barbados 0.40 Cuba 0.29	

Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, population estimates and projections for Latin America and the Caribbean updated in July 2007, Santiago, Chile [online] http://www.eclac.cl/celade/proyecciones/basedatos_BD.htm; United Nations, "World Population Prospects: The 2006 Revision. Population Database" [online database] http://esa.un.org/unpp/.

In other words, the lag between the fall in mortality and the decline in fertility means that countries should reorient their health strategies. With a given level of fertility, even inertia can probably speed up its decline. The same does not seem to apply in the case of mortality, possibly because reducing that variable requires a sustained rise in public spending and increasing accessibility to health care and the use of the latest advances in medical science. Boxes to the right of the diagonal of shaded boxes indicate where mortality has declined more rapidly than fertility.

The following four major groups or stages of transition were defined for the period 2005-2010: moderate, full, advanced and very advanced, in accordance with established ECLAC terminology (ECLAC, 1993; Chackiel 2004).[1] Given the wide range of situations shown in table I.1, it was decided countries at a certain stage must have relatively similar trends in relation to both variables, such that locating countries at each stage involved bringing together ones from different boxes (see figure I.1).

Figure I.1
LATIN AMERICA AND THE CARIBBEAN: COUNTRIES ACCORDING TO THEIR STAGE OF DEMOGRAPHIC TRANSITION, 2005-2010



Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, population estimates and projections for Latin America and the Caribbean updated in July 2007, Santiago, Chile [online] http://www.eclac.cl/celade/proyecciones/basedatos_BD.htm; United Nations, "World Population Prospects: The 2006 Revision. Population Database" [online database] http://esa.un.org/unpp/.

Differences among countries that are at the same stage may be attributable to demographic trends from the past. For countries classified as being at the same stage of transition based on total fertility rates and life expectancy at birth, countries with a more recent reduction in these variables will tend to be younger, while those countries where fertility and mortality rates dropped longer ago will have a more aged population. In addition, there are major differences among countries in the same group in terms of the population growth rate. Differences among countries are also related to the implicit or explicit emphasis that respective governments have placed on promoting policies to reduce fertility or mortality over the years. Some of these specific aspects are examined below.

[1] The classification in those studies (ECLAC, 1993; Chackiel 2004) is based on other criteria, such as gross birth and mortality rates.

1. Very advanced transition

Cuba and Barbados are the countries in the region that have been classified as being at a very advanced stage of transition. In around 1950-1955, fertility in Cuba was already fairly low compared with the average of the time (about five children per woman). The special characteristic of Cuba is that the total fertility rate reached replacement level between the late 1970s and early 1980s, which was much earlier than in the rest of the region. Since then there has been a sharp and ongoing downward trend, with fertility now well below the replacement level for the country's population (1.5 children per woman for the period 2005-2010) and a natural rate of population increase of 0.29%, which is completely atypical for the region. In terms of mortality, for many years Cuba led the way in increasing the life expectancy of its population, climbing the ranks to occupy the top position in the region for the period 1970-1975. Nowadays, life expectancy at birth is 78.3 years in Cuba, which means it ranks third after Costa Rica (78.8 years) and Chile (78.5 years), pointing to a certain lag in reducing mortality. As in the case of Cuba, Barbados has also seen mortality decline more slowly than the fertility rate.

2. Advanced transition

Among the countries at an advanced stage of transition in terms of current levels of fertility and mortality, there is also more than one special case.

Argentina and Uruguay constitute one subgroup within Latin American countries. Both countries saw an early drop in their vital rates. Their fertility and mortality rates shifted in the first half of the twentieth century, with fertility levels of just under three children per woman since 1950. In Argentina, fertility is estimated to have begun dropping at the beginning of the twentieth century, although it was not until 1915-1920 that the total fertility rate began to fall considerably, from 6.2 children per woman to 3.2 children per woman in 1947 (Pantelides, 1996, cited by Guzmán and others, 2006).

A second case apart is Chile, which despite having a similar fertility rate to that of Cuba in the period 1950-1955, did not see fertility decline as sharply as in the latter. Although fertility did not fall as low as in Cuba, Chile is nonetheless the second country in the region where fertility has fallen below the replacement level for its population. All three countries (Argentina, Uruguay and Chile) have population growth rates below 1%.

A third subgroup within advanced transition countries is constituted by Brazil, Colombia, Costa Rica and Mexico. Unlike other countries at an advanced stage of transition, although these countries still had total fertility rates of between six and eight children per woman in the period 1960-1965, fertility had halved (and sometimes dropped lower than that) by the late 1980s to early 1990s. Their natural rates of population increase are therefore between 1.3% and 1.4%. Brazil and Colombia have achieved the least in terms of increasing life expectancy (72.4 years and 72.8 years, respectively), as these figures are below the regional average, whereas life expectancy in the other countries in this group is already above 75 years.

There is more variation among the Caribbean countries in this group, with Trinidad and Tobago at one extreme and Guadeloupe, Martinique and Puerto Rico at the other end of the spectrum. Trinidad and Tobago is the country where fertility has fallen the most, although mortality there is still below the regional average, which means that the country cannot be classed as being at a very advanced stage. The other three countries mentioned (along with Costa Rica and Cuba) are the ones that have made the most progress in increasing life expectancy within the region.

3. Full transition

In Latin America, there are two sets of countries with different backgrounds that can be said to be in full transition. On the one hand, there are those where fertility had already declined considerably by the early 1980s (Bolivarian Republic of Venezuela, Dominican Republic, Ecuador, El Salvador, Panama and Peru). On the other hand, there is a group of countries where fertility has dropped more recently (Honduras, Nicaragua and Paraguay). Both groups of countries now have what is described as an "intermediate" level of fertility. Growth rates within the group are uneven: ranging from 1.47% in Peru to 2.27% in Honduras.

In the Caribbean, the countries at this stage are Belize, French Guyana, Guyana, Jamaica and Suriname, although their respective trajectories leading up to the present situation are all different. Whereas mortality and fertility levels in Jamaica are average for the region, Guyana and Suriname have the lowest fertility but the highest mortality in the group (considerably higher than the regional average). At the other extreme, French Guyana and Belize have the highest levels of fertility but also longer life expectancy than all other countries.

4. Moderate transition

The countries at a moderate stage of transition are Bolivia, Guatemala and Haiti. Although fertility has dropped in all three countries, Guatemala has the highest levels of fertility in the region (4.2 children per woman), and the highest rate of population growth (2.8%). Guatemala is an unusual case within the region. Fertility levels there were below those in Honduras, Mexico and Nicaragua up to 1970-1975, then stabilized for 10 years before beginning to decline once more in 1985, but at a much slower rate than in countries with the same fertility rate at that time. These included Haiti, Honduras and Nicaragua —not to mention Mexico, which had higher fertility levels than Guatemala between 1950-1960 and 1970-1975, and had almost reached replacement level as it entered the 2005-2010 period. Haiti and Bolivia have the highest levels of mortality in the region, with life expectancy at birth for both sexes at 60.6 years and 65.5 years for the period 2005-2010, which means differences of 12.8 years and 7.9 years, respectively, in terms of the regional averages.

In summary the region has undergone a rapid process of demographic transition compared with that experienced by industrialized countries (ECLAC/CELADE/IDB, 1996). Whereas demographic transition lasted over a century in developed countries, it has only been under way for 50 years in Latin America, as the means of controlling mortality and fertility were already available. Between 1940 and 1970, Latin America went from having among the highest reproductive indices in the world to levels below the international average.

However, this phenomenon did not cover Latin American society as a whole, but rather in each country transition began in the most wealthy and urbanized social groups with the greatest access to education, health care and birth control (the main direct determinants of change). The transition then spread to society as a whole, albeit unevenly across countries, depending on levels of access and supply enjoyed by the rest of the population.

B. FACTORS AFFECTING POPULATION GROWTH OR DECLINE

According to Bongaarts and Bulatao (1999), the following four variables determine population dynamics and therefore population growth or decline: (i) mortality; (ii) fertility; (iii) migration and (iv) the growth potential of the population. Below is a brief summary of the situation and trends for these variables.

1. Mortality patterns

As in the developed countries of Europe, demographic transition in Latin America began with a decline in mortality, which gave rise to the first large-scale demographic imbalance as many people survived who would otherwise have died under pre-decline levels of mortality. The greater number of children provided the first boost to population growth, while improved health and increased survival among women of childbearing age resulted in a rise in the number of births. However, when infant mortality becomes low and life expectancy at birth approaches average maximum levels, falls in mortality are smaller, slower and have little effect on population growth.

The decline in mortality has gone hand in hand with a series of processes collectively known as "epidemiological transition", the main feature of which is a change in the prevalence of certain diseases and causes of death (Pan American Health Organization (PAHO), 1990). The most characteristic element of epidemiological transition has been a shift from the prevalence of infectious and parasitic diseases to a predominance of tumours and degenerative diseases (especially of the circulatory system) and external causes (accidents, murder and suicide).

In Latin America and the Caribbean, the changes in most countries have occurred in a socioeconomic context characterized by improved living conditions, rises in the urban population, increased levels of education, lower fertility and greater coverage of sanitation (drinking water and sewerage systems) in urban areas.

These factors, associated with medical advances, increased health service coverage and the implementation of specific programmes for maternal and child health, have played a decisive role in the decline in mortality that began the process of demographic transition.

In the first half of the twentieth century, mortality declined slowly at first and then more quickly from around the 1930s onwards. In the period 1950-1955, life expectancy at birth in the region was only 52 years, and infant mortality was 127.7 in every thousand (see table I.2). Progress was made over the next 20 years, with life expectancy at over 60 years by the 1970s. At this stage, some countries even saw a slight increase in fertility, probably due to increased procreation in the wake of improved nutrition and health, while infant mortality had already begun to fall.

Male mortality is always higher than female mortality, which is reflected in longer life expectancy for women. The figures show that the difference widens as life expectancy increases (see table I.2), because of reduced mortality from female-specific causes (related to reproductive health) and increased mortality from causes that affect mainly men (accidents and violence).

Table I.2
LATIN AMERICA AND THE CARIBBEAN: LIFE EXPECTANCY AT BIRTH BY SEX AND INFANT MORTALITY RATE, 1950-2025

Five-year periods	Life expectancy (in years)			Infant mortality (in every 1000)
	Total	Men	Women	
1950-1955	51.8	50.1	53.5	127.7
1970-1975	61.2	58.9	63.6	81.5
1990-1995	69.1	65.9	72.5	38.3
2000-2005	72.2	69.1	75.4	25.6
2005-2010	73.4	70.4	76.6	21.7
2010-2015	74.5	71.4	77.7	18.6
2020-2025	76.3	73.3	79.5	13.8

Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, population estimates and projections for Latin America and the Caribbean updated in July 2007, Santiago, Chile [online] http://www.eclac.cl/celade/proyecciones/basedatos_BD.htm.

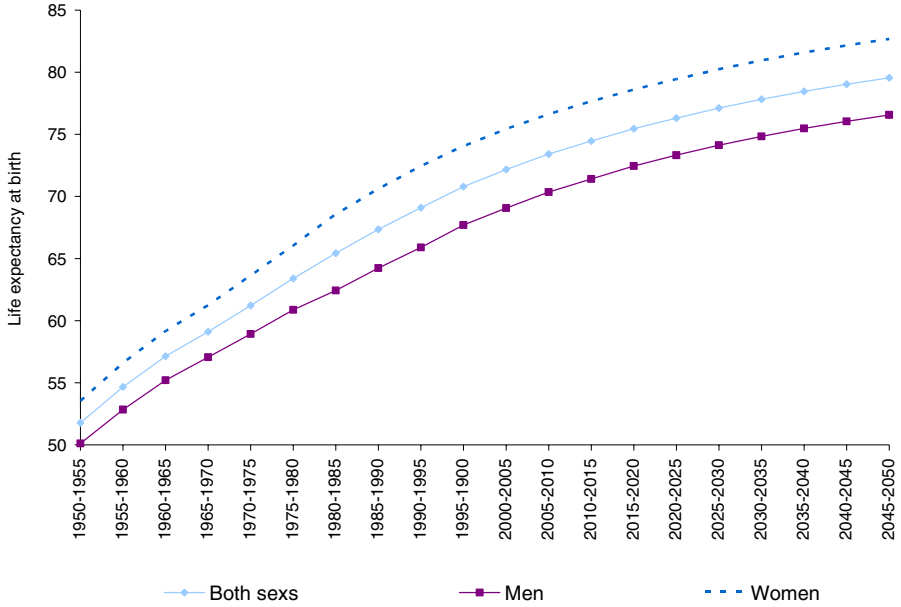
At first, life expectancy increased as a result of falling infant mortality (thanks to the reduced impact of causes of death by infectious, parasitic and respiratory diseases). Declining mortality then spread to other age groups as a result of epidemiological change. The outcome of this process is that, in the last 60 years, life expectancy in Latin America has increased by 21.6 years on average, going from 51.8 years in 1950-1955 to 73.4 years for both sexes in the period 2005-2010. This is eight years more than in developing regions overall, and only 1.2 years less than the average life expectancy in Europe.

It is a well-known fact that women's life expectancy is longer than men's in all societies, and this is also true in Latin America and the Caribbean. Men's increased vulnerability to death has also increased from 3.4 years to 6.2 years between 1950-1955 and 2005-2010, and population projections expect this difference to continue until at least 2020-2025, although this could change as a result of changes in causes of death among men and women (see figure I.2).

Figure I.3 shows the average life expectancy between 1950-1955 and 2045-2050 of selected Latin American and Caribbean countries at various stages of demographic transition, to demonstrate the significant differences among them: figures for both sexes combined range from 70.2 years in Guatemala to 78.3 years in Cuba. Life expectancy is lower still in Haiti (60.6 years) and Bolivia (65.5 years).

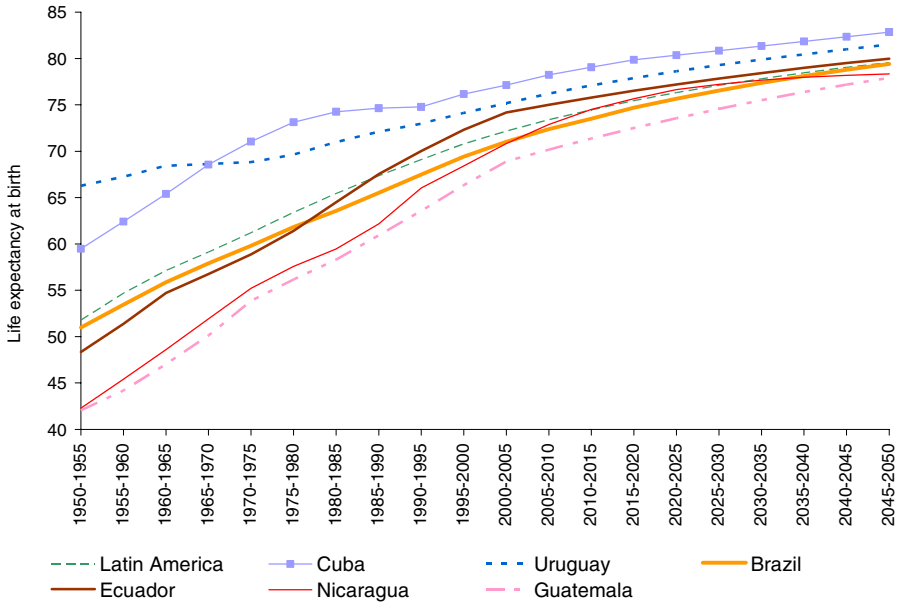
The above highlights two key issues. First, there were major differences among countries at the beginning of the period in question (1950-1955). Second, although there has been some convergence in terms of increased life expectancy at birth in all countries, there remain significant differences in terms of greater longevity for the population as a whole. This demonstrates that much remains to be done to increase the survival of people in the region, given that the level of mortality is similar to that of more developed countries 25 years ago. There is therefore still significant progress to be made in this area, and there is a wealth of experience as to how to proceed (ECLAC, 2007b).

Figure I.2
LATIN AMERICA AND THE CARIBBEAN (SELECTED COUNTRIES): LIFE EXPECTANCY AT BIRTH, TOTAL AND BY SEX, 1950-2025



Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, population estimates and projections for Latin America and the Caribbean updated in July 2007, Santiago, Chile [online] http://www.eclac.cl/celade/proyecciones/basedatos_BD.htm.

Figure I.3
LATIN AMERICA AND THE CARIBBEAN (SELECTED COUNTRIES): LIFE EXPECTANCY AT BIRTH AT VARIOUS STAGES OF DEMOGRAPHIC TRANSITION, 1950-2050



Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, population estimates and projections for Latin America and the Caribbean updated in July 2007, Santiago, Chile [online] http://www.eclac.cl/celade/proyecciones/basedatos_BD.htm.

2. Fertility patterns

Despite the impressive decline in mortality, the major demographic change has been the fall in fertility, as this is the demographic variable that has had the most impact on the age structure of the population in the region's countries. Table I.3 gives and indication of fertility trends between 1950 and 2050, based on hypotheses arising from population projections (ECLAC/CELADE, 2007).

In Latin America and the Caribbean, the total fertility rate dropped from 5.9 children per woman in 1950-1955 to 2.4 children per woman in 2005-2010. According to the average hypothesis of future fertility trends (ECLAC/CELADE, 2007), this variable is expected to remain below but close to replacement level until the end of the projection period (see table I.3).

Table I.3
LATIN AMERICA AND THE CARIBBEAN: TOTAL FERTILITY RATE AND BIRTHS, 1950-2050

Five-year periods	Total fertility rate	Annual births (1000s)	Five-year periods	Total fertility rate	Annual births (1000s)
1950-1955	5.9	7 409	2020-2025	2.0	10 462
1970-1975	5.1	10 548	2025-2030	2.0	10 188
1990-1995	3.0	11 534	2030-2035	1.9	9 855
2000-2005	2.5	11 424	2035-2040	1.9	9 582
2005-2010	2.4	11 271	2040-2045	1.9	9 321
2010-2015	2.2	11 017	2045-2050	1.9	9 087
2015-2020	2.1	10 715			

Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, population estimates and projections for Latin America and the Caribbean updated in July 2007, Santiago, Chile [online] http://www.eclac.cl/celade/proyecciones/basedatos_BD.htm.

The large increase in the annual number of births in the region is shown to have taken place between 1950-1955 and 1990-1995, going from 7,409,000 to 11,534,000. From this period onwards, falling fertility will result in a steady decrease in the annual number of births, if the hypotheses are proved correct. If fertility falls by more than expected (which is not unlikely), this will predictably cause a steeper decline in the number of births in the region.

Fertility has played the most important role in the population dynamics of the majority of Latin American and Caribbean countries. Since the age structure of the population is mainly a result of previous levels of fertility, the latter will continue to have an impact even when fertility levels have reached replacement. The various situations are as follows:

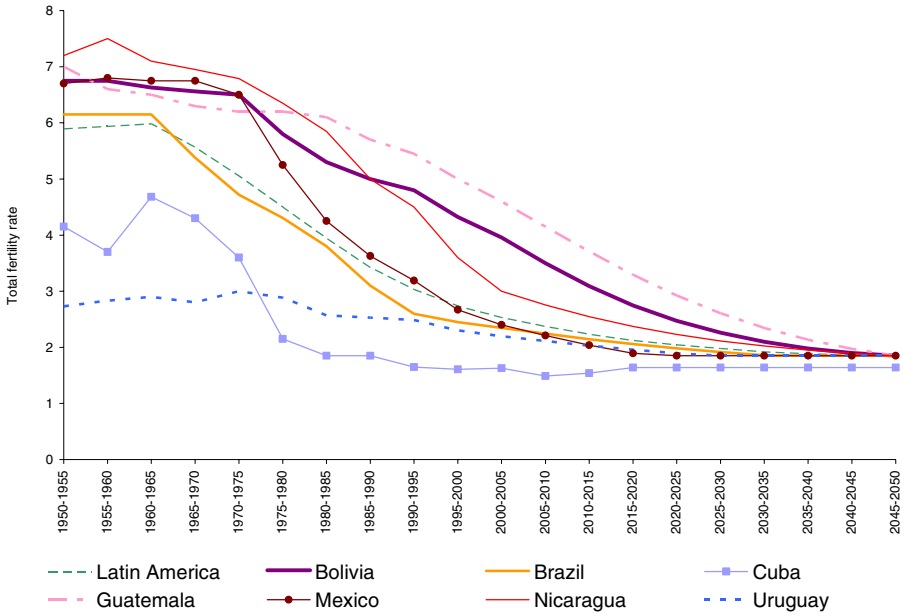
- Countries where fertility is at or below replacement level (2.1 children or fewer per woman): those at a very advanced stage of transition, including Cuba (1.5 children) and Barbados (1.5 children); and those at an advanced stage of transition including the Bahamas (2.0 children), Chile (1.9 children), Costa Rica (2.1 children), Guadeloupe (2.1 children), Martinique (1.9 children), Netherlands Antilles (1.9 children), Puerto Rico (1.8 children), Trinidad and Tobago (1.6 children) and Uruguay (2.1 children).

- Countries where fertility is less than one child above the replacement level (between 2.2 and 3.1 children per woman) and that are in advanced transition, including Argentina (2.3 children), the Bolivarian Republic of Venezuela (2.5 children), Brazil (2.2 children), Colombia (2.2 children), Dominican Republic (2.8 children), Ecuador (2.6 children), El Salvador (2.7 children), Guyana (2.3 children), Jamaica (2.4 children), Mexico (2.2 children), Panama (2.6 children), Peru (2.5 children), Saint Lucia (2.2 children) and Suriname (2.4 children).

- Countries with a fertility rate that is one child or more above the replacement level (3.2 children and above): those at an advanced stage of transition, including French Guyana (3.3 children), Honduras (3.3 children), Paraguay 83.1 children); and those at a moderate stage of transition, including Bolivia (3.5 children), Guatemala (4.2 children) and Haiti (3.5 children).

Figure I.4 shows trends in total fertility rates for selected countries at different stages of demographic transition between 1950 and 2050.

Figure I.4
LATIN AMERICA AND THE CARIBBEAN: TOTAL FERTILITY RATE IN SELECTED COUNTRIES AT DIFFERENT STAGES OF DEMOGRAPHIC TRANSITION, 1950-2050



Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, population estimates and projections for Latin America and the Caribbean updated in July 2007, Santiago, Chile [online] http://www.eclac.cl/celade/proyecciones/basedatos_BD.htm.

As is the case for life expectancy at birth, figure I.4 shows the fertility trajectories followed by some countries, while the average total fertility rate for the region follows the course of Brazil (the country with the largest population). Although all countries are expected to gradually converge around the replacement level during the projection period, in the current five-year period (2005-2010), the values at the two ends of the scale are represented by Cuba and Guatemala (see figure I.4), with total rates of 1.5 children per woman and 4.2 children per woman, respectively.

In terms of fertility among women of certain age groups, rates have fallen in all ages but to varying degrees (see table I.4), with fertility dropping more as the age of women increases (although the real impact on total fertility depends on the proportion represented by each age group, as reflected in the relative distribution of rates). Indeed, whereas fertility was always concentrated mainly among the youngest women (with the highest rates among women aged 20 to 34), the reduction in fertility has been greater among women aged 35 to 49.

In summary, the main features of the fall in fertility are as follows: fertility concentrated in the most fertile ages (20 to 34 years); a significant decline among women over the age of 35; and a higher proportion accounted for by fertility in adolescents who, as a result of the smaller proportion represented by women aged 35 and above, almost doubled their share of total fertility from 8.5% in 1950-1955 to 14.3% in 2000-2005 (even though the actual rates are lower). Given the associated health and social problems, the fact that adolescent fertility has posted the smallest reductions calls for the situation to be analysed and monitored by each country's health services.

Table I.4
LATIN AMERICA AND THE CARIBBEAN: FERTILITY RATES BY AGE OF WOMEN, TOTAL FERTILITY RATE, PERCENTAGE REDUCTION AND RELATIVE DISTRIBUTION, 1950-1955 TO 2010-2015

Periods	Specific fertility rates by age group							TFR
	15-19	20-24	25-29	30-34	35-39	40-44	45-49	
1950-1955	100.1	264.0	289.0	241.0	173.0	84.0	30.0	5.9
1970-1975	91.0	234.0	251.0	206.0	144.0	68.0	18.0	5.1
1990-1995	83.0	165.0	150.0	105.0	63.0	24.0	4.5	3.0
2000-2005	72.0	145.0	129.0	87.0	49.0	17.0	3.2	2.5
2005-2010	69.0	138.0	122.0	82.0	45.7	16.0	2.9	2.4
2010-2015	63.0	127.0	112.0	74.0	41.0	14.0	2.5	2.2
Percentage reduction in fertility rates								
1950-1955/2010-2015	37.1	51.9	61.3	69.3	76.3	83.3	91.7	62.7
Relative distribution of rates by age								
1950-1955	8.5	22.3	24.5	20.4	14.6	7.1	2.5	100.0
1970-1975	9.0	23.1	24.8	20.4	14.3	6.7	1.7	100.0
1990-1995	14.0	27.7	25.2	17.6	10.6	4.1	0.8	100.0
2000-2005	14.3	28.8	25.7	17.3	9.8	3.5	0.7	100.0
2005-2010	14.5	29.0	25.7	17.2	9.6	3.4	0.6	100.0
2010-2015	14.5	29.2	25.8	17.1	9.5	3.3	0.6	100.0

Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, population estimates and projections for Latin America and the Caribbean updated in July 2007, Santiago, Chile [online] http://www.eclac.cl/celade/proyecciones/basedatos_BD.htm.

Given the large amount of literature on the subject of fertility in relation to socioeconomic variables, suffice to say that the many studies on Latin America show the total fertility rate to be declining steadily but unevenly according to country and social groups within countries. The average level of fertility does therefore not provide an insight into internal inequalities (Chackiel and Schkolnik, 1992; Schkolnik and Chackiel, 1998; ECLAC, 2005).

The fertility surveys carried out in the region since the 1970s and population censuses show fertility over time, on the basis of certain characteristics of women, which confirms the hypothesis of inequalities. For instance, estimates of the total fertility rate indicate significant variations by subnational region, urban or rural area, level of education, income bracket, ethnic group and other variables that may be used to classify women and that are mainly the reflection of unequal income, access to education, health, services and information.

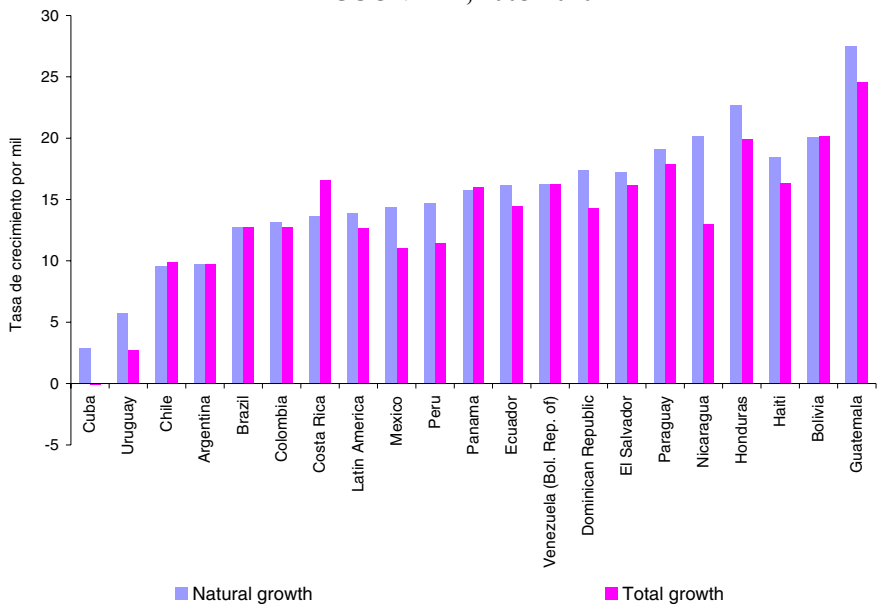
3. International migration

In Latin America and the Caribbean, both international immigration and emigration in their various forms have played and continue to play an important role in terms of the size, growth and social and economic characteristics of the region's countries.

As migration tends to be selective, it changes the population size at origin and destination, while also affecting age structure, sex composition, level of education, labour supply, demand for goods and services and the social and cultural environment. Immigrants may also bring their own fertility patterns and health conditions that, depending on the impact they have on the population of destination or origin, may alter the average levels of demographic variables, depending on the prevailing socioeconomic conditions of the countries concerned.

Figure I.5, which compares natural growth and total growth for each country and the region as a whole in the period 2005-2010, shows that, for Latin America and the Caribbean as a whole, total growth is below natural growth. This applies to most individual countries, including Colombia, the Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Paraguay, Peru and Uruguay.

Figure I.5
LATIN AMERICA AND THE CARIBBEAN: NATURAL AND TOTAL GROWTH RATES BY COUNTRY, 2005-2010



Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, population estimates and projections for Latin America and the Caribbean updated in July 2007, Santiago, Chile [online] http://www.eclac.cl/celade/proyecciones/basedatos_BD.htm.

Countries that make population gains due to migration are Chile (with immigrants mainly from Peru), Costa Rica (with high inflows of Nicaraguan immigrants who made up 8.3 % of the country's population up until a few years ago) (Cortes, 2005, cited by Guzmán and others, 2006) and, to a lesser extent, Panama.

The countries where the migratory balance offsets natural growth are Argentina, the Bolivarian Republic of Venezuela, Bolivia and Brazil. In Argentina, European immigration in the early twentieth century helped populate the country and was considered a key factor in the early decline in fertility. Argentina continues to receive migrants, especially from neighbouring countries, which goes a long way towards offsetting the effect of Argentine nationals emigrating abroad (Guzmán and others, 2006). The Bolivarian Republic of Venezuela is also a country where growth rose by around 40% during the 1970s as a result of immigration. Lastly, Cuba is losing population due to emigration and posts a negative total growth rate.

However, although migration can have a significant impact on certain countries at given points in history, given its close link with the economic situation, future migratory trends are extremely difficult to predict over the long term.

It is nonetheless possible that international migration will come to play a more important role in countries' population dynamics, especially in the medium and long term, given the increasing globalization of economies, improved access to labour markets, greater opportunities for individual mobility, the growing internationalization of family networks and —no less important— the economic impact of migration on the region's people and economies.

4. Growth potential in the age structure

The age structure, which has been described as a momentum factor by Keifitz (1971) and other authors (Goldstein, 2002; Feeney, 2002; and Bongarts, 1994, cited by Feeney, 2002) is directly recognized as being the main factor in world population growth once fertility reaches low levels. Estimates have been carried out into the impact of each of the growth factors on population trends in the main world regions (Bongaarts and Bulatao, 1999; United Nations, 2005) and in some countries of Latin America and the Caribbean (Fígoli and Wong, 2003).

Thus, even when fertility reaches or falls below replacement level (2.1 children per woman), that does not mean that there will be zero or negative population growth. As pointed out by Feeney and Mason (2002), although a high life expectancy at birth and replacement-level fertility are major achievements of our society, demographic transition is far from complete in these countries, where population growth and substantial changes in the age structure continue. This suggests that a population's age structure should not only be seen as a consequence of demographic change, but rather as a cause of population growth during the transition process.

There is therefore a growth potential of the population's age structure, whereby "the tendency for population growth to continue beyond the time that replacement-level fertility has been achieved because of a relatively high concentration of people in the childbearing years", due to past high fertility rates, and "the greater number of births will exceed the number of deaths" (World Bank, 2003).

This is already the case in some Latin American and Caribbean countries, where fertility has reached or fallen below replacement level (Chile, Costa Rica and Cuba) but the population continues to grow (except in Cuba), due to the higher accumulated proportion of young people and people of childbearing age. Even if every woman born in a high-fertility generation was to bear only two children each, that would constitute more than enough births to maintain population growth over the next few decades (Bongaarts and Bruce, 1998).

Even though fertility has fallen to around the replacement level, life expectancy increases slowly (as it has already reached relatively high levels) and migration does not make a substantial difference. However, the total regional population will continue to grow until at least the end of the projection period, boosted by past fertility leaving its mark on the present age structure.

C. SOME CONSEQUENCES OF DEMOGRAPHIC TRENDS ON THE STRUCTURE AND SIZE OF THE POPULATION IN LATIN AMERICA AND THE CARIBBEAN

Population estimates for Latin America and the Caribbean suggest that the region went from 161 million inhabitants in 1950 to approximately 547 million inhabitants in 2005, which means that population size increased three and a half times over 55 years. If the assumptions implicit in the projections are proved correct, the population will reach 763 million inhabitants of both sexes by 2050 (with women outnumbering men slightly since the mid-1980s). This means that the total population will increase by around 40% over the next 45 years.

There will be considerable changes in the population size within various age groups: the youngest population increased 2.5 times between 1950 and 2005 but will decline by around 17% between 2005 and the end of the period; and the adult population expanded 3.8 times in the first period and will continue to increase but only by 33% towards the end of the period. The most significant trend concerns the older adult population, which increased by 5.4 times between 1950 and 2005, and will practically quadruple between 2005 and 2050, thereby outnumbering the young population by 30% (see table I.5).

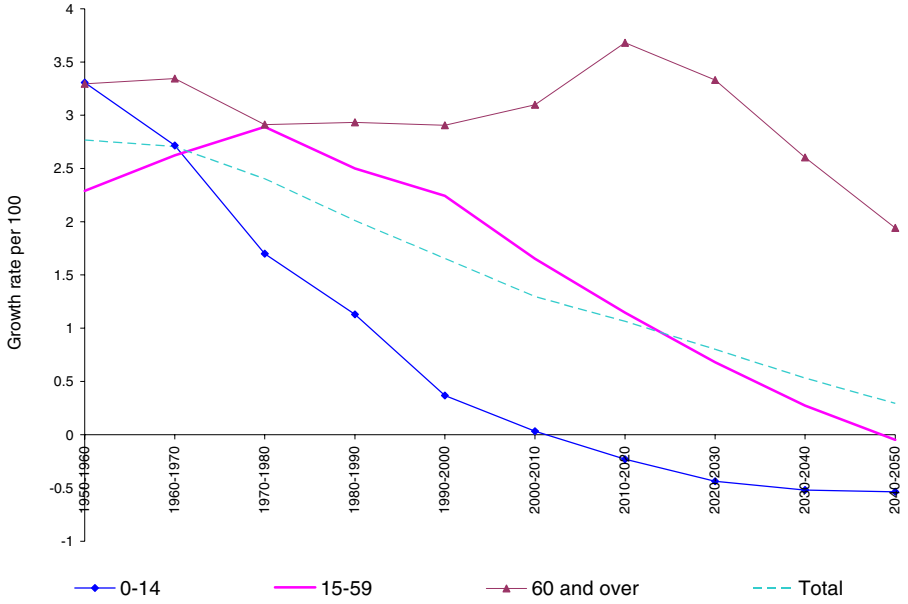
Table I.5
LATIN AMERICAN AND THE CARIBBEAN: TOTAL POPULATION AND POPULATION BY AGE GROUPS, 1950, 2005 AND 2050
(Thousands)

Age groups	Population		
	1950	2005	2050
Total	167 626	558 818	776 631
0 - 14	67 449	166 479	138 146
15 - 59	90 843	342 111	451 764
60 and over	9 334	50 228	186 721

Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, population estimates and projections for Latin America and the Caribbean updated in July 2007, Santiago, Chile [online] http://www.eclac.cl/celade/proyecciones/basedatos_BD.htm.

At presents, rates of population growth in the region may be considered moderate in the current world context, dropping from 2.8% in 1950-1955 to 1.3% in 2005-2010. By the end of the projection period, the rate of population growth is expected to be close to zero (an annual rate of 0.3%). However, opposing trends are observed in the growth of specific age groups (see figure I.6).

Figure I.6
LATIN AMERICA AND THE CARIBBEAN: POPULATION GROWTH RATES, BY MAJOR AGE GROUPS, 1950, 2005 AND 2050



Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, population estimates and projections for Latin America and the Caribbean updated in July 2007, Santiago, Chile [online] http://www.eclac.cl/celade/proyecciones/basedatos_BD.htm.

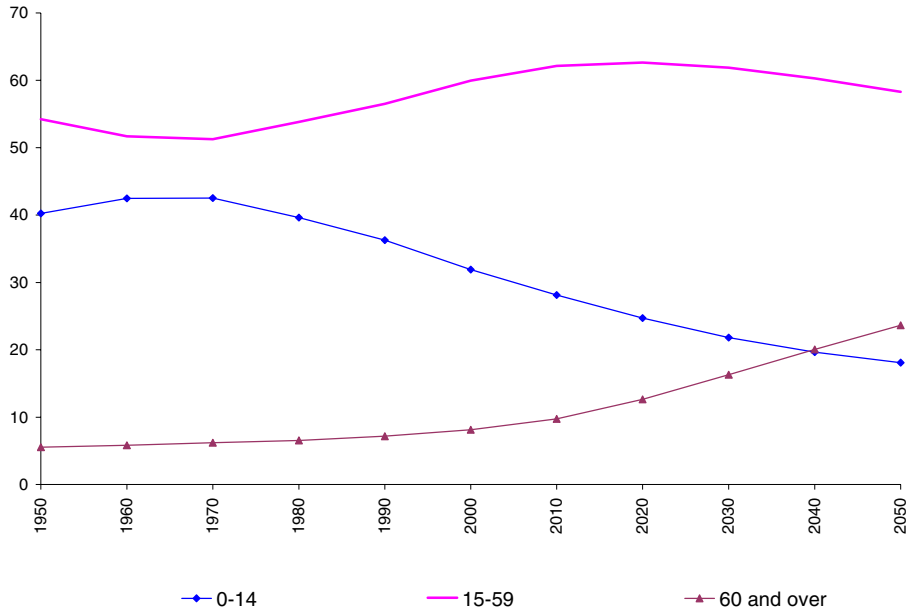
While the youth population is declining rapidly and the adult population is also decreasing, albeit at a slower rate, the growth rate of adults aged 60 and over is rising. This upward trend is expected to continue until about 2010-2015, when the growth rate might begin to fall, although it would remain well above the growth of the other age groups (especially the youngest group, whose population will begin to drop in absolute terms during the present decade (2000-2010)).

In the event of changes that might have a further effect on the survival of older adults, growth among this population could be even stronger, whereas the current fertility trend of fewer births is unlikely to be reversed.

The reduction in the number of children per woman has a major impact on the number of births and the proportion represented by children, giving rise to a significant decline in the population aged under 15. This then has a gradual knock-on effect on the following generations, such that the growth rate of the potentially active population (aged 15 to 59) also slows down. In addition, the growing number of people reaching old age (60 years and above), combined with the fact that older adults live longer, increases the proportion they represent in the total population, an effect that is in turn boosted by the smaller proportion represented by the other two age groups.

An analysis of the population according to the three main age groups reveals that the youngest and oldest groups will show the most significant changes: the proportion represented by those aged under 15 will continue to fall, while the share of older adults will continue to expand until around 2040, when both groups will represent about 20% of the total population. The working-age population is the one to post the least significant changes in terms of its share of the total population during the 100-year period in question, stabilizing at around 60% (see figure I.7), with some changes within the group resulting from population ageing.

Figure I.7
LATIN AMERICA AND THE CARIBBEAN: POPULATION DISTRIBUTION, BY AGE GROUPS, 1950-2050
(Percentages)

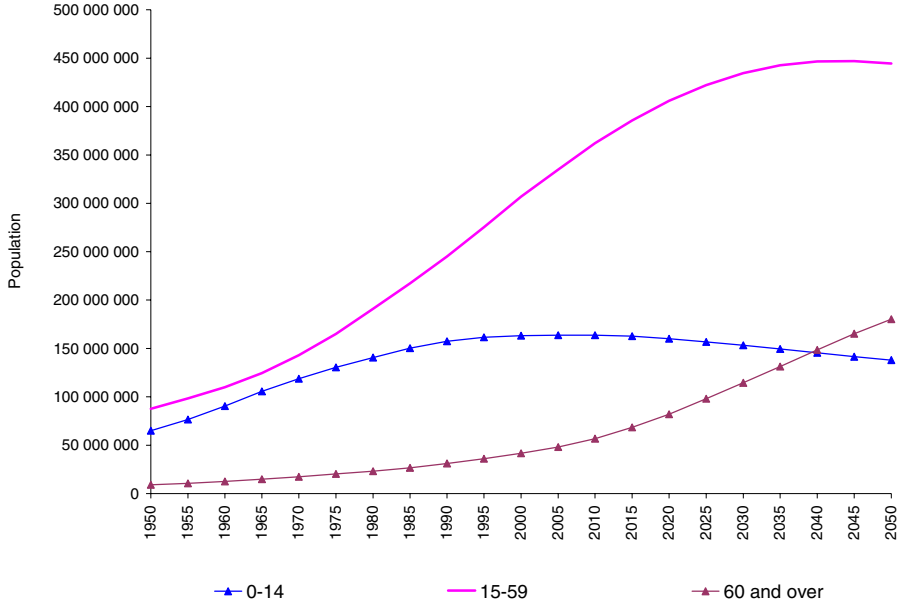


Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, population estimates and projections for Latin America and the Caribbean updated in July 2007, Santiago, Chile [online] http://www.eclac.cl/celade/proyecciones/basedatos_BD.htm.

In terms of specific trends, the youth population rose between 1950 and 1970, before beginning a steady decline; the older adult population increased steadily during the entire period; and the economically active population fell between 1950 and 1970, expanded between 1970 and 2020, and is expected to see its numbers decline between 2020 and 2050. In absolute terms, however, the young population will continue to grow until 2020 and the working-age population will expand until 2045, while the older adult population will continue to rise beyond the period under consideration (see figure I.8).

In brief, in the period 1950-1965, total population size increased on the basis of growth in all age groups (with a low contribution from older adults).

Figure I.8
LATIN AMERICA AND THE CARIBBEAN: POPULATION BY AGE GROUPS, 1950-2050



Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, population estimates and projections for Latin America and the Caribbean updated in July 2007, Santiago, Chile [online] http://www.eclac.cl/celade/proyecciones/basedatos_BD.htm.

During the following period (1965-2020), growth continues amidst two phenomena: in the 15-year period of 1965 to 1995, the three population groups increased their numbers and; between 1995 and 2020, the population aged under 15 stabilizes, as a precursor to the subsequent decline expected to begin in around 2020, while the other two age groups are expected to maintain their respective upward trends.

Lastly, between 2020 and 2050, the working age population will tend to stabilize and possibly decline; the young population will continue its downward trend in terms of numbers; and the older adult population will continue to expand until, from 2040, it outnumbers the youth population, which will be a similar size to that observed between 1975 and 1980. An additional element is that, according to United Nations estimates and projections, the shrinking child population and the expanding older adult population will converge in 2040, before continuing their divergent trends from then on.

According to the above, in the current period (2005-2010) the region has a stabilized young population, a working-age population that is growing but at a slowing rate, and an older adult population expected to expand until the end of the period. This undoubtedly confirms the well-acknowledged fact that population ageing is the main demographic phenomenon of this era, and that such ageing will become increasingly important in years to come, both for society as a whole (population ageing) and for older people themselves (individual ageing). The relative proportion and the absolute number of older adults will grow much more than in other population groups.

Population ageing in the region nonetheless seems to be at a reasonable level and the situation in store for the next 40 years has not fully revealed itself. Current figures are deceptive if taken as an indication of the future, as the process is due to speed up, and the number of people whose needs society is ill-prepared

to meet will exceed all expectations. Indeed, between 1950 and 2000 the population aged 60 and over went from 5.5% to 8.8%, which will then rise from 8.8% to 23.6% over the next 50 years and, in absolute terms, is expected to have increased from around 9 million to 180 million in the course of a century.

Nevertheless, the growth of the older adult population will not have the same impact or manifest itself at the same time in all countries. In some countries or groups of countries, child and youth populations, as well as the working-age population, will still play a major role and will continue to be a considerable source of demand for social sectors and to pose a challenge for public policy. Although population ageing is enormously important, concentrating on that issue alone could divert attention away from those other groups whose place in society is far from assured.

Chapter II

DEMOGRAPHIC SCENARIOS FOR VARIOUS STAGES OF TRANSITION: A PROSPECTIVE VISION UP TO 2100 [1]

This chapter presents and analyses demographic scenarios according to the various stages of countries' demographic transition, and studies the patterns of indicators such as percentage population growth at various points of fertility decline, trends in the main age groups, the ageing index, median age of the population, dependency ratio and the demographic dividend.

The time frame for the analysis is up to 2100, based on the assumption that, from 2050 onwards, fertility and mortality levels will remain constant and the balance of migration will be zero. Long-term projections have been formulated because the forecasts currently available (which tend to be short term) cannot easily be used to assess the outcome of certain processes relating to the age structure within countries.

Estimates up to 2100 show changes that may occur in the age structure of countries if demographic variables estimated for 2050 remain constant. At the starting point for this new projection (2045-2050), all countries will have total fertility rates at or below replacement level (between 1.85 and 2.10 children per woman) and life expectancies at birth of between 74.2 and 82.9 years (according to the assumptions implicit in the projections) (ECLAC/CELADE, 2007).

It should be pointed out that, although these trends are considered to be the most likely given the current health and demographic conditions of the region, they may undergo changes in the future and this needs to be taken into consideration from a conceptual point of view.

In terms of fertility, the projections assume that, once a country reaches replacement level (2.1 children per woman), it will remain at or just below that rate (1.85 children per woman). This is based on trends observed in some of the region's countries in recent years. However, certain factors could speed up the decline in fertility, such as increased availability of contraception or wider access to birth control for adolescents or women who still have higher levels of fertility than desired; women spending longer in the educations system; and greater female participation in the workforce.

As for mortality, rates could still be brought down, especially in the area of infant mortality among the most disadvantaged social groups (although this would have a limited effect on the age structure). Possible reductions in mortality later in life, whereby people live longer, would have an impact in terms of more rapid population ageing.

Although the demographic trends included in these projections may change or intensify, current assumptions nonetheless provide a useful frame of reference for predicting potential future scenarios.

[1] Population projections not available up to 2100 for Caribbean countries.

A. POPULATION GROWTH AT VARIOUS POINTS OF FERTILITY DECLINE

The countries of Latin America and the Caribbean have made significant progress in reducing fertility rates, which in most of them will reach or fall below replacement level (2.1 children per woman) from 2025-2030 onwards. Bringing down fertility rates to this extent does not automatically lead to a stabilization or decrease in population size. Population will continue to grow for between 45 and 80 years —albeit at a slower rate than at present - due to the combined effect of three other variables: mortality, migration and the age structure (with the latter influenced by past levels of fertility).[2]

Any assessment of countries' development possibilities must identify the moment when the population will cease to expand, either by becoming stationary or beginning its downward trend. Irrespective of changes in the age structure, this provides an estimate of a country's maximum population and the moment when most population demands will culminate.

The population estimates and projections up to 2100 make it possible to identify, for each country, the approximate length of time during which the population will continue to rise, its future growth and the main factors affecting its size at the various stages. The methodological considerations underlying this calculation are described in box II.1, while the basic data and calculations are given in table II.1.

The first two columns of table II.1 show countries grouped by their stage of demographic transition. Columns 3 to 7 provide basic population data for all countries from 2005 (column 3), the year when each country reaches TFR=2.1 (columns 4 and 5), and the year of maximum growth (columns 6 and 7).

The following three columns show the number of people by which each country's population increases between 2005 and the year of maximum growth (column 8), and in the following two periods within that total: between 2005 and the moment when TFR=2.1 (column 9), and between TFR=2.1 and the period of maximum growth (column 10). Lastly, the final columns indicate the percentage of total growth (column 11) and, within that, the percentages that correspond to the first and second periods (columns 13 and 14).

[2] The impact of the age structure on population growth is turned a "momentum factor" (see chapter I), whereby the growth potential of the age structure is the percentage by which a population will expand solely due to the age-structure effect up to a given moment, uninfluenced by fertility, mortality and migration. This is worked out by means of a methodological exercise used to calculate the ratio between the ultimate stationary number of population and the population at the beginning of the projection with a net reproduction rate of one (Keyfitz, 1971; Chackiel, 1981). Population is also projected with a constant level of mortality and a balance of migration of zero, in order to completely isolate the effect of the age structure.

Box II.1
METHODOLOGICAL CONSIDERATIONS

Taking the year 2005 as a starting point, it is worth wondering when population will stop increasing, or in which year will each country reach its maximum population size, what will be the scale and proportion of that increase and how can the increase be broken down by country or groups of countries should fertility have a positive effect on population growth (if TFR>2.1) or if fertility is at replacement level (if TFR=2.1) or is a factor of decline (if TFR<2.1).

This raises further questions concerning how much population will grow between 2005 and the year when TFR=2.1, or between that year and when it reaches its maximum size.

The first question aims to identify the moment at which each country's population growth will be affected by the following four factors: fertility above the replacement level; falling mortality; an age structure determined by cohorts born during previous high-fertility periods; and immigration and emigration (with the latter being the only possible way of reducing population numbers). The second question, on the other hand, relates to the moment when fertility ceases to be a factor in population growth and either has a stabilizing effect (assuming 2.1 children per woman) or becomes a factor of decline (if fertility falls below replacement level).

These calculations have made it possible to distinguish two different situations. In the first, population growth is due to the combined effect of fertility, mortality, migration and the age structure. In the second situation, fertility no longer affects population increase, as the calculation is carried out at a time when that variable no longer contributes to population growth but only replaces numbers or is a factor of decline (if fertility continues to fall below replacement level —which could happen in countries at the forefront on transition).[a]

Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC.

[a] Official projections produced by CELADE in conjunction with the region's countries have assumed that fertility will not fall below 1.85 children per woman (with the same assumption maintained for projections up to 2100). However, given fertility trends in Cuba and other parts of the world, that assumption may well have to be adjusted in the future.

The data in table I.1 indicate, that the population will continue to grow from 2005 in all countries except Cuba (where population growth ceased from 2005). In Cuba, in 1975-1980 fertility reached 2.1 children per woman, as the country's demographic development was completely unlike that of other countries in the region, as the country followed a highly different course of social, economic and political development from the 1960s, including a modification of reproductive behaviour due to wide and unrestricted access to contraception and the legalization of abortion in 1965.

The other countries have longer to wait before their population begins to decline in absolute terms, as this is expected to start between 2050 and 2085. The population in countries at an advanced stage of transition will continue to grow until 2050-2055. However, the population of Argentina will continue to increase until 2060. Most of the countries in full transition expect their populations to expand until 2065-2070. The exceptions are constituted at one extreme by Peru, where population is expected to grow until 2060 and, at the other end of the spectrum, Paraguay, where population should increase until 2075. As for countries in moderate transition, the most extreme cases are Guatemala (with numbers increasing up to 2080) and Haiti (with growth expected until 2085).

Table II.1

LATIN AMERICA AND THE CARIBBEAN: POPULATION GROWTH IN DIFFERENT PERIODS AND AT VARIOUS STAGES OF DEMOGRAPHIC TRANSITION

		Basic data					Number of people by which the population will increase in different periods (thousands)			Percentage population increase			
Stage of demographic transition	**Countries**	**Population in 2005**	**Five-year period when TFR=2.1**	**Population when TFR=2.1**	**Year of max. size**	**Population at max. size**	**Between 2005 and max. size**	**Between 2005 and TFR=2.1**	**Between TFR=2.1 and year of max. size**	**Total (between 2005 and max. size)**		**Between 2005 and TFR=2.1**	**Between TFR=2.1 and year of max. size**
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Very advanced	Cuba	1 1242	1975-1980	9 628	2005	11 242	N/A [a]	N/A [a]	N/A [a]	N/A [a]	N/A [a]	N/A [a]	N/A [a]
Advanced	Uruguay	3 317	2005-2010	3 317	2050	3 731	414	N/A	414	12.5	100.0	N/A [a]	100.0
	Chile	16 267	2000-2005	15 398	2050	20 195	3 928	N/A [a]	3 928	24.1	100.0	N/A [a]	100.0
	Argentina	38 592	2015-2020	42 403	2060	50 937	12 345	3 811	8 534	32.0	100.0	30.9	69.1
	Brazil	187 601	2015-2020	211 284	2055	257 283	69 682	23 683	45 999	37.1	100.0	34.0	66.0
	Colombia	44 907	2010-2015	47 859	2055	62 765	17 858	2 952	14 906	39.8	100.0	16.5	83.5
	Costa Rica	4 322	2005-2010	4 322	2055	6 243	1 921	N/A [a]	1 921	44.4	100.0	N/A [a]	100.0
	Mexico	104 159	2010-2015	110 056	2050	131 586	27 427	5 897	21 530	26.3	100.0	21.5	78.5
Full	Peru	27 254	2025-2030	33 765	2060	39 683	12 429	6 511	5 918	45.6	100.0	52.4	47.6
	Panama	3 228	2025-2030	4 219	2065	5 077	1 849	991	858	57.3	100.0	53.6	46.4
	Ecuador	13 211	2020-2025	16 189	2065	20 700	7 489	2 978	4 511	56.7	100.0	39.8	60.2
	Venezuela (Bol. Rep. of)	26 556	2025-2030	33 038	2065	42 114	15 558	6 482	9 076	58.6	100.0	41.7	58.3
	Dom. Rep.	9 355	2030-2035	12 227	2070	13 925	4 570	2 872	1 698	48.9	100.0	62.8	37.2
	El Salvador	6 873	2030-2035	9 652	2070	11 608	4 735	2 779	1 956	68.9	100.0	58.7	41.3
	Paraguay	5 899	2030-2035	8 544	2075	10 771	4 872	2 645	2 227	82.6	100.0	54.3	45.7
	Nicaragua	5 457	2025-2030	6 827	2070	8 238	2 781	1 370	1 411	51.0	100.0	49.3	50.7
	Honduras	6 893	2030-2035	10 414	2070	13 262	6 369	3 521	2 848	92.4	100.0	55.3	44.7
Moderate	Haiti	9 292	2045-2050	15 529	2085	18 040	8 748	6 237	2 511	94.1	100.0	71.3	28.7
	Bolivia	9 427	2030-2035	14 115	2070	17 732	8 305	4 688	3 617	88.1	100.0	56.4	43.6
	Guatemala	12 699	2035-2040	23 546	2080	31 971	19 272	10 847	8 425	151.8	100.0	56.3	43.7

Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, population estimates and projections for Latin America and the Caribbean updated in July 2007, Santiago, Chile [online] http://www.eclac.cl/celade/proyecciones/basedatos_BD.htm.

[a] Does not apply to countries where TFR=2.1 before of during the period of the first year (2005).

Given their lower growth rates, the population of countries at an advanced stage of transition will increase by between 12.5% (Uruguay) and 44.4% (Costa Rica). The population of countries in full transition will expand by between 45% (Peru) and 92.4% (Honduras), while countries at a moderate stage of transition will experience population growth of between 88.1% and 151.8%. Lastly, when the population increase is broken down into the periods before and after the moment when TFR=2.1, it is clear that countries' populations will continue to grow even after fertility reaches the equivalent of replacement level, and that this growth will not be negligible.

Given that fertility in countries at an advanced stage of transition is either very close to or below replacement level, most of the increase in population (or all the population growth in Costa Rica, Cuba and Uruguay) will occur after the total fertility rate reaches 2.1 (see column 14). In countries in full transition, the proportion of the increase in population size is fairly evenly spread between the two periods, while in countries at a moderate stage of transition, most of the increase in population (up to its moment maximum size) will still depend on the combined effect of fertility and the current age structure.

In summary, although the region's high rates of population growth in the 1960s and 1970s prompted predictions of an almost indefinite increase in numbers, current projections show that the end of that trend is already in sight. What is more, for all countries except Cuba (and including those with the largest regional populations, such as Brazil and Mexico) turning point is expected to be reached from 2050.

In Latin American and Caribbean countries, only fertility and the age structure play, and will continue to play, an important role in population growth from 2005. Changes in mortality and migration (with a few exceptions) can only have a marginal effect on population size if current trends remain within a known range of variation.

It is therefore fair to say that, before fertility stands at 2.1 children per woman, the main factors affecting population growth are fertility and the age structure. When calculations are carried out in isolation of the fertility effect (i.e. with fertility at or below 2.1 children), practically the only factor contributing to population growth is the age structure, whereas fertility may even result in population decline. In other words, as demographic transition continues, the "fertility effect" has an ever smaller impact on growth, although fertility will also have some effect until it reaches replacement level. Beyond that moment, the cases of countries at an advanced stage of transition have taught us to expect population increase to become mainly determined by a country's age structure, which contains varying numbers of women of childbearing age who serve to support that growth.

Naturally, these figures have major implications for decision-making in the medium and long term, and for assessing changes in social demands over time, notwithstanding the inevitable adjustments that will have to be made to projections as real changes in the demographic variables prove different from the trends projected.

B. TRENDS IN THE MAIN AGE GROUPS

As total population growth slows down, the greatest demographic changes will occur in the age structure. Trends within the three age groups (and particularly the contrast between the most dramatic shifts in the youngest and oldest age groups) will have the most serious consequences for the social and economic functioning of countries as the demands of each group change (see table II.2 and figure I.1).

The most striking change is the growing proportion represented by the adults aged 60 and above, and the decline in the young population, as countries move further along the transition process. The potentially active population remains fairly stable at around 60%, with a downward trend resulting from the surge in the number of older adults.

Major changes are also afoot within each age group, in terms of both age and sex distribution. The most noteworthy changes relate to ageing, among the working-age population as well as the older adult population.

The working-age population is indeed ageing as people aged 35 to 59 years represent a growing proportion within the group. The increased participation of women in the workforce also means that the latter will no longer be predominantly male.

In terms of the older adult population, those aged 75 and over will make up an increasing proportion of those aged 60 and above, which will push up health care costs and increase the demand for care and special residential arrangements for this elderly population. There will therefore be a smaller proportion of the "third age" who are able to be autonomous, participate in economic activities and be well integrated socially (Chackiel, 2000).

In 2005, the proportion of older adults did not exceed the young population in any of the region's countries, although the numbers were already relative close in Cuba (see table II.2 and figure II.1). By 2025, the two groups will represent more similar proportions in all countries, while the groups will reach the same size in Chile and Uruguay, and in Cuba there will be almost twice as many older adults than children aged under 15. By 2050, only a few countries will have a smaller proportion of older than young people (Bolivia, Dominican Republic, Guatemala, Haiti and Honduras). Towards 2100, the curves representing the youngest and oldest age groups will grow increasingly further apart, forming an age model in complete contrast to the current situation.

In 2005, the proportion of older adults in most countries was less than 10%, while the proportion of young people was between 20% and 40%. By 2050, the projections point to major changes: in half of countries (those at a less advanced stage of the transition), both age groups will represent around 20%, while in the other half (countries at a more advanced stage of transition), older adults will outnumber young people (but with both groups still representing less than 30% —except in Cuba). Following a gradual change in fertility and mortality, in accordance with population projections, in 2100 the relative situation of the age groups will change once more to become more similar among countries. Almost everywhere, the youngest population will represent around 15%; older adults approximately 30%; and the working-age population between about 50% and 55%.

Table II.2

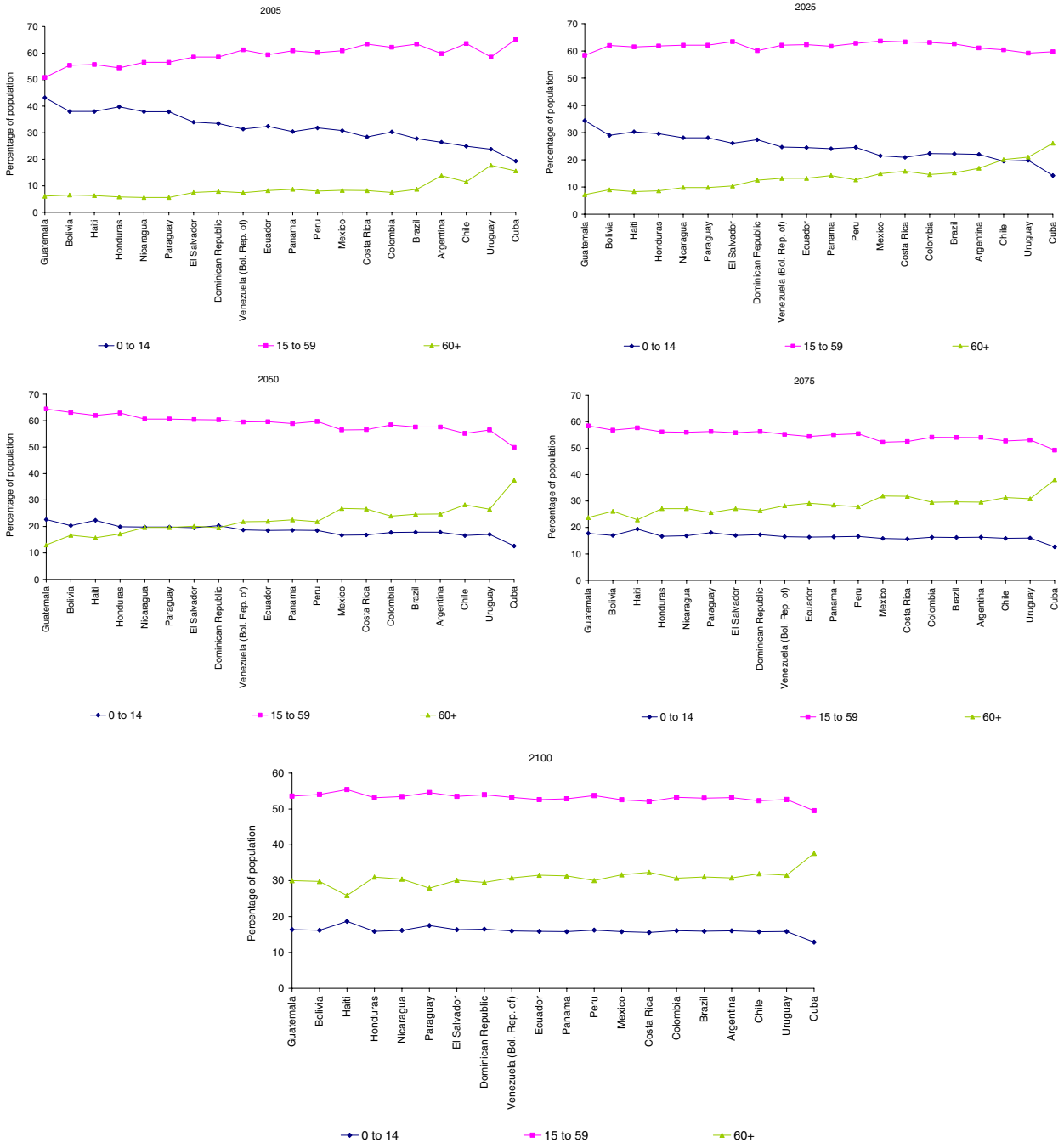
LATIN AMERICA AND THE CARIBBEAN: POPULATION STRUCTURE BY COUNTRIES, AGE GROUPS AND STAGES OF DEMOGRAPHIC TRANSITION, 2005, 2025, 2050, 2075 AND 2100

Stage of demographic transition	Countries	0-14					15-59					60 and above					Approximate year when populations of 0-14 years and 60+ reach the same size
		2005	2025	2050	2075	2100	2005	2025	2050	2075	2100	2005	2025	2050	2075	2100	
Very advanced	Cuba	19.3	14.2	12.6	12.7	12.9	65.2	59.7	49.9	49.3	49.5	15.6	26.1	37.5	38.0	37.6	2010
Advanced	Uruguay	23.8	19.8	17.0	16.0	15.8	58.5	59.2	56.5	53.1	52.6	17.7	21.0	26.5	30.9	31.5	2020-2025
	Chile	24.9	19.5	16.6	15.9	15.8	63.6	60.4	55.2	52.7	52.3	11.5	20.1	28.2	31.4	31.9	2025
	Argentina	26.4	22.0	17.8	16.3	16.0	59.8	61.1	57.6	54.0	53.2	13.8	16.9	24.7	29.6	30.8	2035
	Brazil	27.8	22.2	17.8	16.3	15.9	63.4	62.6	57.6	54.1	53.0	8.7	15.2	24.6	29.7	31.0	2035
	Colombia	30.3	22.3	17.7	16.3	16.1	62.2	63.1	58.4	54.2	53.3	7.5	14.6	23.9	29.5	30.7	2035
	Costa Rica	28.4	20.9	16.8	15.7	15.6	63.4	63.3	56.6	52.5	52.1	8.2	15.8	26.6	31.8	32.3	2035
	Mexico	30.8	21.5	16.7	15.8	15.8	60.9	63.6	56.5	52.2	52.6	8.3	14.9	26.8	31.9	31.6	2035
Full	Peru	31.8	24.6	18.5	16.6	16.2	60.2	62.8	59.7	55.5	53.7	8.0	12.6	21.8	27.9	30.1	2045
	Panama	30.4	24.1	18.6	16.4	15.8	60.9	61.7	58.9	55.1	52.8	8.7	14.2	22.5	28.5	31.4	2040
	Ecuador	32.4	24.5	18.5	16.4	15.9	59.4	62.3	59.6	54.4	52.6	8.2	13.2	21.9	29.2	31.5	2045
	Venezuela (Bol. Rep. of)	31.4	24.7	18.7	16.5	16.0	61.2	62.1	59.5	55.2	53.2	7.4	13.2	21.8	28.2	30.8	2045
	Dom. Rep.	33.5	27.4	20.3	17.3	16.5	58.5	60.1	60.3	56.3	54.0	7.9	12.5	19.5	26.4	29.5	2050
	El Salvador	34.0	26.1	19.5	16.9	16.1	58.5	63.4	60.4	55.9	53.5	7.5	10.4	20.1	27.2	30.4	2050
	Paraguay	37.9	28.1	19.8	18.1	17.5	56.5	62.1	60.6	56.3	54.6	5.6	9.8	19.6	25.6	27.9	2055
	Nicaragua	37.9	28.1	19.8	16.9	16.1	56.5	62.1	60.6	56.0	53.5	5.6	9.8	19.6	27.1	30.4	2050
	Honduras	39.8	29.6	19.9	16.7	15.9	54.4	61.8	62.9	56.2	53.1	5.8	8.6	17.2	27.1	31.0	2055
Moderate	Haiti	38.0	30.3	22.3	19.4	18.7	55.7	61.5	62.0	57.7	55.4	6.3	8.3	15.7	22.9	25.9	2065
	Bolivia	38.0	29.0	20.3	17.0	16.2	55.4	62.0	63.1	56.9	54.0	6.5	9.0	16.7	26.1	29.8	2055
	Guatemala	43.2	34.4	22.6	17.8	16.4	50.8	58.4	64.4	58.4	53.6	6.1	7.2	13.0	23.8	30.0	2065

Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, population estimates and projections for Latin America and the Caribbean updated in July 2007, Santiago, Chile [online] http://www.eclac.cl/celade/proyecciones/basedatos_BD.htm and projections up to 2100.

Figure II.1

LATIN AMERICA AND THE CARIBBEAN: RELATIVE PROPORTION OF POPULATION REPRESENTED BY MAJOR AGE GROUPS, 2005, 2025, 2050, 2075 AND 2100



Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, population estimates and projections for Latin America and the Caribbean updated in July 2007, Santiago, Chile [online] http://www.eclac.cl/celade/proyecciones/basedatos_BD.htm and projections up to 2100.

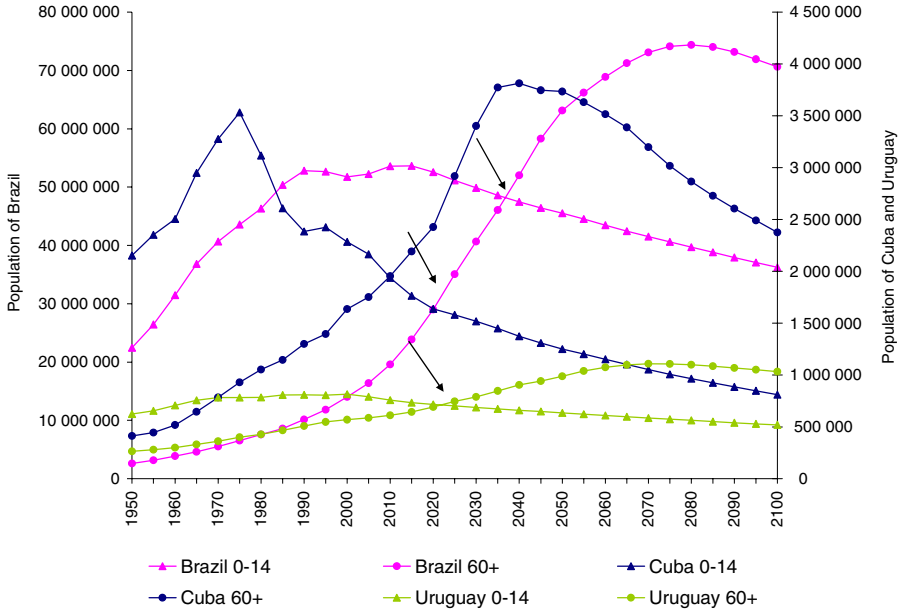
One fundamental aspect of age-group trends is the change in the absolute size of each, which gives a fairly accurate idea of the pressure of potential demand (despite possible bias in estimations regarding the future). Below is an analysis of changes in the absolute size of two age groups (0-14 years and 60 years and above) in selected countries.

To show differences according to their stage of demographic transition, countries have been selected to highlight current distinctions and how future trajectories may diverge in the light of new social and economic demands associated with population dynamics. The countries selected are Cuba (very advanced transition) and Uruguay and Brazil (advanced transition). Differences in the onset of fertility decline and fertility levels up to the present determine at which points in time the youngest and oldest age groups cross over (see the arrows in figure II.2).

Not only is Cuba the most aged country in the region, and will continue to hold that title into 2100, but it is also the country where, in 2010, there will be as many older adults as children under 15 (with around 2 million people in each age group, each representing 17.5% of the total population). From 2010 onwards, adults will easily outnumber children, with the former reaching 3.73 million compared to 1.25 million children by 2050.

Figure II.2

CUBA, URUGUAY AND BRAZIL: POPULATION BY MAJOR AGE GROUPS, 1950-2100



Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, population estimates and projections for Latin America and the Caribbean updated in July 2007, Santiago, Chile [online] http://www.eclac.cl/celade/proyecciones/basedatos_BD.htm and projections up to 2100.

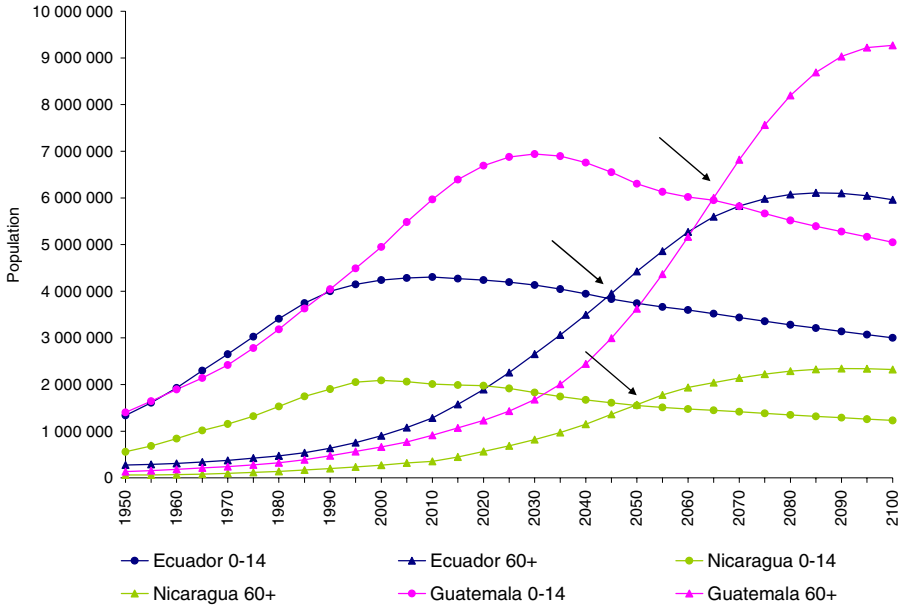
In Uruguay, the age groups will cross over ten years later than in Cuba, as the former initiated its transition much earlier (as did Argentina), and fertility levels never reached such consistently low levels. Indeed, towards 2020 the two age groups will include the same number of people, with the sum amounting to no more than 1.5 million people.

Lastly, in Brazil, where fertility began to decline relatively recently compared to other countries at a similar stage of demographic transition, the two age groups will be equal in size between 2035 and 2040, with approximately 50 million people in each.

It is also interesting to compare changes in the 0-14 year old age group in countries such as Cuba and Brazil. In Cuba, the rapid and intense fall in fertility caused the child population to begin to fall from 1975, thereby reducing pressure on education and health services. In Brazil, on the other hand, the child population practically stabilized between 1990 and 2005, and will remain relatively constant until about 2015, at which point it will be begin its downward trend, while continuing (unlike in Cuba) to exert constant pressure on basic State services. As for the population aged 60 and above, growth will not continue indefinitely, and will reach a maximum in 2040 in Cuba, in 2070 for Uruguay and 2080 in the case of Brazil.

Figure II.3 illustrates the cases of countries in full transition (Ecuador and Nicaragua) and moderate transition (Guatemala). The oldest and youngest age groups will be of a similar size in the first two countries between 2040 and 2050. In countries at a moderate stage of transition, however, that will not be achieved until 2055-2065.

Figure II.3
ECUADOR, GUATEMALA AND NICARAGUA: POPULATION BY MAJOR AGE GROUPS, 1950-2100



Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, population estimates and projections for Latin America and the Caribbean updated in July 2007, Santiago, Chile [online] http://www.eclac.cl/celade/proyecciones/basedatos_BD.htm and special projections.

Ecuador will have almost 4 million people in each of its two extreme age groups by 2045, while Nicaragua will have approximately 1.5 million children under 15 and a similar number of older adults by 2050. In Guatemala, the two groups will have around 6 million people in 2065, owing to the high fertility rates observed until recently.

In all these countries, the 0-14 year old age group will begin to decline between 2010 and 2030, while the population aged 60 and above will only begin to shrink from 2090.

C. AGEING INDEX AND MEDIAN AGE

By 1980, all of the region's countries had begun the process of demographic transition. Their major differences in terms of type of population are reflected in the ageing index and median age.

The ageing index (AI) is an expression of how the growth of the older adult population varies in relation to the youth population, and is the ratio of adults aged 60 and above to children under the age of 15. The ageing index also indicates a population's capacity for renewal: the higher the index, the smaller the capacity of a population to renew its numbers, with older adults replacing children and young people. This provides information on the rate at which the supply of goods and services must be adjusted to the needs of a new and growing demand.

This index is considerably different at the various stages of demographic transition and periods in time (see table II.3 and figure II.4). Although the direction of the index remains the same (upwards), countries vary as to the current level of the index and its future projections.

Countries at a very advanced and early advanced stage of transition have the highest proportion of older adults in relation to the youth population, with Cuba and Uruguay leading the way. In Cuba, the ageing index in 2005 counted 80.9 older adults for every 100 young people, which was the highest rate in the region. Cuba is therefore expected to have the most drastic outcome in terms of the ageing index: a value of 420% is expected in 2100, with the highest rises recorded between 1980 and 2005 (139%) and between 2005 and 2025 (128%). From that moment onwards, the increases will become significantly smaller (see table II.3).

Uruguay follows closely behind Cuba, with an ageing index of 74.2% in 2005. However, ageing is not the same in Uruguay as in Cuba, as from 2025 the ageing index in the former will be half that of the latter. Argentina and Chile have lower ageing indices (52.2% and 46.1%, respectively), and the expected future increases in the index will not be as large as in Cuba (although in Chile it will nonetheless rise by more than in Uruguay). In Chile, the greatest increase in the index will take place between 2005 and 2025, i.e. in the next 20 years (123.6%), while in Argentina the index will grow more rapidly between 2025 and 2050 (80%), before the rate of increase begins to slow.

In the remaining four countries in the group of advanced transition, where changes have occurred more recently, the ageing index was lower in 2005 (ranging between about 25% and 31%). This is expected to climb rapidly by 2050, when the index will be above 100% in all those countries.

Table II.3
LATIN AMERICA AND THE CARIBBEAN: AGEING INDEX BY STAGE OF DEMOGRAPHIC TRANSITION, 1980, 2005, 2025, 2050, 2075 AND 2100

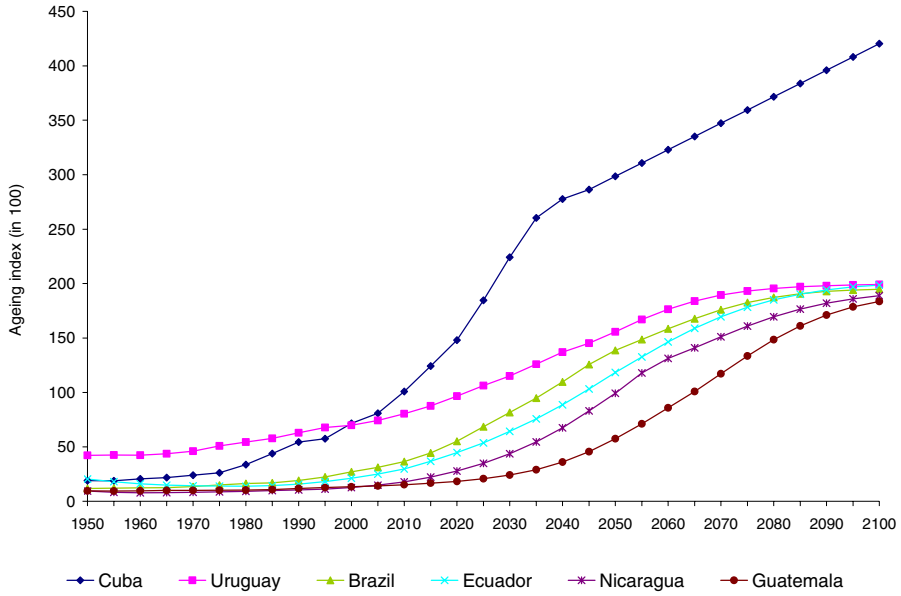
Stage of demographic transition	Countries	Ageing index						Percentage increase				
		1980	2005	2025	2050	2075	2100	1980-2005	2005-2025	2025-2050	2050-2075	2075-2100
Very advanced	Cuba	33.8	80.9	184.6	298.6	359.4	420.3	139.3	128.2	61.7	20.4	16.9
Advanced	Uruguay	54.5	74.2	106.3	155.7	193.1	199.2	36.1	43.3	46.4	24.0	3.2
	Chile	24.7	46.1	103.1	170.0	197.3	202.6	86.6	123.6	64.9	16.1	2.7
	Argentina	39.0	52.2	77.0	138.6	181.3	192.0	33.8	47.5	80.0	30.8	5.9
	Brazil	17.1	31.3	68.6	138.7	182.5	194.8	83.0	119.1	102.2	31.6	6.7
	Colombia	14.2	24.6	65.4	134.7	181.2	191.1	73.2	165.9	106.0	34.5	5.5
	Costa Rica	18.8	28.8	75.5	158.4	202.7	207.6	53.2	162.2	109.8	28.0	2.4
	Mexico	12.1	27.1	69.4	160.4	201.4	200.4	124.0	156.1	131.1	25.6	-0.5
Full	Peru	13.3	25.2	51.0	117.5	167.4	185.4	89.5	102.4	130.4	42.5	10.8
	Panama	16.5	28.5	58.7	120.5	173.1	195.8	72.7	106.0	105.3	43.7	13.1
	Ecuador	13.8	25.1	53.8	118.2	178.3	198.6	81.9	114.3	119.8	50.8	13.1
	Venezuela (Bol. Rep. of)	12.4	23.7	53.6	116.4	170.8	192.5	91.1	126.2	117.2	46.7	12.7
	Dom. Rep.	11.2	23.7	45.6	96.1	152.4	179.3	111.6	92.4	110.7	58.6	17.7
	El Salvador	11.4	22.1	39.9	103.1	159.3	184.6	93.9	80.5	158.4	54.5	15.9
	Paraguay	13.6	19.2	39.4	87.7	117.9	138.7	41.2	105.2	122.6	96.5	17.6
	Nicaragua	9.1	14.8	34.9	99.2	160.9	188.8	62.6	135.8	184.1	62.2	17.4
	Honduras	10.1	14.5	29.1	86.3	142.0	159.5	43.6	100.7	196.6	61.9	12.3
Moderate	Haiti	15.3	16.6	27.3	70.6	153.6	183.8	8.5	64.5	158.6	87.1	19.7
	Guatemala	10.2	14.0	20.8	57.5	133.5	183.6	37.3	48.5	176.7	132.1	37.5
	Bolivia	12.9	17.2	31.0	82.1	162.6	195.3	33.3	80.2	164.8	88.4	20.1

Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, population estimates and projections for Latin America and the Caribbean updated in July 2007, Santiago, Chile [online] http://www.eclac.cl/celade/proyecciones/basedatos_BD.htm and projections up to 2100.

There are also differences among countries at the stage of full transition. In 2005, the Bolivarian Republic of Venezuela, the Dominican Republic, Ecuador, El Salvador, Panama and Peru had ageing indices of between 22% and 29%, while in Honduras, Nicaragua and Paraguay, the index ranged from 15% to 19%. This is a similar level to that recorded in countries at a moderate stage of transition, Bolivia, Guatemala and Haiti, with values of between 14% and 17%. In 2050, differences among groups of countries remain, although the absolute levels of their indices will be higher.

By 2100, practically all of the region's countries will have a high level of ageing of around 200% (two older adults for every child under the age of 15). Cuba will have an ageing index of 400% (four older adults for every child) (see figure II.4).

Figure II.4
LATIN AMERICA AND THE CARIBBEAN (SELECTED COUNTRIES): AGEING INDEX BY STAGE OF DEMOGRAPHIC TRANSITION, 1950-2100

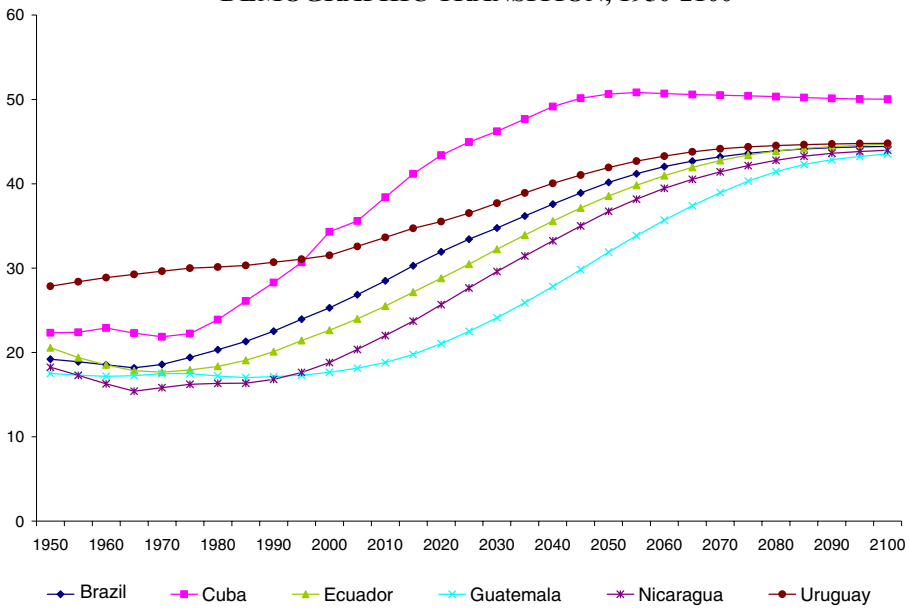


Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, population estimates and projections for Latin America and the Caribbean updated in July 2007, Santiago, Chile [online] http://www.eclac.cl/celade/proyecciones/basedatos_BD.htm.

In keeping with the rising ageing index, the median age (i.e. the age dividing the population into two equal-sized groups) is also related to the various stages of demographic transition (see figure II.5).

In 1950, the range of variation for median age among countries was about 10 years, with extremes of 17.5 years in Guatemala and 27.9 years in Uruguay. By 1980, the range had widened to about 14 years, with extremes of 16.3 years in Nicaragua and 30.1 years in Uruguay. In 2005, the range broadened to almost 18 years difference among countries, ranging from 18.1 years in Guatemala to 35.6 years in Cuba.

Figure II.5
LATIN AMERICA AND THE CARIBBEAN (SELECTED COUNTRIES): MEDIAN AGE BY STAGE OF DEMOGRAPHIC TRANSITION, 1950-2100



Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, population estimates and projections for Latin America and the Caribbean updated in July 2007, Santiago, Chile [online] http://www.eclac.cl/celade/proyecciones/basedatos_BD.htm and projections up to 2100.

From 2005, Cuba began to break away in terms of population, with a median age considerably above that of other countries. The median age there will reach 50 years between 2040 and 2045, and will remain at that level until the end of the projection. In the other countries, if the hypotheses of future fertility trends are confirmed, their median ages will converge to stabilize at around 45 years by 2100.

D. DEPENDENCY RATIO AND THE DEMOGRAPHIC DIVIDEND

1. Dependency ratio

Demographic change generates dramatic transformations in the age structure of the population. Such shifts have a considerable impact on the development process, as they tend to alter the balance between working-age and inactive age groups.

It is common to use indicators calculated using age ranges to compare countries and assess how demographic conditions relate to other aspects of socioeconomic development. In the dependency ratio, the numerator is the potentially inactive population (those aged under 15 and over 60), while the denominator is the potentially active population (aged 15 to 59).[3] The dependency ratio is a valuable indicator of the possible effects of demographic change on socioeconomic development.

[3] The end of this section uses an alternative definition of the dependency ratio, which considers the economically active population to be those aged between 15 and 64.

However, there are limitations to dependency ratios expressed in terms of age ranges. First, in most populations people do not automatically cease to be economically active at the age of 60. Second, not everyone aged 15 to 59 is economically active, especially among the female population (and despite the increasing participation of women in the labour market). Similarly, as training for entering work becomes longer, a growing number of adolescents and young adults spend longer in education and outside the labour market (thereby extending the period of dependence far beyond the age of 15). These observations suggest that trends in dependency ratios considered in this section offer only an indication of the economic impact of changes in the main age groups of the population.[4]

The dependency ratio indicates the relative demographic burden of young people and older adults on the potentially active population. Three types of indicator are generally considered: (i) the *young dependency ratio*, between those aged 0-14 years and those aged between 15 and 59; (ii) the *older dependency ratio*, between those aged 60 and above and those aged 15 to 59; and (iii) the *total dependency ratio*, which is the sum of the two previous ratios. Dependency ratios can also be expressed in terms of the number of young or older people (or both) for every 100 people aged 15 to 59.

2. The demographic dividend

During demographic transition, there is a period when the proportion of people of potentially productive age grows steadily in relation to potentially inactive ages. In that period, when the dependency ratio drops to record lows, the situation is particularly conducive to development, as there are more possibilities for savings and investment in economic growth, while there is also reduced pressure on education spending. Various terms have been coined to describe this period, including "demographic dividend" or "demographic window of opportunity", which refers to the possibility of increasing rates of economic growth per capita and the levels of well-being of the population during this period.

Although the demographic dividend offers an opportunity to speed up development, making the most of such benefits depends on the adoption of macroeconomic policies that will encourage productive investment, increase employment opportunities and promote a stable social and economic environment conducive to sustained development (Bloom, Canning and Sevilla, 2003; Adioetomo and others, 2005; Wong and Carvalho, 2006). To be of real benefit to society, there must be high levels of investment in human capital (especially young people): "efforts must be made to absorb the labour supply of a growing working–age population, while also reducing the insecurity, precariousness and informality that are typical of the region's labour markets*"* (ECLAC, 2004; ECLAC, 2006b).

Although the demographic dividend may last for several decades, the dependency ratio eventually increases once more as a result of the continuous rise in the proportion of older adults. This poses new challenges for society, which must adapt to an unprecedented situation that requires the formulation of policies to facilitate the changes that need to be made by the public sector. The need for those adjustments is related to issues of intergenerational equity, as society must meet the needs of people at different stages of the life cycle, and defines the role to be played by the State, the private sector and the family. It is therefore vital to make the most of the demographic dividend, as a way of creating the conditions for facing the challenge posed by the increase of older adults in the population.

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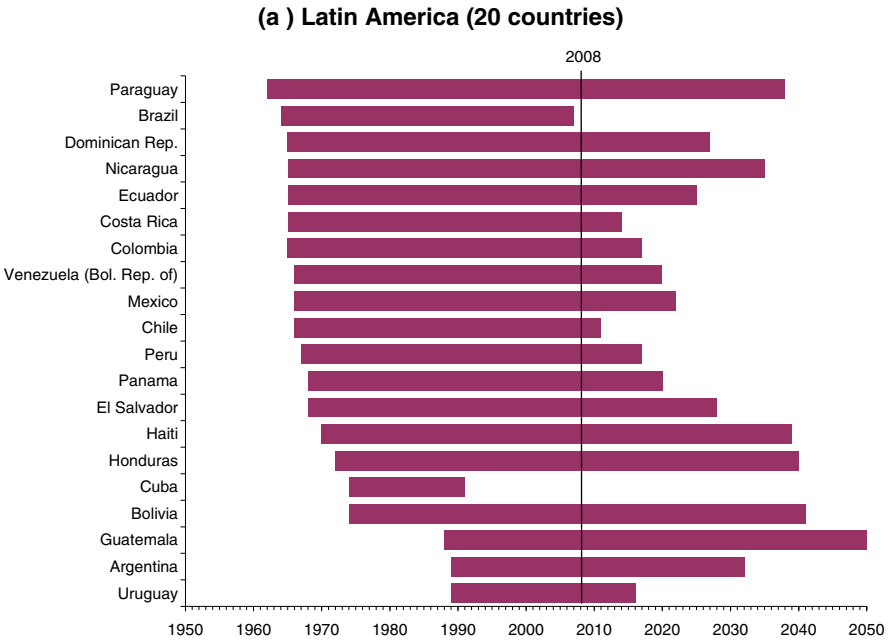
[4] Another way of estimating this impact and incorporate factors beyond the strictly demographic, is to calculate a dependency ratio based on the economic activity of people (as illustrated at the end of this section). The following chapter uses more sophisticated means of analysing the impact of changes in the age structure on specific sectoral demands.

If countries use the demographic dividend as a time to improve social protection, invest in education and health and promote the creation of productive and well-paid jobs, the resulting economic achievements may help to reduce the burden of the larger dependent population in the future. An interesting example is offered by countries in south east Asia that have successfully taken advantage of the demographic dividend by investing mainly in health and education and by increasing the demand for labour so as to absorb the labour supply of the economically active population (UNFPA, 1998; Mason, 2002).

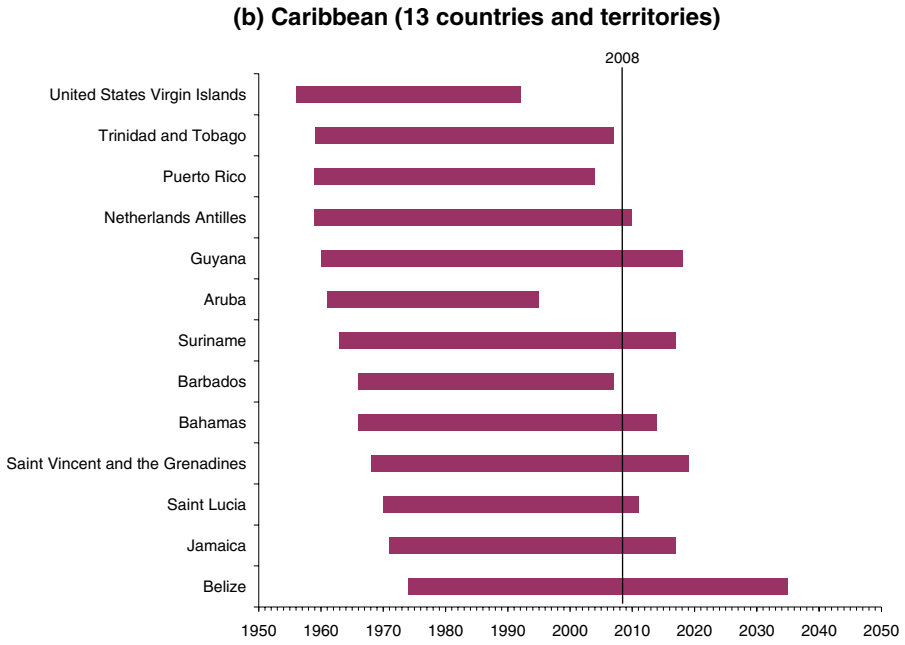
The exact boundaries of the demographic dividend can be defined in different ways. This document considers the following three specific aspects in order to compare the region's countries in terms of the length and scale of the demographic dividend: (i) the period in which the dependence ratio drops from its maximum to its minimum; (ii) the scale of that reduction (in terms of the proportional reduction of the dependency ratio); and (iii) the period during which the dependency ratio remains relatively low (in this case below two dependents for every three people of economically-active age).

The information on those three aspects for various countries in the region is contained in figures II.6, II.7 and II.8. Table II.4 provides a summary of the information in figures II.6 to II.8.

Figure II.6
LENGTH OF TIME IT TAKES FOR THE DEPENDENCY RATIO TO DROP FROM ITS MAXIMUM TO ITS MINIMUM LEVEL
(Years)

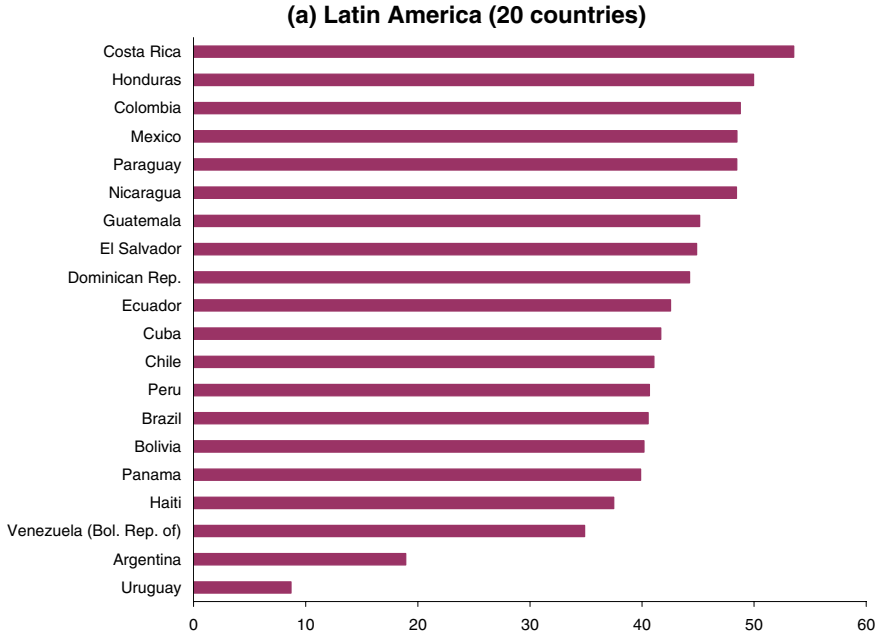


Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, population estimates and projections, 2007.

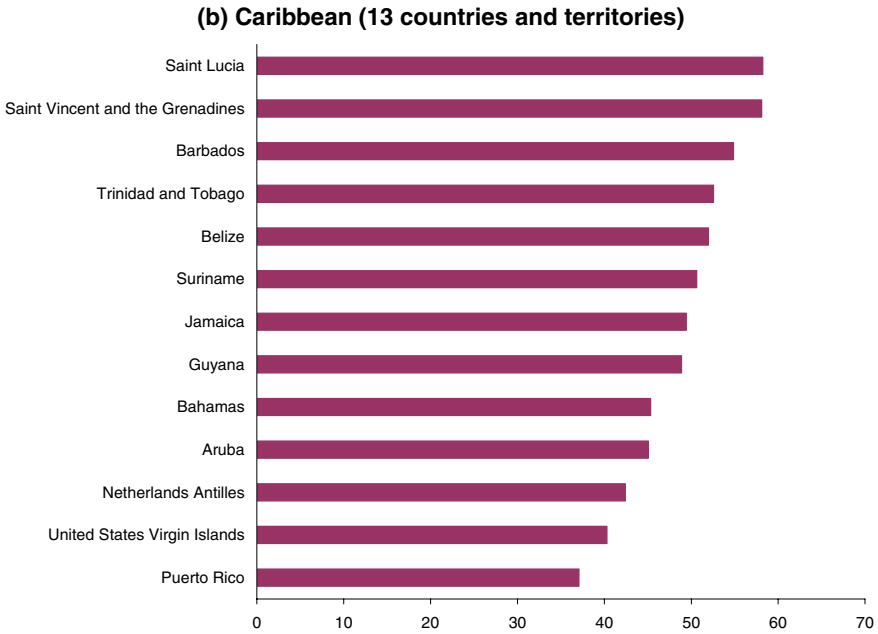


Source: United Nations, "World Population Prospects: The 2006 Revision. Population Database" [online database] http://esa.un.org/unpp/.

Figure II.7
PERCENTAGE REDUCTION IN THE DEPENDENCY RATIO FROM ITS MAXIMUM TO ITS MINIMUM LEVEL

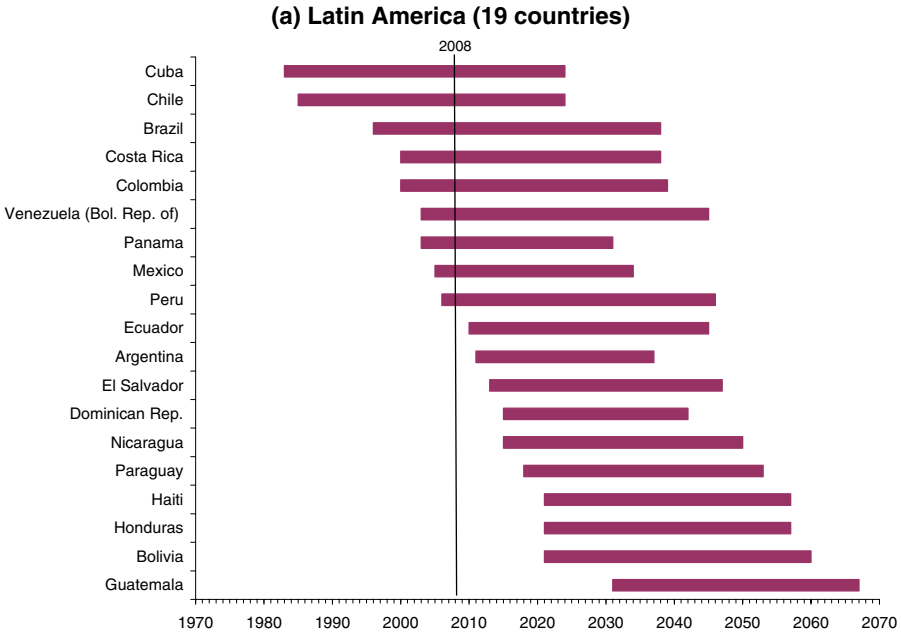


Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, population estimates and projections, 2007.

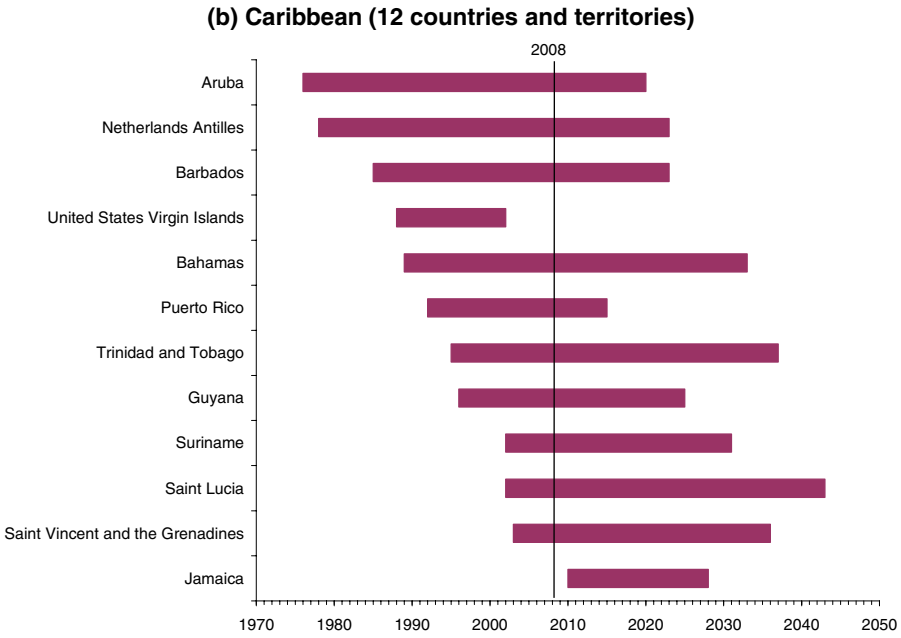


Source: United Nations, "World Population Prospects: The 2006 Revision. Population Database" [online database] http://esa.un.org/unpp/.

Figure II.8
PERIOD FOR WHICH THE DEPENDENCY RATIO REMAINS BELOW TWO DEPENDENTS FOR EVERY THREE WORKING-AGE PEOPLE



Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, population estimates and projections, 2007.



Source: United Nations, "World Population Prospects: The 2006 Revision. Population Database" [online database] http://esa.un.org/unpp/.

Table II.4
LATIN AMERICA AND THE CARIBBEAN (SELECTED COUNTRIES): ASPECTS OF DEPENDENCY RATIO TRENDS

Countries	Reduction period of dependency ratio						Period for which dependency ratio remains below 2/3		
	Maximum value (MAV)	Year of maximum value	Minimum value (MIV)	Year of minimum value	Duration (years)	Intensity (%)	Start year	Final year	Duration (years)
Latin America									
Argentina	77.7	1989	63.0	2032	43	18.9	2011	2037	26
Bolivia	94.6	1974	56.6	2041	67	40.2	2021	2060	39
Brazil	96.7	1964	57.5	2007	43	40.5	1996	2038	42
Chile	92.3	1966	54.4	2011	45	41.1	1985	2024	39
Colombia	108.7	1965	55.7	2017	52	48.8	2000	2039	39
Costa Rica	114.7	1965	53.3	2014	49	53.5	2000	2038	38
Cuba	90.7	1974	52.9	1991	17	41.7	1983	2024	41
Ecuador	105.3	1965	60.5	2025	60	42.5	2010	2045	35
El Salvador	104.1	1968	57.4	2028	60	44.9	2013	2047	34
Guatemala	103.0	1988	55.2	2050	62	46.4	2031	2067	36
Haiti	91.9	1970	57.4	2039	69	37.5	2021	2057	36
Honduras	110.9	1972	55.5	2040	68	50.0	2021	2057	36
Mexico	110.0	1966	56.7	2022	56	48.5	2005	2034	29
Nicaragua	113.6	1965	58.6	2035	70	48.4	2015	2050	35
Panama	101.6	1968	61.1	2020	52	39.9	2003	2031	28
Paraguay	112.5	1962	58.0	2038	76	48.4	2018	2053	35
Peru	98.9	1967	58.7	2017	50	40.6	2006	2046	40
Dominican Rep.	113.5	1965	63.3	2027	62	44.2	2015	2042	27
Uruguay	73.8	1989	67.4	2016	27	8.7	[a]	[a]	[a]
Venezuela (Bol. Rep. of)	103.5	1966	60.8	2020	54	41.3	2003	2045	42

Table II.4 (concluded)

Countries	Reduction period of dependency ratio						Period for which dependency ratio remains below 2/3		
	Maximum value (MAV)	Year of maximum value	Minimum value (MIV)	Year of minimum value	Duration (years)	Intensity (%)	Start year	Final year	Duration (years)
Caribbean									
Netherlands Antilles	95.0	1959	54.7	2010	51	42.4	1978	2023	45
Aruba	91.4	1961	50.2	1995	34	45.1	1976	2020	44
Bahamas	98.5	1966	53.8	2014	48	45.3	1989	2033	44
Barbados	100.9	1966	45.6	2007	41	54.9	1985	2023	38
Belize	117.2	1974	56.3	2035	61	52.0	[b]	[b]	[b]
Guyana	115.7	1960	59.1	2018	58	48.9	1996	2025	29
United States Virgin Islands	101.7	1956	60.7	1992	36	40.3	1988	2002	14
Jamaica	124.9	1971	63.2	2017	46	49.4	2010	2028	18
Puerto Rico	102.6	1959	64.6	2004	45	37.1	1992	2015	23
Saint Vincent and the Grenadines	135.3	1968	56.7	2019	51	58.1	2003	2036	33
Saint Lucia	133.5	1970	55.8	2011	41	58.2	2002	2043	41
Suriname	118.5	1963	58.6	2017	54	50.6	2002	2031	29
Trinidad and Tobago	95.9	1959	45.5	2007	48	52.6	1995	2037	42

Source: Latin American and Caribbean Demographic Centre (CELADE) - Population Division of ECLAC, 2007 population estimates and projections (for Latin America); and United Nations, "World Population Prospects: The 2006 Revision. Population Database" [online database] http://esa.un.org/unpp/ (for the Caribbean).

[a] The table does not include data from Uruguay, as this country's dependency ratio has changed very little during the period in question, remaining below two dependents for every three working-age people throughout.

[b] The table does not include data from Belize, as the dependency ratio has not been below two dependents for every three working-age people for a continuous period.

The length and scale of the reduction in the dependency ratio, as well as the period for which it remains relatively low, all vary greatly among the countries of the region.

Although the year when the maximum dependency ratio is reached does not vary much among countries,[5] the time it took the ratio to drop from its maximum to its minimum, as well as the scale of that reduction, both vary significantly. In terms of the reduction time, the differences are striking and range from a minimum of 17 years in the case of Cuba, to a maximum of 76 years for Paraguay (see figure II.6a). As for the Caribbean, the variation is smaller: ranging from 34 years in Aruba to 61 years in Belize (although this remains significant) (see figure II.6b).

Except for Cuba and Brazil (where the minimum had already been reached by 1991 and 2007, respectively), the dependency ratio in all other Latin American countries is still falling. In some countries, such as Chile and Costa Rica, the minimum level is expected to be reached in a few years, while in other countries (such as Bolivia and Honduras), this may not happen until after 2040 (see figure II.6a). In Guatemala, the dependency ratio is expected to continue to fall until around 2050.

[5] Most countries reached the maximum dependency ratio between 1960 and 1975. In Latin America, the only exceptions were Argentina, Guatemala and Uruguay, which reached their maximum levels in around 1990. In the Caribbean, the Netherlands Antilles, the United States Virgin Islands, Puerto Rico and Trinidad and Tobago reached the maximum level just before 1960.

The reduction period for the dependency ratio in Caribbean countries is shorter. As a result, these countries are closer to reaching the minimum value. Indeed, five Caribbean countries have already reached their minimum levels, while the others (except Belize) will do so between 2010 and 2020 (see figure II.6b).

As for the scale of the demographic dividend, in most countries the dependency ratio is expected to fall by between 40% and 50%. The percentage is much lower in Argentina and (particularly) Uruguay, as in these countries the dependency ratio itself has never exceeded 78% and 74%, respectively. The dependency ratio will drop by less than 20% in Argentina, and by less than 10% in Uruguay (see figure II.7a). At the other extreme, the dependency ratio will drop by more than 53% in Costa Rica, Barbados, Saint Vincent and the Grenadines and Saint Lucia (with reductions of almost a 60% in the latter two countries) (see figure II.7b).

It is interesting to note that there is no precise relationship between the length and the scale of the reduction of the dependency ratio in the region's countries. This is well illustrated by the contrast between Cuba and Argentina: while the reduction lasted 2.5 times longer in Argentina, the scale of the reduction was 2.2 times higher in Cuba (see table II.4 and figures II.6a and II.7a).

In around half of Latin American countries, the period for which the dependency ratio remains below two dependents for every three working-age people has yet to begin. In Bolivia, Guatemala, Haiti and Honduras, where the reduction in the dependency ratio began more recently than in other countries in the region, that period will come at a later stage (particularly in the case of Guatemala) (see figure II.8a). In those four countries (as well as in Paraguay), the favourable period when the dependency ratio remains relatively low will extend beyond 2050.

In the Caribbean, where the transition to lower levels of fertility began earlier than in Latin America, almost all countries are in that favourable period, which in most cases will come to an end before it does in Latin America. In addition, there is usually more variation in the duration of the favourable period in the Caribbean than in Latin America. In the Caribbean, the duration ranges from a minimum of 14 years in the Netherlands Antilles (where the period has already ended) to a maximum of 45 years in Suriname (see figure II.8b).

In Latin America, the period ranges from a minimum of 26 years in Argentina to a maximum of 42 years in the Bolivarian Republic of Venezuela and Brazil. In Cuba, the long period for which the dependency ratio is remaining low (41 years) is in strong contrast with the short length of time it took for the ratio to fall from its maximum to its minimum level (17 years). Generally speaking, the favourable period will last beyond 2030 in Latin America, while in most Caribbean countries the favourable period will end before 2030.

3. Alternative definitions of the dependency ratio

(a) Working-age population considered as those aged 15-64 years

Until now, the economically active age group has been defined as those aged 15 to 59. However, the dependency ratio is often calculated using the age range 15-64 years as the economically active population (given increased longevity and the widespread increase in retirement age in the region). Table II.5 presents the number of extra years added to the dependency-ratio reduction period in Latin America according to this alternative definition.

Using one definition or another does not result in any major changes as to when the dependency ratio begin to fall, except in Haiti, where the reduction period begins 20 years later (with practically no alteration in other countries based on the alternative definition). The differences are more striking in the length of the reduction period: although the increase is generally quite small (between zero and five years) (see table II.2), it is slightly larger in the cases of the Dominican Republic and Ecuador (8-9 years), and considerably larger in the Bolivarian Republic of Venezuela, Brazil, Cuba and Peru (16-20 years).

Table II.5
LATIN AMERICA: CHARACTERISTICS OF THE DEPENDENCY RATIO ACCORDING TO DIFFERENT DEFINITIONS

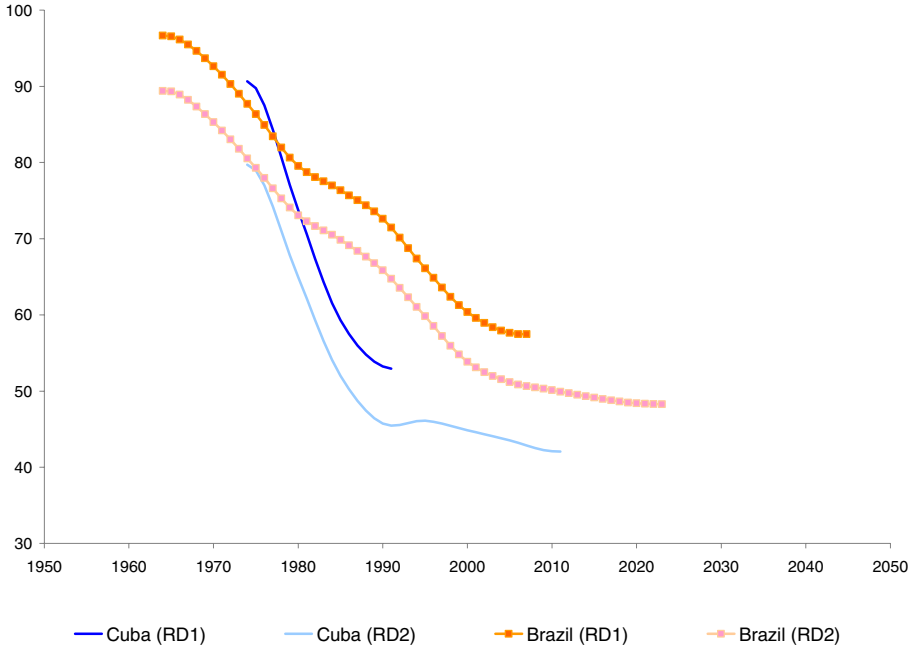
Countries	Definition 1		Definition 2		Extension of reduction period (years)
	Year of maximum value	Year of minimum value	Year of maximum value	Year of minimum value	
	(1)	(2)	(3)	(4)	(4) - (2)
Argentina	1989	2032	1988	2035	3
Bolivia	1974	2041	1974	2046	5
Brazil	1964	2007	1964	2023	16
Chile	1966	2011	1965	2013	2
Colombia	1965	2017	1964	2020	3
Costa Rica	1965	2014	1965	2018	4
Cuba	1974	1991	1974	2011	20
Ecuador	1965	2025	1965	2033	8
El Salvador	1968	2028	1967	2033	5
Guatemala	1988	2050	1986	2050	0
Haiti	1970	2039	1990	2044	5
Honduras	1972	2040	1971	2044	4
Mexico	1966	2022	1966	2024	2
Nicaragua	1965	2035	1965	2040	5
Panama	1968	2020	1968	2024	4
Paraguay	1962	2038	1962	2043	5
Peru	1967	2017	1966	2034	17
Dominican Rep.	1965	2027	1964	2036	9
Venezuela (Bol. Rep.)	1966	2020	1966	2039	19

Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, population estimates and projections, 2007.

Note: Definition 1: DR1 = ((0-14) + (60+)/(15-59))*100.
Definition 2: DR2 = ((0-14) + (65+)/(15-64))*100.

Figure II.9 presents the longer reduction period for the dependency ratio when the 60-64 year old age group is considered economically active, rather than inactive, in Brazil and Cuba. Although the dependency ratio does not drop by much in this additional period, a longer productive period may have a positive effect on the duration of the favourable period associated with the demographic dividend.

Figure II.9
BRAZIL AND CUBA: DEPENDENCY RATIO ACCORDING TO TWO DIFFERENT DEFINITIONS, 1950-2050



Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, population estimates and projections, 2007.

Note: Definition 1: DR1 = ((0-14) + (60+)/(15-59))*100.
Definition 2: DR2 = ((0-14) + (65+)/(15-64))*100

(b) Ratio between the economically inactive and active populations

A more accurate way of estimating the economic impact of changes in the age structure is through the ratio between those who do not participate in economic activities (the economically inactive population (EIP)) and those that do (the economically active population (EAP)). In this case, in addition to demographic factors (the age structure of the population), the estimation of the favourable development period also takes account of non-demographic factors, such as the incorporation of the population in the labour market.

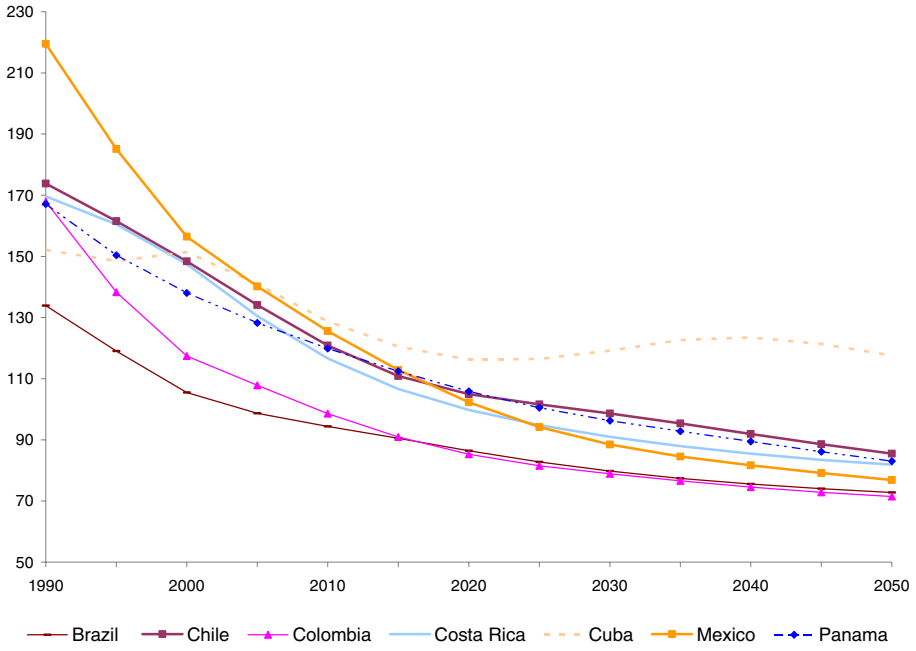
Table II.6 and figure II.10 show, for selected Latin American countries between 1990 and 2050, the economic dependency indicator, which is the ratio between the economically inactive and active populations. By way of illustration, in the countries selected (Brazil, Chile, Colombia, Costa Rica, Cuba, Mexico and Panama) the reduction period for the dependency ratio calculated exclusively using demographic factors finishes before that in other countries.

Table II.6
LATIN AMERICA (SELECTED COUNTRIES): NUMBER OF ECONOMICALLY INACTIVE PEOPLE FOR EVERY 100 ECONOMICALLY ACTIVE PEOPLE, 1990-2050

Countries	1990	1995	2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
Latin America	166	147	131	120	111	103	96	91	86	82	79	76	74
Brazil	134	119	106	99	94	90	86	83	80	77	76	74	73
Chile	174	162	148	134	121	111	105	102	99	95	92	89	86
Colombia	168	138	117	108	99	91	85	82	79	77	75	73	71
Costa Rica	170	160	148	130	117	107	100	95	91	88	85	83	82
Cuba	152	149	151	141	129	120	116	116	119	123	123	121	118
Mexico	219	185	156	140	126	113	102	94	88	85	82	79	77
Panama	167	150	138	128	120	112	106	100	96	93	89	86	83

Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, population estimates and projections, 2007.

Figure II.10
LATIN AMERICA (SELECTED COUNTRIES): ECONOMIC DEPENDENCY INDICATOR (EDI) BETWEEN 1990 AND 2050



Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, population estimates and projections, 2007.

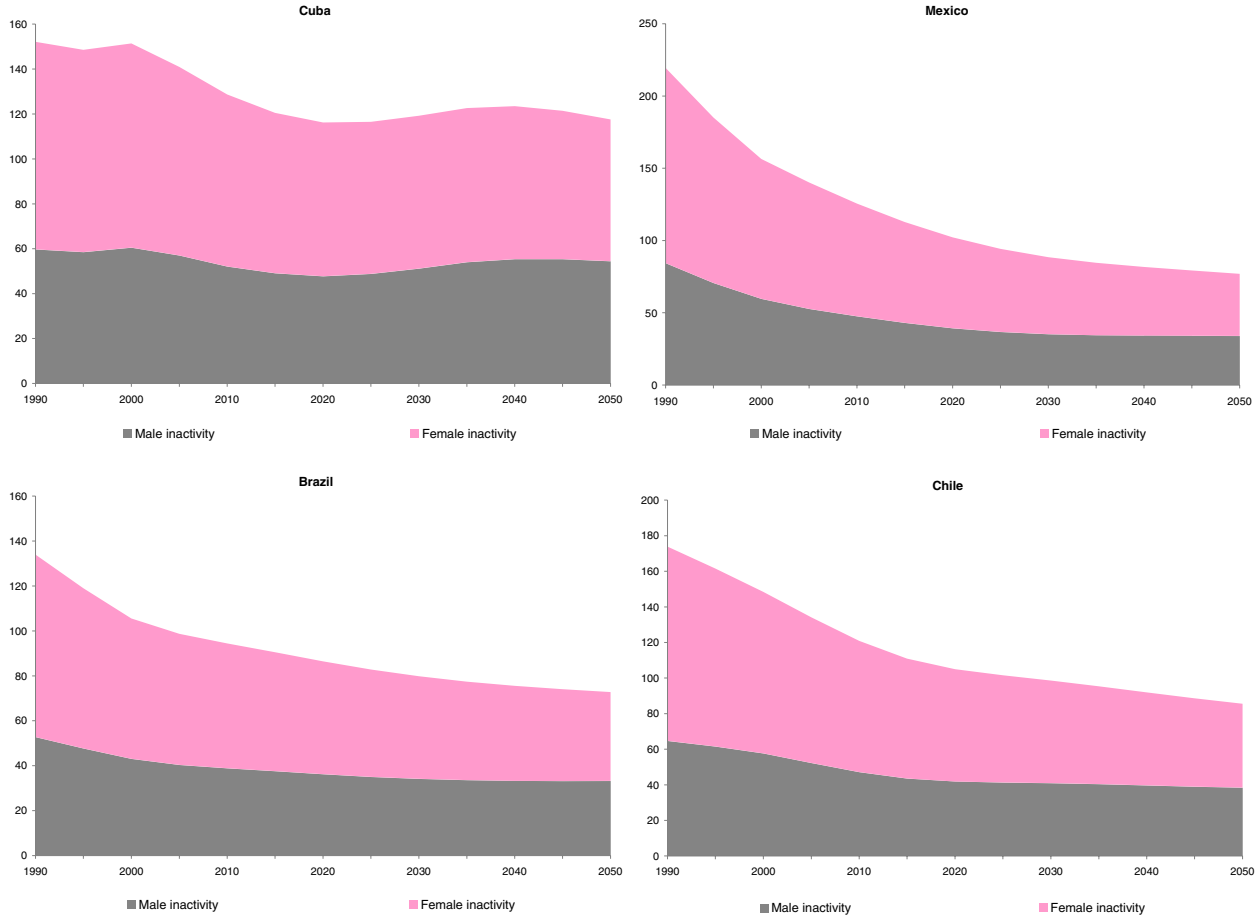
Note: EDI = (total EIP/total EAP)*100, where EIP corresponds to economically inactive population, and EAP to economically active population.

For all these countries, the reduction period for the dependency ratio calculated on the basis of the economically active population (EAP) is longer than when it is calculated on the basis of purely demographic definitions. Indeed, with the exception of Cuba, in all countries the dependency indicator

based on the EAP will continue to drop until at least 2050 (see figure II.10), while the demographic dependency ratio will stop declining before 2030 (see table II.5).

Between 1990 and 2005 in Mexico, for example, the number of inactive individuals went from 220 to 140 for every 100 active individuals, and this ratio is expected to continue to fall until it reaches 77 inactive people for every 100 active ones in 2050 (see table II.6). In Cuba, the EAP indicator will fall until just before 2025 (before declining slightly once more from 2040), while demographic dependence will drop until 2011 (according to the alternative definition) or until 1991 (according to the original definition) (see table II.5).

Figure II.11
LATIN AMERICA (SELECTED COUNTRIES): ECONOMIC DEPENDENCY INDICATOR (EDI), BROKEN DOWN BY CONTRIBUTION OF FEMALE AND MALE INACTIVITY, 1990-2050
(Percentages)



Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, population estimates and projections, 2007.

Note: EDI = (total EIP/total EAP)*100, where EIP corresponds to economically inactive population, and EAP to economically active population.
Contribution of female inactivity = (female EIP / total EAP)*100.
Contribution of male inactivity = (female EIP / total EAP)*100.

This situation illustrates the possibility of boosting the demographic dividend through the effect of factors that are not strictly demographic. Figure II.11 clearly shows the decisive role that increased female participation in productive activities can play in extending the reduction period of economic dependence beyond that caused by demographic changes.

Figure II.11 provides information from the four countries selected (Brazil, Chile, Cuba and Mexico) in terms of recent and future trends of the EAP-based dependency indicator, broken down by the contribution of female inactivity and male inactivity. In all four countries, the fall in female inactivity (i.e. the increase in the proportion of women within the EAP) makes a more significant contribution to reducing economic dependency than in the case of men. In other words, even though the reduction in economic dependence is associated with the period in which the number of working-age people continues to rise as a result of demographic transition, the reduction can be strengthened and extended thanks to the increasing participation of women in economic activity.

The future projections of the economic dependency indicator used in this exercise are naturally based on the hypothesis that female participation in economic activity will increase. Thus, the materialization of the longer favourable period will depend largely on whether such hypotheses are proved accurate or exceeded in the future. This will require the introduction of economic and social policies aimed at facilitating women's access to the labour market.

Chapter III

THE ECONOMIC IMPACT OF THE DEMOGRAPHIC DIVIDEND ON SOCIAL SECTORS

A. THE GENERAL ECONOMIC IMPACT OF THE DEMOGRAPHIC DIVIDEND

The previous chapter examined the demographic dividend by looking at demographic dependency ratios. This chapter begins by analysing the demographic dividend from the perspective of economic support ratios (the ratio of consumers to producers), using information on age patterns of consumption and production. The use of these ratios makes it possible to quantify the impact of demographic change, allowing for comparison with income and consumption, GDP growth and tax rates. The analysis is based on data from three Latin American economies, Chile, Costa Rica and Uruguay, which are used to define a generalized age pattern of economic activity, and in this way it focuses on the impact of demographic change by holding constant differences in economic structure among the countries. This chapter builds on the discussion in chapter II on the economic opportunities and challenges resulting from the dramatic changes in age structure that accompany the demographic transition.

During the initial stages of the demographic transition, as fertility declines, the number of children relative to working-age adults decreases, which produces demographic conditions favourable to economic growth. In economic terms, the number of consumers declines relative to the number of producers, leading to an increase in labour income relative to consumption, all other things being equal. This freeing of resources has been called the "demographic dividend" and this period, which can last for several decades, is known as a "demographic window of opportunity."

Eventually, the number of older persons relative to working-age adults begins to rise steeply because of sustained low fertility and rising life expectancy. This brings the demographic dividend period to a close and opens up an era of accelerated population ageing. To the extent that older persons have not saved to meet their retirement needs, the rising ratio of older persons to working-age adults places an increasing burden on working-age adults in supporting the older population, whether this support comes in the form of individuals caring for their own parents or collectively from taxation. Here, the demographic dividend goes into reverse, as the number of consumers grows relative to the number of producers. Population ageing would be expected to lead to declining labour income per consumer. This decrease, unless offset by increases in non-labour income (such as would arise from savings), would lead to declines in economic well-being and a period of "demographic loss" would follow the period of demographic dividend.

But demography is not destiny. Policy actions of governments and changing behaviours of individuals will determine the long-run economic impacts of these demographic changes. Governments and individuals can make use of the demographic dividend to prepare for the emergence of ageing societies. The demographic dividend could be consumed, leading to temporarily higher per-capita consumption. Alternatively, it could be invested in human or physical capital, leading to permanently higher levels of per-capita consumption in the long run. In addition, with foresight and planning, a second demographic dividend is possible. To the extent that governments and individuals are forward-looking and save for future retirement needs, population ageing —far from leading to declining economic well-being— can be a positive economic force leading to large, permanent increases in savings, wealth and income (Lee and Mason, 2006). But these positive outcomes are not automatic. Whether the dividend is consumed or invested and what the long-run payoffs are for those investments depend on policy choices and individual behaviours.

Box III.1
INTERGENERATIONAL TRANSFERS, AGEING AND SOCIAL PROTECTION

The data used in this chapter are derived in the framework of the Latin American and Caribbean Demographic Centre - Population Division (CELADE) project on Intergenerational Transfers, Population Aging and Social Protection, with funding support from Canada's International Development Research Centre (IDRC). Against a background of population ageing, reforms to social protection systems and persistent inequality within and between generations, the project seeks to measure the magnitude and impact of intergenerational transfers in order to seize the opportunities presented by the dividends of the demographic transition in a manner that is sustainable, just and inclusive.

To this end, the project is developing a common system of economic activity surveillance by age, based on National Transfer Accounts (NTAs). The National Transfer Accounts Project is an international, collaborative effort aimed at monitoring and forecasting the impact of population ageing on economic well-being, based on National Accounts (Mason and others, 2008). NTAs have two distinguishing features in this respect. First, they add the dimension of age to National Accounts. For example, while National Accounts report aggregate labour income and consumption in a national economy, NTAs report the distribution of labour income and consumption by age. Information on economic activity by age is derived from national censuses and socio-economic surveys. The second distinguishing feature of NTAs is the inclusion of information on economic transfers by families, both within and between households. Family transfers are the primary means of support for children and in many countries also represent a major source of support for older persons.

One of the main goals of the project is to allow comparison between family and government transfers by measuring them within a common framework. At present, five Latin American countries are participating in the global project (Brazil, Chile, Costa Rica, Mexico and Uruguay). When completed, the NTA data will provide estimates with sufficient historical depth and international breadth to analyse the evolution of family and government transfer systems under different social and economic contexts, as well as the consequences of alternative public policies with respect to pensions, health care, education and social institutions and, lastly, the social, political and economic implications of population ageing.

Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, on the basis of "Transferencias intergeneracionales, envejecimiento de la población y protección social en América Latina" [online] http://www.eclac.org/celade/transferencias_intergeneracionales.

1. Economic dependency in early and later life

The possible economic benefits of the demographic dividend and the possible detrimental aspects of population ageing both originate in the economic life cycle (a pattern of economic activity which has been found to be broadly similar across countries, with some important variations). Figure III.1 shows the economic life cycle for individuals based on data from the selected Latin American economies (Chile, Costa Rica and Uruguay). Economic activity is measured relative to average labour earnings between the ages of 30 and 49 in each of the economies in order to standardize the measure across all the countries. The dashed line represents average labour earnings by age. These refer to average earnings per person, not per worker; that is, the average is calculated across all persons of a given age. Therefore, the profiles reflect the effects of labour force participation rates and unemployment rates. Labour earnings are zero for children and show a steep increase around age 20, representing entry into the labour market and exit from formal schooling. Labour earnings are somewhat flat over the age range 35 to 50.

This pattern is rather different from that of the United States and European countries (Lee, Lee and Mason, 2007), whose profiles tend to show increases in labour earnings with age, reflecting in part the returns on experience and education. Labour earnings then begin to decline at older ages, reflecting retirement and exit from the labour market. In countries with higher levels of pension coverage, we tend to see much steeper declines in labour activity, centred around mandated ages for retirement. In these Latin American economies, we see older persons continuing to rely on income from labour earnings, as many older people work for as long as they are physically able.

A solid line in the figure indicates average consumption levels by age. This measure of consumption also includes consumption of publicly provided goods and services, most importantly public education and health care. Consumption levels are low for children and rise almost linearly throughout childhood. The effects of educational expenditures on children can be seen in the more rapid rise in consumption near ages 5 and 6, as children enter later pre-school or first grade. Consumption slowly rises throughout adulthood, reaching a peak in the late 50s, and then declines at older ages, with a notable increase among the very elderly (80+), mostly due to increased health expenditures in this age group. This consumption pattern among older persons stands in stark contrast to that observed in the United States and Japan, where consumption among older persons rises very sharply with age, reflecting greater consumption of public and private health care in these countries (Lee, Lee and Mason, 2007).

As is evident in figure III.1, economic life passes through three distinct periods. Prior to entering the labour force, children and young adults rely on transfers from their parents or from the government to provide for their consumption needs. This period of economic dependency lasts for about 25 years. Young-age economic dependency reaches a peak during the teenage years, at age 15.[1] Support for these teenagers is equivalent to about half of the annual labour earnings of middle-aged adults. After reaching a peak at age 15, economic dependency steadily decreases as individuals leave school and enter the workforce. By the middle of their 20s, most individuals are economically independent. At the other end of life, older individuals, who generally have withdrawn from the labour force, rely on transfers from their adult children or from the government to provide for their consumption needs. In addition, older individuals can draw on their accumulated savings to fund consumption during their retirement years. The period of older-age economic dependency begins in the late 50s and steadily increases, reaching a peak in the last age interval, age 80 and over. At this advanced age, individuals are at the peak of economic dependence, requiring economic support equivalent to two thirds of the annual labour earnings of middle-aged adults. Between these two periods of economic dependency is a period of economic independence of about 30 years stretching from individuals' mid-20s to their mid-50s, in which labour earnings exceed consumption.

The economic dependency in these two life cycle periods in early and later life is supported by drawing on the 30-year period of surplus production during the prime working ages. There are three primary support mechanisms through which this reallocation of resources takes place: family transfers, government transfers and intertemporal transfers via financial markets in the form of saving and borrowing. Family transfers can take place within a single household, as when parents provide food, clothing and shelter to their children. They can also take place between households, as when a migrant worker sends remittances home, or at death in the form of a bequest from parents to their adult children. Government transfers involve taxation of one population group (most typically workers) to pay for resources provided to others. These resource transfers can take the form of cash payments, such as pensions, welfare and unemployment benefits, or in-kind benefits such as public education, public hospital care and vocational training. While taxes are drawn primarily from the working-age population, government benefit payments go mainly to the young and older persons. The final mechanism of support is the use of financial markets for savings and borrowing. Saving for future retirement by the working-age population (either through private pensions or government-mandated programmes) leads to the creation of a large amount of financial wealth, which is then drawn on during the retirement years.[2]

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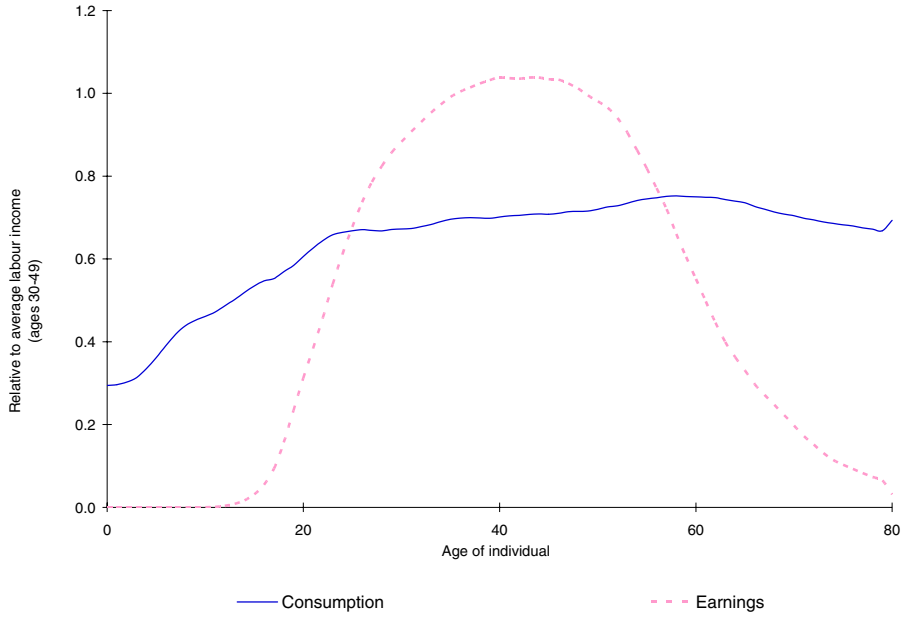
[1] At present, National Transfer Accounts, like National Accounts, lack information on time use. Presumably, incorporation of information on time use would increase the level of dependency of infants and young children relative to teenagers.

[2] This is the second demographic dividend referred to by Lee and Mason (2006).

Figure III.1
LATIN AMERICA (THREE COUNTRIES): THE ECONOMIC LIFE CYCLE



Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, estimates and projections for Latin American and Caribbean populations, 2007 and economic data from the Economic Commission for Latin America and the Caribbean/International Development Research Centre (ECLAC/IDRC) project on Intergenerational Transfers, Population Aging and Social Protection in Latin America and the Caribbean.

Transfers (whether from families or governments) usually operate as pay-as-you-go systems in which the total amount of benefit transfers received by individuals is equal to the total amount of transfers given. Changes in age structure shift the relative numbers of recipients and donors in society, other things being equal. It is this simple shift in the proportion of recipients to donors that generates the demographic dividend.

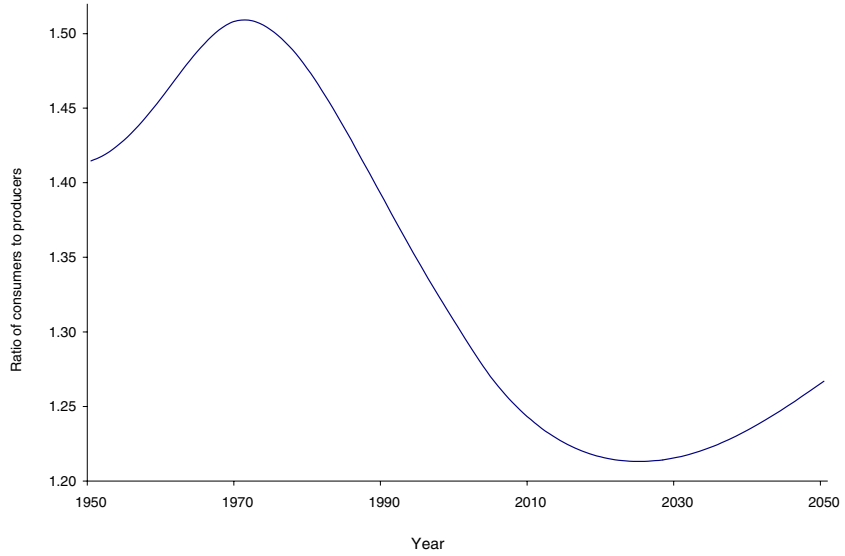
2. The economic magnitude of the demographic dividend

We can measure the economic magnitude of the demographic dividend in terms of the effect of changing age structure on the ratio of consumers to producers. This ratio is known as the economic dependency ratio and is measured as the ratio between effective numbers of consumers and producers. The effective number of consumers is calculated by weighting each country's age distribution by a standard age profile of consumption (based on a simple average of Chile, Costa Rica and Uruguay). In a similar manner, the effective number of producers is calculated using the standard age patterns of labour earnings. Thus, by using country-specific demography with these standard age patterns of economic activity, the analysis focuses solely on the economic impacts arising from demographic differences among countries.

Economic dependency ratio: $C(t,i) / P(t,i) = \sum\{c(x)*n(x,t,i)\} / \sum\{l(x)*n(x,t,i)\}$
Where $C(t,i)$ = Effective number of consumers in year t, country i;
$P(t,i)$ = Effective number of producers in year t, country i;
$c(x)$ = Average consumption at age x from the standard profile;
$l(x)$ = Average labour earnings at age x from standard profile;
$n(x,t,i)$ = Total population at age x, time t, in country i.

If it is assumed that the consumption needs of children and older persons are supported by transfers from the working-age population, then decreases in this economic dependency ratio represent a liberation of resources for use in consumption and investments. This freeing of resources is the demographic dividend. The overall pattern in the economic dependency ratio for the region as a whole is shown in figure III.2. First, the ratio of consumers to producers increased from 1950 to 1971, reflecting a rising proportion of children (net consumers) in the population. The ratio peaked in 1971 at approximately 1.5 consumers per producer. Since 1971, the ratio of consumers relative to producers has steadily decreased, reflecting the declining proportion of children in the population. Based on CELADE population projections of continued fertility decline, the economic dependency ratio is expected to reach its nadir in 2025 at about 1.2 consumers per producer, or a decrease of about 20% relative to 1971. This represents the size of the first demographic dividend: a 20% increase in labour income per consumer (which could be used for increased consumption or investment) over a 54-year period, or the equivalent of annual average growth of about 0.4% in consumption per person. After 2025, the ratio of consumers to producers is projected to increase as the proportion of older persons increases dramatically in the region. To the extent that older persons are supported by the working-age population, in this new period of population ageing age structure changes would be expected to lead to declines in consumption per person.

Figure III.2
LATIN AMERICA AND THE CARIBBEAN (SELECTED COUNTRIES AND TERRITORIES): ECONOMIC DEPENDENCY RATIO, 1950-2050



Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, estimates and projections for Latin American and Caribbean populations, 2007 and economic data from the Economic Commission for Latin America and the Caribbean/International Development Research Centre (ECLAC/IDRC) project on Intergenerational Transfers, Population Aging and Social Protection in Latin America and the Caribbean.

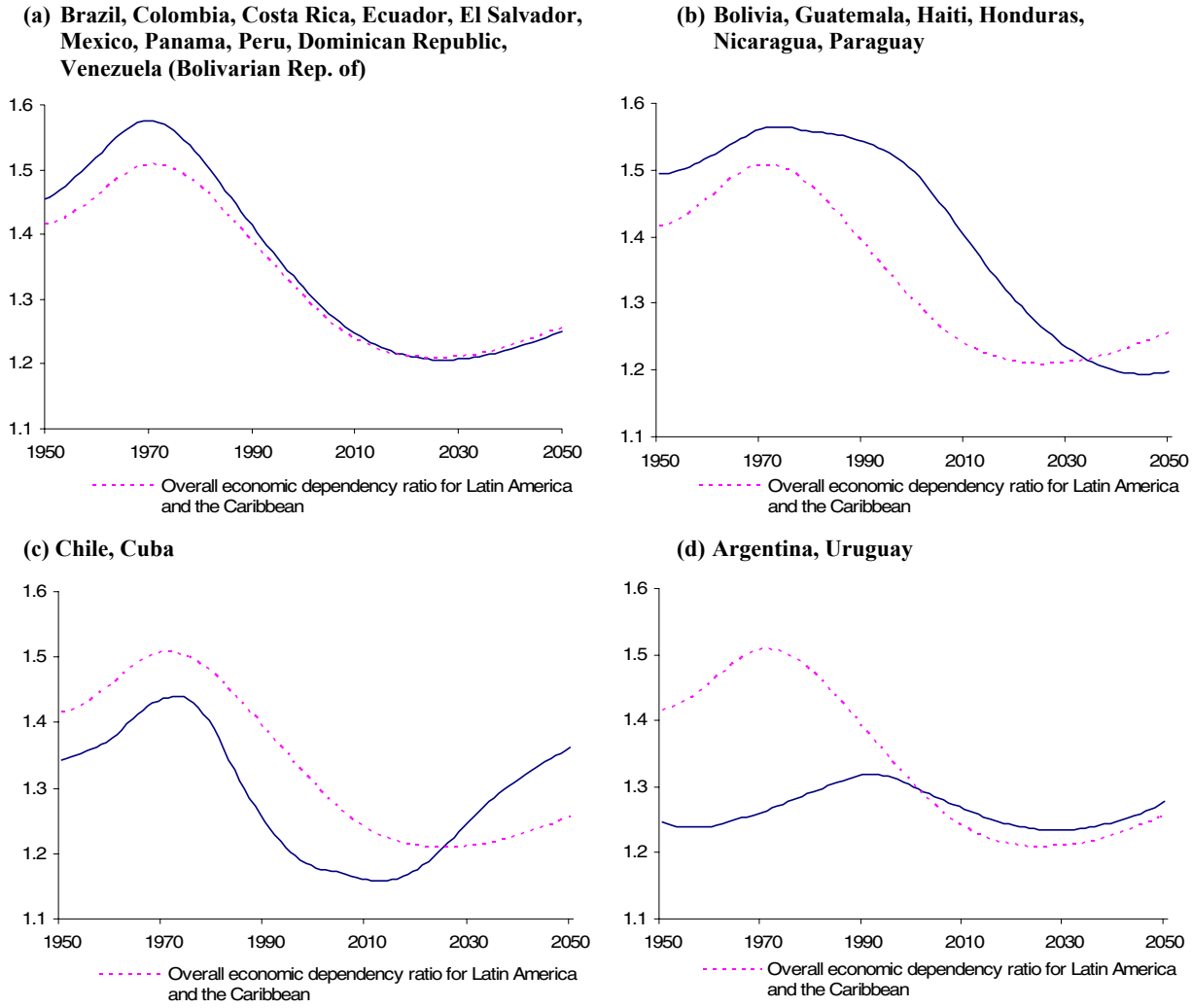
This regional pattern masks important differences among the countries. Figure III.3a summarizes four distinct economic dependency ratio patterns[3] in the region. In each panel, the dashed line represents the overall regional pattern for Latin America and the Caribbean. The majority of Latin American countries fall into the pattern shown in panel I, which looks like the regional one except that the economic dependency ratio is somewhat higher from 1960 through 1990 owing to the initially younger age structure in these

[3] The data were partitioned into 4 groups using the k-means algorithm of Hartigan and Wong (1979) as implemented in the statistical computing language *R* (The R Project for Statistical Computing, n/d).

countries. Pattern II represents Bolivia, Guatemala, Haiti, Honduras, Nicaragua and Paraguay, which exhibit the same trajectory as the regional pattern, but delayed by one or two decades reflecting the fact that they are further behind in the demographic transition than other countries in the region. Pattern III countries (Cuba and Chile) show a much more rapid decrease in the economic dependency ratio and an earlier nadir, reflecting the rapidity of population ageing in these two countries. The increase in economic dependency ratios, which occurs as older persons increase as a proportion of the population, will occur in all countries but is already most pronounced in those countries further along in the demographic transition, such as Cuba and Chile. Pattern IV represents Argentina and Uruguay. Here the economic dependency ratio changes very little over time, reflecting the fact that these countries already had older populations at the start of the period.

Figure III.3a

LATIN AMERICA: FOUR TYPICAL PATTERNS IN THE ECONOMIC DEPENDENCY RATIO, 1950-2050

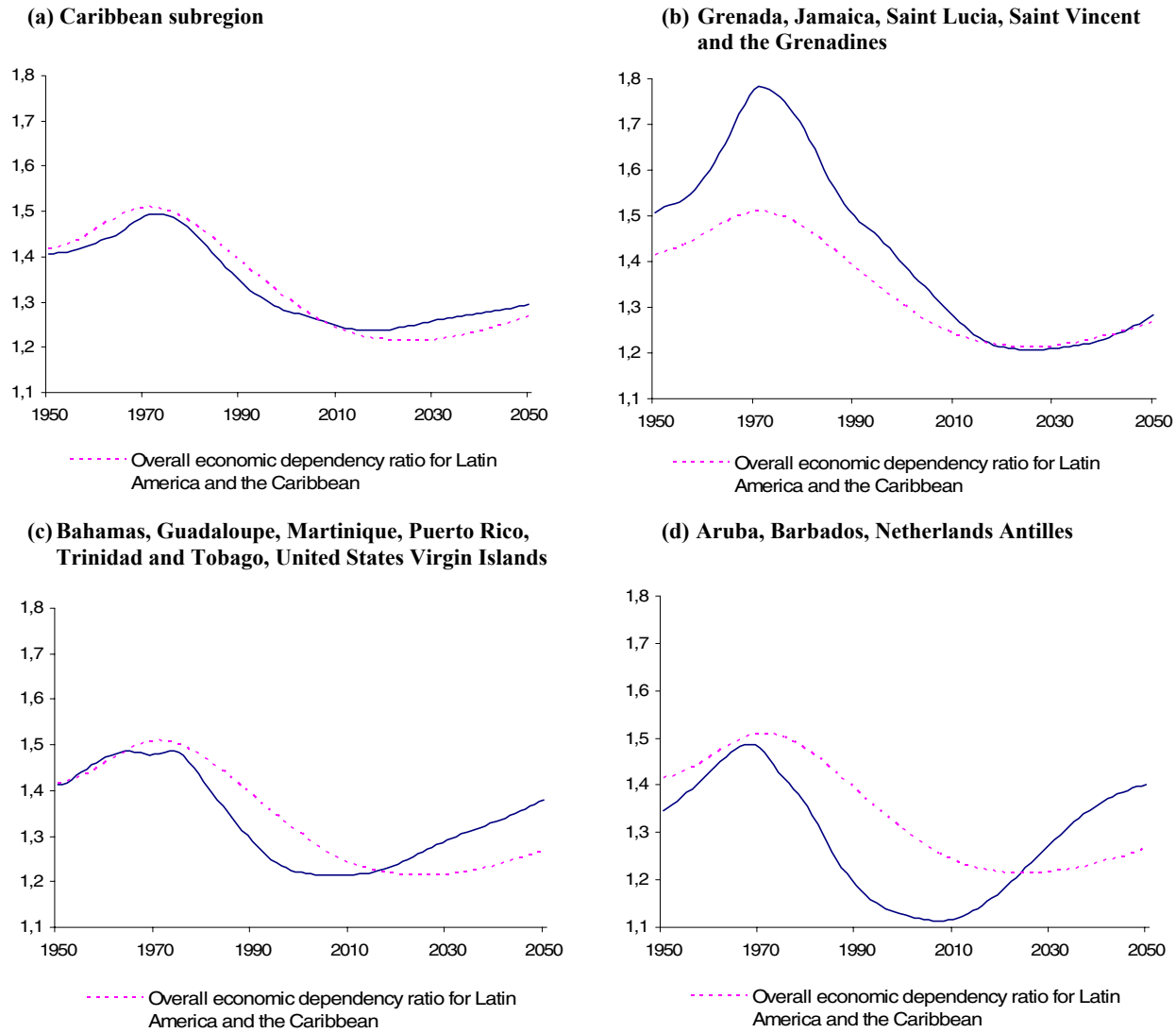


Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, estimates and projections for Latin American and Caribbean populations, 2007 and economic data from the Economic Commission for Latin America and the Caribbean/International Development Research Centre (ECLAC/IDRC) project on Intergenerational Transfers, Population Aging and Social Protection in Latin America and the Caribbean.

The overall pattern of the economic impacts of changing age structure for the Caribbean subregion as a whole are shown in panel I of figure III.3b. The pattern for the Caribbean closely matches that for Latin America and the Caribbean in general. Some distinctive patterns are evident within the subregion, however. Pattern II countries (Grenada, Jamaica, Saint Lucia and Saint Vincent and the Grenadines) show a sharp increase in the economic dependency ratio in the 1960s and a subsequent decline towards the regional pattern. Most of the Caribbean nations conform to pattern III, with an earlier onset of the economic effects of population ageing. A few countries (Aruba, Barbados and the Netherlands Antilles) fall into pattern IV, with dependency rates dropping slightly lower than in the rest of the region then increasing sharply, reflecting the impact of population ageing.

Figure III.3b

THE CARIBBEAN (SELECTED COUNTRIES AND TERRITORIES): FOUR TYPICAL PATTERNS IN THE ECONOMIC DEPENDENCY RATIO, 1950-2050



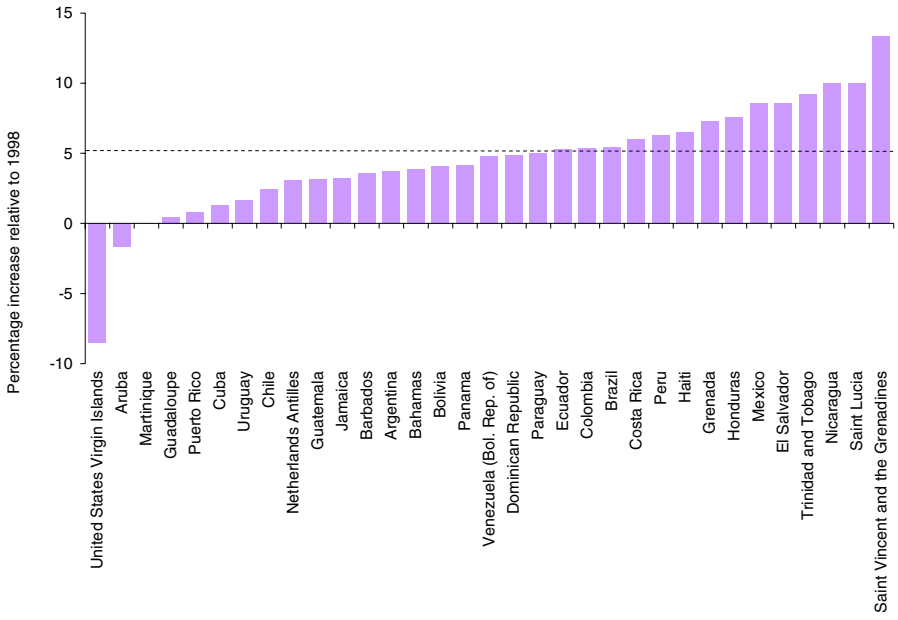
Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, estimates and projections for Latin American and Caribbean populations, 2007 and economic data from the Economic Commission for Latin America and the Caribbean/International Development Research Centre (ECLAC/IDRC) project on Intergenerational Transfers, Population Aging and Social Protection in Latin America and the Caribbean.

Figures III.2 and III.3 depict 100 years of change in the economic dependency ratio in the Latin American and Caribbean region. It is also useful to look at where individual countries currently stand in this century-long process of change. For this purpose, a measurement is taken of the size of the demographic dividend in each country in the last decade and looking ahead to the next decade. Over the past decade, demographic change has contributed positively to growth in economic well-being in virtually every country in the region. Figure III.4a shows estimates of the size of the demographic dividend over this period. For the region as a whole, the demographic dividend was equivalent to an increase of about 6% in labour income per consumer between 1998 and 2008, which represented more than one third of overall per capita GDP growth in this period (an estimated 16% (ECLAC, 2008)). The demographic dividend freed amounts of resources over the last decade that, though modest, were vitally important in the context of the sluggish economic growth that characterized much of the region. The countries experiencing the largest demographic dividend in the last decade in Latin America were Nicaragua (+10%), El Salvador (+8.6%) and Mexico (+8.6%) and in the Caribbean, Saint Vincent and the Grenadines (+13.4%), Saint Lucia (+10.0%) and Trinidad and Tobago (+9.2%). The countries experiencing the smallest demographic dividend in the last decade in Latin America were Cuba (+1.3%), Uruguay (+1.6%) and Chile (+2.5%), while two Caribbean countries experienced a negative dividend: the United States Virgin Islands (-8.5%) and Aruba (-1.7%).

Figure III.4a

LATIN AMERICA AND THE CARIBBEAN (SELECTED COUNTRIES AND TERRITORIES): DEMOGRAPHIC DIVIDEND, 1998-2008

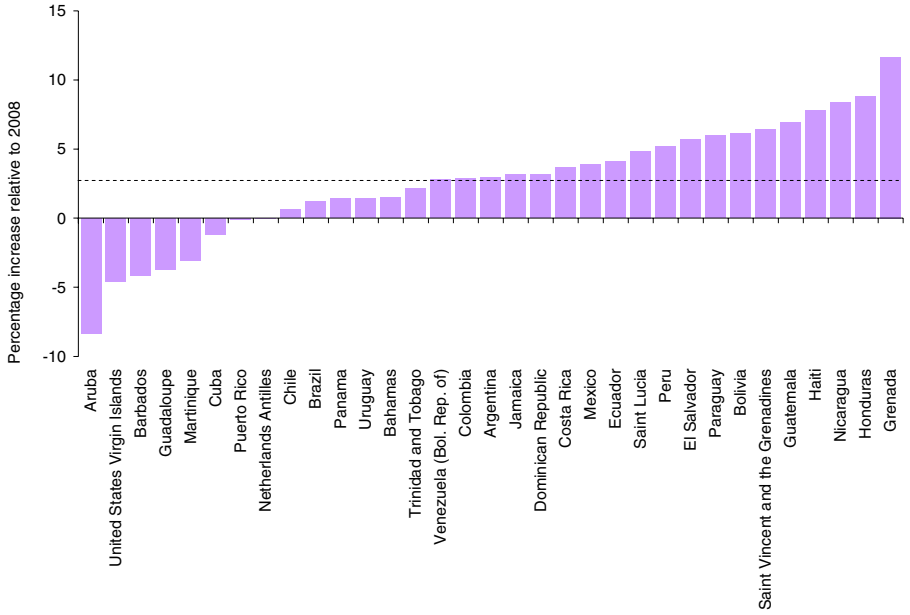
(Estimated increase in labour income per consumer, in percentages)



Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, estimates and projections for Latin American and Caribbean populations, 2007 and economic data from the Economic Commission for Latin America and the Caribbean/International Development Research Centre (ECLAC/IDRC) project on Intergenerational Transfers, Population Aging and Social Protection in Latin America and the Caribbean.

Looking a decade ahead to 2018 (figure III.4b), the demographic dividend is substantially lower for the region as a whole, with labour income per consumer increasing by the equivalent of less than 3% over the entire decade. However, the countries in the region are quite heterogeneous in this respect, reflecting their different stages in the demographic transition. Several countries are projected to have quite large demographic dividends over the next decade, with an increase in labour income per consumer of about 10%: in Latin America the leaders are Honduras (+8.9%), Nicaragua (+8.4%) and Haiti (+7.8%) and in the Caribbean, Grenada (+11.7%). By contrast, projections indicate the period of the demographic dividend is ending for many countries, with population ageing leading to reductions in labour income per consumer over the next decade, other things being equal: Aruba (-8.4%), United States Virgin Islands (-4.6%), Barbados (-4.2%), Guadeloupe (-3.7%), Martinique (-3.0%) and Cuba (-1.2%).

Figure III.4b
LATIN AMERICA AND THE CARIBBEAN (SELECTED COUNTRIES AND TERRITORIES): DEMOGRAPHIC DIVIDEND, 2008-2018
(Estimated increase in labour income per consumer, in percentages)



Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, estimates and projections for Latin American and Caribbean populations, 2007 and economic data from the Economic Commission for Latin America and the Caribbean/International Development Research Centre (ECLAC/IDRC) project on Intergenerational Transfers, Population Aging and Social Protection in Latin America and the Caribbean.

This analysis has shown a considerable variation in the size of the demographic dividend among countries, reflecting their different stages in the demographic transition. Judging from this, it may be concluded that the demographic dividend has contributed positively to overall economic well-being in the region over the last decade. Over the next decade, prospects are good for the majority of the countries, but several, notably in the Caribbean subregion, have entered the stage of population ageing in which demographic change reduces consumption possibilities by increasing fiscal pressures on transfers.

B. THE IMPACT OF THE DEMOGRAPHIC DIVIDEND ON THREE KEY SUPPORT SYSTEMS

This section will examine the impacts of demographic change on three economic support systems: education, health and pensions. While age structure changes have had modest overall economic effects, their impact on specific transfer systems, such as education, health and pensions, has been quite large.

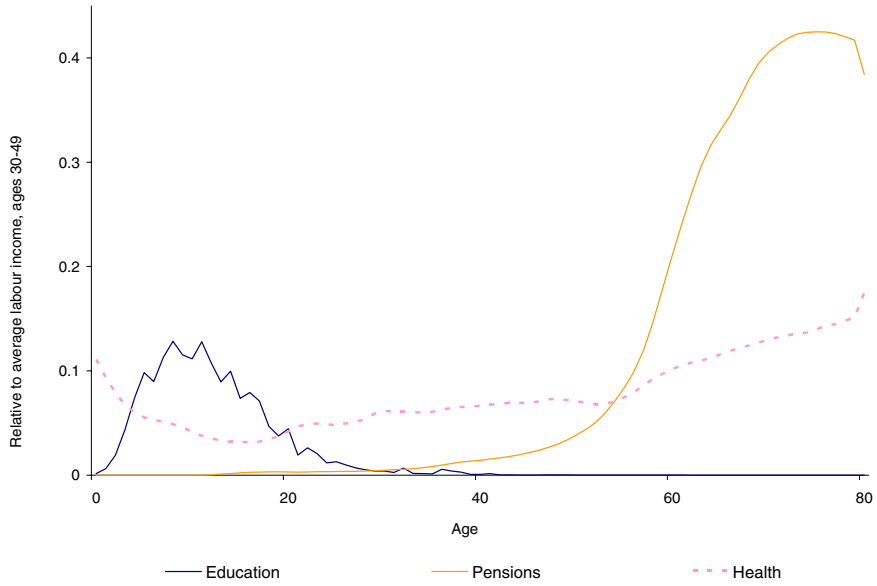
Virtually all the region's countries are facing problems in expanding the coverage of these systems. This section looks at the extent to which changes in demography are easing or increasing these challenges. It uses dependency ratios, similar to the method discussed in the previous section, to measure the impact of the demographic dividend in each of these specific transfer systems. It is assumed that each of the sectors is funded as a pay-as-you-go transfer system (whether the contributions come directly from families or from taxation) and the sector dependency ratio is defined in a manner analogous to the economic dependency ratio. As with that ratio, the denominator refers to the effective number of producers in the population (who provide the resources for the transfers). The numerator in the sector dependency refers to the number of effective beneficiaries of that sector (education, health, or pensions). Effective beneficiaries are measured using data on average education spending, health-care spending and pension benefits by age derived from the National Transfer Accounts for Chile, Costa Rica and Uruguay. By using these standard economic patterns, this section focuses on the economic impact arising from demographic differences between the countries.

Sector Dependency Ratio: $B(t,i) / P(t,i) = \sum\{b(x)*n(x,t,i)\} / \sum\{l(x)*n(x,t,i)\}$
Where $B(t,i)$ = Effective number of beneficiaries in year t, country i;
$P(t,i)$ = Effective number of producers in year t, country i;
$b(x)$ = Average benefits at age x from the standard profile;
$l(x)$ = Average labour earnings at age x from standard profile;
$n(x,t,i)$ = Total population at age x, time t, in country i.

The sector dependency ratio represents the percentage of labour earnings that needs to be transferred (or taxed) in order to fund the benefit programme (education, health or pensions) at current levels of coverage and benefit levels. Decreases in the sector dependency ratio represent a liberation of resources. This dividend can be used within the sector for raising benefits (by increasing either coverage or benefits per beneficiary) or for reducing tax burdens. The dividend could also be shifted for use in other sectors.

Figure III.5 presents the average amount of education, health care and pensions received by age in three Latin American economies (Chile, Costa Rica and Uruguay). Of course, the levels of these programmes will differ from country to country, reflecting differences in the coverage and generosity of the social programmes, but the general age shape is a common feature across a wide variety of countries. Because the age patterns are broadly similar from country to country, the averages of the three Latin American economies can be used to project the effects of changes in population age structure on education, health care and pensions. It is assumed that these programmes are funded from labour earnings (whether funded by family contributions or by government taxation). As for age groups, education consumption is concentrated among young people from age 5 to age 20; receipt of pension benefits is concentrated among older persons; and health-care consumption typically displays a U-shape with high consumption by infants, lowest consumption in the teen years, and highest consumption by older persons.

Figure III.5
LATIN AMERICA (THREE COUNTRIES): AVERAGE RECEIPT OF EDUCATION, HEALTH CARE AND PENSIONS BY AGE



Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, estimates and projections for Latin American and Caribbean populations, 2007 and economic data from the Economic Commission for Latin America and the Caribbean/International Development Research Centre (ECLAC/IDRC) project on Intergenerational Transfers, Population Aging and Social Protection in Latin America and the Caribbean.

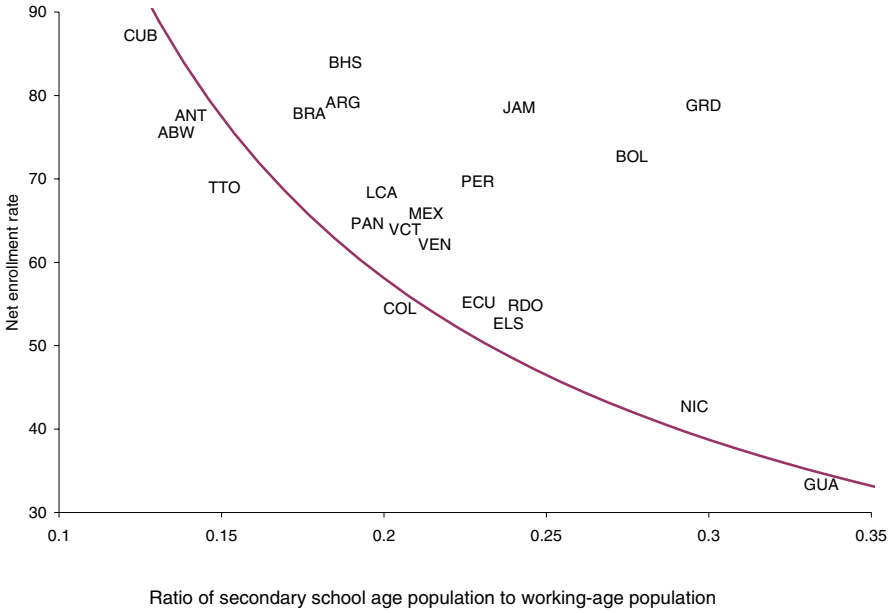
1. The impact of changing age structure on public education

As noted in chapter II, declines in fertility in the region are leading to a long-term decline in child dependency rates. This section examines the relationship between child dependency rates and enrolment in education in the region's countries. The strong negative relationship observed in the data is suggestive of a fiscal constraint on educational spending arising from demographic factors. It is demonstrated that this fiscal constraint eases over time through projections of the educational dependency ratio. This represents the demographic dividend from the perspective of the educational transfer system: the same tax burden allows for increased investment in children.

Figure III.6 shows the negative relationship between net enrolment rates and dependency ratios in secondary education in some of the countries in the region. The regional average for net enrolment in secondary schools is 68%. Cuba leads the region in net enrolment in secondary school at 87%. Guatemala lags at 34%. In order to look at the possible effects of age structure, we measure the dependency ratio in secondary education as the ratio between the secondary school-age population (ages 12 to 17) and the working-age population (here considered as ages 20-64). As is evident in figure III.6, there is a very strong negative correlation between the demographic dependency ratio and enrolment rates in secondary education, with a simple correlation of -0.67. Cuba, which leads the region in net secondary enrolment, also has the lowest secondary school-age dependency ratio at 0.13. Guatemala, which lags the region in net enrolment in secondary education, has the highest school-age dependency ratio in the region at 0.33. This negative relationship is suggestive of a fiscal constraint on educational spending arising from demographic factors. However, it is important to note that this is not a binding constraint as is evident from countries like Bolivia, which with a relatively unfavourable demographic situation is achieving quite high levels of education.

This relationship may be explored further by looking at hypothetical financing costs of secondary schooling. The dashed line in figure III.6 shows the different combinations of net enrolment and dependency ratios that are possible, assuming that secondary schooling is financed by a fixed tax (of about 1.5%) on labour earnings. The educational programmes in Cuba, Colombia and Guatemala all lie along this same hypothetical line, indicating that in principle the same funding programme could provide support for the educational programs in these countries but with very different outcomes. In Guatemala, such a programme would support only low levels of coverage; in Cuba, the same financing programme would allow for nearly universal secondary education.

Figure III.6
LATIN AMERICA AND THE CARIBBEAN (SELECTED COUNTRIES AND TERRITORIES): NET ENROLMENT RATES AND DEPENDENCY RATIOS IN SECONDARY EDUCATION

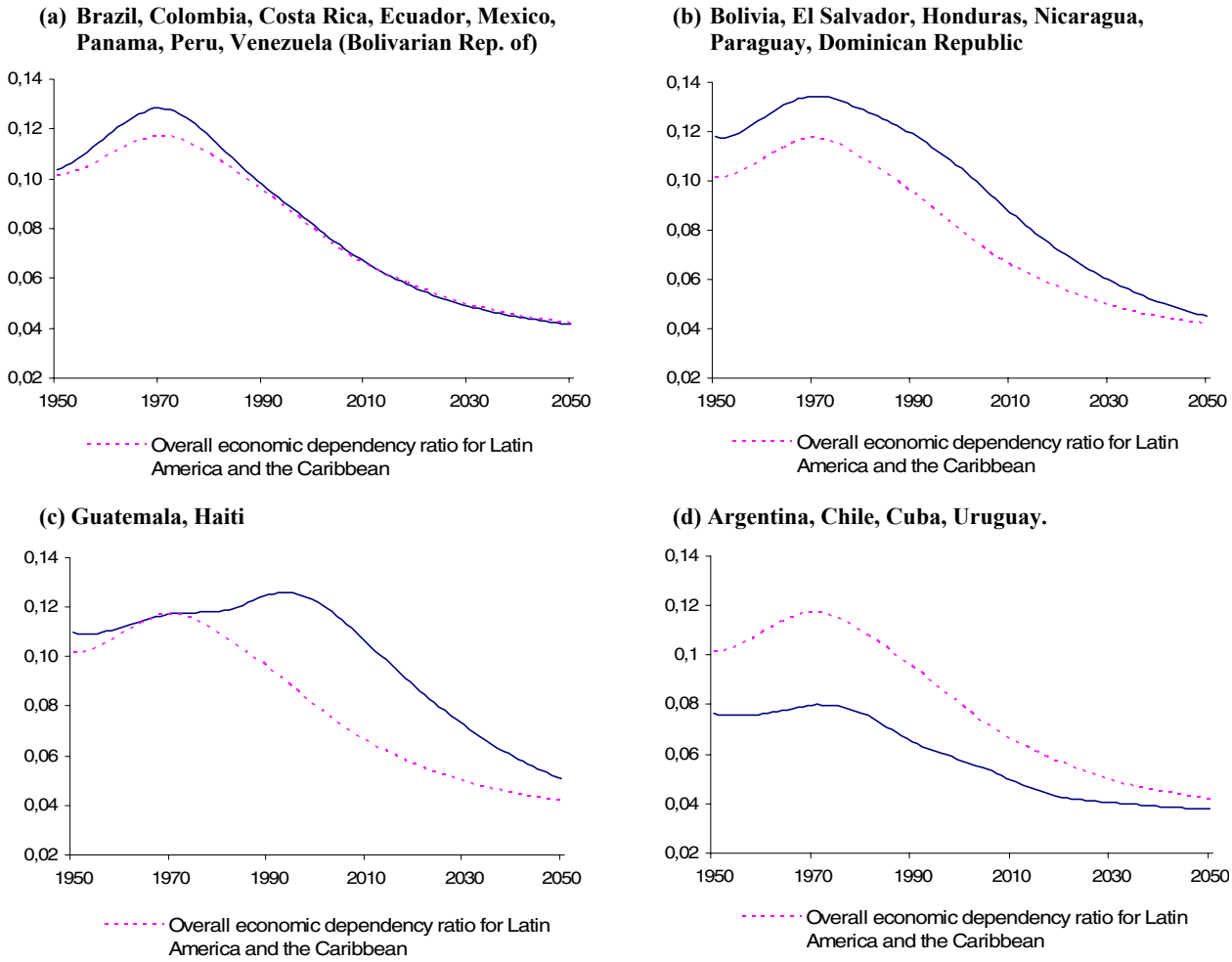


Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, estimates and projections for the Latin American and Caribbean population, 2007 and on the basis of figures from the Database on Social Statistics and Indicators (BADEINSO) [online database] http://www.eclac.cl/badeinso/Badeinso.asp.

We turn now to look at the impact of demographic change on educational transfers as seen in the educational dependency ratio, which measures the ratio of the effective number of students to the number of producers. The effective number of students is calculated by applying the standardized age profile of educational spending (based on data for Chile, Costa Rica and Uruguay) to the population distribution in each country. The number of producers is calculated in a similar manner using the standardized age profile of labour earnings. Figure III.7a shows the regional pattern (dashed line) over the course of a century (1950-2050) along with four subregional patterns for Latin America (solid lines). For the Latin American and Caribbean region as a whole, the education dependency ratio stood at 10% in 1950, meaning that a tax of 10% of labour income would be necessary to support students at current levels of enrolment. The regional educational dependency ratio increased throughout the 1950s and 1960s, as the school-aged population increased in size relative to the working-age population. It peaked in 1971 at 11.7%. Then a long-run decline began, reflecting the fertility transition in the region. Currently, the educational dependency rate stands at 6.8%, which is a reduction of 40% relative to the peak value. In

other words, the same amount of schooling per child can now take place using 40% fewer resources, owing to the reduction in the size of the school-age population relative to the working-age population. Fertility is expected to continue declining in the region, leading to an educational dependency ratio of 4.2% by 2050, which represents an additional 40% decline relative to today's values.

Figure III.7a
LATIN AMERICA: FOUR TYPICAL PATTERNS IN THE EDUCATIONAL DEPENDENCY RATIO, 1950-2050



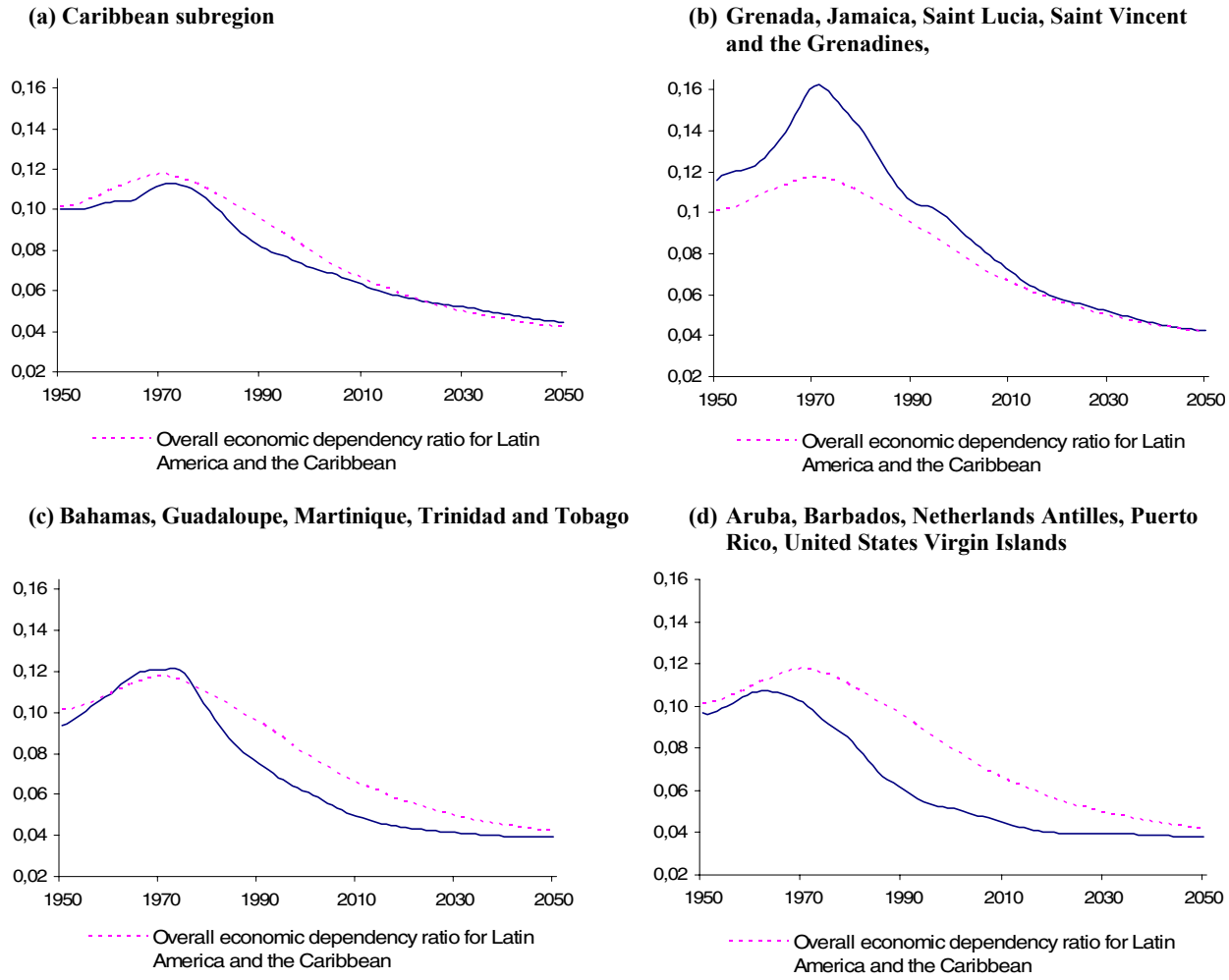
Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, estimates and projections for the Latin American and Caribbean population, 2007 and economic data from the Economic Commission for Latin America and the Caribbean/International Development Research Centre (ECLAC/IDRC) project on Intergenerational Transfers, Population Aging and Social Protection in Latin America and the Caribbean.

The educational dependency ratio follows four distinct patterns in Latin America. Most countries fall into pattern I, which matches the regional trend. Pattern II countries (Bolivia, the Dominican Republic, El Salvador, Honduras, Nicaragua and Paraguay) show a similar trend to that of the region overall but with significantly higher values, reflecting higher fertility in these countries. Guatemala and Haiti exhibit a third pattern, with consistently high levels of educational dependency from the 1950s to

the 1990s, owing to continuing high levels of fertility. In pattern IV countries (Argentina, Chile, Cuba and Uruguay) the educational dependency ratio begins much lower than the regional values in the 1950s, owing to the fact that fertility was already rather low in these countries relative to others in the region.

Figure III.7b shows the patterns in the Caribbean subregion. As a whole, the educational dependency ratio there closely follows that for Latin America. Pattern II countries (Grenada, Jamaica, Saint Lucia and Saint Vincent and the Grenadines) show a sharp increase in the educational dependency ratio, well above the regional pattern, in the 1960s. The other Caribbean countries and territories had below-average educational dependency ratios with especially early declines registered in pattern IV countries (Aruba, Barbados, Netherlands Antilles, Puerto Rico and the United States Virgin Islands).

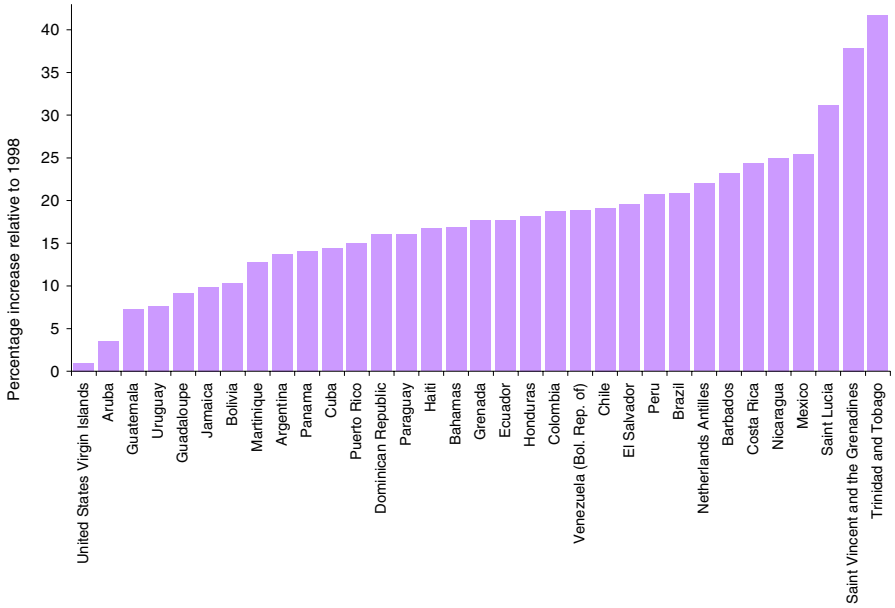
Figure III.7b
THE CARIBBEAN: FOUR TYPICAL PATTERNS IN THE EDUCATIONAL DEPENDENCY RATIO, 1950-2050



Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, estimates and projections for the Latin American and Caribbean population, 2007 and economic data from the Economic Commission for Latin America and the Caribbean/International Development Research Centre (ECLAC/IDRC) project on Intergenerational Transfers, Population Aging and Social Protection in Latin America and the Caribbean.

Focusing on country-specific patterns over the past decade, we find a substantial positive demographic dividend in education for all the countries in the region, reflecting the declines in the school-age population relative to the working-age population. The educational dividend (seen in figure III.8a) was very large (with an increase of more than 25%) in Mexico and Nicaragua in Latin America and particularly large (more than a 30% increase) in several Caribbean nations: Trinidad and Tobago, Saint Vincent and the Grenadines and Saint Lucia. For the region overall, the declines in the school-age population relative to the labour force translated into an educational dividend of +19% in the past decade, indicating that schooling could have been increased by 19% between 1998 and 2008 without an increased financial burden.

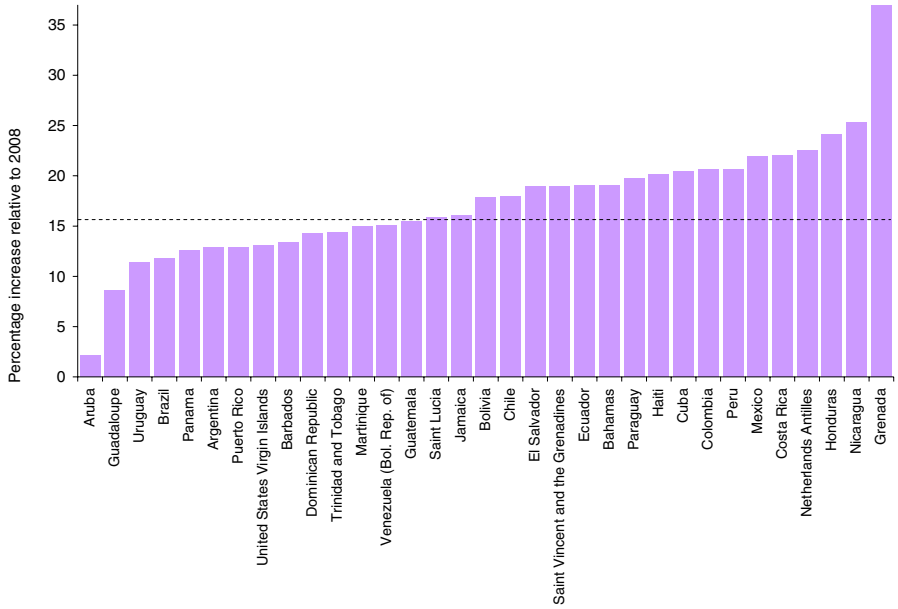
Figure III.8a
LATIN AMERICA AND THE CARIBBEAN (SELECTED COUNTRIES AND TERRITORIES): DEMOGRAPHIC DIVIDEND IN EDUCATION, 1998-2008
(Estimated increase in resources per beneficiary, in percentages)



Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, estimates and projections for the Latin American and Caribbean population, 2007 and economic data from the Economic Commission for Latin America and the Caribbean/International Development Research Centre (ECLAC/IDRC) project on Intergenerational Transfers, Population Aging and Social Protection in Latin America and the Caribbean.

Looking ahead to 2018 (see figure III.8b), large demographic dividends continue to be projected in the education system, with a figure of +16% for the region as a whole. In Latin America, countries with particularly large educational dividends are Nicaragua (+25%) and Honduras (+24%) and in the Caribbean, Grenada (+37%). These large demographic dividends in education could be used to expand coverage in the educational systems or improve their quality by deepening expenditures per student without incurring additional fiscal burdens.

Figure III.8b
LATIN AMERICA AND THE CARIBBEAN (SELECTED COUNTRIES AND TERRITORIES): DEMOGRAPHIC DIVIDEND IN EDUCATION, 2008-2018
(Estimated percent increase in resources per beneficiary, in percentages)



Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, estimates and projections for the Latin American and Caribbean population, 2007 and economic data from the Economic Commission for Latin America and the Caribbean/International Development Research Centre (ECLAC/IDRC) project on Intergenerational Transfers, Population Aging and Social Protection in Latin America and the Caribbean.

2. The impact of changing age structure on public pensions

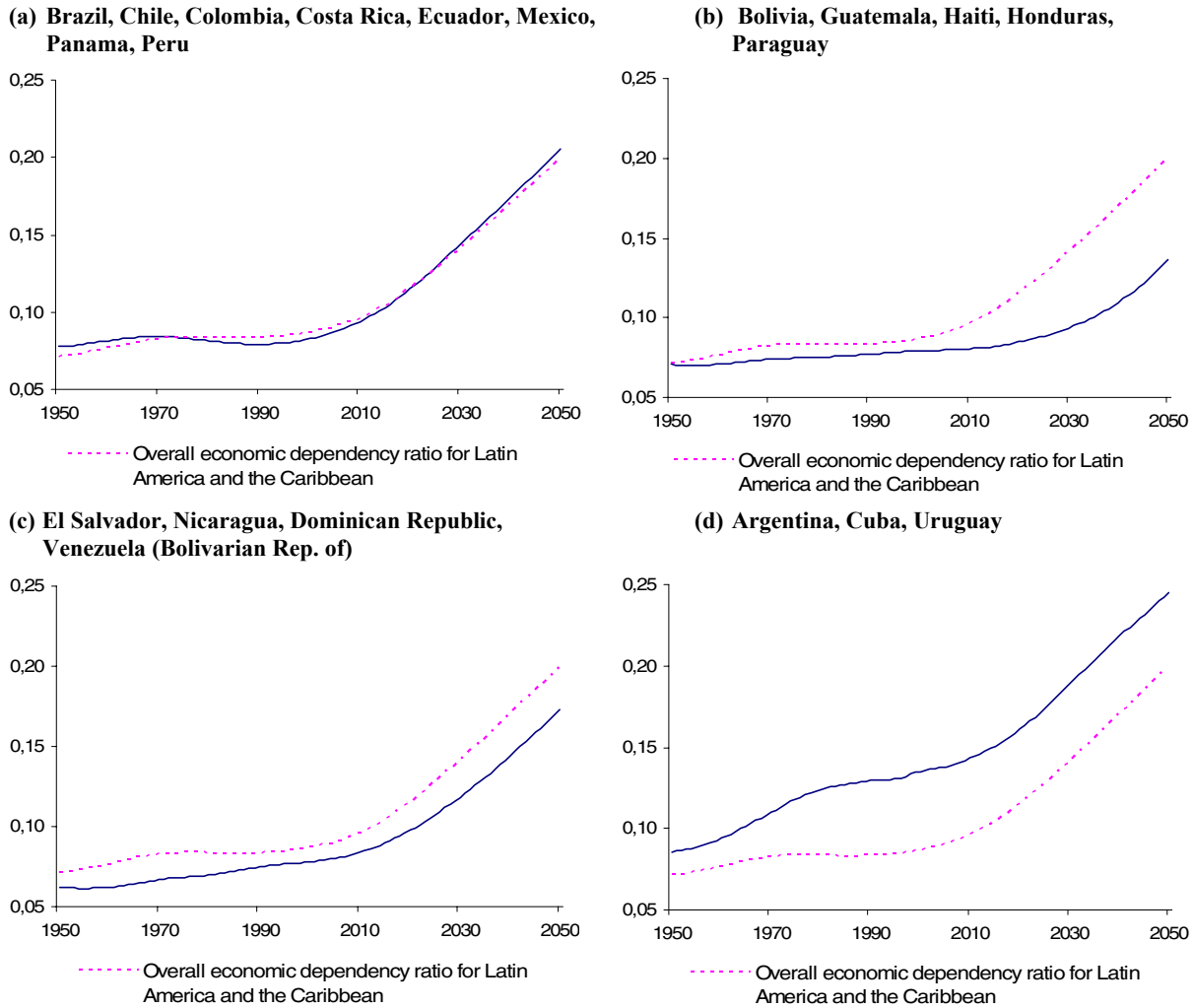
As we have seen, changes in demography will lead to a substantial reduction in the fiscal burden associated with financing education and make possible significant expansions in educational coverage. By contrast, these changes are also steadily increasing the difficulty of funding pay-as-you-go pension systems. In many countries in the region, these very concerns over the long-term fiscal sustainability of public systems led to pension reforms in which part or all of pay-as-you-go pension systems were privatized. This section examines the different impacts of changing demography on pay-as-you-go pensions, using a standard profile of pension benefits (based on Chile, Uruguay and Costa Rica) and abstracting from differences in pension policies across countries in the region.

The pension dependency ratio measures the ratio of the effective numbers of pensioners to producers. Figure III.9a shows the regional pattern (dashed line) over the course of a century (1950-2050) along with four subregional patterns (solid lines). For the Latin American and the Caribbean region as a whole, the pension dependency ratio stood at 7% in 1950, meaning that in 1950 a tax of 7% of labour income would be necessary to support the retired population at current levels of coverage and benefits. Demographic pressures on pay-as-you-go pension systems were negligible for most of the last century. The regional pension dependency ratio rose only very slightly over the course of the last six decades, reaching about 9% in 2008. Recently, the effects of population ageing in the region have begun to be felt and the pension dependency ratio is projected to rise steeply, reaching a regional level of 20% by 2050. That is, without considering the additional impacts of expanding pension coverage, population ageing

would have the effect of more than doubling the taxes devoted to pensions, from the current level of 9% of labour earnings to 20% by the middle of this century.

Figure III.9a shows four distinct subregional patterns in Latin America. Most countries fall into pattern I, closely following the general regional trend. Pattern II countries (Bolivia, Guatemala, Haiti, Honduras and Paraguay) perform similarly to the regional pattern but are delayed by two or three decades, because their populations are further behind in the demographic transition. Pattern III countries (El Salvador, Nicaragua, Dominican Republic and Bolivarian Republic of Venezuela) follow the regional trend but, owing to their slightly younger age structure, have pension dependency rates below the regional average. Pattern IV countries (Argentina, Cuba and Uruguay) appear to be several decades ahead of the regional trend.

Figure III.9a
LATIN AMERICA: FOUR TYPICAL PATTERNS IN THE PENSION DEPENDENCY RATIO, 1950-2050

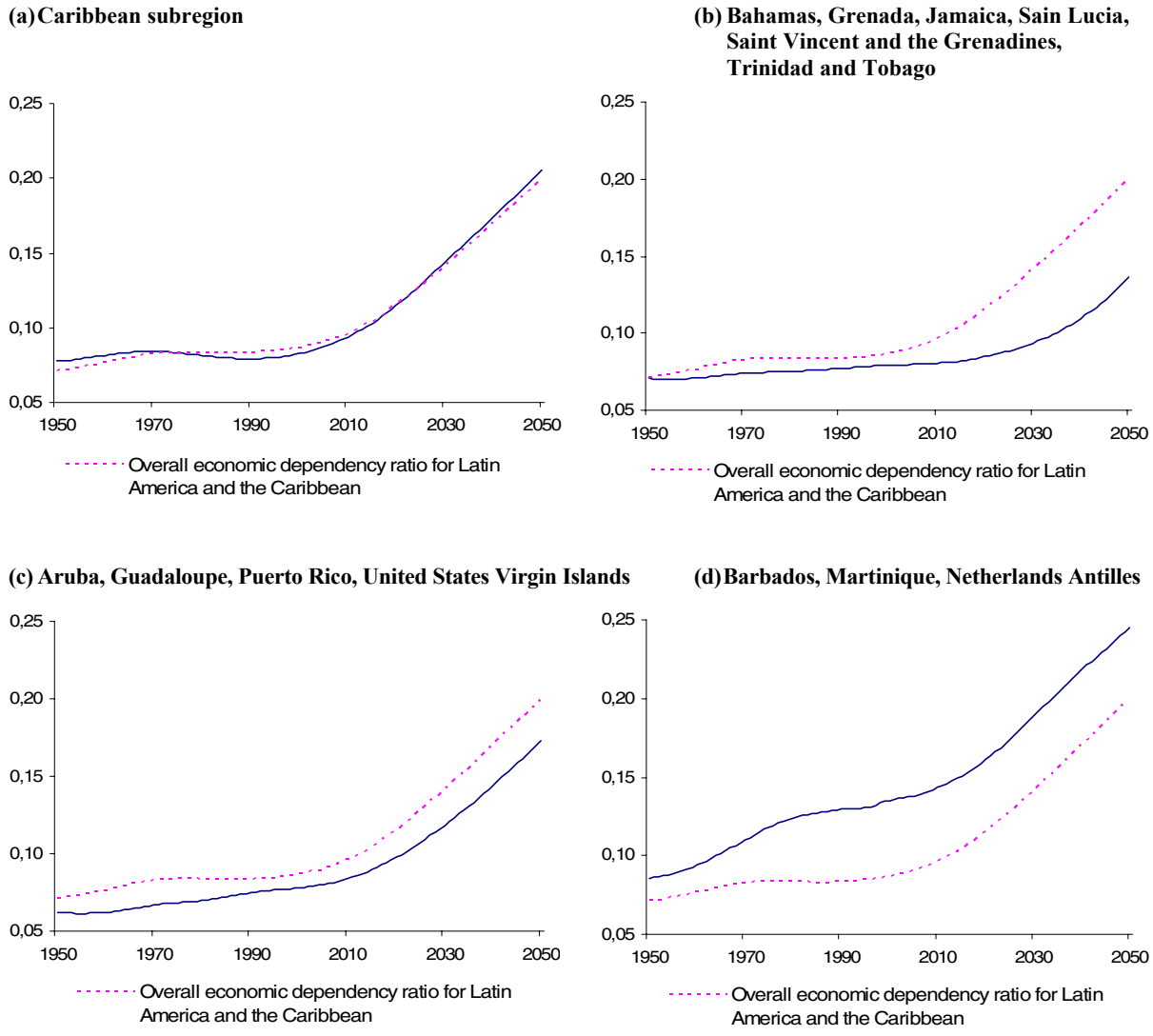


Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, estimates and projections for the Latin American and Caribbean population, 2007 and economic data from the Economic Commission for Latin America and the Caribbean/International Development Research Centre (ECLAC/IDRC) project on Intergenerational Transfers, Population Aging and Social Protection in Latin America and the Caribbean.

The Caribbean region (figure III.9b) follows the general pattern of the pension dependency ratio observed for the Latin American and Caribbean region overall. However, as was the case in Latin America, several Caribbean countries appear to be a few decades ahead of the region, showing very significant increases in pension dependency ratios as their populations age.

Figure III.9b

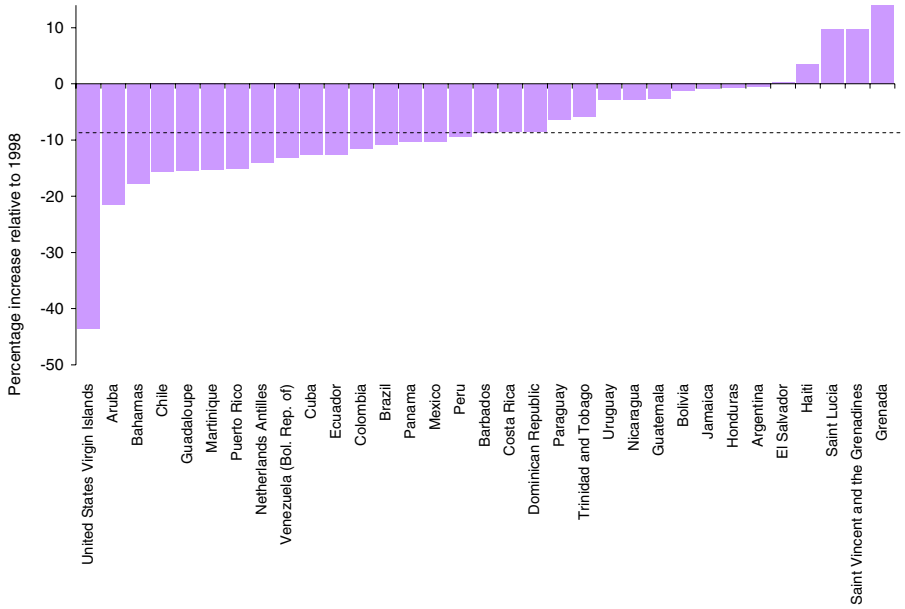
THE CARIBBEAN (SELECTED COUNTRIES AND TERRITORIES): FOUR TYPICAL PATTERNS IN THE PENSION DEPENDENCY RATIO, 1950-2050



Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, estimates and projections for the Latin American and Caribbean population, 2007 and economic data from the Economic Commission for Latin America and the Caribbean/International Development Research Centre (ECLAC/IDRC) project on Intergenerational Transfers, Population Aging and Social Protection in Latin America and the Caribbean.

The experience of countries in the last decade (see figure III.10a) shows negative demographic dividends in pension systems in all countries in the region with the exception of Haiti (+3%), Saint Lucia (+9.7%), Saint Vincent and the Grenadines (+9.7%) and Grenada (+13.9%), where population change favoured expansion of pension systems. In Latin America, Chile had the most negative dividend with a loss of 15% over the past decade, followed by the Bolivarian Republic of Venezuela (-13%) and Cuba (-12%). In these countries, the retirement-age population grew significantly faster than the working-age population. Overall, the dividend in pay-as-you-go pension systems for the region as a whole was -9% over the last decade, implying that taxes to fund pensions would need to have been raised by about 9% over the decade to support the growing population of retirees at current levels of benefits and coverage. In the Caribbean, the United States Virgin Islands (-44%) posted the largest loss. Of course, the pension system in those islands does not operate independently from the United States mainland, so these apparent losses do not reflect actual demographic pressures on the pension system there.

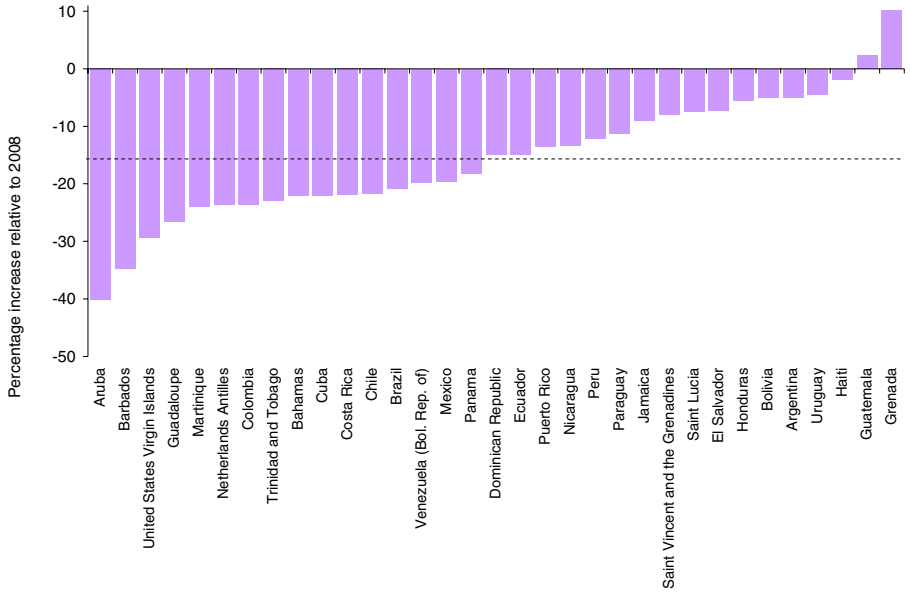
Figure III.10a
LATIN AMERICA AND THE CARIBBEAN (SELECTED COUNTRIES AND TERRITORIES): DEMOGRAPHIC DIVIDEND IN PENSIONS, 1998-2008
(Estimated increase in resources per beneficiary, in percentages)



Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, estimates and projections for the Latin American and Caribbean population, 2007 and economic data from the Economic Commission for Latin America and the Caribbean/International Development Research Centre (ECLAC/IDRC) project on Intergenerational Transfers, Population Aging and Social Protection in Latin America and the Caribbean.

Looking ahead to the next decade (see figure III.10b), further increases in the pension dependency ratio lead to an increasingly negative demographic dividend in pay-as-you-go pension systems. In Latin America, Colombia exhibits the most severe demographic pressures on this system, with losses of 24%. Cuba, Costa Rica, Chile, Brazil, Bolivarian Republic of Venezuela and Mexico are all projected to experience losses of approximately 20% by the end of the next decade. In the Caribbean, a host of nations exceeds the loss forecast for Colombia: among them are Aruba (-40%), Barbados (-35%) and the United States Virgin Islands (-29%).

Figure III.10b
LATIN AMERICA AND THE CARIBBEAN (SELECTED COUNTRIES AND TERRITORIES): DEMOGRAPHIC DIVIDEND IN PENSIONS, 2008-2018
(Estimated increase in resources per beneficiary, in percentages)



Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, estimates and projections for the Latin American and Caribbean population, 2007 and economic data from the Economic Commission for Latin America and the Caribbean/International Development Research Centre (ECLAC/IDRC) project on Intergenerational Transfers, Population Aging and Social Protection in Latin America and the Caribbean.

3. The impact of changing age structure on health care

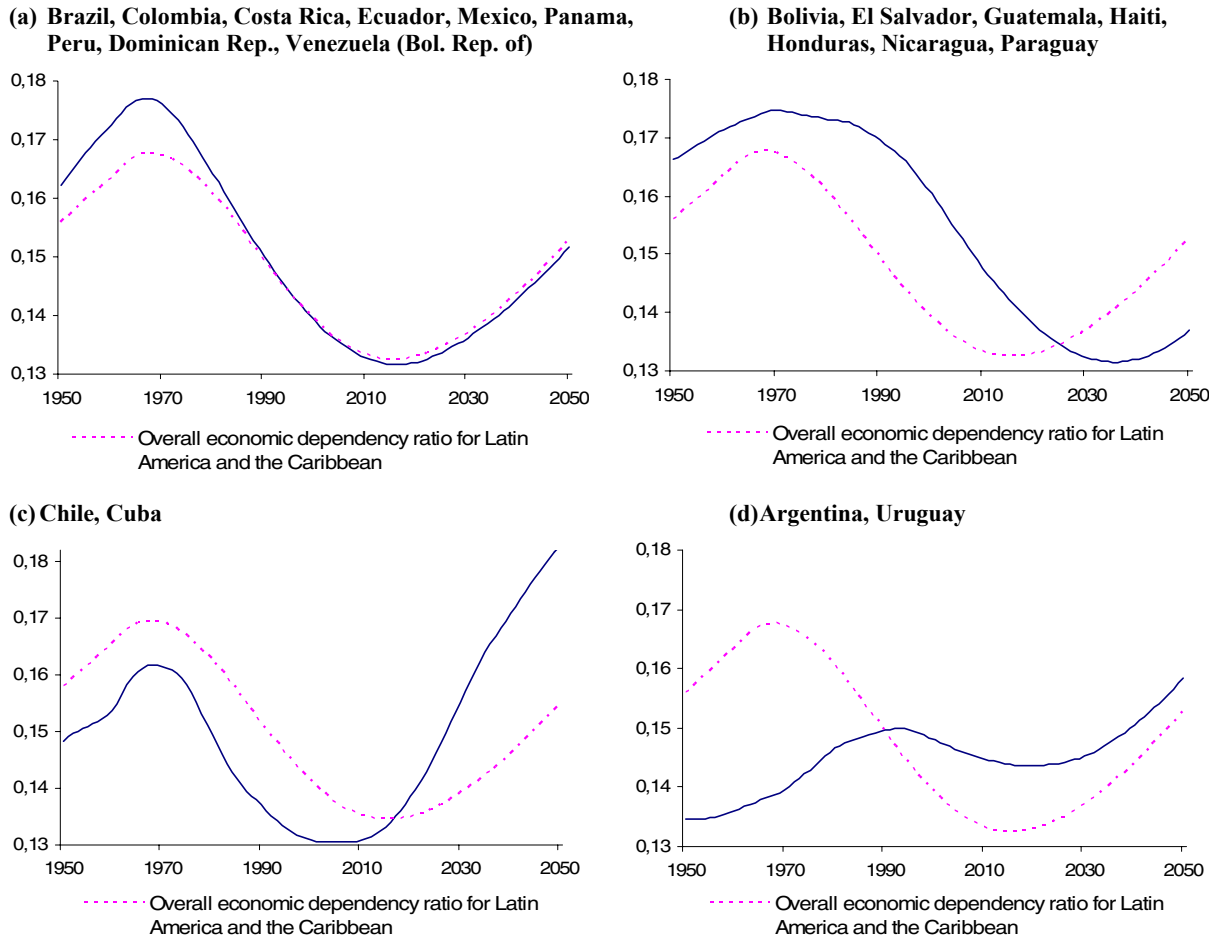
Health-care spending tends to be concentrated among children and older persons. As fertility falls and the proportion of children declines, demographic forces contribute to a substantial easing of financial pressures in health systems over a period of several decades. But as population ageing sets in and the proportion of older persons begins a rapid and sustained rise, demographic forces dramatically increase fiscal pressures in the health-care system.

The health-care dependency ratio measures the ratio of the number of consumers of health care to the number of overall producers (who are assumed to fund health care) in the economy. Figure III.11a shows the regional pattern (dashed line) over the course of a century (1950-2050) along with four subregional patterns (solid lines). For the region as a whole, the health-care dependency ratio stood at 15.6% in 1950, meaning that a tax of 15.6% of labour income would be necessary to provide the level of health-care support currently observed in Chile, Costa Rica and Uruguay. The health-care dependency ratio rose slightly throughout the 1950s and 1960s as the proportion of children increased in the region (children tend to use significantly more health-care resources than the general population). The regional health-care dependency ratio peaked in 1967 at 16.8% before beginning a long period of decline, corresponding to higher proportion of the population of working age (which tends to use lower amounts of health-care resources than children or older persons). The dependency ratio now stands at 13.3% and is projected to reach its long-run nadir around 2015. From then onwards, the health dependency ratio is projected to increase in the region, reaching 15.2% in 2050.

As before, this regional pattern masks significant demographic heterogeneity among the countries. Figure III.11a shows four distinct patterns in the health dependency ratio in Latin America. The majority of countries fall into pattern I, which closely follows the regional trend, but with higher health-care dependency ratios in the 1950s and 1960s, reflecting the younger age structure of these populations. Pattern II countries (Bolivia, El Salvador, Guatemala, Haiti, Honduras, Nicaragua and Paraguay) tend to follow a pattern similar to that of the region but delayed by about two decades, reflecting the fact that they are further behind in the demographic transition. The health dependency ratio in Chile and Cuba (pattern III countries) follows a trend similar to the regional pattern (but at lower levels) from 1950 through 2000 and then begins to climb sharply upwards, reflecting rapid population ageing in these countries. Argentina and Uruguay stand out as pattern IV countries, with increasing health dependency ratios at relatively low levels early in the period (below the regional average) and relatively high health dependency ratios at the end of the period (above the regional average).

Figure III.11a

LATIN AMERICA: FOUR TYPICAL PATTERNS IN THE HEALTH-CARE DEPENDENCY RATIO, 1950-2050

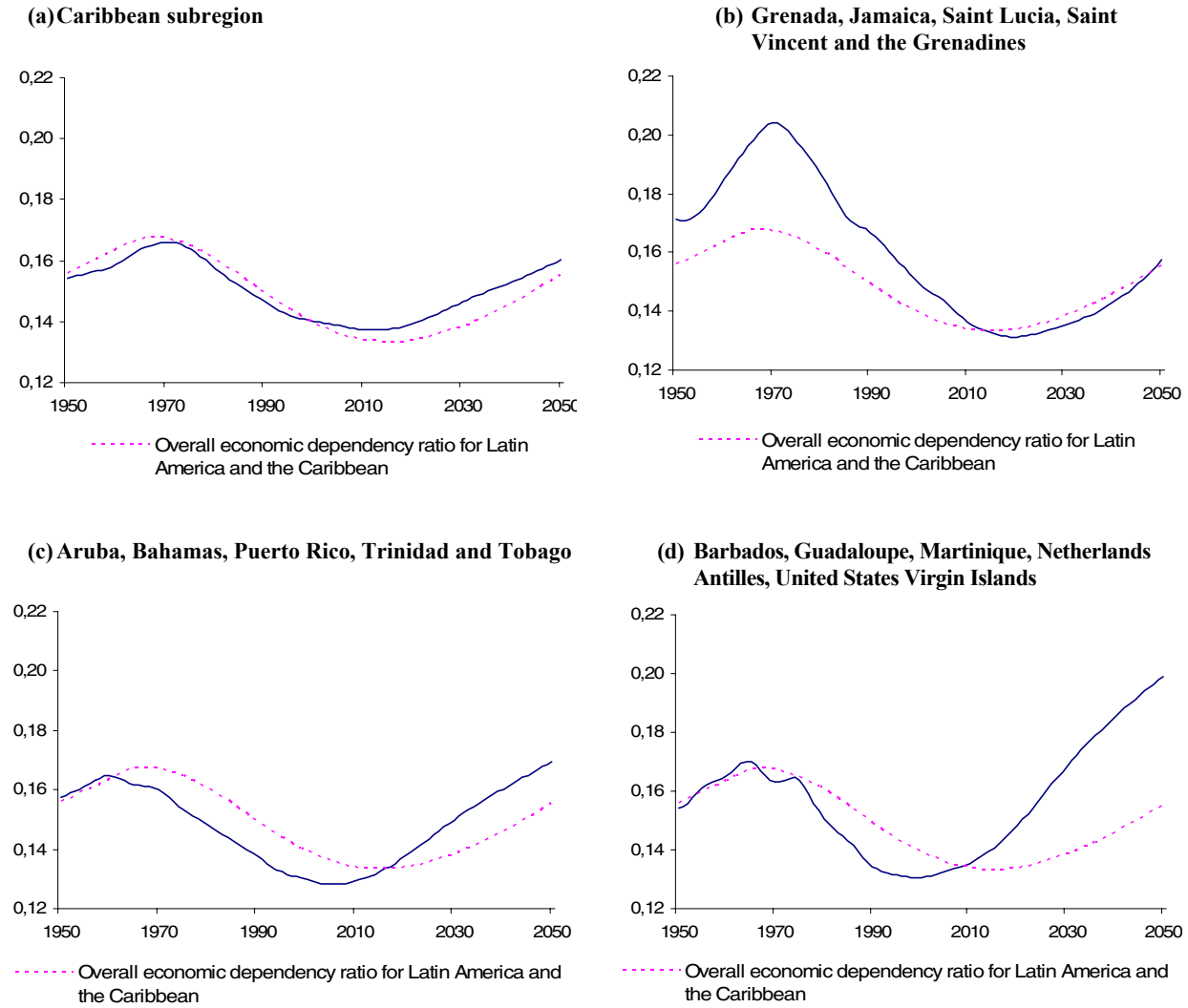


Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, estimates and projections for the Latin American and Caribbean population, 2007 and economic data from the Economic Commission for Latin America and the Caribbean/International Development Research Centre (ECLAC/IDRC) project on Intergenerational Transfers, Population Aging and Social Protection in Latin America and the Caribbean.

Demographic change in the Caribbean region has generally had the same impact on health-care financing as that seen in Latin America. Some distinctive patterns are evident within the subregion. In pattern II countries (Grenada, Jamaica, Saint Lucia and Saint Vincent and the Grenadines), the burden of financing health care was larger and showed a higher peak in the 1960s and 1970s, compared to the regional patterns. Pattern III and IV countries generally had demographic trends that were more favourable to health costs than the region overall, but are expected to experience health costs in excess of the regional average over the next few decades.

Figure III.11b

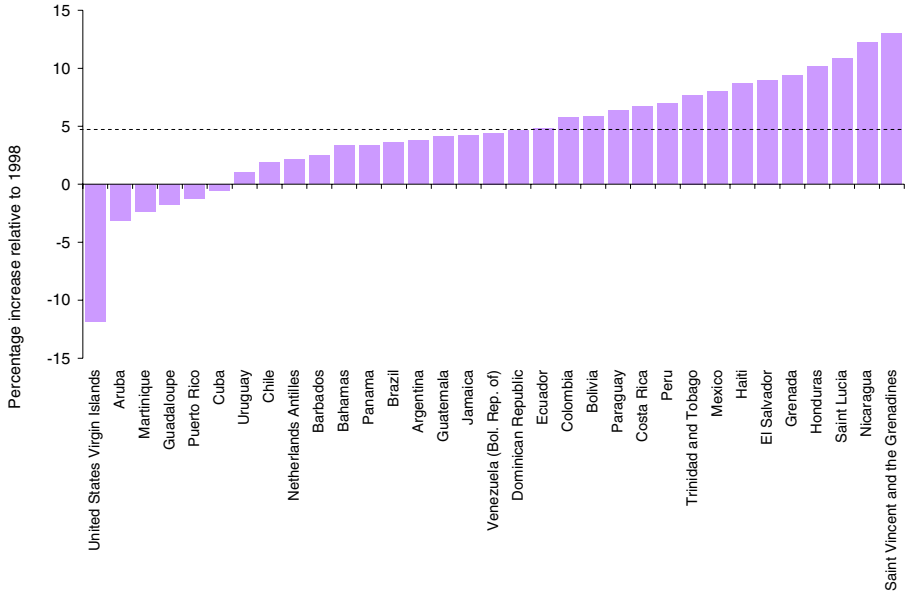
THE CARIBBEAN (SELECTED COUNTRIES AND TERRITORIES): FOUR TYPICAL PATTERNS IN THE HEALTH-CARE DEPENDENCY RATIO, 1950-2050



Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, estimates and projections for the Latin American and Caribbean population, 2007 and economic data from the Economic Commission for Latin America and the Caribbean/International Development Research Centre (ECLAC/IDRC) project on Intergenerational Transfers, Population Aging and Social Protection in Latin America and the Caribbean.

Figure III.12a depicts the experience of countries in the region in the last decade, showing positive demographic dividends in most of them. Nicaragua (+12%) saw the largest dividend in health care in Latin America; Saint Vincent and the Grenadines (+13%) saw the largest dividend in the Caribbean. Overall, the dividend in health care for the region as a whole was a modest +5%, or about one fourth of the dividend observed in education.

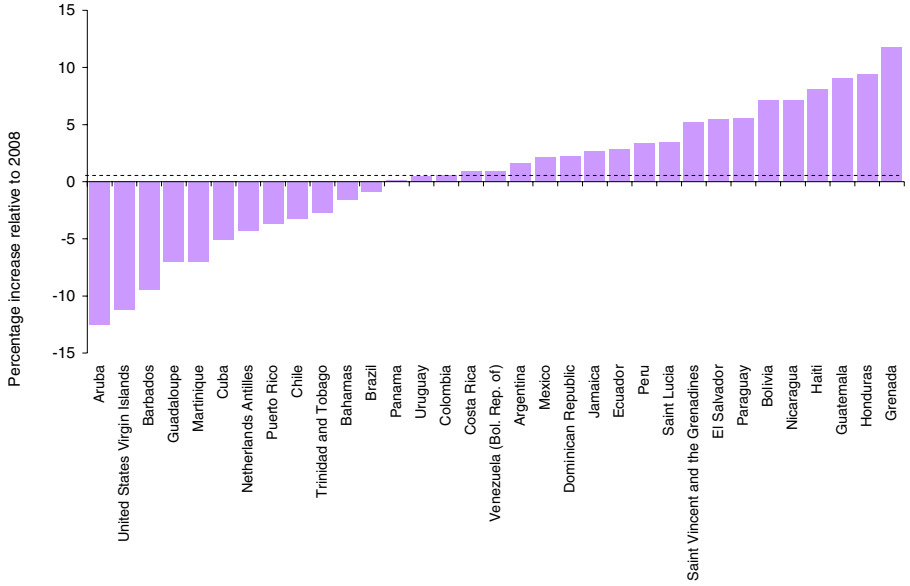
Figure III.12a
LATIN AMERICA AND THE CARIBBEAN (SELECTED COUNTRIES AND TERRITORIES): DEMOGRAPHIC DIVIDEND IN HEALTH CARE, 1998-2008
(Estimated increase in resources per beneficiary, in percentages)



Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, estimates and projections for the Latin American and Caribbean population, 2007 and economic data from the Economic Commission for Latin America and the Caribbean/International Development Research Centre (ECLAC/IDRC) project on Intergenerational Transfers, Population Aging and Social Protection in Latin America and the Caribbean.

Looking ahead to the next decade (figure III.12b), we see considerable differences in the effect of age structure changes on health-care financing. In Honduras, Guatemala, Haiti and Grenada, declining numbers of children as a proportion of the population will lead to a considerable easing of the health-care burden in these countries, with a demographic dividend on the order of +10% over the next decade. By contrast, in other countries, including Aruba, Cuba, Chile and Brazil, the health dependency ratio is forecasted to increase. Without increased effort, health resources per beneficiary would decline over the next decade by 12% in Aruba, 5% in Cuba, 3% in Chile and 1% in Brazil, owing to the effects of population ageing in these countries.

Figure III.12b
LATIN AMERICA AND THE CARIBBEAN (SELECTED COUNTRIES AND TERRITORIES): DEMOGRAPHIC DIVIDEND IN HEALTH CARE, 2008-2018
(Estimated increase in resources per beneficiary, in percentages)

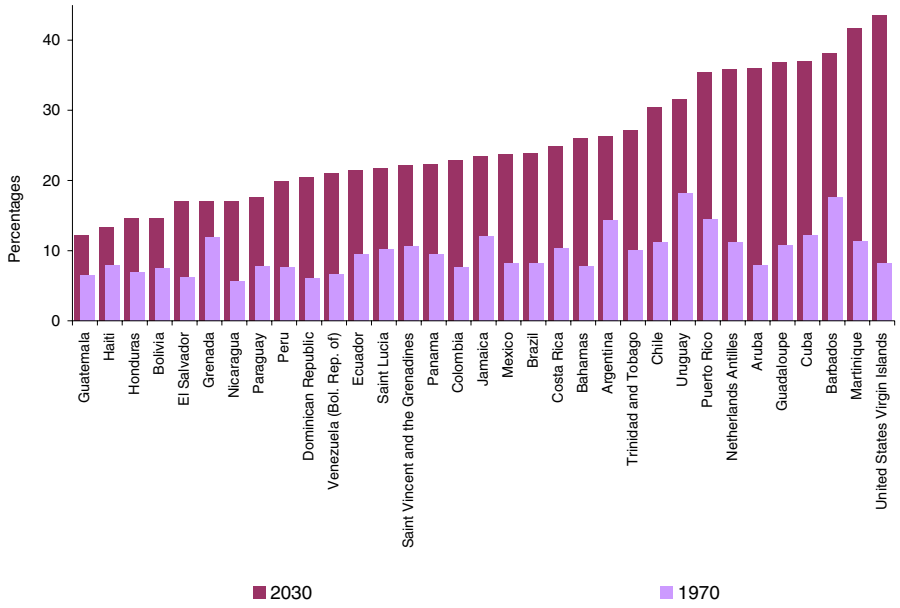


Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, estimates and projections for the Latin American and Caribbean population, 2007 and economic data from the Economic Commission for Latin America and the Caribbean/International Development Research Centre (ECLAC/IDRC) project on Intergenerational Transfers, Population Aging and Social Protection in Latin America and the Caribbean.

As the population ages, the health-care needs of the older population come to represent a greater share of all health-care spending in society, especially because older persons, on average, use many more health resources than working-age individuals. In Latin America, NTA estimates indicate that the average older person consumes twice as much health care as the average working-age adult. Figure III.13 presents estimates of the percentage of health-care resources used by the older population in 1970 (grey bars) and in 2030 (black bars), based on a standardized age profile of health-care usage using NTA data for Latin America. Large increases are seen in every country over this 60-year period. For the region as a whole, health spending on older persons would have amounted to about one tenth of all health spending in 1970 and would be projected to rise to about one quarter by 2030. Cuba (at 37%), Uruguay (32%) and Chile (30%) are projected to lead Latin America in health-care spending on older persons in 2030; the United States Virgin Islands (44%), Martinique (42%) and Barbados (32%) are expected to be the leaders in the Caribbean.

In addition to affecting the financing of health care, demographic change will also dramatically affect the kinds of health care needed by the population. As the population ages, health systems will increasingly need to focus on chronic ailments such as cancer and heart disease. This means that shifts are needed in the public health-care system in terms of monitoring, prevention, screening and curative strategies. For example, in the case of cancer, surveillance systems need to be strengthened to collect basic statistical data on cancer incidence. Anti-smoking strategies need to be implemented to limit the sharp rise in cancers that will take place in the next few decades as populations age. Since successful treatment of cancer relies on early detection of the disease, screening programmes (such as mammographies) will need to be increased. Finally, adoption of curative strategies in response to the rise in cancer rates means, for example, that radiation treatment facilities will have to be expanded.

Figure III.13
LATIN AMERICA AND THE CARIBBEAN: HEALTH-CARE RESOURCES DEVOTED TO OLDER PERSONS, 1970 AND 2030
(Percentages)



Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, estimates and projections for the Latin American and Caribbean population, 2007 and economic data from the Economic Commission for Latin America and the Caribbean/International Development Research Centre (ECLAC/IDRC) project on Intergenerational Transfers, Population Aging and Social Protection in Latin America and the Caribbean.

The rapidity of population ageing in Latin America means that societies with relatively modest levels of economic development will face the same challenges as richer countries in supporting older populations. In health care, this means that, in addition to the new challenges of chronic diseases brought about by population ageing, countries will still be dealing with the high burden of infectious and childhood diseases typical of the early stages of the epidemiological transition. Health-care systems in the region will thus face the twin burden of "epidemiological backlog" and population ageing, and will thus be under strong pressure to expand (ECLAC, 2006a).

In summary, this chapter has investigated the economic impacts of changing age structure in the region. In terms of general economic well-being, demographic change has brought moderately favourable changes and continues to do so. For the region as a whole, the demographic dividend amounted to an increase of about 6% in labour income per consumer over the past decade and is forecast to continue to provide benefits with an increase of around 3% in the next decade. As noted in chapter II, the region is quite heterogeneous in this regard, and some countries show quite large demographic dividends; others show the initial growth-slowing effects of population ageing, through increased fiscal pressures on pay-as-you-go systems.

While the demographic effects of changing age structure are moderately beneficial overall, they can be quite large in particular support systems. In the case of education, very large demographic dividends were found. In the last decade, the demographic dividend in education translated into an

average rise of 19% in available resources per student across the region; continued large increases (averaging +15%) are forecast over the next decade. These large dividends bode well for increased efforts at expanding educational coverage at the secondary and tertiary levels. In short, the demographic dividend can be invested in boosting educational attainment and thus help to convert the short-run demographic dividend into long-run sustainable economic growth. But more importantly, such investments in education serve to build more inclusive societies that support the full and active participation of all.

In the case of health-care systems, demographic change was found to have relatively modest effects on the changing financial burden. In the early stages of the demographic transition, financial pressures increase somewhat as the proportion of children in the population rises. As the working-age population increases proportionally, however, the financial burden on health-care systems eases. Most countries are currently in this period of declining health-care burdens. But, as populations age, health systems will become increasingly burdensome to finance. The main impact of demographic change on health systems in the region is the surge in the proportion of spending devoted to older persons. The estimates conducted here indicate that 20 years ago, on average, 9% of health resources were devoted to older persons, but 20 years from today this figure will more than double to 23%. This shift in the spending target suggest that health systems will have to undergo large transformations as regards monitoring, prevention and treatment of chronic diseases such as cancer and cardiovascular ailments.

In the case of pension systems, it was found that, although countries are in the midst of an overall demographic dividend, the deleterious effects of population ageing on pay-as-you-go pension systems are already evident in almost every country in the region. Over the past decade, the cost of pay-as-you-go pension systems increased by 9%, owing to the fact that the pension-age population increased faster than the working-age population did. Such effects are mounting in the region and the cost of funding pensions is projected to increase by around 17% in the next decade, owing to the effects of population ageing.

Chapter IV

THE BACKGROUND TO DEMOGRAPHIC CHANGE

A. RIGHTS, POVERTY AND INEQUITY

The right to development dates back to the Declaration of the International Labour Organization (ILO) adopted in 1944 in Philadelphia, United States, which established the relationship between fundamental human rights and trade-union rights (Umozurike, n/d; Marcos-Sánchez, 2007; ILO, 1944). The Declaration stated that "all human beings, irrespective of race, creed or sex, have the right to pursue both their material well-being and their spiritual development in conditions of freedom and dignity, of economic security and equal opportunity," and that "poverty anywhere constitutes a danger to prosperity everywhere." It also stated that the principles of the Declaration, including "the war against want [which] requires to be carried on with unrelenting vigour within each nation, and by continuous and concerted international effort," were fully applicable to all peoples everywhere, in both dependent and independent territories (ILO, 1944).

Likewise, a study conducted by the Secretary-General of the United Nations at the request of the former Commission on Human Rights concluded that numerous principles enshrined in the Charter of the Organization and in texts and declarations on human rights confirmed the legal existence of the right to development (United Nations, 1979, cited by Umozurike, n/d). In 1997, in the framework of the United Nations reform programme, the Secretary-General called upon all United Nations bodies to design and implement their activities and programmes with a human-rights perspective (UNDP, n/d), given that in a rights-based approach those rights determine the relationship between individuals and groups with valid claims (rights-holders) and State and non-state actors with correlative obligations (duty-bearers). The approach identifies the holders of "rights" and "obligations" in order to strengthen the capacities of individuals and help to expand citizenship.

Article 2 of the Declaration on the Right to Development, adopted by the General Assembly in its resolution 41/128 of 4 December 1986 (United Nations, 2002), states that:

1. The human person is the central subject of development and should be the active participant and beneficiary of the right to development.
2. All human beings have a responsibility for development, individually and collectively, taking into account the need for full respect for their human rights and fundamental freedoms as well as their duties to the community, which alone can ensure the free and complete fulfilment of the human being, and they should therefore promote and protect an appropriate political, social and economic order for development.
3. States have the right and the duty to formulate appropriate national development policies that aim at the constant improvement of the well-being of the entire population and of all individuals, on the basis of their active, free and meaningful participation in development and in the fair distribution of the resulting benefits.

In accordance with that perspective, the strategic view of development upheld by ECLAC is essentially founded upon a rights-based approach, which constitutes a conceptual framework for the development process which is legally founded on international human-rights standards and

operationally designed to promote, protect and give effect to human rights. A perspective of this kind integrates the legal rules, principles and standards of the international human-rights system into legislation, programmes, plans and processes relating to development (Artigas, 2005).

The human rights-based approach adopted by the United Nations is based on the 1948 Universal Declaration of Human Rights, but it includes a series of subsequent additions enshrined in the binding provisions of human rights treaties, which define the obligations of States in respect of the rights of individuals, whether economic, social and cultural, or civil and political (ECLAC, 2007c).

The rights-based approach links development and poverty reduction to issues of rights and obligations, not just to charitable activities (OHCHR, 2004). From that perspective, both persons and groups are holders of rights. This entails a legal obligation to create the conditions for holders of rights to have access to and enjoy their rights, through the creation of mechanisms such as accountability; active, free and meaningful participation by the population; and non-discrimination and attention to vulnerable groups, meaning that particular care must be given to issues of discrimination, equity and vulnerability based on gender, age, religion, ethnicity and other possible categories such as migrants and prison inmates (Artigas, 2003).

In the framework of human rights, States bear the primary responsibility for ensuring enforcement. Furthermore, as the legitimate holders of rights, individuals and groups can lay claim to them and participate in decision-making processes which shape the programmes and policies relating to them.

In sum, the human rights approach changes the logic behind the elaboration of laws, policies and programmes, since they are based on the idea, not of people with needs who need to be assisted, but subjects with rights which represent a duty for the State and also the rest of society (Abramovich and Courtis 2006; OHCHR, 2004; ECLAC, 2006b). As a corollary, it is recognized that the human person is the central subject of development and that the guarantees enshrined in the universal regime of human rights are the conceptual framework, accepted by the international community, and capable of offering a coherent system of principles and rules in order to guide it (Abramovich, 2006; ECLAC, 2006b; ECLAC, 2007c).

The beginning of demographic transition in Latin America and the Caribbean was not unconnected to the economic and social changes which took place in the region between 1950 and 1970. Economic development —which trended upward strongly after the Second World War— laid the foundations for rising real incomes for large sections of the population, for increased urbanization and expansion of education, giving rise to the emergence or growth of the middle class in many countries. At the same time, health coverage expanded and the nutritional condition of the population improved, new discoveries in medicine were disseminated, availability and awareness of contraceptive methods increased, and the range of the media expanded, including access to information on sexual and reproductive matters.

The demographic transition began in the more prosperous and urban sectors of society as a result of the availability of opportunities for greater access to education, health care, family planning and the use of contraceptives (the principal direct factors of change), and it then spread to society as a whole, although at differing speeds in the various countries of the region. This not only helped to prolong life and improve health, but also led to changes in values, beliefs and behaviour in relation to health care, the formation of families and the desired number of children, which led to a fall in infant mortality and in fertility (Schkolnik and Chackiel, 1998; Schkolnik, 1999).

This shows that, while demographic transition can be considered as a product of the economic and social development of that time, it has begun to be somewhat independent of the factors which influenced it initially, and it is now taking place in a context characterized by a considerable, persistent lack of equity in all areas of economic and social life, which affects it in a number of ways.

The combination of socio-economic inequalities with demographic conditions makes old problems more visible and creates new, more specific focuses of attention and of needs which must be taken care of by economic and social policies. Two aspects must be taken into account in this regard: the lags and debts resulting from the different historical backgrounds of the social and ethnic groups, which mostly relate to gaps in income, and differential access to goods and services, which are reflected in differences in mortality rates, unwanted fertility and illegal abortion, among other things.

The second aspect relates more to "emerging" issues, such as overcoming gender discrimination, the rights of indigenous peoples, population ageing, adolescent pregnancy and the living conditions of older adults. Although these are not novel situations, they have become more preponderant, with increased visibility, and represent an unavoidable challenge on the way towards creating an inclusive society with respect for human rights.

Reduced access to development in many of the countries —and in the poorer sectors within them— has resulted in slower demographic transition, with persisting lags or with parallel transitions with more or less rapid population dynamics, as the case may be (Schkolnik and Chackiel, 1998; Guzmán and others, 2006). In turn, owing to the way in which demographic phenomena influence and reinforce social and economic aspects, they also contribute to increasing the vulnerability of individuals and groups.

Although educational opportunities have expanded, health coverage is widespread, access to housing has improved considerably and per capita incomes have risen a great deal in the countries of the region, it is also true that large numbers of people are living with low or very low incomes; that there are sectors of the population which cannot achieve the low mortality rates which should be guaranteed for the entire population; that those sectors are excluded from the information needed in order to exercise their economic, social, sexual and reproductive rights; and that they are unable to accumulate in the course of their lives the resources they will need to sustain them in old age. The State fails to organize itself effectively to meet those needs and provide the population with an acceptable standard of living.

It is clear, therefore, that despite medical and health-care advances which make it possible to achieve low mortality rates and to enjoy levels of life expectancy which would have been unthinkable a few decades ago, despite the wide availability of family planning methods making it possible to control fertility according to the wishes and needs of individuals, demographic inequalities are a reflection of socio-economic disparities. Inequities have evolved, but they still exist and the countries are faced with challenges which are now unavoidable.

The persistence of poverty gaps and of inequality in income distribution is an issue under constant consideration (ECLAC, 2007a). Although the growth of the economies has made it possible to improve the living conditions of broad sectors of the population, not all social groups have benefited to the same extent. Socio-economic disparities, reflected in differences in income and opportunities and restrict the scope of action for people from low-income groups in areas such as education, health, employment, and social, political and cultural participation.

A central issue in development and human rights is combating poverty, through the implementation of wide-ranging policies and the creation of various mechanisms designed to guarantee equal opportunities for individuals and population groups affected by poverty. As stated in the Human Development Report 2005 (UNDP, 2005), extreme inequalities in opportunity and life chance have a direct bearing on what people can be and what they can do. The inheritance of unequal opportunities violates the basic precepts of social justice. Wide disparities based on wealth —or gender, age, religion or ethnic origin— are harmful both for growth and for democracy, governance and social cohesion.

Table IV.1 shows that there is a connection between the level of poverty, expressed as a percentage of people living below the poverty line (defined for each country) and the stage in the demographic transition, given that the countries which have advanced furthest in that transition generally show lower levels of poverty.

Table IV.1
LATIN AMERICA AND THE CARIBBEAN: PEOPLE LIVING IN POVERTY, BY STAGE IN THE DEMOGRAPHIC TRANSITION, 1990 AND 2006
(*Percentages*)

Stage in demographic transition	Country	Population below the poverty line				
		About 1990		About 2006		Percentage change
Very advanced	Cuba	…	…	…	…	…
Advanced	Uruguay	1990	17.9	2006	18.5	3.4
	Chile	1990	38.6	2006	13.7	-64.5
	Argentina	1990	21.2	2006	21.0	-0.9
	Brazil	1990	48.0	2006	33.3	-30.6
	Colombia	1994	52.5	2005	46.8	-10.9
	Costa Rica	1990	26.3	2006	19.0	-27.8
	Mexico	1989	47.7	2006	31.7	-33.5
Full	Peru	1997	47.6	2006	44.5	-6.5
	Panama	1991	32.7	2006	30.8	-5.8
	Ecuador (urban areas)	1990	62.1	2006	43.0	-30.8
	Venezuela (Bol. Rep. of)	1990	39.8	2006	30.2	-24.1
	Dominican Rep.	2000	46.9	2006	44.5	-5.1
	El Salvador	1995	54.2	2004	47.5	-12.4
	Paraguay	1990	43.2	2005	60.5	40.0
	Nicaragua	1993	73.6	2001	69.4	-5.7
	Honduras	1990	80.8	2006	71.5	-11.5
Moderate	Haiti	…	…	…	…	…
	Bolivia	1989	52.6	2004	63.9	21.5
	Guatemala	1989	69.1	2004	60.2	-12.9

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of national household surveys and *Social Panorama of Latin America 2007* (LC/G.2351-P/E), Santiago, Chile. United Nations publication, Sales No. E.07.II.G.124.

The situation varies from country to country. While the demographic transition has progressed in all the countries, in some of them the proportion of persons living in poverty has increased or has fallen very slightly. This is particularly serious in countries where about 50% of the population (Colombia, Dominican Republic, Ecuador, El Salvador and Peru) or an even higher proportion (Bolivia, Guatemala, Honduras, Nicaragua and Paraguay) is below the poverty line. In Bolivia, Paraguay and Uruguay, that percentage has increased, whereas in Argentina, Colombia, Dominican Republic, El Salvador, Guatemala, Honduras, Nicaragua, Panama, Peru the fall has been less than 13%. At the other extreme, the countries which are showing more progress in overcoming poverty gaps are, in descending order, Chile (-64.5%), Mexico (-33.5%), Brazil (-30.6%), Costa Rica (-27.8%), Bolivarian Republic of Venezuela (-24.1%), and the urban areas of Ecuador (-30.8%).

Thus, in the past 15 years the region's achievements in terms of overcoming poverty have been slim, considering how few countries can show significant improvements. Furthermore, at least in the cases of Ecuador (urban areas) and Mexico (and also in the cases of some countries which have progressed less), much of the progress towards overcoming poverty is due to the economic impact of remittances from outside the country, in other words, from those who have emigrated precisely owing to the lack of economic opportunities in their own countries, the latter problem being the cause of the poverty in the first place.

In addition to those living below the poverty line, many more live in a situation of vulnerability with incomes barely above the poverty line, which do not give them the means to deal with any crisis situation; the latter would cause them immediately to fall below the poverty line, particularly in light of the fact that in no country of Latin America does the fifth decile of income distribution have an average income equal to or greater than twice the poverty line (ECLAC, 2007a).

The situation with employment and the availability of jobs is the critical factor. An analysis by ILO (2000, cited by Silveira, 2006) states that in the 1990s, the principal characteristics of employment in the region included: privatization of employment (95% of new jobs were created in the private sector), falling demand for labour —especially unskilled workers— in the formal sector, a growing shift to the services sector and towards informal and unstable employment (83% of new jobs were created in the services sector and 55% had no social protection). All these are factors which tend to prevent the attainment of goals such as decent living conditions and salaries, occupational stability, social security coverage and adequate pensions and retirement benefits.

To combat poverty —from the viewpoint of progress in the demographic transition and the drastic changes in the age structure which are expected in the coming decades— in addition to employment and wages, social security is a key aspect of people's financial situation. With the increasing ageing of the population and increasing life expectancy, social security income, particularly pensions and retirement benefits, can become people's sole source of maintenance for about the last third of their lives.

B. VULNERABLE GROUPS AND CHANGES IN THE FAMILY

During its thirty-first session, held in Montevideo, Uruguay, in March 2006, ECLAC proposed the creation of a new social protection covenant (ECLAC, 2006b). It was stated that "The main reason why solidarity-based social protection mechanisms need to be rethought is that the labour market has not demonstrated a capacity for greater inclusiveness either through the creation of decent job opportunities or in terms of the level of social protection contributions," and that "Employment cannot be expected to be the only way that most people have of accessing social protection in the short and medium term, at a

time when the pressure on social protection systems is also being heightened by demographic and epidemiological transition and changes in family structures and relationships." (ECLAC, 2006a).

Following the same reasoning, the following sections will analyse the important aspects of three types of population groups or segments which, although they are defined by different criteria such as age (older persons), gender (women) and ethnic origin (indigenous peoples), are characterized by their vulnerability and by the need for mechanisms to ensure equity, solidarity and the exercise of human rights.

1. Poverty and older persons

For the growing numbers of older persons, most of whom have retired from economic activity and paid employment, social security is the most viable source of income for their subsistence and for combating poverty. This option, however, is undermined by low levels of social security coverage in the region and by the low amounts of pensions and retirement benefits in relation to the minimum spending required for subsistence and to the income obtained through employment. This does not mean that all older persons are in an unfavourable situation in terms of poverty, but there is a strong probability that the problem will continue in the future.

The financial situation of older persons is linked both to their own employment backgrounds and those of their families, and also to the opportunities which family members who are younger and more economically active may have to obtain relatively stable employment, sufficient incomes, education, health care, housing, and so on. Older persons do not constitute a separate stratum of society. Their situation is due, on the one hand, to their own past history and to the type and quantity of assets they may have managed to accumulate and, on the other hand, to the economically active population on which they depend to a greater or lesser extent in the majority of households.

Lack of job security, underemployment, unemployment and depressed wages among the economically active population can make the financial situation of older persons more unsustainable (Bajraj, 2000). Older persons may also be responsible for dependants, particularly in lower-income sectors (children, grandchildren, spouses, parents, other family members) so that part of their incomes, although they may be scant at the individual level, is used for intra- or intergenerational transfers.

The measurement of poverty on the basis of national household survey data shows that it is less among older persons than in the rest of the population. By this criterion, the countries can be classified into three major groups: low incidence of poverty, with less than 20%; medium incidence, from 20% to 39%; and high incidence, with a rate of poverty of 40% and over (see table IV.2).

Table IV.2
LATIN AMERICA AND THE CARIBBEAN (15 COUNTRIES), BY INCIDENCE OF POVERTY AMONG OLDER PERSONS, ABOUT 2000

Country	Incidence of poverty among older persons
Argentina, Brazil, Chile and Uruguay	Low: less than 20%
Venezuela (Bol. Rep. of) (urban areas), Costa Rica, Dominican Republic, Panama, Paraguay	Medium: 20% to 39%
Bolivia, Colombia, Ecuador (urban areas), El Salvador, Honduras and Mexico	High: 40% and over

Source: Fabiana Del Popolo, "Características sociodemográficas y socioeconómicas de las personas de edad en América Latina", *Población y desarrollo series*, No. 19 (LC/L.1640-P), Santiago, Chile, Economic Commission for Latin America and the Caribbean (ECLAC), 2001. United Nations publication, Sales No. S.01.II.G.178.

Considering the possible limitations of the data —which in many cases have a strong urban bias— and the low levels of official poverty lines in the countries, it can be concluded that, although older persons may be no poorer than the rest of the population, they are still affected by poverty.

The factors which bring older persons, and any dependants they may have, into poverty or keep them in poverty include the precariousness of their incomes, either because they were unable to accumulate assets, because the latter are insufficient or because the chances of generating additional income are practically non-existent. Consequently, an important factor at this stage of life is social security coverage and the availability of pensions and retirement benefits to ensure a life free of poverty in old age.

Nonetheless, social security coverage in the region is generally inadequate. A study by ECLAC (2006b), based on national household surveys in 16 of the countries of the region, shows that the percentage of employed workers contributing to a contributory social security scheme is relatively low. For example, the group with social security coverage below 15% in 2000 included Bolivia, Paraguay and Peru; between 15% and 29% were Guatemala and Nicaragua; from 30% to 44%, Dominican Republic, Ecuador (urban areas) and El Salvador; between 45% and 59% were Argentina (urban areas), Brazil, Mexico and Panama, and between 60% and 79% were Bolivarian Republic of Venezuela, Chile, Costa Rica and Uruguay, with rural populations greatly disadvantaged (see table IV.3).

Table IV.3
LATIN AMERICA AND THE CARIBBEAN (16 COUNTRIES): BY SOCIAL SECURITY COVERAGE, ABOUT 2000
(*Percentages*)

Stage in demographic transition	Country	National total	Total, urban areas	Total, rural areas	Males	Females
Advanced	Uruguay (urban areas)	…	63.8	…	63.6	64.0
	Chile	64.9	67.0	48.8	66.6	62.1
	Argentina (urban areas)	…	56.0 [a]	…	59.0 [a]	52.5
	Brazil	47.8	54.3	17.4	48.4	47.0
	Costa Rica	65.3	68.2	60.5	68.5	59.3
	Mexico	55.1 [a]	64.8 [a]	30.8 [a]	52.9 [a]	59.1 [a]
Full	Peru	13.0	18.7	2.6	15.0	10.4
	Panama	53.8	66.6	29.3	48.6	63.4
	Ecuador (urban areas)	…	32.3	…	32.4	32.0
	Venezuela (Bol. Rep. of)	61.5 [a]	…	…	58.0	67.1 [a]
	Dominican Rep.	44.7 [a]	48.0 [a]	32.7 [a]	43.4 [a]	46.6 [a]
	El Salvador	32.9	43.4	14.5	30.9	35.9
	Paraguay	13.5	20.2	5.0	13.1	14.2
	Nicaragua	18.3	25.1	7.6	16.3	21.9
Moderate	Bolivia	14.5	21.2	4.6	13.8	15.4
	Guatemala	17.8	31.1	8.5	18.4	16.7

Source: Economic Commission for Latin America and the Caribbean (ECLAC), *Shaping the Future of Social Protection: Access, Financing and Solidarity* (LC/G.2294(SES.31/3)/E)), Santiago, Chile, March.

[a] The rate corresponds to the social security contributions of salaried workers, excluding own-account workers, unpaid family workers and employers.

The same study also reveals that, although the rates of coverage of contributory schemes are similar for men and women, this conceals a major gender difference because of women's larger social security gaps caused by the time they spend caring for children, older persons or persons with disabilities. It has even been found that the gender gap has been increasing because "in most of the countries under consideration, proportionately more women than men enter low-productivity sectors of the labour market in activities where there is usually little contributory social security protection" (ECLAC, 2006b), which leaves them at a disadvantage within social security systems (ECLAC, 2004).

Around 2005, the percentage of older persons receiving income from pensions and retirement benefits varied greatly from country to country, but the percentages were mostly well below 50%, considering both urban and rural areas (see tables IV.4 and IV.5).

Only in Brazil, Chile and Uruguay was the 2005 figure above 60%, and in the remaining countries it was somewhat below that level (Argentina, Colombia, Costa Rica, Mexico, Panama) or well below it (Bolivarian Republic of Venezuela, Bolivia, Dominican Republic, Ecuador, El Salvador, Honduras, Nicaragua, Paraguay). In rural areas, older persons receiving pensions or retirement benefits generally represent a very small proportion of the total; the amounts they receive may also be very small, as is the case in Ecuador, where the *Seguro Social Campesino* provides the equivalent of US$ 3 per month (Schkolnik, 2007).

Table IV.4
LATIN AMERICA AND THE CARIBBEAN (16 COUNTRIES): OLDER PERSONS RECEIVING INCOME FROM PENSIONS AND RETIREMENT BENEFITS, URBAN AREAS, ABOUT 2005
(Percentages)

Stage in demographic transition	Country	Percentage of older persons					
		Age 65-69			70 and over		
		Total	Males	Females	Total	Males	Females
Advanced	Uruguay	73.1	74.2	72.3	92.0	95.4	89.9
	Chile	64.4	72.7	57.6	81.9	89.1	77.2
	Argentina	47.8	49.9	46.2	77.3	83.0	73.9
	Brazil	79.3	84.6	75.1	88.7	93.6	85.6
	Colombia	25.6	34.9	18.3	24.1	32.5	18.1
	Costa Rica	39.0	38.0	40.0	44.0	57.0	33.0
	Mexico	31.5	44.7	19.8	31.8	45.1	21.0
Full	Panama	57.5	68.7	46.4	56.2	66.2	48.6
	Ecuador	17.4	20.1	15.1	29.7	35.1	25.1
	Venezuela (Bol. Rep. of)	12.0	21.0	3.0	13.0	26.0	3.0
	Dominican Rep.	16.8	24.2	11.2	14.9	21.8	9.1
	El Salvador	25.1	36.8	15.9	21.7	32.7	14.1
	Paraguay	29.9	24.1	33.8	26.2	28.5	24.9
	Nicaragua	14.0	22.0	9.0	22.0	36.0	12.0
	Honduras	17.1	12.3	20.9	17.2	20.9	14.3
Moderate	Bolivia	19.4	32.5	8.6	19.9	34.7	8.9
	Guatemala	17.2	23.6	12.3	18.8	29.1	9.6

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of special tabulations of data from household surveys conducted in the relevant countries.

Table IV.5
LATIN AMERICA AND THE CARIBBEAN (12 COUNTRIES): OLDER PERSONS RECEIVING INCOME FROM PENSIONS AND RETIREMENT BENEFITS, RURAL AREAS, ABOUT 2005
(Percentages)

Stage in demographic transition	Country	Percentage of older persons					
		Age 65-69			70 and over		
		Total	Males	Females	Total	Males	Females
Advanced	Chile	69.7	76.1	63.1	89.7	92.1	87.3
	Brazil	88.9	87.9	89.9	94.8	96.7	92.8
	Colombia	8.4	11.9	4.7	6.8	8.4	5.2
	Costa Rica	20	27	11	22	28	14
	Mexico	10.4	14.3	6.8	12.0	16.2	8.5
Full	Panama	28.1	8.7	18.4	18.4	22.4	13.0
	Dominican Rep.	6.4	11.3	2.1	7.8	10.4	4.5
	El Salvador	3.6	6.3	1.1	5.0	6.1	3.9
	Paraguay	1.9	0.7	3.3	7.3	9.9	4.8
	Honduras	2.3	2.9	1.6	2.6	2.6	2.7
Moderate	Bolivia	7.1	14.5	0.9	2.8	5.4	1.1
	Guatemala	3.9	5.8	1.4	9.1	14.3	2.7

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of special tabulations of data from household surveys conducted in the relevant countries.

2. Poverty and gender

Poverty is worsened by gender gaps, which have acquired much higher social visibility than in the past due to the impetus given by their inclusion in the agendas of civil society and international bodies, promoting their recognition at the national and international levels. Some indicators demonstrate the connection between gender and situations of poverty.

First, it has been shown that there are more poor women than poor men. In most of the countries, there is a greater female presence in poor households, especially in the group aged 20 to 59, in both urban and rural areas. It can therefore be said that women of active age are more at risk of being poor. Finally, the femininity index reveals a larger number of women living alone, for whom an equivalent male population does not exist among the poor. These are generally separated women, widows and single mothers, including female heads of household and heads of family without a male partner (ECLAC, 2003).

Second, men and women experience poverty differently, especially owing to the subordinate nature of women's participation in society which, for example, limits their opportunities for owning property and controlling economic, social and political resources (Arriagada, 2005). In the framework of the gender perspective, it is recognized that there is considerable inequality in the distribution of resources and in power relations in both the domestic and the public spheres, which gives rise to considerable disparities between men and women, to the detriment of the latter (ECLAC, 2003).

It is a fact that there has been progress in the economic participation of women in Latin America and the Caribbean. Estimates and projections of the economically active population (ECLAC/CELADE, 2007) show that between 1990 and 2005 that participation practically doubled in absolute numbers for the region as a whole and that it will increase further by up to

70% between 2005 and 2030 (see table IV.6), so a hypothesis on future demand for women's labour can be formulated.

Table IV.6
LATIN AMERICA AND THE CARIBBEAN: ECONOMICALLY ACTIVE FEMALE POPULATION, BY COUNTRY AND STAGE IN THE DEMOGRAPHIC TRANSITION, 1990-2030
(Thousands)

Stage in demographic transition	Country	1990	1995	2000	2005	2010	2015	2020	2025	2030
	Latin America and the Caribbean	53 544	68 353	85 271	98 963	112 923	12 7145	14 1397	155323	168 614
Very advanced	Cuba	1 380	1 482	1 537	1 695	1 848	1 973	2 056	2 098	2 116
Advanced	Uruguay	515	591	666	689	724	763	800	836	868
	Chile	1 414	1 768	2 156	2 527	2931	3 324	3 666	3963	4 243
	Argentina	4 184	5 104	6 096	7 188	8052	8 920	9 763	10 595	11 420
	Brazil	23 375	28 924	35 182	39 871	44 242	48 518	52 801	56 955	60 795
	Colombia	4 548	6 111	7 929	9 118	10 350	11 579	12 746	13 803	14 750
	Costa Rica	313	395	503	628	762	891	1 014	1 131	1 240
	Mexico	6 808	9 574	12 838	15 338	18 113	20 966	23 784	26 448	28 871
Full	Peru	2 569	3 637	4 856	5 542	6 279	7 020	7 734	8 435	9 128
	Panama	278	348	424	509	597	687	779	870	957
	Ecuador	882	1 332	1 818	2 143	2 519	2 935	3 381	3 832	4 278
	Venezuela (Bol. Rep. of)	2 091	2 520	3 010	3 717	4 474	5 255	6 049	6 852	7 655
	Dominican Rep.	821	1 095	1 395	1 622	1 861	2 113	2 378	2 651	2 927
	El Salvador	528	701	907	1 099	1 304	1 522	1 758	1 997	2 226
	Paraguay	487	605	751	919	1 109	1 317	1 540	1 772	2 009
	Nicaragua	385	507	648	789	951	1 125	1 300	1 478	1 658
	Honduras	365	476	606	786	1 009	1 269	1 555	1 864	2 191
Moderate	Haiti	1 089	1 140	1 203	1 416	1 676	1 970	2 290	2 633	2 989
	Bolivia	1 017	1 253	1 553	1 817	2 126	2 470	2 846	3 243	3 648
	Guatemala	496	790	1 193	1 551	1 996	2 529	3 155	3 868	4 646

Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, population estimates and projections for Latin America and the Caribbean updated in July 2007, Santiago, Chile [online] http://www.eclac.cl/celade/proyecciones/bsaedatos_BD.htm.

In relative terms that growth will be less dramatic; however, the projection implies that by 2030, the end of the projection period, female workers would represent close to 50% of the total economically active population. In other words, the numeric participation of women in the labour market will be very close to equalling that of men (see table IV.7).

Although in 2005 the participation of women in the region’s labour markets was already considerable (between 43% in Haiti and Uruguay and 31% in Honduras), those markets still show deficiencies such as segmentation, income gaps in favour of men and higher unemployment rates for women regardless of their level of education. Women have fewer training opportunities than men and they continue to be in a majority in the most insecure “pockets” of the economy (ECLAC, 1997 and 2003).

Table IV.7
LATIN AMERICA AND THE CARIBBEAN: ECONOMICALLY ACTIVE FEMALE POPULATION AS A PROPORTION OF THE TOTAL ECONOMICALLY ACTIVE POPULATION, BY COUNTRY AND STAGE IN THE DEMOGRAPHIC TRANSITION, 1990-2030
(Percentages)

Stage in demographic transition	Country	1990	1995	2000	2005	2010	2015	2020	2025	2030
	Latin America and the Caribbean	32.8	35.7	38.5	39.8	40.9	41.9	42.8	43.8	44.7
Very advanced	Cuba	32.8	33.7	34.7	36.3	37.6	38.7	39.6	40.7	41.9
Advanced	Uruguay	38.0	40.4	42.5	43.2	43.8	44.4	44.9	45.4	45.9
	Chile	29.4	32.1	34.8	36.4	37.9	39.2	40.5	41.8	43.0
	Argentina	33.1	36.3	39.2	41.4	42.4	43.2	44.1	44.9	45.7
	Brazil	36.5	39.1	41.4	42.2	43.0	43.7	44.5	45.2	45.9
	Colombia	34.9	38.1	41.4	42.2	42.9	43.6	44.3	45.0	45.7
	Costa Rica	27.4	29.6	31.7	33.5	35.1	36.7	38.1	39.6	41.0
	Mexico	25.9	29.7	33.0	35.4	37.1	38.7	40.1	41.5	42.8
Full	Peru	32.5	37.6	42.0	42.7	43.4	44.1	44.7	45.3	45.9
	Panama	30.8	32.7	34.3	36.0	37.5	38.9	40.1	41.3	42.5
	Ecuador	25.5	30.8	35.2	36.7	38.1	39.4	40.7	41.9	43.1
	Venezuela (Bol. Rep. of)	30.3	32.1	33.8	35.8	37.5	39.0	40.4	41.8	43.0
	Dominican Rep.	29.6	33.8	37.7	39.1	40.2	41.3	42.3	43.3	44.2
	El Salvador	30.4	33.7	36.6	38.2	39.6	40.7	41.8	42.8	43.6
	Paraguay	30.4	32.9	35.3	37.0	38.4	39.8	41.1	42.3	43.4
	Nicaragua	29.7	31.8	33.6	35.5	37.3	38.9	40.5	41.9	43.2
	Honduras	23.7	26.3	28.8	31.3	33.6	35.8	37.7	39.4	41.1
Moderate	Haiti	42.4	42.4	42.5	43.4	44.2	44.8	45.4	46.0	46.5
	Bolivia	39.0	41.2	43.2	43.6	44.1	44.6	45.1	45.6	46.2
	Guatemala	19.6	25.9	32.0	35.2	37.8	39.8	41.4	42.8	44.0

Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, population estimates and projections for Latin America and the Caribbean updated in July 2007, Santiago, Chile [online] http://www.eclac.cl/celade/proyecciones/bsaedatos_BD.htm.

An analysis conducted in 2002 in urban areas in 14 countries of the region showed that the incomes of women employed in low-productivity sectors were significantly lower than those of men. The wage differential between men and women remains significant, although there has been some improvement in recent years. Women earn less than men in almost all the countries of Latin America and the Caribbean. In 1998, women's incomes averaged 64% of men's, but in the informal sector the figure was 52%, with female own-account workers being even worse off. The greater the number of years of studies completed, the greater the differential (ECLAC, 2003). On average, women's incomes are just over 50% of men's, and even lower for women aged 45 and over. This is true —with varying degrees of severity— in all the countries of the region (ECLAC, 2007a).

The causes of the gap include high representation of women in the services sector, where wages are generally low. There is also the fact that women have responsibilities relating to other family members, so that they enter and leave the labour market more often and tend to prefer part-time jobs (Silveira, 2006).

Furthermore, female-headed households have lower per capital monetary incomes than male-headed households. In 2002 per capita income among households headed by women averaged 94% of that for households headed by men in 17 countries of the region. Similarly, in nine out of 18 countries, the proportion of indigence is clearly higher among female heads of household than among their male counterparts. Also, according to data on urban areas, in 2002 close to 90% of households headed by women lacked a spouse or partner, whereas only 13% of households headed by men were in that situation (ECLAC, 2003).

Thirdly, in the case of women, there is demand for unpaid work in relation to procreation and caring for children, older persons, the sick and those with disabilities. There is no equivalent in the case of men. The burden of domestic work which, since it is done in the home, is neither remunerated nor treated as expenditure, has negative consequences for the incomes of households and of the women themselves, both because it makes it difficult or impossible for them to join the paid labour force, achieve higher levels of education, or take on any responsibilities in public life, among other things. In the longer term, it creates gaps in their social security coverage, resulting in lower pensions and retirement benefits.

Calfio and Velasco (2006) note that women members of indigenous groups experience a double form of pressure: that of being female, and that of belonging to a population group other than the dominant group. Many of them therefore find that their rights and freedoms are curtailed more severely because they are indigenous women. They suffer discrimination from the indigenous men of their own peoples (fathers, brothers, male partners) but also from other groups which are part of their daily lives, such as teachers, transport workers, tradesmen, medical personnel, and even officials responsible for development programmes.

Analysing and overcoming poverty therefore requires a gender perspective, and this in turn means recognizing that the social and power status of women is unequal and is structurally subject to various forms of exclusion, based on the way in which gender relations are structured and passed on from one generation to the next. This means correcting the causes of the "invisible" but inevitable demand for unpaid domestic work and restoring its economic value and that of women's work in procreation and in caring for children and older persons. This means rethinking society as a whole from a gender perspective (Valenzuela, 2003; Feres, 2005; Arriagada, 2005).

Without such a perspective, strategies to combat poverty are unlikely to be a viable solution in the long term. This does not mean that women's entry to the paid labour market is always the best way to overcome poverty. As Valenzuela (2003) rightly notes, the existence of more than one employed person per household is the most viable option in the short term in order to meet its needs. Nonetheless, for both spouses in a very poor household, for example, to have unskilled, low-productivity, poorly paid employment with no job security is only a short-term palliative for cases of extreme poverty and fails to solve the problem of the intergenerational transmission and reproduction of poverty in the medium and long term. Consequently, all governments have to face the same problems.

3. Poverty and indigenous peoples

The indigenous population is a particular kind of "vulnerable group" in the sense that, in addition to its difficult socio-economic situation, it is also affected by the exclusion and discrimination to which it has been subjected as an ethnic minority in the context of national society. It is demonstrably true that most indigenous peoples live in extreme poverty (Psacharopoulos and Patrinos, 1994; Plant, 1998, cited by Bello and Rangel, 2000) and are critically deprived, excluded and poor (ECLAC, 2006a).

As ECLAC (2007a) states, indigenous peoples have typically been in the poorest quintiles of each country. Late twentieth century economic and social transformations and economic globalization have impacted on old and new social development gaps between indigenous peoples and non–indigenous populations, as has been demonstrated empirically in different studies conducted by multilateral agencies (Machinea and Hopenhayn, 2005; Hall and Patrinos, 2006; Busso, Cicowiez and Gasparini, 2005; Plant, 1998 cited by Bello and Rangel, 2000; Montenegro and Stephen, 2006).

According to various estimates, as of the early twenty-first century the world's indigenous peoples total between 350 and 400 million persons, representing over 6,000 languages and cultures and located in about 70 countries. It is estimated that between 30 and 50 million indigenous people live in Latin America and the Caribbean, depending on the source of information (Pando, 1990; Stavenhagen, 1996; Deruteyrre, 2001; UNDP, 2004), speaking about 860 languages and dialects (Toledo, 2006).

As for indigenous peoples' living conditions, a recent study designed to assess the outcome of the International Decade of the World's Indigenous Peoples, 1995-2004, shows that there has been little improvement in living conditions or poverty reduction among indigenous peoples. Hall and Patrinos (2006) note that indigenous peoples live in more disadvantaged situations than non-indigenous groups. In terms of poverty, their study shows that (i) Few gains were made in income poverty reduction among indigenous peoples during the International Decade of the World's Indigenous Peoples; (ii) Indigenous people recover more slowly from economic crises; (iii) The indigenous poverty gap is deeper, and shrank more slowly over the 1990s; (iv) Being indigenous increases an individual's probability of being poor, and this relationship was about the same at the beginning and at the close of the Decade and (v) Evidence of labour earnings disadvantage is strong across the region, but the study also suggests it may be falling.

Regarding educational performance, access to health care and public policies, the study also notes that (i) Indigenous people continue to have fewer years of education, but the gap is narrowing; (ii) The labour earnings that indigenous people derive from each year of schooling are lower, and this gap widens at higher education levels; (iii) Educational results are substantially lower among the indigenous population, reflecting problems with educational quality; (iv) High child labour rates may also be limiting the learning outcomes of indigenous children; (v) Indigenous people, especially women and children, continue to have less access to basic health services, so major differences persist in health indicators for indigenous and non-indigenous peoples and (vi) Some poverty-targeted programmes successfully reach indigenous people, but others do not. The authors note that all this conspires strongly against the achievement of the Millennium Development Goal of halving extreme poverty by 2015 (Hall and Patrinos, 2006).

From the demographic viewpoint, the indigenous population of Latin America has a younger age structure than the non-indigenous population, which mostly reflects differences in fertility between the two populations. The countries with young or very young indigenous populations are Bolivia, Costa Rica, Ecuador, Guatemala, Honduras, Mexico, Panama and Paraguay. The exceptions to the rule are the indigenous peoples of Brazil, which have more mature age structures, and Chile, where the indigenous population shows the same aged structure as the non-indigenous population (ECLAC, 2007a).

As for levels of infant mortality and undernutrition, indigenous peoples have the greatest disadvantages. There are still gaps in relation to the non-indigenous population —although these have been diminishing in the past 15 years— and deaths of indigenous children, which are mostly considered to be avoidable. Nonetheless, infant mortality among the region's indigenous children

averages 60% higher than among its non-indigenous children (48 per thousand compared with 30 per thousand, respectively). Studies conducted by ECLAC show that indigenous children who do survive become part of the population suffering from undernutrition in a greater proportion than among the non–indigenous population. According to data from demographic and health surveys, the incidence of total and chronic undernutrition among indigenous peoples in Bolivia, Ecuador, Guatemala and Peru, is slightly more than double that of non–indigenous peoples: chronic undernutrition ranges from 48% to 68% among the former and 23% to 37% among the latter (ECLAC, 2006a).

Although they share this unfavourable social and economic situation in the context of national society, indigenous peoples do not constitute a homogenous group. Their heterogeneity relates to the diversity of their situations in respect of factors such as their attachment to ancestral cultures and values, their original territories, the feeling of belonging to an indigenous people, their physical and material living conditions, their place of residence in urban, rural or forest areas, the occupations and activities in which they are involved, how economically dependent they are upon non-indigenous people, their degree of integration in the national economy, the family and community environment, and the use of the indigenous language. Moreover, countries tend to lack a single policy for indigenous people and do not afford the same status to all of them (ECLAC, 2006a).

Owing to this variety of situations among indigenous peoples, policies to support their development should not follow a general rule, but adapt to each group's specific living conditions and aspirations. This means that the peoples themselves should be the main protagonists in the design of policies which affect them, within the framework provided by both universal standards of human rights and also the rights which relate specifically to indigenous peoples at the national and international levels (ECLAC, 2006a).

4. The family environment and changes in the role of women

Demographic changes have led to a transformation in the structure and size of families and, together with many other social, economic, cultural and political factors, have played a major part in the changing role of women in society.

Conversely, new family arrangements and the fuller integration of women into their countries' economic, social, cultural and political life have, and will continue to have, an impact on the intensification of demographic changes and probable downward trends in fertility towards below-replacement values. In the medium and long term, this will have a considerable impact on the age structure of the population and will affect intergenerational relations in social and economic-support terms, in ways which are unprecedented in the region.

Changes which have been observed in the size and structure of families relate to the fact that they are becoming smaller and less stable, and taking on different forms. As a result, there are fewer people available to look after family members, whether these are children, older persons or those with disabilities. The new role of women in society promotes their participation in the labour force and in political, social and cultural life. Thus, they spend more time outside the home, which results in changes in the family environment in terms of the time available for carrying out domestic tasks. Two types of changes will be considered briefly in the following section: those within the family, and those in the role of women in society and the impact of those changes on the family.

(a) Changes within the family

(i) Changes in the marriage rate and the characteristics of unions

The dimensions which have most clearly shown changes in relation to the marriage rate in the region are the duration of unions and the increasing prevalence of consensual unions as a proportion of total unions.

The first of these factors relates to the decreasing duration of unions and the resulting fall in marital stability, which is reflected in rising numbers of separations and divorces. Although in many countries there are problems with the reliability of statistics, the trend in recent years is clearly towards an increase in separations and divorces, particularly the latter. García and Rojas (2004) note that patterns of marital dissolution in the region are beginning to show marked changes, although there are still considerable differences between countries, and in each case, cultural and institutional heritage can go a long way towards explaining them.

Another change which can be observed is the increase in consensual unions as a proportion of total unions. Although consensual unions are part of an old and well-known pattern in rural and marginal sectors in Latin America and the Caribbean, they have spread to other sectors of society. This may mean that such unions are being chosen because they offer greater independence and freedom for the partners.

García and Rojas (2004) report that the available studies show a rise in consensual unions since the second half of the twentieth century, and a clear differentiation in that respect in the interior of Latin America. The proportion of women in consensual unions has traditionally been much higher in many of the Central American and Caribbean countries —where this type of union may even be more common than marriage— whereas in many South American countries the numbers of consensual unions have always been smaller (Camisa, 1977; United Nations, 1990; Rossetti, 1993; Ramírez, 1995; Castro Martín, 1997; Quilodrán, 1999, cited by García and Rojas, 2004). García and Rojas also report that the most recent statistical data show that in the 1990s, far from losing momentum, the numbers of consensual unions in the region continued to increase. This upswing is particularly noticeable in the countries where such unions had traditionally been less numerous (Argentina, Brazil, Chile).

Nonetheless, they also report that union and marriage remain a central choice in the lives of young men and women in the region, and the postponement of that culturally very significant choice is still only gradual.

(ii) Changes in family structure

It appears that the nuclear family, consisting of a father who is the breadwinner, the mother who is a homemaker, and children is no longer in the majority in the region (Arriagada, 2007). This suggests that a change is taking place in the family model. The following phenomena have been observed:

- A slight decline in the proportion of extended families, from 23% to 21.7%;
- A reduction in nuclear families, from 63.1% to 61.4%, owing to the rise in numbers of non-family households;
- Greater diversity within the nuclear-family category;

- A fall in the number of two-parent nuclear families with children, from 46.3% to 41.1%; this is partly because some of those families have become single-parent families with children, particularly female-headed families;

- An increase in non-family households from 11.5% to 14.8%, among which single-person households rose from 6.7% to 9.7%. These consist mostly of young people who have become independent, and older persons living alone or having economic resources;

- The impact of migration (of all types) on family structures, such as greater fragmentation of the family, ageing in rural areas, and children living with their grandparents in the absence of the parents (Arriagada, 2007).

(iii) Changes in family size

Arriagada (2001) notes that average family size has fallen because of the decline in the numbers of children and increased spacing between births. Ramírez (1995) reported that family size has fallen in most of the countries, with a high percentage of households consisting of only one family. Data from some of the countries for which information is available show that this reduction averages 0.5 to one person. Sunkel notes that between 1987 and 1999, the trend towards lower family sizes was observed in all the Latin American countries, although there were significant variations among them. Uruguay has the lowest average number of persons per household (3.2 in 1999), with Guatemala and Honduras at the opposite end of the scale with 4.8 persons per household in the same year (Sunkel, 2006).

The increase in dissolutions of unions has given rise to other types of families, such as compound families, defined as those consisting of a couple living with at least one child who is the offspring of only one of them. In such cases, the lives of men and women are more and more often characterized by a series of experiences in a variety of family contexts (Street, 2007).

Falling fertility has undoubtedly played a major role in this phenomenon, but there are other important factors such as the trend towards nuclear families and the fall in extended families, as well as the increase in separations and divorces. Migration, especially for economic reasons, can also lead to smaller family sizes in both the place of origin and the destination country, in addition to major changes in family composition.

An indicator which is in accordance with the fall in the size of families is the change in desired family sizes which occurred in the 1990s and which prefigured the continuous, long-term trend towards smaller families. In many countries, the fertility surveys conducted in 1980, 1990 and 2000 showed considerable falls in women's preferences as to the desired number of children, particularly in groups where fertility was high and educational levels were low (Schkolnik and Chackiel, 1998 and 2004). Despite rising contraceptive use, many women have not yet achieved their fertility targets; this implies that, as the gap narrows between the wish to reduce the number of children and access to modern contraceptive methods, fertility will trend downwards and family sizes will become even smaller.

(b) Changes in the role of women and impact on the family

As Arriagada notes (2001), massive entry by women into the labour market has changed the habitual patterns of functioning of Latin American and Caribbean households; however, women have entered public life in many areas which were formerly the almost exclusive preserve of men (such as education, politics, public service and even consumption), they have diversified their activities and perhaps given rise to conflict between the public and private spheres. This, although it causes tension, is in turn a source of further changes.

As Sen reports (1990 and 1991, cited by Arriagada, 2001), the sharing of the family's common benefits will probably be less unfavourable to women if: (a) They can earn income outside the home; (b) Their work is recognized as productive, which is easier to achieve if they work outside the home; (c) They possess some financial resources and have some rights to which they can have recourse and (d) There is a clear understanding of the ways in which women's rights are abridged and recognition of the possible measures to change that situation.

It has been difficult to measure the increase in women's participation in a considerable number of areas. An initiative conducted in order to monitor the implementation of international agreements and in response to a proposal from the regional coordination of non-governmental organizations in Latin America and the Caribbean, the Women's Initiative Group of Chile prepared the Latin American Index of Fulfilled Commitment (IFC) (Valdés, Muñoz and Donoso, 2005), on the basis of a selected set of indicators (see table IV.8).

Table IV.8
CHILE AND LATIN AMERICA: INDEX OF FULFILLED COMMITMENTS IN THREE MAIN AREAS, 1995, 2000 AND 2003
(*Percentages*)

Indicator	1995	2000	2003
Average achievement of goals in all areas	61.2	60.4	66.4
Area of citizen participation and access to power (average)	16.6	23.1	24.4
Parity in positions of Ministers of State or Ministerial secretariats	16.7	28.9	27.1
Parity in national- or federal-level parliamentary posts	19.0	25.8	30.3
Parity in supervisory posts in local government	13.9	14.6	15.8
Financial independence and poverty (average)	71.9	74.9	76.3
Equality in average incomes of men and women [a]	64.8	67.2	69.2
Female-headed households not living in poverty [b]	55.7	67.3	67.1
Literacy among women aged 15-24 [b]	91.8	93.1	94.5
Women's health and sexual and reproductive rights (average)	75.7	78.5	73.6
Women of childbearing age using modern contraceptives [c]	62.6	70.7	73.0
Live births to women aged 20 or above [b]	88.2	87.2	87.7
Institutional care during childbirth [a]	74.4	77.1	81.9

Source: Teresa Valdés, Ana María Muñoz and Alina Donoso (coords.), *1995-2003: Have Women Progressed? Latin American Index of Fulfilled Commitment* , Santiago, Chile, Latin American Faculty of Social Sciences (FLACSO)/United Nations Development Fund for Women (UNIFEM), 2005.

[a] Target = 100%.
[b] Target = 95%.
[c] The target is for 60% of women aged 15-49 to be using modern contraceptive methods. The achievement indicated is the percentage achieved in respect of the target in question, and refers only to women receiving public-sector care.

The Latin American and Caribbean Women's Health Network (LACWHN) has developed a gender-adjusted human development index which measures gender equity in three dimensions of human development: long and healthy life, appropriate information and decent standard of living. According to an example of seven countries monitored using this index, the human development index is higher than the gender-adjusted index, demonstrating the lack of opportunities and gender inequity which still affect women.

Nonetheless, regardless of the scarcity of progress in many areas and the delay in achieving true gender equity and equal opportunities for men and women in both the public and private spheres, it is true that the process has begun and is present on countries' development agendas.

A good number of the changes mentioned aim to redefine roles within the family and the part that the State must be willing to play in order to reconcile the personal development of all family members with the continuance of the family itself as an institution. This means that, as viewed from this perspective, achieving gender equity will entail significant changes in government policies and in the people themselves who will have to assume responsibility for the challenges that lie ahead.

Chapter V

SUMMARY REMARKS

The purpose of this document is to furnish information for a diagnostic analysis of the sociodemographic situation and to offer guidance for countries of the region as they address the major challenges which, given their current demographic trends and demographic features, are expected to arise in the next few decades. The approach that Governments adopt in tackling population issues and the associated challenges needs to be suited to the stage of demographic transition which each country has reached, the future changes expected in the demographic variables that affect population growth, and the degree to which, directly or indirectly, each demographic variable can be targeted by public policy.

A. CATEGORIZATION OF COUNTRIES BY STAGE OF DEMOGRAPHIC TRANSITION

This paper presents an overview of the demographic situation of the region's countries, updated to 2005-2010, and classifies them into four categories based on the different stages of the demographic transition: very advanced, advanced, full and moderate.

- *Very advanced transition:* countries with very low fertility and mortality rates. Although no country in the region fully meets both these conditions, Barbados and Cuba are conditionally classified in this group because they meet the "very low" fertility rate condition (more than half a child below the replacement rate) although their mortality rate is still only "low".

- *Advanced transition:* countries with low fertility and mortality rates. This category includes Chile, Costa Rica, Guadeloupe, Martinique, Mexico, Puerto Rico and Uruguay. The other countries placed in this group on a conditional basis because they do not meet the mortality requirement are: Colombia, Brazil, Jamaica, Argentina, Saint Lucia and the Netherlands Antilles, which have "intermediate" mortality rates, and Trinidad and Tobago, which has a "moderately high" mortality rate. These countries need to make a concerted effort to increase the life expectancy of their inhabitants.

- *Full transition:* countries and territories with intermediate fertility and mortality rates. The countries that fully meet these criteria are the Bolivarian Republic of Venezuela, the Dominican Republic, Ecuador, El Salvador, French Guiana, Honduras, Nicaragua, Panama, Paraguay, and Peru. Those placed in this category on a conditional basis are Suriname and Guyana, which have "moderately high" mortality rates, and Belize, which has a "low" mortality rate. This means that, contrary to what is happening in other countries, the decline in mortality in Belize has outpaced the decline in fertility.

- *Moderate transition:* countries with moderate fertility and mortality rates. Bolivia and Guatemala comprise this group, together with Haiti, which is placed in this category conditionally because it is the only country with a "high" mortality rate (life expectancy is more than 10 years lower than the regional average).

The analysis of demographic transition in terms of the total fertility rate and life expectancy at birth shows that, in some countries, progress in lowering the mortality rate has lagged somewhat behind the reduction made in the fertility rate.

Once fertility rates have begun to full, they may continue to decline through sheer momentum. This does not seem to occur in the case of mortality, however, possibly because mortality is a highly sensitive variable. In order to lower mortality rates, greater access must be provided to health care and to the latest medical services and technology, all of which translates into steadily rising levels of public spending on health.

B. FACTORS AFFECTING POPULATION GROWTH

Four factors affect population growth: fertility, mortality, migration and the growth potential inherent in the age structure.

Towards the middle of the twentieth century, high fertility rates (of six or more children per woman) and falling mortality rates were the main factors fuelling population growth in the region. In some cases, large inflows of migrants, mainly from outside the region, also affected the age structure of the population.

The demographic situation has changed considerably in the vast majority of the region's countries. Fertility rates are down to levels far below those anticipated even in the 1970s and 1980s: Latin American and Caribbean women today have, on average, 2.4 children. Life expectancy at birth for both sexes now stands at 73.3 years, which means that, without substantial improvements in living conditions or major medical breakthroughs, improvements in this indicator are unlikely to be anywhere near as spectacular as they have been in the past 20 years. The impact of migration has also waned and now has only a moderate impact on population sizes.

In this context, when fertility, which has been the main factor driving population growth in every country except Cuba, reaches replacement levels (2.1 children per woman) in all the countries of the region, populations will continue to increase for several more decades as a result of the growth potential of the age structure created by past high fertility rates.

The expected future increase in the countries' populations (growth recorded between 2005 and the year at which population growth peaks) varies considerably. Among the countries in the advanced transition stage, Uruguay will witness the slowest population growth (12.5% in relation to its current population), followed by Chile and Mexico (24.1% and 26.3%, respectively), Argentina, Brazil and Colombia (between 30% and 40%) and Costa Rica (44.4%).

Larger relative increases will be recorded among the countries in full transition, although the situation will vary considerably from country to country. Those expected to witness the least growth include Peru, Dominican Republic and Nicaragua (45.6%; 48.9% and 51%, respectively), followed by Ecuador, Panama, Bolivarian Republic of Venezuela and El Salvador (56.7%; 57.3%; 58.6% and 68.9%, respectively). Paraguay and Honduras, by contrast, will experience higher levels of growth (82.6% and 92.4%, respectively). When their population growth peaks, these two countries will have practically doubled the population they had in 2005, as will two countries undergoing moderate transitions: Haiti

(94.1%) and Bolivia (88.1%). Guatemala, meanwhile, is the country that will experience the largest increase in population (151.8%).

As demographic transition advances, the impact of fertility on population growth declines. Its effect is not completely lost, however, until fertility reaches replacement levels. From that moment onwards, as shown in the cases of the countries in the more advanced stages of transition, growth depends mostly on age structure in the countries that still have a more or less important proportion of women of child-bearing age. These figures are therefore obviously highly important for medium- and long-term decision-making and for assessing and anticipating variations in demand over time. Needless to say, care must be taken to adjust for real changes in demographic variables that diverge from the projected trends as they arise.

C. THE THREE MAIN ASPECTS OF DEMOGRAPHIC CHANGE: AGEING, THE DEMOGRAPHIC DIVIDEND AND CHANGES IN THE BURDEN ON SOCIAL SECTORS

1. Population ageing

The most notable feature of countries moving into the more advanced stages of demographic transition is the increase in the proportion of older persons and the decrease in the proportion of younger persons in the population, at a time when the potentially active population remains relatively stable before beginning to decline slightly. In the region as a whole, the expansion of the older adult population is picking up speed and is not projected to slow down before 2010-2015. Even then the growth of this population segment will far outpace the growth of the other two large age groups.

The size of the young population in Latin America and the Caribbean in the current period (2005-2010) has stabilized. The working-age population is growing but at a slowing rate, and the older adult population is expected to continue expand until the end of the period. This undoubtedly confirms the well-acknowledged fact that population ageing is the main demographic phenomenon of this era and will become increasingly important in years to come, both for society as a whole (population ageing) and for the elderly themselves (individual ageing), as the relative and absolute weight of older persons in the population exceeds that of other groups.

At the moment, population ageing in the region, in terms of numbers, seems to be a manageable phenomenon and to be occurring at a reasonable pace. This is because all the different aspects of the situation in store for the region over the next 40 years have yet to reveal themselves. Current figures should not be taken as an indication of the future: the process is due to speed up, and the number of older people will exceed all expectations. Indeed, between 1950 and 2000 the population aged 60 and above went from 5.5% to 8.8%, and it will rise from 8.8% to 23.6% over the next 50 years. In absolute terms, this represents an increase from around 9 million to 180 million people in the course of a century.

Nevertheless, the growth of the older adult population will not have the same impact or manifest itself at the same time in all countries. In some countries or groups of countries, child and youth populations, as well as the working-age population, will still play a major role and will continue to be a considerable source of demand for social sectors and to pose a challenge for public policy. Although population ageing is enormously important, concentrating on that issue alone could divert attention away from those other groups whose place in society is far from assured.

The countries of the region need to come up with specific policies to tackle the consequences of population ageing, bearing in mind the increasing fragility of the family support network, the inadequate supply of social services and the need for new strategies that can guarantee acceptable living conditions for older persons in the future without neglecting the needs of other social groups.

2. The demographic dependency ratio and the demographic dividend

There is a period during the demographic transition when the young population is declining and the segment of older persons is just beginning to expand, in which the proportion of working-age people steadily increases in relation to the rest of the population. This creates particularly favourable conditions for economic development because the possibilities of generating savings and investing in economic growth increase, while the pressure on public spending on education decreases. This period is commonly referred to as the demographic "bonus" or "dividend" or the "demographic window of opportunities" because of the possibilities this stage offers for improving per capita economic growth and the living conditions of the population. The demographic dividend may last for several decades, but the steady increase in the proportion of older persons eventually pushes the dependency ratio back up again, and the window is then closed.

The benefits associated with this dividend are not automatic. The opportunity that the dividend poses for speeding up development can only be successfully exploited by implementing macroeconomic policies that stimulate investment in production, increase job opportunities and promote a stable economic and social environment that paves the way for sustainable development. If, during the dividend, countries improve social protection, invest in education and health and promote the creation of productive well-paid jobs, the ensuing economic benefits can help reduce the burden that the growing proportion of older persons will pose in the future.

The demographic dependency ratio is used to approximate the true economic burden on the working-age population. The observation of the ratio between the inactive and active members of the population shows that the demographic dividend, which is associated with the stage of demographic transition when the proportion of active people is still rising, can be increased and prolonged by factors that are not strictly demographic in kind. The increased participation of women in productive activities, for example, has been shown to have a decisive influence on prolonging the period of declining economic dependency beyond the period of decline brought about by demographic changes. The analysis also shows the positive effect that an extension of the productive period can have on the duration of the favourable period of the demographic dividend.

The following observations have been made about the demographic dividend in the region:

(i) In most countries, the dependency ratio will fall between 40% and 50%;

(ii) The duration of the dividend, from the moment the dependency ratio is at its highest to when it is at its lowest, varies considerably from country to country, and fluctuates between 40 and 65 years on average. The duration of the dividend is expected to fall far short of this range in the cases of Cuba (17 years), Uruguay (27 years) and Aruba (34 years), and extend well beyond in the cases of Haiti (69 years), Honduras (68 years), Nicaragua (70 years) and Paraguay (76 years);

(iii) The stable period of the demographic dividend (when the dependency ratio is less than 2 dependent people for every 3 working-age people) has still not begun in almost half the countries of Latin America and the Caribbean because they are in the less advanced stages of demographic transition;

(iv) The period in which the dependency ratio is relatively low (which is potentially beneficial for boosting economic and social development) varies considerably from country to country, ranging in Latin America from 26 years in Argentina to 42 years in Brazil, and in the Caribbean, from 14 years in the Netherlands Antilles to 45 years in Suriname;

(v) When the age bracket for economic activity is set at 15 to 64 years (as is done in some countries), the favourable period associated with the demographic dividend is prolonged by only five years in most countries, except in Brazil, Cuba and the Bolivarian Republic of Venezuela, where using these parameters adds 16 to 20 years to the duration of the dividend.

Given the wide array of demographic situations in the different countries of the region, public policies will have to be individually tailored to take advantage of the development opportunities that changing demographics are creating.

3. Changes in burden on social sectors

In the preceding sections, the impact of changes in the population age structure in the region's countries was observed from the perspective of the demographic bonus or dividend, which reflects changes in the dependency ratio between age groups. This section examines the economic benefits to be derived from the impact of these changes on three sectors that are key for economic development and the expansion of social protection, namely: education, pension systems and health. The behaviour of the demographic dividend is therefore analysed in terms of "economic dependency ratios", in other words, the ratio between effective consumers and producers. The number of "consumers" and "producers" was estimated by applying a standard model that combines the age patterns of consumers and producers in three Latin American countries. This made it possible to compare demographic differences between countries and their impact on the social sectors.

The demographic dividend is thus considered to be the product of the interaction between the age structure of the population and the age structure of production and consumption and is measured by the quotient between the number of effective consumers and the number of effective producers.

On the supposition than the consumption needs of children and older persons are met by transfers from the economically active population, a fall in the dependency ratio represents the freeing up of economic resources that can be used for investment or consumption instead. This liberation of resources is the so-called "demographic dividend". For example, between 1971 and 2025, the ratio of consumers to producers will have fallen 20% in the region. This 20% drop over 54 years will represent a 0.37% increase per year in economic resources. In other words, for the region as a whole, the demographic dividend between 1971 and 2025 will be almost 0.4% per year.

This figure, calculated as it is for a long period of time and for the region as a whole, conceals significant differences at the country level, however. These differences basically stem from the stage of demographic transition that each country has reached. The size of the demographic dividend also depends

on the period under analysis. For practical purposes, two periods either side of the present one were taken into consideration: the preceding decade, 1998-2008, and the forthcoming decade, 2008-2018.

In 1998-2008, the demographic dividend for the region as a whole was approximately 6% in terms of economic resources liberated per consumer, which can be best appreciated when expressed as a third of the *increase* in per capita GDP in the same period. Although this could seem to be a relatively modest potential dividend, it is a significant contribution considering the minimal economic growth recorded in most of the countries of the region. The countries with above-average dividends during the past decade recorded the sharpest falls in their fertility rates, most notably Nicaragua (10%), El Salvador (8.6%) and Mexico (8.6%). The countries with below-average dividends recorded the fastest ageing of the population and had the least potential to reduce their child populations. The most notable cases of this situation were Cuba (1.3%), Uruguay (1.6%) and Chile (2.5%).

A substantially lower demographic dividend will be observed in 2008-2018, equivalent to less than 3% of the economic resources liberated per consumer. The highest dividends will be recorded by the countries that still have relatively large young populations, such as Honduras (8.9%), Nicaragua (8.4%) and Haiti (7.8%), and the lowest dividends will be seen in countries with a more aged population, such as Chile (0.6%), Brazil (1.2%), Panama (1.4%) and Uruguay (1.5%). The case of Cuba is emblematic of the situation in the region because the period of the demographic dividend will clearly come to an end during 2008-2018 because of the increase in the population of older persons. The dividend will in fact turn negative by the end of the period (-1.2%).

In short, the demographic dividend for the region, though modest, has been positive over the past decade and will continue to be so during the next, especially in the countries that still have the potential to lower their fertility rates and in which the ageing of the population has not really started yet. In the countries with ageing populations, on the other hand, the demographic dividend will shrink and even disappear.

As far as social services are concerned, in the education sector, the long-term decline in fertility dramatically lowered the ratio between the school-age population and the working-age population. This freed up financial resources for investing more in the scope and quality of education: i.e., it produced a demographic dividend in education. This occurred in all the region's countries and represented, on average, a 19% increase in the resources available for each school-age child in the region over the past decade. A substantial increase (15% on average) is projected for the forthcoming decade, which will make it possible to economically sustain the efforts to increase secondary and tertiary education coverage.

By contrast, the demographic shifts will make it increasingly difficult to finance pay-as-you-go pension systems. The impact of the ageing of the population is evident in nearly all the countries of the region. Concerns about the long-term sustainability of public pension systems have led some countries to privatize all or part of their pay-as-you-go pension systems. The financial burden these schemes represent is expected to increase 17% on average per contributor. The impact will be most felt in the countries in the more advanced stages of demographic transition. For example, in countries such as Colombia and Guadeloupe, the burden of financing a pay-as-you-go system will increase almost 25% over the next decade, while in countries such as Bolivia, which has a relatively young population, the burden will be much less.

In the case of health, the countries in the least advanced stages of demographic transition are in a particularly favourable position because the proportion of economically active people, which are those that require the least medical attention, is increasing. In Grenada, Honduras and Guatemala, for example, changes in the age structure of the population are expected to increase the resources available for health per

consumer by approximately 10% over the next decade (a demographic dividend in health). In the countries in the more advanced stages of demographic transition, however, the growing proportion of older persons (who tend to make more intensive use of medical services) is expected to translate into a "demographic disadvantage". In Barbados, for example, changes in the age structure of the population are projected to result in a 9% drop in the health resources available per consumer by 2018; and in a 5% drop in Cuba.

The main challenges being brought about by demographic changes in the health sector will be how to fund the required increase in spending on older persons and how to restructure health systems to handle the growing number of patients with non-transmissible chronic diseases and disabilities. The impact of demographic change on the health system is already evident in all the countries of the region, particularly in those in the more advanced stages of demographic transition. Twenty years ago, 9% of health resources, on average, were devoted to older persons. This figure is expected to almost triple over the next 20 years to 23% by 2030.

D. THE BACKGROUND TO DEMOGRAPHIC CHANGES

The various aspects of demographic change need to be analysed in light of two pressing issues: the expansion of human rights and the fight against poverty. These two issues have their own specificities but are also interrelated. Development involves respecting the rights of people and groups and guaranteeing "dignified" living conditions for all individuals regardless of their position in society and their opportunities to access the social benefits that can be obtained through participation in the formal labour market.

The beginning of demographic transition in Latin America and the Caribbean was largely influenced by the economic and social changes which took place in the region in the twentieth century. Economic development —which trended upward strongly after the Second World War— laid the foundations for rising real incomes for large sections of the population and for increased urbanization and expansion of education, giving rise to the emergence or growth of the middle class in many countries. At the same time, health coverage expanded and the nutritional condition of the population improved, new discoveries in medicine were disseminated, the availability and awareness of contraceptive methods increased, and the range of the media expanded, improving access to information on sexual and reproductive matters.

The current demographic situation, which is characterized by an expanding total population that is ageing increasingly rapidly, is forming within a context of wide poverty gaps and inequity in income distribution, two factors that are particularly resistant to change.

Socio-economic differences, which are reflected in differences in income and opportunities, restrict the scope of action for people from low-income groups in areas such as education, health, employment, and social, political and cultural participation and pose a serious threat to social harmony and cohesion.

Within the context of the economic and social development of the region's countries, which all suffer from huge disparities in income distribution, the drop in the mortality and fertility rates has had a positive impact on health and helped improve the living standards of the population. The way in which these processes have occurred favoured those with the greatest access to opportunities in society. This has generated a new demographic panorama in which demographic inequalities and inequities closely mirror

the socio-economic situation of the population, and this in turn has created new, more specific, problems that social action and economic and social policies need to address.

This document analysed the important aspects of three types of population groups or segments that are each defined by different criteria but share a high level of vulnerability owing to the lack of political, economic and social policy instruments that have been implemented to ensure economic equity, solidarity and respect for human rights. These groups are: older persons, women and indigenous peoples.

1. Older persons

In recent years, the ageing of the population, which has been brought about by declining fertility rates and improvements in older-age life expectancy around the globe, has become the latest challenge posed by demographic change. The number of people aged 60 and above is climbing at an increasingly faster pace, and this expanding population group of older persons is making new and more demands regarding social security, health care, employment, education, social and political participation, etc.

Older persons will soon become an important segment of society in numerical terms and, thanks to improvements in life expectancy, they will live longer. This poses two enormous challenges to society. One is how to ensure not only that people have enough to make ends meet when they reach old age (either through universal contributory or non-contributory social security schemes or by adsorbing them into the paid workforce), but also that older person are not excluded from society. The other is how to take advantage of the potential that older persons have to act as agents for furthering development, generating wealth and improving inter-generational relations, given that a growing number of them will have full control of their physical and mental faculties and be capable of engaging in productive activities.

In addition to addressing the ageing of the population as a whole, Governments will have to take specific action and target social protection measures to address the ageing of the poor. The problems facing older persons stem from their inability (compared to other population groups) to generate income through paid employment and the inadequate coverage and poor quality of pension and retirement schemes. Family arrangements are often precarious, and in both economic and social terms, there is a lack of suitable family or institutional care options available to older persons. Unstable employment conditions can affect the economically active population, including the children or relatives of older persons and limit their capacity to help or economically support older family members, especially ones who can no longer live alone and require constant or near-constant care.

From the institutional viewpoint, the ageing of the population poses a huge challenge to health care systems because the medical problems associated with degenerative and chronic diseases require diagnostic techniques and treatments that are more complex and expensive than those required to attend the medical needs of the younger population. Moreover, as the current demographic and epidemiological trends continue, the incidence and severity of non-transmissible chronic diseases will increase.

The fact that women tend to outlive men means that more women are on their own than men. Furthermore, the disadvantages women face in the labour market (lower wages, fewer opportunities for formal employment, more precarious jobs, less access to credit, etc.) limits the extent to which they can benefit from pension schemes.

The challenge as far as the ageing of the population is concerned is to:

- Incorporate a gender perspective into the country's social protection systems and adjust these systems according to the different realities existing in the country, paying particular attention the poorest sectors of the population, when people have not been able to accumulate (during their working life) sufficient resources to subsist in old age, especially in the case of women.

- Upgrade health services in keeping with the changes in the age structure of the population and epidemiological changes, with a view to addressing the needs of the most vulnerable groups, and, in light of the feminization of ageing, incorporate a gender perspective into health care so that health policies take the greater longevity of women into account.

- Create the social and economic conditions needed to handle an increasingly aged population and adjust the supply of social services according to age-related changes in demand. Create conditions that encourage the employment of older persons and increase their participation in community life and in social networks and organizations.

- Incorporate a gender perspective in all social policies, especially policies that target older persons, to take the feminization of ageing into account.

2. Gender relations

Gender equity is a human rights issue and falls within the broad concept of citizenship that affords equal opportunities to all. As such, gender equity reflects how far a country has come along in advancing human development. Inequalities in the distribution of power and resources within a country and between men and women are the best indicator of how far behind that country is in its human development.

A gender perspective acknowledges that men and women experience poverty differently and that there is considerable inequality in the distribution of resources and in power relations in both the domestic and the public spheres, which gives rise to considerable disparities between men and women to the detriment of the latter.

Analysing and overcoming poverty therefore requires a gender perspective, and this in turn means recognizing that the social and power status of women is not only unequal but structurally subject to various forms of exclusion, based on the way in which gender relations are structured and passed on from one generation to the next. Steps therefore must be taken to correct the causes of the "invisible" but inevitable demand for unpaid domestic work and to restore its economic value and to restore the value of women's work in procreation and in caring for children and older persons, which is similarly unacknowledged by the market. This means rethinking society as a whole from a gender perspective.

Without such a perspective, strategies to combat poverty are unlikely to be a viable solution in the long term. This does not mean that women's entry to the paid labour market is always the best way to overcome poverty. In the poorest sectors, people tend to be engaged in unskilled, low-productivity, poorly paid employment with no job security, and employment of this kind is thus only a short-term palliative for cases of extreme poverty and fails to solve the problem of the intergenerational transmission and reproduction of poverty in the medium and long term.

The challenge as far as gender relations are concerned is to:

- Promote gender equity in the labour market through policies that encourage job opportunities to be created for women in sectors that have traditionally excluded them and help women balance their productive and reproductive roles in society.

- Provide training to less-educated women with a view to increasing their productivity in the labour market and implement human resources policies that target poor women to help narrow the income gap among women.

- Promote gender equity in wages and eliminate sexual discrimination in pension systems so that women are not negatively affected by their more limited participation in the labour market, the lower wages they earn and the time they devote to unpaid labour in the home.

- Incorporate a gender-based approach into the health sector to ensure that women do not assume responsibility for health care in the family alone, but share it with men and thus have time to devote to other productive activities.

3. Indigenous peoples

The indigenous population is a special kind of "vulnerable group". Most indigenous people live in extreme poverty. The fact that they belong to a distinctive ethnic group makes them subject to exclusion and discrimination within the context of national society.

Lately indigenous groups have begun to exert pressure on governments, and certain issues in the past decade, such as claims regarding land rights and cultural knowledge, have attracted widespread attention. This, together with the recent adoption of the United Nations Declaration on the Rights of Indigenous Peoples, has extended the scope of their social action and strengthened the obligations of States to recognize, promote and guarantee both the individual and the collective human rights of indigenous peoples. Countries must now complete the implementation of the rights established by the new international standard regardless of how daunting the task may be.

The challenge as far as indigenous peoples are concerned is to:

- Bridge the gaps in the implementation of the rights enshrined in international and national instruments.

- Incorporate the problems facing indigenous peoples into public policy by making policies culturally valid and ensuring they take the heterogeneity and complexity of local dynamics into account.

- Guarantee the active participation of indigenous peoples in the policies, plans and programmes for their development.

- Foster and promote an intercultural dialogue through education and training programmes in different areas of national life (education, health, work, culture, etc.).

4. Changes in the family environment and the role of women

Demographic changes have led to changes in the structure and size of families and, together with many other factors, have played a major part in the changing role of women in society.

Changes which have been observed in the size and structure of families are due to the fact that they are smaller, less stable, and are adopting new arrangements. As a result, there are fewer people available to look after family members, whether these are children, older persons or persons with disabilities.

Falling fertility has undoubtedly played a major role in this phenomenon, but there are other important factors as well. Migrations, especially those which occur for economic reasons, can also lead to smaller family sizes in both the place of origin and the destination, in addition to major changes in family composition.

In addition to changes in size, families are undergoing two other notable changes: the duration of unions is decreasing, and the resulting decline in marital stability is reflected in the rising number of separations and divorces; and consensual unions are becoming increasingly prevalent as a proportion of total unions. Changes are also occurring in family structure: the nuclear family (comprising a breadwinner husband, stay-at-home wife and their children) is giving way to non-family households, one-person households and a wide array of family arrangements that do not fit the traditional model at all.

The new role of women in society promotes their participation in employment outside the home and in political, social and cultural life. Thus, they spend more time outside the home, which results in changes in their family environment in terms of the time available for carrying out tasks within the household. The new types of family arrangements and the full integration of women into economic, social, cultural and political life has accelerated, and will continue to accelerate, the demographic changes under way and will probably ensure fertility is pushed down to below replacement rates in the future. This will have a strong impact in the medium and long term on the age structure of the population and will alter intergenerational social relations and economic ties in the region in ways never seen before.

The challenges identified in this area are to:

- Recognize the heterogeneity of family arrangements and the emergence of new needs among families as a whole and their different members.
- Offer equal opportunities to family members to achieve their own potential and to construct and maintain a supportive and cohesive family environment.
- Eliminate exclusion on the grounds of gender within the family by bringing men and women together to work on a shared personal and social development project that encompasses both their public and private life.
- Boost the role of families in society through targeted policies.
- Acknowledge that in order to attain economic and social development with equity and respect for people's rights, men and women need to enjoy equal opportunities and work together, and that the place for this to start is in the family.

In short, without progress in all the areas mentioned above, the way will be paved for the perpetual reproduction and transmission of poverty from one generation to the next even if fertility rates are low, and countries will find themselves moving backwards rather than forwards.

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