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Population and the labour force in Latin America: some simulation exercises

*Charles Rollins**

In Latin America due importance has not been attached to the problems deriving from population growth, and although it is not a matter of promoting a new malthusianism, attention should be drawn to the challenges with which the countries of the region will be faced if current population trends continue in the next few decades. Suffice it to point out that should this happen, Latin America would have more than 700 million inhabitants by the end of the century and over 6 000 million in a hundred years' time; that is, its population would be 20 times as big as at present, and one and half times as large as the entire population of the world today.

The present article explores some aspects of this process in relation to the continent as a whole and at the national and regional levels in four specially selected countries (Argentina, Brazil, El Salvador and Venezuela). In the light of several population projections, constructed on the basis of various growth hypotheses, it analyses general demographic trends (fertility, mortality, population growth) and changes in the age composition and in the structure of the labour force. In this last connexion, the author stresses the point that the great increase in the active-age population will exert tremendous pressure on the labour market during the coming decades, with the consequent economic, social and political repercussions.

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Introduction

In the course of work on a general simulation model designed to experiment with a variety of possible development styles it became clear that employment is likely to remain one of the major problems facing the Latin American economy throughout the remainder of this century, if not longer. Given the importance of this question a separate population model was set up to investigate population and labour force trends. A set of simulation exercises was designed for the analysis of four countries, selected to show the range of variation in the region. The present paper reports the principal results of these exercises.

To place the exercise in proper perspective the analysis begins with a general discussion of the population parameters which characterize the region. Although well-known to demographers, it is probable that many of these, and their implications, are less familiar to economists and other specialists concerned with development problems, and in view of their often fundamental importance can bear repeating.

The first point to stress is that population is a long-term variable *per se*, and changes in the basic parameters require very long periods to work themselves out. Thus, even on the extreme assumption that age-specific fertility rates drop sharply for 25 years, to a level which implies zero population growth in a stable population, the population would still continue to increase rapidly for a much longer period; for the region as a whole, half a century would pass before the rate of population increase approached the present-day Western European level, and growth would actually stop only after about 100 years. From about 275 million in 1970 the

population of the region would rise to well over 500 million at the end of this century and to about 800 million by the time the expansion eventually stopped. The practical importance of such a minimum projection lies in that it shows quite clearly that the concept of Latin America as an under-populated region, with abundant land and other resources in relation to its population, corresponds to a transitory phenomenon only; in most countries this phase will have passed in less than 50 years' time.

At the other extreme, if birth rates are held at their 1970 level for a prolonged period, imagination boggles at the projected population figures: after 100 years the population of a small country such as El Salvador would number over 150 million, Brazil's more than 2 000 million, and that of the region as a whole over 6 000 million — half as large again as the present population of the entire world. The question is not whether this will happen, but rather how and how soon changes will occur which will bring down population growth to more manageable proportions.

The Latin American population is in general a very young one, but age structures vary substantially from one area to another and this has major implications for the size and growth rate of the labour force, the size of the dependent population, educational requirements, etc. An analysis of these aspects is undertaken, and again the very long-range projections show how age structures might change in extreme cases.

There are three major underlying population parameters which need to be estimated for use in the simulation exercises: fertility rates, death rates, and the pattern of internal migration. The greatest interest is probably in fertility rates, and the range is very wide: in 1970

the total fertility rate is estimated to have varied from around 2.3 in the urban south of Argentina to over 7 in various rural areas. This of course implies major differences in both the rate of increase and the structure of the population from one area to another. One of the more important conclusions to be drawn from the study must indeed be that, with respect to population parameters and trends, there is an impressive range of variation within Latin America.

On the basis of these estimates of the situation in 1970, and using specific assumptions about future changes, a number of simulation exercises were then carried out, covering the 30-year period to the end of the century. A similar set of exercises was conducted for each of the four countries studied, showing what would occur in the event of little change in the population parameters, moderate change, great change, a continuing shift to the cities, a relative retention of population in the rural areas, etc.

The aggregate population increases which can be expected are reasonably familiar. Even if it is assumed that age-specific fertility rates fall steadily and sharply, the annual rate of population growth declines only slowly and remains around 2 per cent at the end of the century in most countries; if more moderate decreases in fertility rates are assumed, the population will still be increasing at that date at rates of 2.5 per cent to over 3 per cent per annum. The end-of-the-century population in most countries can be expected to be more than twice as large as in 1970.

The two broadest economic issues here are the implications for per capita resource availabilities and the potential size of the market. With respect to the first, even with the rapid population

increase which will occur the region as a whole will not be particularly densely populated at the end of the century. But the resource base will have become much less generous than it has been customary to assume: from the early post-World War II period to the end of the century the population will have multiplied about fourfold, and so the per capita resource base will have been cut by three-quarters in half a century. As regards markets, it is clear that in the region as a whole the number of potential consumers will be more than sufficient to support even those modern industries with very large economies of scale. The more relevant question here is the extent to which the population can be integrated into the production process so as to provide real money demand for such products.

There are striking variations from one country to another in these general respects, however, and these differences are specified in the analysis.

In addition to the magnitude of the total population increase it is of major importance to determine where it is likely to occur. In part this will depend on existing population patterns—and here again there is a very wide range of variation—but it also depends on future internal migration flows, which add an important element of uncertainty to future trends.

At one extreme there are areas which were already largely urban in 1970 and where the bulk of the future population increase will occur in the cities, even if little more rural-urban migration takes place. In such areas facilities required for the growing population will have to be provided mainly in the urban centres, where infrastructure costs are likely to be relatively high. Other major implications are linked to

the fact that the population shift from the rural to the urban areas has basically already occurred. The impact on the cities of continuing rural migration will be relatively slight, and the increase in the urban population will depend primarily on fertility rates in the cities themselves. The nature of the urban population will gradually change; recent migrants will become a steadily smaller proportion of the total, with important economic, social and political consequences. What is perhaps of greatest importance is that since the period of most rapid urban population growth, linked to migration, is past, the cities can be expected to expand less rapidly in the future, and pressures for urban employment, housing, social services, etc., should therefore be easier to accommodate. At the same time the rural population will already have been reduced to a minority of the total, and so the problem of rural poverty will also be easier to deal with.

At the other extreme are those areas where the bulk of the population is still rural. Here the extent to which migration takes place is a central factor, and will determine where most of the population increase occurs. The potential transition to a chiefly urban population remains in the future. Large-scale migration could produce such a transition, and bring with it very high rates of increase in the urban population and consequent pressures for employment, social services, etc. At the same time, since the population will still be mainly rural, the problem of rural poverty will be especially difficult to tackle.

In addition to the rural-urban division, similar considerations can be applied to different regions within a country, and an analysis of this sort is undertaken in the cases of Argentina and Brazil.

Significant changes in the age structure may well take place by the end of the century, but the population will remain a relatively young one in most areas. The changes which occur will depend primarily on how much fertility rates decline, but also to some extent on internal migration flows. If birth rates decline substantially there will be a considerable reduction in the relative importance of the dependent population, which is composed largely of children in most areas (except in Argentina, the elderly dependent group will remain quite small until after the turn of the century). This would mean a sharp fall in the growth rate of the school-age population in many areas and so make adequate educational facilities easier to provide.

The age group which will increase most rapidly is the young adult group, and this has significant implications both for the growth of the labour force and for the number of births at any particular level of age-specific fertility rates. If fertility rates decrease substantially, by the end of the century there will be a sharp upswing in the relative importance of the young adult age group in most countries.

In all these respects great differences are observable from one area to another. In general the proportion of children is much higher and the proportion of active adults much lower in the rural areas than in the cities, a fact which carries major economic and social implications. As these disparities are partly the result of rural-urban migration (it is primarily the very young who migrate), future migration flows may be a continuing influence here. There are also significant differences among regions and at the national level.

On the basis of assumptions about labour participation rates, possible

trends in the dimensions of the labour force are obtained. In most countries it is likely to increase at annual rates of 3 per cent or higher for several decades at least, attaining by the end of the century $2\frac{1}{2}$ to $2\frac{3}{4}$ times its 1970 size. The near-certainty of this conclusion is shown clearly by the simulation exercises; despite the diversity of the underlying assumptions, the projections do not differ greatly from one exercise to another. Although the magnitude of the discrepancy varies, the increase in the labour force is nearly always a good deal larger than the increase in the population as a whole.

These growth rates are very high, and will represent a vital challenge to the modern-type industrial development process which characterizes the economies of the region. Historically, during the phase of industrial development in the now highly industrialized countries the labour force was increasing much more slowly, and even so the employment problem was for long periods often critical.

The relatively high rates of increase are a comparatively recent phenomenon, and partly account for the heightened concern with the problem of adequate employment opportunities in recent years. Furthermore, owing to the age structure of the population, these rates are only now reaching their peak in some countries, and cannot be expected to decline much until at earliest the last decade or so of the century.

Trends in labour participation rates may be an important factor in some areas. In particular, female participation rates are often quite low, and if they should rise toward Western European levels would significantly affect the overall expansion of the labour force. Its composition, both by age and by sex,

might be influenced to a considerably greater extent.

Again the question arises of where the increase in the labour force will be concentrated, and this is discussed in terms similar to those already noted with respect to the population as a whole.

The situation in the urban areas is of particular interest here, as the problem of employment tends to be more urgent in these areas.

All the foregoing aspects of the problem, plus others, are analysed more fully in the following pages.

1.

General population trends and structures

The population exercises described here are quite simple in concept, do not pretend to observe the analytical rigour required by professional demographers, and are not intended for that audience. Estimates of all variables were made on the basis of the best data available at the time, but some of these must be regarded as only very approximate. Still, an effort has been made to deal with a number of the key determinants of population and the labour force, and although often results cannot be specified with precision they are likely to be of some interest to economists and others concerned with the role of population and the labour force in the development process.

Four countries were selected for the exercises with the aim of giving some idea of the range of variation throughout the region: Argentina, a highly urbanized country with a relatively low rate of population growth; Venezuela, a highly urbanized country with a high rate of population growth; Brazil, with an average degree of urbanization and a moderately high (and also average for the region) rate of population growth; and El Salvador, a country which remains mostly rural and has a high rate of population growth.

(a) Total population trends

The simulation exercises reported on here are basically concerned with the 30-year period 1970-2000. This is already a period of such length that nearly all variables can change considerably, and for most purposes there is little point in considering longer intervals. Population trends, however, are perhaps the long-term variable *par excellence*. The underlying parameters often change relatively slowly, and even when they do change can take a long time to work themselves out through the population structure. The aggregate population was therefore first projected for a 100-year period on each of two extreme hypotheses. This projection shows the limits within which population movements are likely to lie, and serves as a general framework within which to orient the analysis, which is thereafter restricted to the 1970-2000 period.

The limiting hypotheses refer to age-specific fertility rates. In one case the projection shows what would occur if fertility rates remained at about the 1970 levels. In the other, it is postulated that the age-specific fertility rates decline steadily and rapidly for 25 years, by

Table 1
**LATIN AMERICA: POPULATION GROWTH IN SELECTED COUNTRIES ON
 MAXIMUM AND MINIMUM HYPOTHESES**

	Rate of population increase					Total population (millions)				
	1970	1985	2000	2035	2070	1970	1985	2000	2035	2070
<i>A. Minimum hypothesis: Birth rates decline to zero growth level by 1995^a</i>										
Argentina	1.3	0.9	0.6	0.2	0.1	23.8	28.1	31.4	36.3	37.7
Brazil	2.9	2.2	1.3	0.5	0.1	95.2	137.7	177.1	245.8	264.4
Venezuela	3.0	2.7	1.4	0.6	0.1	10.6	16.1	21.4	30.8	34.8
El Salvador	3.3	2.5	1.4	0.5	0.0	3.5	5.3	7.0	9.9	10.5
Latin America ^b						276.7	405	520	720	780
<i>B. Maximum hypothesis: Birth rates remain at 1970 levels</i>										
Argentina	1.3	1.3	1.2	1.2	1.2	23.7	29.0	35.0	53.1	80.6
Brazil	2.9	3.2	3.3	3.2	3.1	95.2	150.2	242.3	730	2 124
Venezuela	3.0	3.5	3.5	3.5	3.4	10.6	17.1	28.9	82.9	310
El Salvador	3.3	3.8	3.9	3.9	3.9	3.5	6.0	10.7	40.8	156
Latin America ^b						276.7	437	704	2 121	6 175

^aFertility rates decline to the point where the gross reproduction rate is 2.2. In a stable population with the death rates which are expected to prevail in Latin America at the end of this century (and which are maintained in the projection) this results in approximately zero population growth.

^bThe figures are for the 20 republics. An independent projection was not made for the regional total: the figures are estimates assuming that the population of Brazil remains a constant proportion of the whole.

which time (1995) they reach a level which implies approximately zero population growth in a stable population, and then remain unchanged. Both hypotheses are extreme. There will almost certainly be future decreases in fertility rates, which are now often very high, in most countries; and it is highly unlikely that within 25 years fertility rates will decline to the level consistent with zero population growth. Nevertheless, this does set limits, and these, particularly the lower one, are of some importance,

specifically when dealing with the probable size of the labour force during the coming decades.

The results of these projections are presented in table 1, showing, for the limiting hypotheses, population growth rates and population size in absolute terms at intervals over the 100-year period.

For practical purposes the information provided by the minimum projection is of greater interest. Although in this projection fertility rates

in all countries have already fallen by the end of the century to a level consistent with zero growth in a stable population, the population is in fact still increasing at an annual rate of about 1.3 per cent in the region as a whole, and at higher rates in some countries. Even in the year 2035, when fertility rates have been at the zero growth level for fully 40 years, the population continues to increase at 0.5 per cent per annum. That is, even on this minimum hypothesis well over half a century would pass before the rate of population increase declined to the present-day Western European level, and about 100 years before the population became stable and growth actually stopped.

During this period the size of the population would expand substantially. Even with the very rapid decline in fertility rates assumed, the population of countries such as El Salvador or Venezuela would double by the end of the century, Brazil's would exceed 175 million, and that of the region as a whole would be well above 500 million. When stability was eventually reached, a small country such as El Salvador would have a population of well over 10 million, Venezuela over 35 million (similar to that of Argentina), Brazil about 265 million (similar to the 1970 population of the entire region), and Latin America *in toto* nearly 800 million.

The practical importance of this projection is that it shows quite clearly that the concept of Latin America as an under-populated region, with abundant land and other resources in relation to its population, corresponds only to a transitory phenomenon. Even on an extreme hypothesis regarding the decline in fertility rates the population of the region will continue to grow rapidly for a lengthy period, and when it becomes sta-

bilized will be nearly triple the 1970 population. The phase of under-population and relatively abundant resources will have passed in most countries in less than 50 years' time.

Long-term planning in the region will have to be oriented more in this direction. Land and other resources will become increasingly scarce—a minimum of around 800 million people will have to be provided for—and increasing attention will have to be given to the husbanding of these resources. This is likely to have major implications for a wide range of problems: patterns of urbanization and land settlement, natural resource extraction rates and export policy, agricultural development programmes, etc. It should be emphasized that no programme of family planning, or autonomous change, can reasonably be expected to alter this situation. The projection is a minimum one, assuming a sharp and rapid decline in fertility rates, and the real question is likely to be how far above this minimum the actual trend will lie.

The maximum projection is of interest less as a real possibility than as an illustration of the implausibility of things remaining as they are for a long period. If fertility rates were to remain at their 1970 level the population of the region would exceed 700 million at the end of the century. This is 35 per cent more than on the minimum hypothesis, but is still not an impossible difference, and again indicates the very long-term and slowly changing nature of population trends. Even with extreme hypotheses the results differ only moderately at first; it is only after several decades that the divergence begins to be striking and finally reaches enormous proportions. Should fertility rates continue at the 1970 level for 100 years (with

death rates unchanging at the levels expected in the year 2000) the population of a small country such as El Salvador would increase to over 150 million people, Brazil's would number more than 2 billion, and that of the region as a whole would be over 6 billion—half as large again as the present population of the entire world. The imagination boggles at such figures. The question is not whether this will happen, but rather how and how soon changes will occur which will bring population growth down to more manageable proportions.

(b) Age structures at the national level

To return to the minimum projection, it is of interest to note not only the changes in the totals, but also the shifts in the age structure which occur. As was noted above, the population continues to increase fairly rapidly for some time after fertility rates have declined to the zero growth level (in a stable population), and this is due to the age structure. The age structure also has major implications for the size and rate of growth of the labour force, the size of the dependent population, educational requirements, etc.

The youthfulness of the Latin American population has been widely commented on, but some of the implications are probably less generally known among non-specialists, particularly when they relate to changes over time; and they are of considerable importance. The major factor determining the age structure, as well as the total rate of increase, is the fertility rate; but death rates can also have an important influence, and the impact of these two vital rates tends to be of a similar sort.

Birth rates obviously determine the size of the infant population, and changes in fertility rates affect the relative size of this group and hence the age structure. Less obviously, a large proportion of total deaths also occur among the very young. In the late 1960s 40 per cent or more of all deaths in the region probably occurred among children under 5 years of age,¹ and the percentage was probably even higher in earlier years. Most of these child deaths, in turn, take place among infants of less than one year. This situation is a reflection both of the age structure of the population, and of the high child mortality rates which are often encountered, especially before death rates begin to fall substantially.

Thus changes in mortality rates tend to have a concentrated impact on the very young, and to affect the age structure in much the same way as changes in the fertility rate. In either case it is first the size, and hence the relative importance, of the youngest age group which is affected. With time this initial impact then surges up through the age structure like a wave.

It is useful to illustrate the variations which these kinds of influences have already produced in the region, and the extremes possible on the maximum and minimum hypotheses of the projections. Table 2 shows the age structure in the four countries dealt with in the projections.

¹ There is considerable variation among countries. In Uruguay and Argentina the figure was only about 15 per cent, while in a few countries it was over 50 per cent. There was some concentration around 45 per cent, however, and this included several of the most populous countries. For purposes of comparison it may be noted that the proportion in Canada and the United States was approximately 5 per cent.

Table 2
AGE STRUCTURES IN SELECTED COUNTRIES^a

Age group	1970				2070
	Argentina	Brazil	Venezuela	El Salvador	Typical with minimum projection ^b
0 - 4	10.0	16.3	17.3	18.5	7.1
5 - 14	19.1	26.4	29.5	29.0	3.9
15 - 19	9.0	10.8	10.8	10.3	6.8
20 - 39	28.6	27.2	24.8	25.3	26.8
40 - 65	26.2	16.3	14.7	13.8	30.0
65 and over	7.2	3.0	2.9	3.1	15.4

^aThe figures show the percentage of the total population of the country included in each age group.

^bThe minimum projection eventually results in an approximately stable population in each country and the age distribution is essentially the same in each case.

In Argentina both fertility and death rates have for some time been lower than in most of the region and this has already resulted in a distinctly different age structure. Structures in the other countries shown, while varying somewhat, are more similar. The differences are concentrated at the two ends of the age structure. Children (those less than 15 years of age) are a markedly smaller proportion of the population in Argentina: 29.1 per cent of the total. At the other end of the range, children account for 47.5 per cent of the population of El Salvador. Adolescents and young adults (the 15-39 age groups) represent surprisingly similar proportions of the population, and the compensating differences are concentrated in the older age groups. In Argentina 33.4 per cent of the population is 40 or more years of age, while in El Salvador the corresponding figure is only 16.9 per cent.

The projections using the maximum hypothesis (unchanging age-specific fertility rates) yield age structures in 2070 similar to those of 1970 in the respective countries, and are not reproduced in the table. The projections with the minimum hypothesis of eventual zero population growth, however, result in a quite different age structure—essentially the same for each country—and this is shown in the table. The differences are of the same sort already occurring between the countries in 1970, but more marked. Children plus adolescents account for only about 28 per cent of the total in a stable population, young adults about 27 per cent, and the older age groups about 45 per cent. To take the most extreme comparison, in El Salvador the proportion of children and adolescents would decline from 58 per cent of the population in 1970 to 28 per cent, while that of the 40-plus age group would increase

from 17 per cent to 45 per cent; the percentage of young adults would not change much.

These different age structures have numerous important implications. The dependent population (those under 15 and over 65) represented only 36.3 per cent of the population in Argentina in 1970, whereas the corresponding proportion ranged up to 50.6 per cent in El Salvador. Even with similar productivity levels per member of the working population, this would mean that per capita incomes would be higher in Argentina. Also, the school-age population is relatively much smaller in Argentina and so educational costs are less demanding. In an eventually stable population the dependent population would be of the same relative importance as in Argentina in 1970, but its composition would be quite different: there would be relatively fewer children and more retired persons, with the consequent social and economic implications.

The most active working-age population was approximately evenly split between the younger and older age groups in Argentina in 1970, whereas in El Salvador the younger group outnumbered the older by nearly two to one. Thus in Argentina the proportion of experienced workers was much greater than in the other three countries, with the various consequences which this might bring.² Again the age structure in a stable population is in this respect more similar to the 1970 situation in

² As is shown later, the age structure of the labour force itself varies from the age structure of the population owing to differing labour participation rates. The data therefore provide only an approximate idea of the labour force distribution.

Argentina—but with a significant further shift toward the older and more experienced part of the working-age population.

Other implications of the differences in age structures will be presented as the points of main interest in this analysis require.

The 1970 age structures presented in table 2 are already the result of changes over time in the different countries, and as these changes have important implications for some aspects of the following discussion they too need to be noted. The type of change which has occurred in recent decades, and its extent, are illustrated in the figures for Venezuela given in table 3.

As shown, the relative size of the child population has increased substantially in recent decades: from 41 per cent of the total in 1936 to 46.8 per cent in 1970, with most of the increase occurring in a single decade, i.e., the 1950s. This again illustrates how the initial impact of changes in the underlying vital statistics tends to be concentrated on the youngest age group. There was some increase in fertility rates, probably the result of improved health conditions, but the fall in mortality rates seems to have been more important, and this too had its most concentrated effect on the very young.

It is the infant population (children under 5 years of age) which first begins to increase in relative importance—during the 1940s and 1950s this group grew sharply in relative size. Then in the mid-1960s fertility rates started to decline, so that the relative importance of the infant population in 1970 fell from its earlier peak, while the upward surge of the 1940s and 1950s was beginning to work its way through the age structure. During the 1950s and

1960s the 5-14 year group increased rapidly in relative importance, and in the 1960s the adolescent population was similarly affected. But the surge is only just reaching the adult population groups, which have therefore continued to decline in relative importance.

Again there are numerous implications which follow from these changes. In the 1950s and 1960s the rapidly expanding primary school population can be expected to have exerted increasing pressure on the educational system. By the 1960s this pressure will have spread to the secondary and university level.

Of the impacts only just making themselves felt, one is of particular importance from the present point of view. The surge is barely starting to enter the age groups which make up the labour force. In the 1960s an upswing in the number of new entrants to the labour force can be presumed, which will result in pressures for additional employment

that are likely to continue for some years to come.

A second consequence worth noting is that the surge is also just beginning to penetrate into the child-bearing age groups, and this will have a marked effect on total births in coming years, quite apart from the trend in age-specific fertility rates.

The sequence shown for Venezuela can be regarded as fairly normal, although the changes are sharper than those which have occurred in some countries. First, an improvement in health conditions leads to a rapid increase in the size of the infant population, largely as a result of the fall in infant mortality rates, but also to some extent through a possible rise in fertility rates. The upsurge will then begin to work its way through the age structure. Finally, at some point fertility rates may decrease and counteract this tendency towards increase.

Table 3

VENEZUELA: AGE STRUCTURE OF THE POPULATION IN RECENT DECADES^a

<i>Age group</i>	<i>1936</i>	<i>1941</i>	<i>1950</i>	<i>1960</i>	<i>1970</i>
0 - 4	15.0	15.8	17.6	19.2	17.3
5 - 14	26.0	25.6	24.8	26.8	29.5
15 - 19	10.4	10.4	9.9	9.1	10.8
20 - 39	30.0	29.4	29.1	27.4	24.8
40 - 65	15.4	15.3	15.2	14.8	14.7
65 and over	3.2	3.4	3.4	2.6	2.9

^aThe 1950 to 1970 figures are from the Latin American Demographic Centre (CELADE). Those for 1936 and 1941 are census data approximately adjusted so as to be directly comparable with the CELADE figures.

In the greater part of Latin America the strong downward movement in death rates appears to have begun in the 1940s, while trends in fertility rates have been more varied. Of the countries considered here Argentina is the one in which fertility rates seem always to have been lower than in most countries in the region, and have been declining gradually for some time. In Brazil fertility rates have also been somewhat lower than in a number of countries —although well above Argentina's level— and during the 1950s and 1960s they fell slightly. Fertility rates in Venezuela have been high, and began to decrease significantly only in the mid-1960s. In El Salvador, too, they have been high, and by the end of 1970 had not shown any marked downturn.

The tendency for a substantial drop in mortality rates to occur well ahead of any compensating change in fertility rates, which also results in a speeding-up of the rate of population growth, has been more widely commented on. But it is worth repeating the figures for the region as a whole to emphasize the magnitude of the change. In recent decades, the average annual rates of population growth in Latin America were as follows:

1920-1930	1.9 per cent
1930-1940	1.9 per cent
1940-1950	2.4 per cent
1950-1960	2.8 per cent
1960-1970	2.8 per cent

As observed above, it was in the 1940s that falling mortality rates introduced a pronounced change, and the process continued apace through the 1950s. In those two decades the annual rate of population increase rose by nearly half. The 1960s was a period of transition: the rate of increase was stabilized at a high level, as a result of offsetting trends

in different countries. The current expectation is of a decline, due to falling fertility rates; but it seems improbable that, for the region as a whole, the rates of population growth of the 1920s and 1930s will again prevail in this century.

(c) *Labour force trends*

It is very important to keep in mind that the changes which brought about this speeding-up of the rate of population growth caused an accompanying shift in the age structure of the population. To date it has meant primarily an increase in the number of children and adolescents, but in coming years the upsurge will work its way through the rest of the age structure. There is one aspect of this process which is of special interest here and needs to be explicitly considered: the implications for the labour force and so for employment prospects.

Table 4 shows, for each of the four countries considered, how fast a hypothetical labour force has grown since 1950 and might grow in the future. The labour force is hypothetical as it is assumed that no change occurs in labour participation rates. The figures thus illustrate how the labour force is affected by population growth and changes in the age structure alone.³ Up to 1970 the population figures are those of CELADE. From 1970 on they are the figures which result from the minimum projection, which assumes that fertility rates decline to the eventual zero growth level in 1995. This minimum projection

³ Possible effects of changes in labour participation rates are considered in the simulation exercises discussed later; but it is useful first to emphasize the tendency of basic underlying population changes.

Table 4
**SELECTED COUNTRIES: HYPOTHETICAL ANNUAL GROWTH
 RATES OF THE LABOUR FORCE^a**

	<i>Argentina</i>	<i>Brazil</i>	<i>Venezuela</i>	<i>El Salvador</i>
1950-1955	1.7	2.7	2.5	2.2
1955-1960	1.5	2.7	2.8	2.4
1960-1965	1.4	2.9	3.2	2.8
1965-1970	1.4	3.1	3.5	3.1
1970-1975	1.4	3.1	3.8	3.6
1975-1980	1.2	3.0	3.7	3.6
1980-1985	1.1	2.9	3.4	3.4
1985-1990	1.0	2.7	3.1	3.1
1990-1995	1.0	2.5	2.9	2.9
1995-2000	0.9	2.2	2.7	2.6
2010-2015	0.4	1.1	1.3	1.2
2030-2035	0.1	0.5	0.6	0.6
2065-2070	0.1	0.1	0.1	0.0

^aThe rates of increase shown are those which would result if no changes in labour participation rates occurred. A fixed set of labour participation rates by age group – the ILO estimates for 1960 for each country – are applied to the population figures for each year. Up to the end of 1970 the population figures are the CELADE estimates. After 1970 they are the figures which result from the minimum-hypothesis projections. In both cases they exclude international migration.

is of greater interest as it shows the lowest rate of increase in the labour force which must be anticipated – and, as can be seen, even this rate will remain high for some time.

The figures in table 4 give, again, a rather different picture for Argentina than for the other countries considered. At the beginning of the period shown the labour force was already growing less rapidly in Argentina than elsewhere, and this divergence became steadily greater through the 1950s and the 1960s. Whereas in Argentina the rate of increase declined from the level of the early

1950s, in the other countries it rose substantially.

The problem of employment has not been of the same serious nature in Argentina as in some countries of the region, despite the fact that the rate of economic growth during the 1950s and 1960s was relatively low, and that the population was very largely urban, conditions which tend to make employment problems more conspicuous. A major factor keeping the employment problem under reasonable control in such circumstances was undoubtedly this tendency for the labour force to increase

at a more moderate rate. If the trend in Argentina had been similar to that shown in the other countries the situation would have been much more serious.

But Argentina is an exception, and the other countries are more typical of what has occurred in the region as a whole. There are two aspects of the labour force trends in these countries which are of particular interest here. First, there has been a steady rise in the growth rate of the labour force over the past two decades. The rise was sharper in Venezuela and El Salvador than in Brazil, but it was considerable in each country. Furthermore, the rates of increase in the early 1950s were no doubt already well above those of earlier decades. This speeding-up of the growth of the labour force reflects, with some lag, changes in population growth rates. As discussed earlier, the substantial decline in death rates, with its impact on population growth, generally started around 1940, and presumably began to be more fully reflected in labour force changes toward the end of the 1940s. During the 1920s and 1930s this hypothetical labour force was probably increasing at only slightly over 2 per cent per annum in Brazil and Venezuela and at less than that rate in El Salvador.

So marked an acceleration of the annual growth rate of the labour force in recent decades—from around 2 per cent to 3 per cent or more in most countries—has undoubtedly been a major factor behind the mounting awareness of the lack of adequate employment opportunities. This factor alone could often create difficulties: an economic structure capable of absorbing an annual 2 per cent increase in the labour force could become more and more inadequate in this respect as the annual increments

rose to half as much again. There are of course other important factors: increasing urbanization, making employment problems more visible; changes in the industrial structure toward more capital-intensive and labour-saving techniques; etc. But it is important to bear in mind that the basic underlying population variables have changed in such a way as themselves to make the employment problem a great deal more difficult to cope with in recent years.

The second aspect of these labour force trends which is important here is that this pressure can be expected to continue for some time, and even on occasion to be intensified during the 1970s and 1980s. As shown in table 4, given the assumptions used, the rate of increase in the labour force climbs to its peak in Brazil in the last half of the 1960s and the first half of the 1970s; while in Venezuela and El Salvador the peak—in each case considerably higher than in Brazil—is reached only during the 1970s.

From the 1980s on the rates of increase gradually decline, but it will be recalled that this is on the basis of a projection which assumes a rapid fall in fertility rates, eventually to zero growth level in 1995. Even on this extreme hypothesis, the labour force continues to grow rapidly throughout the 1970s and 1980s; while at the end of the century the annual rate of increase is still 2.8 per cent in Venezuela and 2.6 per cent in El Salvador, and only in Brazil has fallen back to 2.2 per cent. In absolute terms the numbers go on rising well after the rate of increase has begun to decline. In Venezuela the absolute increment in the labour force toward the end of the century would be about double the yearly increase registered in the late 1960s; and even in Brazil the number to

be absorbed each year would be nearly two-thirds larger. It is only well into the next century that the growth of the labour force (as here defined) begins to slow down to the rates now commonly prevailing in the advanced industrial countries, and that the absolute numbers to be absorbed show signs of dwindling.

Even in the case of extreme hypotheses, then, the underlying population characteristics ensure that the labour force will continue to expand rapidly in most of the region through the rest of this century. In many countries its growth will actually speed up in the years immediately ahead. Employment policies must therefore be framed to deal with employment pressures about as great as those which have been experienced in recent years, and with the likelihood of the situation's being especially serious in the 1970s and early 1980s in this respect. The farther the decline in fertility rates falls short of this extreme hypothesis, the farther into the future will the period of maximum pressure extend.

There is one qualification of this picture which needs to be touched on here, even though it can only be adequately discussed later, with the aid of the simulation exercises. It is the urban employment situation which is usually of greatest concern to policy-makers, and rural-urban migration can cause the rate of increase in the urban labour force to vary greatly, independently of the trend for the labour force as a whole.

Table 5 shows rates of growth of the urban population in recent decades, from which it can be presumed that the urban labour force in each country has increased much faster than is indicated by the figures shown in table 4. In Venezuela and Brazil in particular the urban labour force has grown very rapidly during the post-World War II period.

Both recent and future trends depend heavily on how far urbanization has gone and how fast it is progressing. In a country such as Venezuela, where urbanization has been swift and has gone a relatively long way (only about one-fifth of the population is still rural), this has meant both a period of extremely rapid expansion in the urban labour force and a probability that future increases will be more moderate; already in the 1960s the growth rate of the urban population, although still nearly 5 per cent per annum, was much lower than in the preceding two decades. In a country like El Salvador, by contrast, the bulk of the population is still rural, and the possibility of a speeding-up of migration and consequently of the growth of the urban labour force remains in the future.

As noted above, this subject is discussed more fully in the context of the simulation exercises.

(d) *Urban-rural and regional differences*

The discussion up to this point has concentrated on population characteristics at the national level, with some references to trends in Latin America as a whole. There are often, however, significant urban-rural, and on occasion regional, differences within individual countries, and these are not only of interest in themselves, but are also important factors in determining trends at the national level. One of the essential reasons for undertaking the simulation exercises described in the next section was precisely to try to take these differences into account and to appraise their impact on the national aggregates. They are therefore discussed in more detail later; but it is useful here to point out several of the main features.

Table 5
SELECTED COUNTRIES: INTERCENSAL RATES OF POPULATION INCREASE

	National average	Rural	Urban		
			Total ^a	Cities with 50 000 to 500 000 inhabitants in 1960 ^b	Cities with 500 000 inhabitants or more in 1960 ^b
Argentina					
1914-1947	2.1	1.4	2.7	2.9	2.6
1947-1960	1.8	(-) 1.0	3.0	2.8	2.7
1960-1970	1.6	(-) 2.9	2.8
Venezuela					
1936-1941	2.7	1.2	5.3	3.8	6.5
1941-1950	3.0	(-) 0.1	6.7	7.4	7.8
1950-1961	4.0	0.5	6.3	6.3	6.6
1961-1971	3.4	(-) 0.5	4.9
Brazil					
1940-1950	2.3	1.6	3.9	4.8	4.6
1950-1960	3.0	1.3	5.5	6.2	4.3
1960-1970	2.9	0.9	4.8
El Salvador					
1930-1950	1.3	1.4	1.1	2.5	-
1950-1961	2.8	2.5	3.3	4.0	-
1961-1971	3.5	3.3	3.8

^aUrban population as defined in census data. This includes smaller cities not shown in either of the following two columns.

^bThe growth rates in these columns relate to a fixed list of cities, the composition of the list being determined by the population in 1960. They are therefore not affected by cities shifting from one category to another as the population increases. The data are from CELADE, *Boletín Demográfico*, Year IV, Nº 9.

First, there is the widely-noted fact that the urban population is generally increasing much faster than the rural population. Trends in the countries being considered are shown in table 5. In both Argentina and Venezuela migration to the cities has for some time more than offset the natural increase in the rural population: in Argentina the absolute size of the rural population has declined

substantially since the mid-1940s and in Venezuela there has been a small net decrease since 1941. In Brazil the rural population has continued to increase, at least through 1970, but since 1940 the rate of increase has been falling steadily and is dropping ever farther below the national average. Only in El Salvador is the situation somewhat different. In that country the rural population has grown

faster in recent decades, in line with the rising rate of total population increase, and until around 1950 even grew somewhat more quickly than the urban population.

With this single exception, the urban population in each country, and in all recent intercensal periods, has increased more rapidly than the rural population. In El Salvador the difference is modest, but in the other three countries it is striking. At the extreme, in Venezuela the urban population increased throughout the 1940s and 1950s at an average rate of about 6½ per cent per annum.

Table 5 also shows the rates of population increase in the larger cities in the different countries, another aspect which has received considerable attention. As can be seen, the expansion of these larger cities is often, but not always, even more rapid than that of the urban population as a whole.

As was discussed earlier, at the national level there is considerable variation in the age structures of the different countries; and within a particular

country somewhat similar variations can be observed between the urban and rural populations and on occasion on a regional basis. Table 6 shows the urban and rural age structures in each of the four countries.

The differences in age structure are quite consistent, and often substantial. The percentage of children (up to 15 years of age) is in each country a much larger proportion of the rural than of the urban population, the difference ranging from 11 percentage points in Argentina down to 5 in Venezuela. This gap may well widen for some time in certain countries, primarily because the decline in fertility rates, and the consequent reduction in the relative importance of the youngest age groups, tends to take place first in the urban areas. The 15-19 age group is where the transition occurs. In Argentina this group, represents, as do children under 15, a smaller proportion of the urban than of the rural population; in the other countries it is relatively larger in the urban areas but the differences are rather slight.

Table 6
SELECTED COUNTRIES: PERCENTAGE COMPOSITION, BY AGE GROUP,^a
OF THE URBAN AND RURAL POPULATIONS

Age group	Argentina		Brazil		Venezuela		El Salvador	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
0 - 4	27.8	38.8	13.1	17.1	17.3	19.9	15.6	18.1
5 - 14			25.6	29.2	26.2	29.6	25.7	28.8
15 - 19	8.0	9.6	11.1	10.9	9.3	8.5	10.0	9.4
20 - 39	31.5	27.3	29.1	25.4	29.8	23.9	28.1	26.2
40 - 64	26.3	19.8	17.5	14.6	14.9	15.3	16.6	14.7
65 and over	6.4	4.5	3.5	2.7	2.5	2.7	4.0	2.8

^aThe calculations are based on the latest available census data, which are from the 1970 census for Brazil and from those taken around 1960 for the other countries.

The adult population as a whole—those of 20 or more years of age—is the counterpart of the child population and accounts for a bigger share of the urban population in each country, although there is a good deal of variation within the total. This greater relative importance in the cities is striking in Argentina in the case of the older half of the adult population; in Brazil and El Salvador it is uniform, if more modest, throughout the adult age groups; and in Venezuela it is confined to the young adults, while the older half of the adult population is actually a slightly smaller proportion of the total in the urban areas. These variations reflect the shifting importance of the two principal factors underlying these differences in age structure: fertility rates and the scale of migration. In Venezuela, for example, migration was very substantial during the 1940s and 1950s, and since it is primarily the young who migrate this resulted in an unusually large concentration of young adults in the urban areas.

There are also significant differences from one country to another. Although there are consistent dissimilarities between the rural and urban age structures within each country, the urban (or rural) age structures are not all alike; in particular, the rural age structure in Argentina is more similar to the urban than to the rural structures in the other countries. Moreover, this cross-classification shows the range to be very great. The relative importance of children, for example, varies from less than 28 per cent of the urban population in Argentina to nearly half the rural population in Venezuela. Other differences are revealed by the data presented in table 6.

Table 7 shows the same data organized somewhat differently, to indicate the percentage of each age group which

lives in the urban and rural areas of the country concerned. The youngest age group is always of greatest relative importance in the rural areas (and least in the cities). In Venezuela the rural percentage falls steadily through the young adult group and then rises again for the older adult population. In the other three countries the rural percentage follows an unbroken downward trend throughout the age structure.

These different age structures tend to aggravate one of the region's major economic problems: the much lower productivity and income levels in the rural areas. Since the dependent population is everywhere a substantially higher proportion of the total in the rural areas this pulls per capita incomes even farther below urban levels than they would be anyway because of the lower productivity per worker. In addition, the fact that children constitute the great bulk of this dependent population complicates the educational problem. Children, relative to the rest of the population, are concentrated in the rural areas, where adequate educational facilities are in any case more difficult to provide and where low incomes limit the local contribution.

This population structure is likely to be an important aspect of the difficulties of the rural areas: except for Argentina, only about half of the rural population is in the active age groups, even if these are stretched to include all persons from 15 to 65 years of age.

It is also worth noting that women appear to migrate to the cities in significantly greater numbers than men, which perhaps reflects the type of employment most easily found in the urban areas; domestic and other low-income service positions commonly filled by women are probably more readily available. For the different countries table 8 shows the

Table 7
**SELECTED COUNTRIES: PERCENTAGE DISTRIBUTION OF EACH AGE GROUP^a
 BETWEEN URBAN AND RURAL AREAS**

Age group	Argentina		Brazil		Venezuela		El Salvador	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
0 - 4	66.8	33.2	49.4	50.6	59.1	40.9	35.0	65.0
5 - 14			52.7	47.3	59.6	40.4	35.9	64.1
15 - 19	70.2	29.8	56.3	43.7	64.4	35.6	39.9	60.1
20 - 39	76.4	23.6	59.3	40.7	67.6	32.4	40.2	59.8
40 - 64	78.9	21.1	60.3	39.7	61.9	38.1	41.4	58.6
65 and over	79.8	20.2	62.2	37.8	61.2	38.8	46.6	53.4
Total population	73.8	26.2	55.9	44.1	62.5	37.5	38.5	61.5

^aCalculations are based on the same data used for table 6.

proportion of women and of men, in each age group, living in the urban areas. The percentages are essentially the same for the 0-4 age group, reflecting fertility patterns, but thereafter a consistently higher proportion of the female population is found in the cities.

Similar variations in the age structure may also occur between different regions

within a country, a situation which can be illustrated with data from Brazil. Table 9 shows the age structure in the state of São Paulo, a high-income area, and in the North-east region, a low-income area; in both areas urban and rural age structures are shown separately so that the urban-rural and regional influences are not mixed. Table 10 again

Table 8
**SELECTED COUNTRIES: PROPORTIONS LIVING IN URBAN AREAS,
 BY SEX AND AGE GROUP**

Age group	Argentina		Brazil		Venezuela		El Salvador	
	Males	Females	Males	Females	Males	Females	Males	Females
0 - 4	66.2	67.3	49.3	49.3	59.0	59.0	34.9	35.1
5 - 14			52.1	53.3	58.4	60.7	35.3	36.6
15 - 19	67.4	72.9	53.9	58.4	62.1	67.0	37.5	42.2
20 - 39	74.6	78.3	57.5	61.0	67.6	67.5	37.8	42.6
40 - 64	76.4	81.5	57.7	62.9	59.5	64.4	37.4	45.3
65 and over	76.4	82.9	57.7	65.9	53.4	66.4	39.0	51.3

Table 9
**BRAZIL: AGE COMPOSITION OF THE URBAN AND RURAL POPULATIONS
 IN SÃO PAULO AND IN THE NORTH-EAST, 1970^a**

Age group	State of São Paulo		North-east Region	
	Urban	Rural	Urban	Rural
0 - 4	11.6	15.1	15.6	17.7
5 - 14	23.6	28.2	27.5	29.1
15 - 19	10.4	11.0	11.4	10.7
20 - 39	31.4	26.9	26.5	24.6
40 - 64	19.3	16.1	15.7	14.8
65 and over	3.8	2.7	3.3	3.1

^aPercentage figures calculated from unadjusted census data.

Table 10
**BRAZIL: PERCENTAGE OF NATIONAL POPULATION IN SELECTED
 AREAS, BY AGE GROUP^a**

Age group	State of São Paulo		North-east Region	
	Urban	Rural	Urban	Rural
0 - 4	11.9	3.8	13.2	20.9
5 - 14	13.3	3.9	12.7	18.8
15 - 19	14.5	3.7	13.0	17.0
20 - 39	17.5	3.7	12.2	15.7
40 - 64	18.2	3.7	12.2	16.0
65 and over	18.5	3.2	13.3	17.2

^aThe percentages across do not total 100 as major areas of Brazil are not included in the table. Calculations are based on the data in table 9.

presents the same information in a different form, giving for each age group the proportion of the nationwide total living in the different zones.

The figures in table 9 show the now familiar and consistent sort of variation. At one extreme is the age structure in the urban areas of São Paulo with a relatively

small proportion of children and with a large proportion of the population in the active age groups; and that this is a shift of the sort referred to is shown by comparison with the figures for the urban areas of Brazil as a whole (see table 6). The rural areas of São Paulo have an age structure very similar to that

of the cities of the North-east, i.e., an intermediate situation. And at the other extreme is the age structure of the rural North-east, with a large dependent population and a much smaller proportion in the active age groups.

Table 10 shows the cities of São Paulo to have only 12 per cent of the infant population of the country (under

5 years of age) to care for, but close to 18 per cent of the most active age groups (20-64) to provide income. The rural areas of the North-east have 21 per cent of the infant population but only 16 per cent of the major income-earning groups.

The implications of such differences are similar to those mentioned in earlier sections.

2.

The simulation exercises

The simulation exercises are designed to provide detailed projections, to the year 2000, of population and labour force trends in the selected countries. They are of course not predictions, but rather calculations of what will occur given specific assumptions about the principal variables which determine the model, i.e., fertility and death rates to calculate population trends, and then labour force participation rates to derive the labour force. Each of these variables is specified by sex and by 5-year age groups. In addition, one of the central aims of the simulation exercises is to calculate the effect of urban-rural and regional differences, so each variable is given a set of values for each of the regions considered, and within each region for the urban and the rural areas. This necessitates taking internal migration into consideration, and so migration rates are another key variable; again these are specified by sex and by 5-year age groups. For Venezuela and El Salvador the exercises distinguish only between the urban and the rural areas, but for Argentina and Brazil regional divisions are also taken into account.

The first step was to estimate all these values for the base year, 1970.⁴ The CELADE estimates of population

by 5-year age groups and of age-specific fertility and death rates provided figures at the national level for each country. Then, with the use of census data, estimates were made of urban-rural and, where applicable, regional differences for each of the variables in the model. Values, by sex and 5-year age group, were calculated for each region and/or the urban and rural areas so that they were consistent with the CELADE aggregate estimates for the country. Labour force participation rates and the age structure of internal migration were estimated on the basis of census data alone.

Starting with these base year estimates, the simulation exercises calculate trends to the year 2000 in the light of a given set of assumptions as to how the values of the underlying variables will change during that period. Five different simulation exercises were carried out for each country. The specific assumptions

⁴For Venezuela and El Salvador detailed data from the 1970 censuses were not yet available, so estimates were originally prepared for 1960 and calculations were then made to reproduce the 1970 situation in so far as this was known.

were made in the context of each of the individual countries, but the exercises were designed to have a common pattern for every country, and their general nature can be indicated here.

The first exercise assumes relatively little change from the 1970 situation. Fertility rates decline only moderately, there is relatively little internal migration, and labour force participation rates remain nearly unaltered. Changes are generally of similar magnitude in different areas of the country; that is, there are no important relative shifts between different regions and/or the urban-rural areas.

The second exercise postulates that within a context of economic and social transformation which is largely concentrated in the more modern areas, the variables undergo changes, mainly in the more advanced regions and/or in the urban areas. Substantial internal migration is assumed, toward the more developed regions and/or toward the cities; urban fertility rates decline sharply—at least in the more developed regions—to around the zero growth rate in a stable population; urban labour force participation rates shift to about the present European values (the 1968 French rates). The changes in the less developed regions and/or the rural areas are not as pronounced, but are still more substantial than those postulated in the first exercise.

The third experiment again assumes that changes are concentrated in the more modern areas, where, however, while still considerable, they are not as marked as in the second exercise. In the less developed regions and/or the rural areas the changes are similar to the postulates of the second exercise.

The fourth exercise assumes economic and social change of a different type, concentrated largely in the less modern areas. There is less migration here than in any of the other exercises, and a larger proportion of the population remains in the less developed regions and/or the rural areas. And it is primarily the variables in these areas that change: fertility rates decline substantially, and move much closer to those in the more developed regions and/or the urban areas; labour force participation rates shift approximately to the present structure in the more developed regions and/or the cities. In the context of this exercise, more moderate changes are projected for the better-developed regions and/or the urban areas.

Finally, the fifth exercise postulates more balanced change, spread through both the more and the less modern areas. The population structure toward the end of the century, as between the different regions and the urban-rural areas, is intermediate between those projected in the third and in the fourth exercises; and the values assigned to the different coefficients are also intermediate between those used in these two exercises.

The values assigned to mortality rates have been omitted from this description of the simulation exercises. This simplifies the discussion, and has been done because mortality rates have less differential impact on the calculations than the other variables. In the CELADE population projections four alternative possibilities are normally presented. Each of the four postulates a different rate of decline in fertility rates, but as there is less uncertainty about mortality trends the same mortality rates are used in each of the four projections. A similar procedure has been followed in the simu-

lation exercises. Mortality rates often differ in different areas of the country, and these variations have been estimated for the base year, 1970. The CELADE projections to the end of the century are then used as a guideline. In the first three simulation exercises it is assumed that mortality rates in the different areas all decrease in line with the CELADE projections; that is, the structure of relative mortality rates in different areas does not change. In the fourth exercise the assumption is that, as part of the concentration on the less modern areas, mortality rates in such areas are gradually reduced to the level of those prevailing in the cities; by the end of the century mortality rates are uniform throughout the country. Here too the fifth exercise represents an intermediate position between the fourth exercise and the others.

The results of the set of simulation exercises were first analysed separately, and in some detail, for each of the four countries. These individual country studies have been presented as internal CEPAL working documents. The following discussion is confined to an analysis of the more general conclusions which can be drawn from comparisons of the different country projections, but of course it depends heavily on the earlier country analyses.

While in several important respects inferences can be drawn for Latin America as a whole, one of the most important general conclusions must be that in population parameters and trends there is an impressive range of intra-regional variation. Any statement about "conditions in Latin America" is apt to refer to some kind of average, around which there is considerable dispersion, instead of describing a situation which is the common norm throughout the region.

(a) *The situation around 1970*

To begin with, the two major population parameters – fertility rates and death rates – have evolved in quite different ways in the countries analysed, so that the 1970 rates of population growth and age structures, as well as the parameters themselves, vary considerably. At the national level, fertility rates in Argentina have been declining for some time and are now moderately low; in the other three countries they remain very high, although in Brazil and Venezuela there has been a modest decrease in recent years. Death rates have been greatly reduced in all countries, but with the partial exception of Argentina, there is still considerable scope for further reductions. It is well to observe at once that the setting-apart of Argentina already noted will tend to continue throughout this analysis; the general population structure has evolved much further in Argentina than in any of the other countries studied and when different aspects are considered it will often be found that the values or trends characterizing that country are markedly different from those prevailing elsewhere.

But these values at the national level are already averages of widely differing figures in major areas within the individual countries, and in this respect Argentina is no exception. Table 11 shows the total fertility rate in 1970 in each of the areas distinguished in the analysis; relative infant mortality rates are also shown to give some idea of the variation in death rates.⁵

⁵Up to about the age of 50 the variation in age-specific death rates among the different areas is fairly similar to that shown for infant mortality rates. From about the age of 50 on

Table 11
**SELECTED AREAS: ESTIMATES OF TOTAL FERTILITY RATES AND RELATIVE
 INFANT MORTALITY RATES, 1965-1970**

Area	Total fertility rates	Infant mortality rates (Brazil = 100)
Venezuela, rural	7.54	90
Brazil, less-developed rural	7.53	144
El Salvador, rural	7.33	123
Brazil, intermediate rural	6.48	68
Argentina, North rural	5.93	85
Brazil, developed rural	5.64	68
El Salvador, urban	5.52	123
Venezuela, urban	5.44	60
Brazil, less-developed urban	5.43	103
Argentina, South rural	3.93	55
Argentina, North urban	3.81	85
Brazil, intermediate urban	3.78	57
Brazil, developed urban	3.45	57
Argentina, South urban	2.27	55

With the exception of the rural South in Argentina, fertility rates are higher in all rural areas than in any urban zone, but there are major variations within each grouping. At the top of the list are three rural areas where the total fertility rate remains at the very high level of more than 7 (the figure can be approximately interpreted as the number of children the average woman would have during her lifetime, given the prevailing age-specific fertility rates). The decline is then moderately rapid to a cluster of one rural and three urban areas with total fertility rates ranging around 5½. Then comes a sharp drop to another

the range narrows greatly; at more advanced ages death rates tend to be more similar throughout the areas analysed.

rural area plus three urban areas with rates of 3½ to 4; and finally, well below all of the others, the relatively low total fertility rate in the urban South of Argentina.

Except in this last area, fertility rates are everywhere at least moderately high, but the range is very wide. The cluster of areas with figures of from 3½ to 4, for example, have total fertility rates only about half those prevailing in the three areas at the top of the list; and there are major population groups in both clusters. It is always useful to bear in mind that when the total fertility rate in Latin America in 1970 is placed at about 5.4, this is an average figure covering areas with rates as widely varying as those shown.

To some extent death rates follow an order of ranking similar to that of fertility rates—in particular, the areas with low infant mortality rates tend to be the same as those with relatively low fertility rates—but there are striking exceptions. In general infant mortality rates appear to vary at least as much by region as on an urban-rural basis; thus the areas with the highest infant mortality rates include the urban as well as the rural areas in El Salvador, and likewise the less-developed region in Brazil. Here too there is a very great range: infant mortality rates in the less-developed rural area of Brazil and in El Salvador appear to be well over double those recorded in the areas with the lowest figures. Too much cannot be made of these comparisons, however, as in general the data on which the estimates are based are less complete than those available for making the fertility rate estimates.

These differing population parameters, with the additional major factor of

internal migration flows, have led to differing age structures in different areas, and to dissimilar geographic, and in particular rural-urban, population structures. These aspects have already been analysed in comparative terms, and in the context of the recent past. With respect to age structures all that need be recalled here is that, except in Argentina, populations are everywhere still very young, especially in the rural areas. As regards rural-urban structures, it is useful to summarize the degree of urbanization in 1970 in the regions analysed (see table 12).

Again the range is wide, and several of the major regions have reached very high degrees of urbanization. From these figures follow important implications about migration flows. In each of the first four regions the rural-urban flow in recent years has been on a large enough scale to result in a notable contraction in the absolute size of the rural population. In the next two regions of Brazil rural-

Table 12

SELECTED COUNTRIES AND AREAS: DEGREE OF URBANIZATION IN 1970^a

<i>Region</i>	<i>Percentage of population in urban areas</i>
Argentina, South region	87.9
Brazil, developed region	80.4
Venezuela	77.0
Argentina, North region	55.7
Brazil, intermediate region	44.2
Brazil, less-developed region	43.7
El Salvador	39.4

^aThe definitions of 'urban area' adopted here are those of the respective censuses, which generally refer to cities with a population of 1 000 or more; in the case of Brazil, however, the definition appears to be based more on the type of administrative unit. The percentage shown for the developed region of Brazil is in fact the figure for the State of São Paulo, which is more appropriate in view of the way the developed region is defined in the study.

urban migration has also been substantial, even though the rural populations have continued to increase moderately rapidly. El Salvador is the only country, or region, analysed where rural-urban migration in recent years has been relatively insignificant, at least in relation to natural rates of population growth in the rural area.

Given the scale of internal migration, the structure of the migration flows becomes another variable of considerable importance, and here there is much less diversity among the countries analysed. The common characteristics are that it is primarily the very young who migrate, and that women migrate more than men. That migrants tend to be young is a commonplace, but they are perhaps surprisingly so in Latin America, particularly the women. It is in the rural-urban migration flows that women predominate, but even over the greater distances involved in regional migration in Argentina and Brazil they appear to migrate in numbers approximately equal to the figures for men. The structure of migration tends to be fairly similar in the different countries.

This then is the general demographic background which forms the starting-point for the simulation exercises: very considerable diversity, within as well as among the countries analysed, with Argentina a case apart in many respects; fertility rates, and hence population growth rates, for the most part ranging from moderately high to very high, major migration flows nearly everywhere, but with widely varying degrees of urbanization already achieved in the different regions.

(b) *Projected population trends*

(i) *Trends at the national level.* The first question is: how fast is the popula-

tion likely to increase from 1970 to the end of the century, and how much do the projections change with changing assumptions about the underlying population parameters? Populations increase most rapidly with the assumptions of little change from the 1970 situation adopted in the first exercise, and least rapidly with the great change postulated in the second exercise, so a comparison of these two experiments will show the probable limits involved (see table 13).

The extent to which Argentina is a case apart is at once clear. The population will increase only moderately to the end of the century and the range of uncertainty is quite small; the difference between the maximum and minimum end-of-the-century projections is only 12 per cent of the 1970 population.

In each of the other three countries the population more than doubles over the 30-year-period even in the minimum projection, and to the extent the substantial changes assumed in the second exercise do not occur the increase will be even larger. This means that the average rate of population increase will be at least 2.4 per cent per annum from 1970 to the end of the century, and probably significantly higher in most countries.

It is important to stress that this large increase occurs despite assumptions which lead to big reductions in fertility rates. First, large-scale migration to the cities, and in Brazil to the more developed regions, is assumed; and as the rates in question are substantially lower in these areas the effect is a considerable decline in the total national fertility rate. Secondly, it is directly assumed that fertility rates in the urban areas drop sharply, at least in the more developed regions, to the level of zero population growth in an eventually stable popula-

Table 13
**SELECTED COUNTRIES: PROJECTED POPULATION INCREASES TO THE END OF
 THE CENTURY — PROBABLE LIMITS**

Country	Population in 2000 (1970 = 100)		Average increase per annum 1970 to 2000 (percentage)		Increase per annum at the end of the century (percentage)	
	Exercise II	Exercise I	Exercise II	Exercise I	Exercise II	Exercise I
	Argentina	130	142	0.9	1.2	0.5
Brazil	203	237	2.4	2.9	2.0	2.9
El Salvador	217	280	2.6	3.5	2.0	3.6
Venezuela	204	248	2.4	3.1	1.6	2.8

tion. The net result is that in 30 years the total fertility rate decreases from about 5.4 to about 3.1 in Brazil, from 6.6 to 3.1 in El Salvador, and from 6.0 to only 2.5 in Venezuela.

That populations nevertheless increase rapidly over the period is a reflection of the very youthful age structure in most of Latin America. The very high fertility rates which have prevailed in many areas would have produced even higher rates of population increase with a stable age structure, but, owing mainly to the way in which the shift to higher rates of increase occurred, the age structure in most countries is still in a process of fairly rapid evolution. It was primarily the number of children which first increased very rapidly, thanks to falling infant mortality rates in the 1940s and 1950s, and this bulge is only now beginning to work its way through the adult age structure. In consequence, the numbers in the most fertile age groups will be rising rapidly in the coming decades in most countries—usually a good deal faster than the population as a whole—and this will be a major factor in increa-

sing the number of births, and offsetting increases in age-specific fertility rates.

Thus even if fertility rates should fall rapidly, as in the second exercise, a prolonged period is likely to pass before the full impact is felt. The rates of population increase at the end of the century in the second exercise are important to note in this respect. They have by that time declined to 2 per cent per annum or less, and as the numbers in the fertile age groups are no longer increasing so rapidly (reflecting the decline in fertility rates which began several decades earlier), the downward trend might well continue a good deal farther in the early decades of the next century. This is an indication of the very long-term nature of population changes; even sharp changes in the parameters may well require several decades to produce the expected results.

If there is no big drop in fertility rates the youthful age structure may actually result in rising rates of population growth in some countries in the years ahead. Thus even though the first experiment does assume some decrease in fertility rates, the figures above show

that rates of population increase at the end of the century are not necessarily lower than the average for the period as a whole. In Brazil there is a very small rise during the 1975-1985 period, but the rate of increase is essentially constant to the end of the century; in Venezuela there is a more significant upswing during the 1975-1985 period, after which the rate declines slowly to the end of the century; and in El Salvador the rate continues to climb, from 3.2 per cent per annum in 1970 to 3.6 per cent at the end of the century.

Argentina apart, then, it is clear that the population will increase very substantially in Latin America, and even if fertility rates should begin an immediate and rapid downward movement—which has not yet occurred in most of the region—the rate of increase will remain high at least to the end of the century. Two very general economic issues of interest here are the implications of such an increase for per capita resource availabilities and for the potential size of the market. Each of these would of course require a thorough study of its own before much could be said about it, but the figures shown in table 14 are of interest as a general, although imprecise, sort of indicator.

In terms of the resource base—in so far as this is indicated by the simplistic measure of population density—Latin America will continue to be among the more favoured regions of the world. For the region as a whole the population density at the end of the century will probably be around 30, i.e., somewhat higher than the figures shown for Brazil and Venezuela; in the South American continent the overall density will be lower, and this will be offset by higher densities in Central America and the Caribbean. The corresponding figure for

the world as a whole is already about 30 in the mid-1970s, although densities in the areas regarded as resource-rich are of course much lower.⁶

Thus, even with the rapid population increase which will occur, the region as a whole will not be particularly densely populated at the end of the century. But the resource base will have become much less generous than it has been customary to assume. From the early post-World War II period to the end of the century the population of the region will have approximately quadrupled, and this of course means that the per capita resource base will have been cut by three-quarters in half a century. In the mid-1970s the world as a whole is no longer considered to be especially resource-rich in relation to its population, and it is roughly the present world density level that at the end of the century will characterize Latin America.

With respect to markets, in the region as a whole the number of potential consumers will clearly more than suffice to support even those modern industries with very large economies of scales. The important question here is the extent to which the population can be integrated into the production process so as to provide real money demand for the products of such industries. But also, at least with present institutional arrangements, markets need to be considered on a national rather than on a regional basis, and this is

⁶For example, population densities in the mid-1970s were around 11 in the USSR, 22 in the United States, 2 in Canada and Oceania, 13 in Africa, and 16 in Latin America itself. To take examples of densely-populated areas, the figure was around 155 in Western Europe, over 180 in India, more than 290 in Japan, and around 475 in Bangladesh.

another situation in which the diversity is striking.

In Argentina, since the total population is moderately large, and is already more generally integrated and has higher incomes than in most countries, the market should be big enough to support a reasonably diversified modern economy. At the same time the population density will remain low, implying an unusually favourable per capita resource base; in particular there are rich agricultural resources, a key asset in a world expected to be beset by food supply problems. Argentina may well find itself in a uniquely favourable situation in the region in these broadest economic terms.

Brazil stands out in a different way. The resource base, as expressed in terms of population density, will be somewhat better than the average for the region as a whole (although worse than the South American average); but the potential market will be very large. The Brazilian population at the end of the century will be of the same order of magnitude as those of the economic superpowers of the post-World War II period: the EEC, the United States, or the USSR. The major issue in Brazil in this connexion

will be the extent to which that population can be integrated into the modern economy so as to provide an effective market with real purchasing power. Although their population will not be nearly so large as Brazil's, this sort of situation is likely to characterize other major countries in the region. Mexico will have a very big population, and the limiting factor in market terms will be the extent to which that population can be integrated; densities will be well over double those in Brazil. And both Colombia and Peru will have populations of a size to support diversified economies, if, again, they can be integrated into the economy so as to provide effective monetary markets.

Venezuela's situation is more similar to Argentina's but rather less favourable in both respects. Population density will be more than double that of Argentina at the end of the century, yet the total market will be significantly smaller. Income levels are likely to be high, however, so that the population can be expected to be relatively fully integrated and the effective market large in relation to the population.

Finally, El Salvador is in a much less favourable position. Population density

Table 14

SELECTED COUNTRIES: PROJECTIONS FOR THE YEAR 2000

<i>Country</i>	<i>Total population (millions)</i>	<i>Number of inhabitants per square kilometer</i>
Argentina	31 to 34	11 to 12
Brazil	194 to 225	23 to 26
El Salvador	7.6 to 9.7	354 to 455
Venezuela	22 to 26	24 to 29

will be very high – to the point that mere pressure on resources, especially land, may be a major problem – and at the same time the total population is not large enough to provide the basic market for a diversified, internally-oriented economy. Although, to less extreme degrees, a number of the smaller countries of the region may easily find themselves in this sort of situation in the decades ahead.

(ii) *Trends in the different areas.* In addition to the total population increase, it is of major importance to determine where that increase is likely to occur and the implications this will have for the different areas. In much of Latin America a substantial proportion of the population is still rural, and since fertility rates are generally much higher in the rural areas, it is often there that most of the population increase originates. But migration to the cities is occurring everywhere, often on a large scale, so that in general it is the urban areas which will absorb the bulk of the population increase in the decades ahead. To a lesser extent the same sort of considerations will apply as between more and less developed regions within the larger countries.

Trends and the possible range of variation can be seen by comparing the results of the third and fourth simulation exercises. The third assumes continuing modern-type development, oriented towards the cities and, in Argentina and Brazil, the more developed regions; large-scale migration; and major decreases in urban fertility rates, although not so great as with the extreme assumptions of the second exercise. The fourth simulation, in contrast, assumes a shift to a less modern-type development, oriented towards the rural areas and the less-developed regions; there is very little migration, and it is primarily the popula-

tion parameters in the rural areas which are assumed to change. These two experiments thus show the extreme extents to which the population increase might remain in the rural areas (and the less-developed regions) or might shift to the cities instead. Comparative figures are shown in table 15.

Given the assumptions of the fourth exercise, except in Argentina there is not much change in the distribution of the population, and rates of increase are fairly similar from one area to another within each country.⁷ But even in the fourth exercise El Salvador is the only country where somewhat more than half the population increase takes place in the rural areas; in the other countries, even if migration is held to a minimum, it is primarily the cities which will have to accommodate the increment. In regional terms, however, the position alters: practically half the total increase would occur in the less-developed region in Brazil, and well over half in the North of Argentina.

With the assumptions of the third exercise, on the other hand, the situation is very different. There are substantial shifts in the distribution of the population in all countries toward the cities and, in Brazil, toward the more developed regions. Practically all the population increase is accounted for by the expansion of the urban areas, and most of it occurs in the more developed regions of Brazil and Argentina. And, of course, rates of population growth are

⁷The low fertility rates in the urban South of Argentina mean that population growth in this area depends to an unusual extent on migration. Thus with the limited migration assumed in the fourth exercise the population of the area does not increase much and its share in the total declines from 62.5 per cent in 1970 to 54.8 per cent at the end of the century.

Table 15
**SELECTED COUNTRIES AND AREAS: RELATIVE IMPORTANCE OF DIFFERENT AREAS
 IN THE PROJECTED POPULATION INCREASE, 1970-2000**

Country and area	Distribution of population throughout the country			Percentage of population increase in area		Average annual rate of increase	
	1970	2000 Exercise III	2000 Exercise IV	Exercise III	Exercise IV	Exercise III	Exercise IV
Argentina							
North rural	12.9	7.9	14.8	-6.6	20.3	-0.7	1.6
North urban	14.9	18.2	21.3	25.7	37.0	1.5	2.2
South rural	9.7	5.7	9.1	-4.7	9.4	-0.7	1.1
South urban	62.5	68.2	54.8	85.7	33.4	1.3	0.6
Brazil							
Less-developed rural	30.1	13.9	27.9	-0.6	25.9	-0.1	2.3
Less-developed urban	23.4	30.8	23.2	37.5	23.1	3.5	2.6
Intermediate rural	9.9	7.9	10.8	6.1	11.7	1.8	2.9
Intermediate urban	7.8	12.7	8.1	17.0	8.4	4.2	2.7
Developed rural	4.1	2.3	4.0	0.7	3.9	0.6	2.5
Developed urban	27.4	32.4	25.9	39.4	27.0	3.5	2.7
El Salvador							
Rural	60.6	33.1	57.1	15.4	54.7	1.1	2.9
Urban	39.4	66.9	42.9	84.6	45.3	5.0	3.4
Venezuela							
Rural	25.3	14.6	24.6	6.5	24.0	0.9	2.7
Urban	74.7	85.4	75.4	93.5	76.0	3.3	2.8

very much higher in the cities than in the rural areas; except in Argentina, the urban growth rates are everywhere high, ranging from 3.3 per cent to 5 per cent per annum for the 30-year period as a whole. Because of the gradually diminishing impact of migration as the shift to the cities proceeds, as well as the marked fall in urban fertility rates, these rates of increase are even higher at the beginning of the period and then decline to lower levels at the end of the century.

These potential shifts in population structures and the variations in possible

rates of increase in the different areas are of major importance, and were analysed in some detail in the individual country studies. Several different 'type' situations are apparent—depending upon the 1970 population distribution and upon variations in fertility rates—and these are worth summarizing for their general implications.

Venezuela is the best illustration of likely trends in a country which was already quite highly urbanized in 1970. There the bulk of the population increase occurs in the cities under all

assumptions; even with the limited migration assumed in the fourth exercise, over three-quarters of the increase is found in the cities, and if substantial migration continues, essentially the entire increase will be urban (during the 1960s the rural population actually declined).

This state of affairs has several important implications. Its direct consequence is simply that facilities required for the growing population will have to be provided largely, or even entirely, in the urban areas; because of greater densities and the habitual provision of more services in the cities, this will mean that infrastructure costs are likely to be relatively high.

A second implication is that, since the rural population has already been reduced to a minor proportion of the total, the impact of continuing migration on the cities will be relatively slight, and the increase in the urban population will depend primarily on fertility rates in the cities themselves. Thus in Venezuela, on the assumption of continuing rapid migration adopted in the third simulation, newly-arriving migrants account for only about 18 per cent of the total increase in the urban population at the beginning of the period and the figure decreases to about 14 per cent at the end of the century (despite the fact that urban fertility rates fall sharply over the 30-year period). Related to the total, the number of migrants arriving in a year would be only about 2/3 of one per cent of the urban population in the early 1970s and the proportion would decline to less than 1/3 of one per cent at the end of the century. Migration in these conditions will continue to be a major factor in determining the size and composition of the rural population, but its significance for the cities will become increasingly marginal.

A logical corollary is that the nature of the urban population will gradually change: migrants will become a steadily smaller proportion of the total. Even with the third simulation's assumptions of continuing large-scale migration, less than 10 per cent of the urban population in Venezuela at the end of the century will be migrants who have lived in the cities for less than 30 years; over 80 per cent of that population will have been born in the cities. Recent arrivals from the rural areas were a much bigger proportion of the urban population during the 1950s and 1960s, and the shift can be expected to have a powerful impact on expectations, and in general on social, economic and political orientations in the urban areas.

Finally, and perhaps of greatest importance, the fact that the massive shift to the cities has already occurred, and that the impact of migration is diminishing, will mean that rates of urban population growth can also be expected to decline. In Venezuela the urban population increased at rates of well over 6 per cent per annum during the 1940s and 1950s, with newly-arriving migrants representing more than half the increment. Around 1960 the incidence of migration began to lessen markedly (two-thirds of the population was already urban by that date), and the annual rate of urban population growth began to slacken correspondingly. In the second half of the 1960s this rate was already much slower—4.7 per cent—and it will continue to decline steadily.⁸ The

⁸ How fast it declines will also, of course, depend on the trend in urban fertility rates. It will fall to around 3 per cent at the end of the century, if these do not decrease much, and to around 2½ per cent if they do, even assuming that substantial migration continues.

period of most rapid urban population growth is therefore already over, and in Venezuela future rates of increase will be much lower than the peak rates of the recent past. As a result, pressures for urban employment, housing, social services, etc., should be a good deal less intensive, at least in relative terms, and therefore easier to accommodate.

At the same time, the problem of rural poverty will become more manageable. The rural population is now much smaller than the urban population and so funds required to improve conditions for the former are more likely to be a viable proportion of the total available. Those who cannot obtain remunerative employment in the rural areas can migrate to the cities, where, as noted, they now have a relatively slight impact, and this in itself should considerably alleviate poverty in the countryside. Indeed, the fact that the population is already relatively highly urbanized is likely to mean that conditions have not deteriorated in the rural areas; in Venezuela the rural population has remained approximately constant in size since about 1940, so there has been no build-up of pressure on the land. And so long as the natural increase is drained away by migration all efforts can go to improving levels of per capita welfare in the rural areas; nothing is required to accommodate greater numbers. All these considerations suggest that the problem of rural poverty is not likely to be as severe as in some regions, and should be easier to deal with.

This is all true, of course, only if the bulk of the population which is now urban has been more or less effectively integrated into the urban money economy; a simple shift from conditions of rural poverty to unintegrated urban poverty would not really mean changes

of the sort implied here. But the mere fact that urbanization has gone so far is evidence that such integration has probably taken place. Otherwise it is unlikely that migration would have continued for so long on such a large scale.

This, then, is something of a case of "unto him that hath shall be given". Once the mass transition from a basically rural to a basically urban society is successfully made, the difficulties—which are apt to be very severe in the transition period—are mitigated and at the same time resources available to deal with them are likely to become more generous, at least in relative terms. Much of the post-World War II period was one of such transition for Venezuela, and it seems probable that pressures associated with rapidly increasing numbers will moderate considerably in the years ahead.

In addition to Venezuela, among the countries (or regions) analysed the South of Argentina and the developed region of Brazil are also characterized by high degrees of urbanization, although there are special characteristics in each of these cases and both are complicated by the existence of migration flows from other regions within the country. Migration may therefore continue to be somewhat more important, even though the rural populations within each region are smaller in relative terms than in Venezuela. Nevertheless, much of the above discussion is also applicable to these two major regions.

A somewhat different sort of problem which may persist in these highly urbanized regions is that related to the absolute size, as distinct from the rate of expansion, of some metropolitan areas. Given the type of economic growth which has characterized the region in the post-war period, there has often been a

considerable concentration in one or a few major cities, and some of these have reached a size where diseconomies of scale are now thought to present serious problems. In these circumstances it is possible that if a city continues to expand fairly rapidly the difficulties of coping with the expansion may increase, despite the fact that the *rate* of population growth may be declining. The metropolitan areas of Buenos Aires and of São Paulo, for example, may well have grown to the point at which considerations of this sort apply.

The relative difficulty of tackling problems of regional disparity can also be viewed in the same light in which rural poverty was discussed above, and the contrast between the situations in Argentina and in Brazil can be noted here. In Argentina over 72 per cent of the 1970 high-income population was in the South (62.5 per cent in the urban South alone). The comparison between the South and the North is thus fairly similar to that between the urban and rural areas of Venezuela, and many of the same comments are applicable. A regional development programme in Argentina appears manageable in these conditions and could probably be undertaken while at the same time a modern type of expansion was continued in the South itself. That is, the diversion of resources required would probably not be so great as to absorb all, or the bulk, of what was available.

In Brazil, however, the situation is much less favourable. In 1970 less than 28 per cent of the population was in the developed region (less than one-quarter in the developed urban area), and well over half still lived in the less-developed region. In these conditions the requirements of a full-scale regional development programme might well preempt

almost all the resources available, leaving little for continuing modern-type expansion in the developed region itself. That is, a different development style would probably be necessary to bring about short- or even intermediate-term regional change on a major scale.

A second useful 'type' to analyse is a situation where around half the population was urban at the beginning of the projection period. Brazil as a whole and the North of Argentina are fairly close to this position—in each case about 56 per cent of the population was urban in 1970—but it can be better illustrated with the Brazilian data, the situation in the North of Argentina again being complicated by regional migration flows.

The bulk, if not all, of the population increase will still occur in the urban areas, but if large-scale migration continues the impact on the cities will be considerably greater than in the Venezuela-type situation. In the third exercise, which assumes that rural-urban migration continues on about the same scale as in the recent past, the urban areas absorb practically all (94 per cent) of the population increase; and newly-arriving migrants account for well over 40 per cent of the total urban population growth in the early 1970s and for nearly 30 per cent even at the end of the century.⁹ In the early 1970s migrants arriving during the course of a year would represent about 2 per cent of the entire urban population, a figure which

⁹The reason why the relative importance of newly-arriving migrants does not decline faster lies in the assumption that urban fertility rates are substantially reduced over the period. Both this assumption is adopted in the third exercise for all countries, so the figures are directly comparable to others cited in this connexion.

would fall to about 0.8 per cent by the end of the century.

These figures are much higher than those cited for Venezuela and indicate that rural-urban migration may for a good while remain a major factor in the growth of the cities in Brazil. The impact will be fairly great, and for some time to come recent migrants will continue to be an important component of the urban population.

Nevertheless, this impact has already begun to weaken, and in Brazil too the peak period of urban population growth is almost certainly over. Rural-urban migration has been substantial in Brazil in recent decades and has played an even bigger part in urban population growth than the simulation projections indicate it will in the future. During the 1950s the urban population increased at a peak rate of 5.5 per cent per annum; in the course of the 1960s this rate had already fallen to 4.8 per cent per annum and the third simulation projects an annual rate of 4.4 per cent during the early 1970s and then a continuing decline to 3.2 per cent at the end of the century.

The pressures on the urban areas can therefore also be expected to decrease in the Brazilian type case in the years ahead, although less rapidly, and from less high extremes, than in Venezuela. This reflects the fact that the mass shift from a basically rural to a basically urban population was compressed into a shorter time-span in Venezuela, producing annual rates of urban population increase of well over 6 per cent from 1940 to 1960, and then a sharper drop once the transition was well on its way to completion. In Brazil the shift has been more gradual, so that such high rates of urban population increase never occurred, and the decline has also been less abrupt.¹⁰

This more gradual transition in Brazil is at least in part the result of the great regional differences within the country, and these require a major qualification of the above discussion. As a general rule, it is useful to indicate likely trends, and their implications, for a country with somewhat more than half its population now urban. But in the specific case of Brazil this is of more limited relevance. As the degree of urbanization is very different in the major regions of the country, so likewise trends in the individual regions will be different, and it is these which are of primary importance. As is often the case for Latin America as a whole, the 'average' here is only a sum of disparate parts.¹¹

Finally, a third 'type' is a country whose population is still largely rural, and this can be illustrated with the data for El Salvador. As shown earlier, over 60 per cent of the population was still rural in 1970, so that the transition to an urban society, with its implications for rapid expansion of the cities, is a possibility still to come. Furthermore, this relatively low degree of urbanization has not changed much in recent decades; as early as 1930 about the same percentage of the population was urban (38.3 per cent) and in the intervening decades there has been no major rural-urban migration flow and rates of population increase in the rural and urban areas have

¹⁰ During the period of most rapid urban expansion in Brazil (1950 to 1970) the urban population rose from 36 per cent to nearly 56 per cent of the total population. Over the equivalent 20-year period in Venezuela (1941 to 1961) the urban population increased much more, from 39 per cent to 67 per cent of the total.

¹¹ The analysis in the case study of Brazil is made largely in terms of the individual regions for this reason.

been much more similar than in most of the region. Rapid urbanization, should it begin, would therefore also represent a sharp break with past trends.

The first important point to note is that a relatively low degree of urbanization means greater uncertainty about the distribution of the future population increase as between the rural and the urban areas. If past trends continue, the bulk of it will be in the rural area—which is not true of any other country analysed—but to the extent migration increases it will shift to the urban area. Again, the maintenance of past trends will make rates of population growth fairly similar, and high, in both areas; but if there is substantial migration the rate of increase will drop sharply in the rural areas and rise sharply in the cities. Thus migration flows become a more central variable in this sort of situation and must be watched even more closely for policy purposes.

Given large-scale migration, here as in the other type situations, the great bulk of the population increase would be in the urban area, and it is there that facilities would have to be provided. But the impact of such migration on the urban area would be greater in this case. If the projections of the third exercise are again considered, newly-arriving migrants account for over half of the total urban population increase in the early 1970s and still represent about 30 per cent of it at the end of the century. Migrants arriving during the course of a year total more than 3 per cent of the existing urban population in the early 1970s, and although it declines steadily the proportion is still 1.2 per cent at the end of the century. These figures are far higher than those of the corresponding simulation for Venezuela and substantially exceed those for Brazil, particu-

larly during the first half of the projection period, indicating the more powerful potential impact of large-scale migration on this sort of situation. Here the composition of the urban population would shift, but in a way opposite to its probable evolution in Venezuela. Recent migrants would be a rising proportion of the total for some time to come, and would remain a major element in the cities until well past the end of the century.

As large-scale migration would represent a break with past trends in El Salvador, the pressure on the cities would sharply increase. The annual rate of urban population growth has been fairly rapid in the recent past (around 3½ per cent) but with large-scale migration it would rise to an average of 5 per cent for the period 1970-2000 as a whole. At the beginning of the large-scale migration it would be around 6 per cent, and then decline, as the shift to the cities progressed, to about 4 per cent at the end of the century.¹²

A change of this magnitude, with the urban population rising from less than 40 per cent to about two-thirds of the total over a thirty-year period, would

¹² These projected rates of increase are based on the assumptions of the third simulation, and the rates could be even higher. Although large, the migration assumed in that exercise is less than has often occurred elsewhere, and the rural population continues to increase at an average rate of 1.1 per cent per annum to the end of the century. The third exercise also assumes a sharp drop in urban fertility rates, which of course reduces the rate of increase. In an exercise designed to show the extremes (the rural population is held approximately constant and there is only a small decline in fertility rates) the average rate of urban population increase to the end of the century is 5.6 per cent per annum.

not be particularly unusual in the region. It would be similar to the speed of urbanization in Brazil in recent years, for example, and would be less rapid than the transition which occurred in Venezuela during the post-war period.¹³ But, given the high fertility rates prevailing in most of the region, the transition will of necessity involve a spell of very rapid urban population growth, with the resulting severe pressures for employment, essential infrastructure and social services in the urban areas, which would be, at best, difficult to cope with. This may well be a period which assumes crisis characteristics, and is likely to be crucial to success or failure in establishing a reasonably integrated modern economy. Herein lies one of the reasons why population trends during the transition phase are among the most important results obtained from the simulation exercises.

Lastly, where the population is still largely rural, the problem of rural poverty is an extremely difficult one to resolve. As most of the population may well be involved, the resources required are likely to bulk very large in the total available to the economy, and in these circumstances it will probably be impossible to seek a basic solution to the rural poverty problem while at the same time pursuing a growth programme centred on a modern-type urban economy.

¹³ In Brazil the urban population rose from 36 per cent of the total in 1950 to 56 per cent in 1970, and rates of increase in the urban and rural populations were similar to those projected in the third exercise for El Salvador. In Venezuela the shift projected over 30 years for El Salvador occurred in only 20 (the urban population increased from less than 40 per cent of the population in 1941 to over two-thirds in 1961); rates of population growth were higher in the cities and there was essentially no expansion of the rural population.

In effect, a choice may have to be made between less satisfactory alternatives. Priority for the rural poverty problem may well necessitate a different style of development, oriented less towards modern-type industrial production and more towards the rural areas. This could be regarded either as a long-term alternative, or as an intermediate-term solution, in the latter case with the expectation that it would result in a fairly rapid decline in rural fertility rates so that, with slower population growth, the shift to a more modern urban economy could then be undertaken more gradually and therefore with less severe pressures.

Alternatively, the transition to a modern-type urban economy could be undertaken at once, with essentially all resources concentrated on making the transition successful and the rural poverty problem left either to be resolved by the transfer of population itself, or to be dealt with later. As noted, neither alternative is completely satisfactory.¹⁴

The simulation projections provide data on another issue related to urbanization which is worth noting: the extent to which the process reduces fertility rates and hence the rate of population increase at the national level. Since ferti-

¹⁴ This discussion implicitly involves one of the factors which will probably be important in determining how difficult the transition to an urban society is likely to be: the population density at the time the transition begins. If the rural areas are only sparsely populated—as was the case in Venezuela, for example—then the problem of rural poverty is likely to be less severe. It can more safely be ignored to concentrate on the pressures in the burgeoning cities, and will be easier to deal with later. If densities are already rather high in the rural areas—as in El Salvador—then the problem is likely to be more serious and the whole transition process more difficult to handle.

lity rates are in general lower in the cities, if migrants adopt urban practices this will reduce the number of births, and so urbanization is sometimes regarded as the most effective and practical way of reducing the rate of population growth. Past trends in the countries included in this study do not offer much support to this hypothesis. In Venezuela there has been a mass shift to the cities in recent decades, but this has not been accompanied by any substantial decline in fertility rates at the national level. In Brazil there has been a somewhat smaller, but still very considerable, shift toward the areas with lower fertility rates (the cities and the more developed regions), but again this has brought with it no significant decrease in the overall national fertility rate. Other factors have no doubt been present, but these trends do not encourage the belief that urbanization alone is likely to slow down the rapid rates of population increase.

The potential numerical impact can be shown in two differing cases—Venezuela and El Salvador—with data from the simulation exercises.¹⁵ Venezuela represents a country already quite highly urbanized and so it is not surprising that the impact of further migration is limited, even though fertility rates are

¹⁵ For these two countries an additional simulation exercise was carried out to determine the impact of mass migration in conditions where otherwise, particularly with respect to fertility rates, there was little change from the 1970 situation. In this exercise, with the exception of migration rates, all variables are the same as in the first exercise. Any difference in results is therefore exclusively due to migration, this being very limited in the first exercise and very large, in relation to the rural population, in the additional exercise.

estimated to be nearly 40 per cent higher in the rural than in the urban area. Both the rate of increase and the total population at the end of the century are closely similar in the two exercises.¹⁶

El Salvador is still primarily rural at the starting-point of the projections, however, and the difference between the degree of urbanization in the two exercises is very marked,¹⁷ so the differential effect on population growth is predictably great. In the first exercise the total population at the end of the century, with 1970 = 100, is 280 and the population is then increasing at the very rapid annual rate of 3.6 per cent, whereas in the special exercise the figures are only 263 and 3.3 per cent, respectively. The impact of urbanization is, as noted, important, but even with a massive population shift of the sort projected here, and on the assumption that migrants immediately adopt urban practices, it is clearly limited. Urbanization alone cannot be expected to reduce the rate of population increase to moderate proportions in most of the region; that will occur only when fertility rates within the different areas fall below their generally high present levels.

¹⁶ Given 1970 = 100, the population is 248 at the end of the century with limited migration and 245 with large-scale migration. The annual rates of population increase are 2.79 per cent and 2.74 per cent, respectively. This simply confirms numerically the intuitively obvious conclusion that in a population which is already largely urban further urbanization alone will not have a significant impact on total fertility rates.

¹⁷ In the first exercise the proportion of the population which is urban rises only from 39.4 per cent in 1970 to 43.6 per cent at the end of the century. In the special experiment it

(c) Projected trends in age structures

Currently prevailing age structures have already been discussed in comparative terms, and the principal implications noted, so that here it is necessary to deal only with likely trends to the end of the century. It is the trend in fertility rates which largely determines the age structure, and so a comparison of simulation exercises with differing assumptions about fertility rates will show the limits within which changes can be expected to occur. This means comparing the results of the first exercise (little change from the 1970 situation) with those of the second (large-scale migration toward areas with lower fertility rates and sharp declines in fertility rates in the urban areas) (see table 16).

In the first exercise only moderate changes take place up to the end of the century. In Argentina there is a pronounced increase in the relative importance of the over-65 group; in Venezuela, and to a lesser extent in Brazil, a decline in the relative importance of children is offset by an increase in that of the adult age groups; and in El Salvador that of teenagers and young adults is stepped up slightly.¹⁸ With the continuing exception of Argentina, populations will remain very young if fertility rates do not fall much lower.

rises to 76.9 per cent. That is, there is a differential shift of fully one-third of the total population.

¹⁸ The changes are different in the several countries mostly because of differing past trends in the population parameters, the results of which are now working their way through the age structure. There are also some discrepancies due to the extent of the decline in fertility rates assumed in the first exercise for the various countries.

In the second exercise the shift in all countries is much greater, with the relative importance of children declining substantially and that of the adult age groups increasing. But, Argentina apart, populations will remain quite young even if there should be a sharp and sustained downward movement in fertility rates. At the end of the century less than one-quarter of the population in the other countries will be 40 or more years of age, whereas in Argentina one-third of the population was already in that category in 1970, and in an eventually stable zero-growth population the proportion would be about 45 per cent.

Since the bulk of the age range at the end of the century represents those already born in 1970, whose numbers are therefore essentially unaffected by the assumptions of the projections, the differences between age structures in the first and in the second exercises are due very largely to differences in the numbers of children and adolescents at the end of the century, which are very great. With the rapidly falling fertility rates assumed in the second exercise, the number of infants (the 0-4 age group) at the end of the century in Venezuela and El Salvador is not much more than half the number projected in the first exercise, and in Brazil less than two-thirds. The number of children (5-14 years of age) at the end of the century in the second exercise is only about two-thirds the number projected in the first exercise in Venezuela and El Salvador, and about three-quarters in Brazil.¹⁹ With the adult population more or less pre-determined, it is these sharp possible variations in the

¹⁹ The differences are less in Brazil largely because of regional disparities in that country and the consequently somewhat different pattern of assumptions used in the exercises.

Table 16
SELECTED COUNTRIES: PROJECTED AGE STRUCTURES
(Percentage distribution)

Age group	1970				2000 (exercise I)				2000 (exercise II)			
	Argentina	Brazil	Venezuela	El Salvador	Argentina	Brazil	Venezuela	El Salvador	Argentina	Brazil	Venezuela	El Salvador
0-4	10.1	16.3	16.9	18.4	9.7	15.3	14.8	18.1	7.4	11.7	9.7	11.7
5-14	19.1	26.4	29.4	28.6	18.0	25.0	25.5	27.9	15.5	22.0	21.5	23.5
15-19	9.0	10.8	10.7	10.2	8.4	10.2	10.7	10.6	7.9	9.9	10.6	10.8
20-39	28.5	27.1	25.1	25.6	28.4	28.3	28.9	26.9	30.2	31.5	33.5	32.7
40-64	26.2	16.3	15.0	14.0	25.4	17.1	16.0	13.4	27.9	20.0	19.6	17.2
65 and over	7.2	3.1	2.9	3.2	10.2	4.2	4.1	3.2	11.1	4.9	5.0	4.1

number of children which account for the different age structures in the two exercises.

There are already great differences in the age structures from one area to another within each country, and these can be intensified by large-scale migration. As it is mostly the young who migrate, this will tend, over the period of the projection, to reduce the relative importance of young adults in the areas from which migrants come (primarily the rural areas) and to increase it in the recipient areas. Different trends in fertility rates can of course cause the age structures to diverge further. The possible extent of such differences can be shown by the age structures at the end of the century projected on the basis of the assumptions of great change in the second exercise. Figures for selected

areas in each country are given in table 17. Too much weight cannot be attached to these figures because of the way in which migration is calculated in the model, but they do illustrate the striking extent of the divergencies which might arise.

In general the proportion of children will be much higher in the rural areas and the proportion of active adults, especially young adults, much lower. A special situation to note is the high percentage of older people in the rural South of Argentina. A fairly mature population structure has evolved in that region, and continuing large-scale migration will drain away much of the younger population, so that older people, who tend to remain, will become an increasingly large proportion of the total. All the figures shown illustrate the

Table 17
SELECTED COUNTRIES AND AREAS: AGE STRUCTURES IN 2000 AS
PROJECTED IN THE SECOND EXERCISE

Age group	Venezuela		El Salvador		Argentina			Brazil	
	Rural	Urban	Rural	Urban	North rural	South rural	South urban	Less-developed rural	Developed urban
0-4	14.1	9.1	17.5	9.6	10.7	7.3	6.8	17.6	8.9
5-14	26.7	20.8	28.6	21.6	21.5	16.2	14.0	32.8	17.0
15-19	10.0	10.7	9.8	11.1	8.2	6.8	7.7	13.2	8.6
20-39	27.4	34.4	24.7	35.7	21.8	22.8	31.7	21.2	35.8
40-64	16.7	20.0	15.2	18.0	24.7	27.3	28.7	10.8	24.3
65 and over	5.1	5.0	4.2	4.0	13.0	19.6	11.1	4.4	5.4

changes that could occur with the assumptions of extreme change adopted in the second exercise; in the other simulations the divergencies between areas are less striking, but they are always substantial.

There are several important implications of these potential changes in age structure. The first is that the relative size of the dependent population (those less than 15 and over 65) will generally diminish somewhat, how much being conditional upon trends in fertility rates. In Argentina the dependent population in 1970 was of the same relative importance as it would be in an eventually stable zero-growth population (somewhat more than 36 per cent of the total), and this proportion will not change greatly. But in all the other countries the proportion was much larger (nearly 46 per cent in Brazil and around half in Venezuela and El Salvador), and can be expected to decline, perhaps quite substantially. There are again marked differences from one area to another, with dependency ratios a good deal higher in the rural areas and in the poorer regions. The likely range at the end of the century can be illustrated with the results of the first exercise (little change from the 1970 situation) and the third (considerable change, but less extreme than that assumed in the second exercise), selected figures from which are shown in table 18.

In addition to the overall figures, it is important to note the composition of this dependent population. In Argentina, in 1970 the over-65 group was already somewhat more than 7 per cent of the entire population, and about one-fifth of the dependent population itself; and if fertility rates decline further these figures could rise to close to 11 per cent and to 30 per cent, respectively, at the end of the century. The elderly population is

thus beginning to assume considerable importance in Argentina.²⁰ In the other countries, however, the over-65 group was only about 3 per cent of the population in 1970 (6 per cent to 7 per cent of the dependent population), and although these proportions will rise, it does not exceed 5 per cent of the population at the end of the century (less than 14 per cent of the dependent population) in any simulation. Not until the next century will the elderly group become a major part of the dependent population in these countries, and in most of the rest of Latin America as well.

The principal consequence of the generally large size of the dependent population is simply that each member of the labour force will have a greater average number of dependants to support, so that at any given labour productivity level per capita incomes for the population as a whole are lower. This is a major factor in the relatively high per capita income levels in Argentina, and in the other countries as dependency ratios decline per capita incomes will tend to rise. It is thus that a fall in fertility rates can have an immediate impact: there are fewer children to support per member of the active population and so per capita incomes improve.

There are also policy implications relating to the measures which will have to be taken to look after the dependent population. In Argentina a major consideration will be the provision of social services and health facilities for the elderly, but in the other countries it will very largely be children's needs that have

²⁰ As a point of reference, in an eventually stable zero-growth population the over-65 group would be about 15 per cent of the total, and well over 40 per cent of the dependent population.

Table 18
**SELECTED COUNTRIES AND AREAS: RELATIVE IMPORTANCE OF THE
 DEPENDENT POPULATION, 1970 AND 2000**

(Percentage of total population)

Country and area	1970	2000	
		Exercise I	Exercise III
Argentina: total	36.4	37.9	35.4
North rural	49.0	47.6	45.7
South urban	31.7	34.4	33.1
Brazil: total	45.8	44.5	40.3
Less-developed rural	50.2	51.8	52.9
Developed urban	39.4	35.8	32.8
El Salvador: total	50.2	49.2	46.0
Rural	51.8	51.8	50.8
Urban	47.5	45.7	43.5
Venezuela: total	49.2	44.4	41.2
Rural	54.1	48.5	47.5
Urban	47.1	43.4	40.2

to be met. Here educational facilities are a permanent concern in the social area, and the most important issue is therefore how fast the primary-school-age population is likely to increase.

The 5 to 14 age group can be used as an estimate of the primary-school-age population, and the figures presented earlier show that the relative importance of this group will decline in all countries – moderately even in the first exercise and much more if there is a big drop in fertility rates. Hence this age group will increase less rapidly than the population as a whole in the years ahead. At the national level the period of most rapid increase in the primary-school-age population has already passed in all the countries analysed, so that, in the aggregate, the often severe pressures for

school facilities experienced in the recent past will presumably be eased in the future. But the extent of the relief varies greatly, and it is often the pressure in particular areas rather than the aggregate which is most exacting, so care must be taken in interpreting such a sweeping, although still very important, generalization. In addition to the clear-cut differences from one area to another there is often considerable uncertainty here, so that for purposes of educational planning trends will have to be closely followed if effective provision is to be made.

At one extreme, the rate of increase in the primary-school-age population in Argentina had already fallen to about 1 per cent per annum during the 1960s, and will slow down somewhat more

during the 1970s. If fertility rates continue to decline, this age group will then remain approximately constant from 1980 to the end of the century, so that no additional expansion of primary school facilities will be required on this score. This would be a situation similar to that experienced in a number of the advanced industrial countries in recent years. But as the primary-school-age population is quickly affected by trends in fertility rates uncertainty is introduced, although less in Argentina than elsewhere, and if there is no further significant reduction of fertility rates the school-age population will increase somewhat faster again after 1980.²¹

The primary-school-age population will continue to expand much more rapidly in the other countries, and the rate may fluctuate substantially. This can be illustrated by past and projected trends in Venezuela, figures for which are shown in table 19.

As shown, the peak was reached during the second half of the 1950s, when this age group increased at the extremely rapid annual rate of 5.7 per cent. The rate has declined since, and will drop sharply to less than 2 per cent during the 1970s. From that relatively low level it will rise a good deal during the 1980s, and turn downward again during the last decade of the century, the magnitude of the fluctuation depending on the trend of fertility rates.²²

²¹ In the first exercise (little change from the 1970 situation) the 5-14 year age group increases at the rate of 1.3 per cent per annum during the 1980s and then, somewhat more slowly again, by 1 per cent per annum during the last decade of the century.

²² These fluctuations result from the nature of the underlying population parameters and from the way in which the transition to higher rates of population increase occurs.

In addition to the variations in growth at the national level, there are major disparities in the extent to which the increment, and the need for primary school facilities, are likely to be concentrated in particular areas: and so the rate of increase is also likely to differ greatly from one area to another. At one extreme, the rural primary school population in Argentina decreased substantially during the 1960s, and if migration continues on a similar scale the decline will continue. There was also a significant reduction in the developed rural area in Brazil, and growth was only slight in the rural areas in Venezuela, so that here too continuing migration will involve little or no expansion of this group. In such circumstances no increase in school places is required, except perhaps to improve attendance ratios, and available funds can be used entirely to raise standards.

At the other extreme, the cities must often clearly absorb the great bulk of the increase, and growth rates in some circumstances can be very high. To cite the most striking instances, the urban primary-school-age population in Venezuela was increasing at a peak rate of close to 10 per cent per annum during the late 1950s, when the rapid expansion of this age group in the country as a whole coincided with the mass movement to the cities. The rate then fell fairly quickly, and, as most of the population shift to the cities has already occurred, the increase in the urban primary school population in Venezuela will in the future remain below 4 per cent per annum. Within that limit there will be considerable fluctuations from one period to another, and much will depend on the trend in fertility rates.

Growth rates of this age group in the urban areas of Brazil were also very high

during the 1960s (for the decade as a whole they ranged from 5.5 per cent to 6.8 per cent per annum in the different regions of the country) and will remain quite high to the end of the century. But the peak rates of urban increase in Brazil, as in Venezuela, have passed, and the pressures for primary school facilities in the cities, which have often been very great, will probably be substantially eased in the years ahead. In the countries here considered, the only urban area which might well experience a marked intensification of the pressures for primary schooling is that of El Salvador. In El Salvador the population is still basically rural, and large-scale migration to the cities could increasingly accelerate the growth rate of the urban primary-school-age population.

It must be stressed that there is clearly a good deal of variation among the different areas. Both the existing situation and the trend are likely to be quite different from one area to another, and there is considerable room for uncertainty because of possible changes in fertility rates and/or migration flows. Adequate educational planning will require a careful analysis of conditions in the different areas of the country, and trends will need to be followed closely; they are unlikely to be steady and can change relatively quickly for this age group.

The other age group whose relative importance will probably alter a good deal in most countries, and with implications that require noting, is the young adult group (20-39 years of age). Argentina is again an exception, but in the other countries this age group will gain in relative importance even if fertility rates do not decrease much, and if they do, the increase may be very substantial.²³ The number of young adults will

therefore be growing faster—perhaps much faster—than the population as a whole in most countries. This reflects the fact that the initial bulge, which began with the transition to higher rates of population growth, and which, as pointed out above, often resulted in very high rates of increase in the child population during the late 1950s and 1960s, is now reaching the young adult age group; consequently, this age group will expand rapidly in most countries at least until the last years of this century.²⁴

Again considerable variation is likely from one area to another within a country, particularly if there are large-scale migration flows. As this group is

²³ In Argentina the fall in the relative importance of children tends to be offset primarily by a rise in that of the elderly. If there is a major decline in fertility rates the relative importance of young adults will of course increase, but no more than that of the older adult group. The situation is also somewhat different in Brazil. As in Venezuela and El Salvador, the proportion represented by young adults will rise, perhaps substantially; but in Brazil the 40-64 year age group will increase approximately as much as young adults in relative terms.

²⁴ The projected growth rates of this age group in the different countries to the end of the century are as follows:

	1970-1980	1980-1990	1990-2000	
			Exercise I	Exercise II
Argentina	1.5	1.2	0.8	0.6
Brazil	3.4	3.0	2.8	2.4
El Salvador	3.6	3.8	3.5	3.1
Venezuela	4.2	3.8	2.8	2.3

The rates are of course the same in all exercises until 1990. Only after that date do differing assumptions about fertility rates begin to affect this age group.

Table 19
**VENEZUELA: AVERAGE ANNUAL INCREASE IN THE
 PRIMARY-SCHOOL-AGE POPULATION**
(Percentage)

<i>Period</i>	<i>Actual rates of increase</i>	
1950-1955	4.1	
1955-1960	5.7	
1960-1965	4.7	
1965-1970	3.8	
	<i>Projected rates of increase</i>	
	<i>Exercise I</i>	<i>Exercise III</i>
1970-1980	1.9	1.8
1980-1990	3.4	2.8
1990-2000	2.5	1.7

heavily affected, such migration can well result in an absolute fall in the number of young adults in some rural areas, with big counterpart increases in the urban areas to which the migrants move. In those exercises which assume large-scale migration, rates of increase of 5 per cent to 6 per cent per annum are projected for several of the urban areas during the first half of the 30-year period.

There are two major implications of this rapid future increase in the young adult population. First, since this is the age group with the highest age-specific fertility rates, a rapid rise in its numbers will tend to mean a rapid rise in the number of births, and hence a relatively high growth rate for the population as a whole. So this aspect of the age structure is a basic determinant of an accelerated rate of population increase in most countries, at least up to the end of the century, regardless of assumptions about fertility rates.

The impact is clear from the simulation exercises. In the first exercise only a slow decline in fertility rates is assumed, and even this is largely, or entirely, negated by the rapid numerical increase in the fertile age groups: in Venezuela the rate of population growth rises marginally during 1975-1985 and then gradually sinks until the end of the century; in Brazil it remains practically constant throughout the period of the projections; and in El Salvador it rises steadily up to the end of the century. At the other extreme, even with the rather unrealistically large decreases in fertility rates assumed in the second exercise, the projected rates of population increase remain in general very high until the last decade of the century.

The second major implication is that young adults tend to account for about half the total labour force, so that the rapid expansion of this age group is a basic factor in the expected enlargement of the labour force itself.

(d) The labour force

(i) *Projected trends.* In most of Latin America the labour force will increase rapidly at least to the end of the century, and the simulation exercises clearly demonstrate the certainty of this central conclusion: despite widely divergent underlying assumptions the projections do not differ greatly from one exercise to another. A general impression of likely trends, and possible variations in them, can be given by comparing the projections of the first and of the second exercises (see table 20).²⁵

Here, as in most other aspects relating to population, Argentina is clearly a case apart. The labour force in Argentina is likely to increase at rates ranging around $1\frac{1}{4}$ per cent per annum during the next few decades, and at the end of the century the total labour force will be perhaps 50 per cent larger than it was in 1970. This rate of increase is higher than that characteristic of most of the high-income industrial countries, but it is closer to their type of situation than to the situation which will prevail almost throughout the rest of Latin America.

In the other countries analysed the rates of increase in the labour force will be 3 per cent per annum or higher in the decades ahead, and at the end of the century the total labour force is likely to be $2\frac{1}{2}$ or $2\frac{3}{4}$ times its 1970 size. These rates of growth, and the total increase to

²⁵ The first exercise assumes little change from the 1970 situation, while the second exercise assumes great change. In addition to the different assumptions about population parameters which have been noted before, the first exercise assumes little change in labour participation rates, while the second assumes that in the urban areas these shift to the rates which prevailed in France in 1968.

which they give rise during the 30-year period of the projection, are very high, and will offer a vitally important challenge to the modern-type industrial development process which characterizes the economies of the region. Historically, during the phase of industrialization in the now highly industrialized countries the labour force was increasing much more slowly, and even so the employment problem was for long periods often critical. In much of Western Europe, for example, reasonably full integration has been achieved only in the post-World War II years, with their unusually favourable record of growth and structural change; and during that period the labour force has been expanding at a rate of around 1 per cent per annum in most countries. It is clear that with the much higher rates of increase which will prevail in most of Latin America the problem of adequate employment opportunities will remain a central issue at least until well into the next century.²⁶

²⁶ It is worth emphasizing the importance of these much higher rates of increase, and this can be done with a simple numerical exercise. The problem, in so far as it relates to employment, is to absorb the labour force into the modern, high-productivity and high-income areas of the economy. This has generally been associated with a shift in the structure of the labour force away from the low-income agricultural sector and toward industrial and high-income service activities. Very large switchovers of this sort have occurred in many of the high-income industrial countries during the post-World War II period, reflecting the strong and continuous industrial expansion. The change which has occurred in three countries considered to have achieved a great deal during this period are noted below. With respect to Western Europe, reference is often made to the Italian and the West German 'economic miracles'; and Japan's case is commonly cited as

It has already been pointed out that these very high rates of increase in most countries are a relatively recent phenomenon. The labour force has probably been expanding at mounting speed throughout the post-World War II period, a process which may reach a climax during the 1970s, whereafter

rates of increase may decline somewhat in many countries. As the above figures show, this is not a certainty: somewhat divergent trends occur in the different countries, and with the adoption of different assumptions. But these fluctuations in the rate of increase over the 30-year period of the projections are of

the outstanding success story of this type. From 1955 to 1970, which was a time of very concentrated change in these countries (in Italy the annual growth rate of the gross product was close to 6 per cent, in West Germany slightly more than 6 per cent, and in Japan nearly 11 per cent), labour force structures altered as follows:

		<i>Percentage distribution of the labour force</i>		
		<i>Agri- culture</i>	<i>Indus- try</i>	<i>Servi- ces</i>
Italy:	1955	42.2	32.1	25.7
	1970	17.2	44.4	38.4
Germany:	1955	22.8	43.9	33.3
	1970	8.7	47.0	44.3
Japan:	1955	43.8	27.3	28.9
	1970	19.8	34.1	46.1

The shift out of agriculture and into the higher-income industrial and services sectors is striking in each country. But this must be viewed in relation to labour force growth rates in the years 1955-1970: in Italy the size of the labour force contracted slightly over the period, while in West Germany it increased at the rate of 0.7 per cent per annum, and in Japan by 1.5 per cent per annum.

These rates are much lower than any that will prevail in Latin America. If it is hypothetically assumed that the same process of expansion and the same absorption of labour into the industrial and services sectors would occur, but that the total labour force would be expanding at a rate of 3 per cent per annum, with any residual increase remaining in the agricultural sector, the results would be very

different. On this hypothesis, in both Italy and West Germany the proportion of the labour force in agriculture would increase (to 46.9 per cent in Italy and to 35 per cent in West Germany), while the proportion in industry and services would dwindle, although of course there would be the same absolute increase as actually occurred in these sectors. In the Japan-type expansion the much higher growth rate would still produce a moderate decline in the proportion of the labour force in agriculture (to 35.8 per cent), while the proportion in the industrial sector would remain constant, and there would be an offsetting increase in the proportion engaged in services. Hence, with the rates of increase in the labour force to be expected in most of Latin America in the decades ahead, an 'economic miracle' of the Italian or West German variety would not improve the structure of the labour force; the proportion underemployed (for which the agricultural sector is here used as a proxy) would actually rise. Even a 'miracle' of the Japanese kind would lead only to a moderate improvement: if the labour force were increasing by 3 per cent per annum (and it will do so even faster in some countries), the proportion underemployed would decline from 43.8 per cent to 35.8 per cent over a 15-year period and there would be no increase in the proportion in the industrial sector.

As noted earlier, modern-type industrial expansion does not readily absorb large quantities of labour. If the labour force is increasing rapidly, the absorption of most of it into the high-productivity sectors is apt to require extremely high economic growth rates. In the past such shifts have been achieved in circumstances where the labour force was increasing at much more moderate rates.

secondary importance. The main conclusion must be that, at least to the end of the century, the labour force will continue to grow very rapidly in most countries.

Before examining in more detail the different aspects and implications of these trends it is important to clarify the two major factors underlying the aggregate increase, and the relative importance of each. The first factor is simply the growth of the population in the active age groups in the different countries. As has been discussed in some detail earlier, in most countries the total population will increase rapidly over the period of the projections, and the relative importance of the active age groups as a whole is likely to rise substantially: that is, the population in these groups is

likely to increase a good deal more quickly than the population as a whole. The young adult group will expand particularly fast, especially during the 1970s and 1980s, and as noted this age group alone tends to account for around half of the total labour force. The second most important group in the labour force is that of more mature adults (40-64 years of age), and this group too can be expected to increase more rapidly than the population as a whole. This rapid increase in the population in the active age groups will alone ensure a very large expansion of the labour force, irrespective of any reasonable assumptions which might be made about labour participation rates.

(ii) *Labour participation rates.* The second major factor underlying the

Table 20
SELECTED COUNTRIES: LABOUR FORCE TRENDS TO THE END OF THE CENTURY

	<i>Argentina</i>	<i>Brazil</i>	<i>El Salvador</i>	<i>Venezuela</i>
Actual increase 1965-1970 (per cent per annum)	1.4	3.1	3.2	3.4
Increases projected in exercise I (per cent per annum)				
1970-1980	1.2	3.0	3.6	3.6
1980-1990	1.1	3.0	3.6	3.3
1990-2000	1.2	3.1	3.8	3.3
Increases projected in exercise II (per cent per annum)				
1970-1980	1.6	3.4	3.6	3.9
1980-1990	1.4	3.3	3.5	3.4
1990-2000	1.2	3.0	3.2	3.1
Size of the labour force in 2000 (1970 = 100)				
Exercise I	141	244	291	274
Exercise II	153	262	277	278

Table 21
SELECTED COUNTRIES: ESTIMATED FEMALE LABOUR PARTICIPATION RATES

Age group	Argentina 1960		Brazil 1970		El Salvador 1960	Venezuela 1960	France 1968
	Urban North	Urban South	Less- devel- oped urban	Devel- oped urban	Urban	Urban	
15-19	.350	.369	.222	.388	.311	.222	.313
20-24	.419	.459	.281	.437	.407	.327	.623
25-29	.338	.332	.232	.327	.381	.305	.507
30-44	.278	.254	.212	.281	.329	.279	.424
45-49	.223	.212	.205	.238	.285	.236	.455
50-54	.184	.163	.195	.189	.267	.203	.453
55-59	.148	.121	.181	.143	.229	.170	.423
60-64	.114	.087	.159	.095	.204	.140	.324
65-69	.087	.065	.124	.063	.169	.110	.150
70 and over	.052	.037	.066	.029	.114	.064	.020

aggregate increase consists in possible changes in labour participation rates, and although it is clearly the less important of the two, it can also have a strong impact in some circumstances. The situation here is a good deal more complicated, and 'reasonable' assumptions to be used in the projections are more difficult to define.

Perhaps the first point to note in a more detailed analysis is that labour participation rates at the national level must be treated with caution, as they combine the rural and urban population, and participation rates in the two areas are likely to be quite different. Male participation rates are generally significantly higher at all ages (but particularly for adolescents and for older men) in the rural areas, where female participation rates, by contrast, tend to be much lower. These differences probably reflect

at least in part registration conventions in the rural areas — nearly all men regard themselves as members of the labour force, while women do not— and so rural participation rates, and projected changes in those rates, are probably less meaningful from the present point of view. For this reason, as well as because greater importance is usually attached to the problem of urban employment, owing to the general social and political context in which it arises, the following discussion concentrates on labour participation rates in the urban areas.

It is female labour participation rates which present the greatest scope for possible change and so can most affect the increase in the labour force. Since they are quite low in Latin America, even in the cities, if more women should enter the labour force, for whatever reason, the impact might possibly be

quite significant. Even within Latin America, however, there is a good deal of variation from one country and region to another, and it is best to present the estimated age-specific participation rates in the different urban areas before proceeding; the rates prevailing in France in 1968 are shown for purposes of comparison.²⁷

Participation rates for adolescents and for elderly women are often somewhat higher in the Latin American urban areas than in France; but for all the rest of the age range they are much lower, so there is great scope for an increase in the number of working women in all the countries analysed. How large an increase might actually occur depends of course on the reasons for the present low participation rates and the extent to which anticipated changes might alter that situation; and this is very difficult to specify. One important reason for the relatively small proportion of working women in Latin America may simply be a lack of employment opportunities; the availability of more and/or better opportunities might alone suffice to raise commensurately the numbers in the labour force. A comparison of labour participation rates in the different areas does not give much support to this hypo-

²⁷ The French rates are for the country as a whole rather than for the urban area. They were used in the simulation exercises as a possible 'target' toward which rates might move. The French rates were chosen as they occur in a diversified, industrialized urban economy, where the social structure is perhaps closer to that of Latin America than in the case of some of the other high-income economies of Western Europe. These rates therefore provide an indication of the direction in which labour participation rates might move as industrialization advanced in the region. As will be noted in the text, however, a great deal of uncertainty exists in this area.

thesis, however. In Argentina, for example, female participation rates are somewhat higher in the urban South up to the age of 25; but for women over 25 they are higher in the urban North, and it is unlikely that there are greater opportunities in the North than in the South. Further, for the female population as a whole the highest rates are found in El Salvador, where income levels are lower and opportunities probably less attractive than in most of the other urban areas analysed. The opposite economic motive might even be adduced to explain these comparative figures: that is, women tend to work primarily from necessity. But this hypothesis in its turn is contradicted by the fact that, up to the age of 50, the lowest rates occur in the less-developed urban area of Brazil, where income levels are lower than in most other urban areas and the pressure to work, therefore, presumably greater.

Both these factors, plus many others, probably play a part in the determination of female participation rates. The fairly clear conclusion to be drawn from an examination of participation rates in different countries is that these are to a major extent a reflection of the entire, and quite specific, socio-cultural environment. As such they may vary widely from one urban area to another, and it is unlikely that any simplified set of economic or other factors can satisfactorily explain these differences or make it possible to predict future trends.²⁸

²⁸ This can be even more graphically illustrated by noting female participation rates in countries outside Latin America, where extreme variations can be found. A number of these, admittedly picked to show divergencies, follow (the figures are taken from the ILO *Labour Statistics Yearbook*).

Considered in these terms, the general structure of female participation rates in Latin America is worth noting. In all of the countries analysed participation rates are highest for very young women (reaching their peak in the 20-24 year age group), and then decline quite rapidly after the age of 30; although there are again important differences in both levels and structure from one area to another. This general structure suggests that by far the majority of women view

work outside the home not as a career, but rather as a transitory phase, prior to marriage, or the formation of a family, or perhaps until the male head of the family is more firmly established. It may also be linked to the type of activities open to women; these may be mostly casual, unskilled jobs offering little incentive to the formation of a longer-term, career-oriented outlook.

These are clearly broad socio-cultural aspects of a society, in which changes are difficult to project and will not necessarily be closely associated with economic or any other limited set of variables. About all that can definitely be said is that if the role of women in society and their attitude to work outside the home should change, there could be a very large increase in the number of women in the labour force. The solution to this difficulty, where the simulation exercises are concerned, has been, as already noted, to select the 1968 French participation rates as a possible 'target'. In so far as the general environment changes, participation rates might move part or all of the way to those levels, and this is the sort of assumption adopted in the exercises. It must be kept in mind, however, that such assumptions are to a considerable extent arbitrary.

The situation with respect to male labour participation rates is more straightforward; again for the reasons cited earlier, only the urban rates are estimated (see table 22).

By comparison with the French standard, male participation rates in Latin America tend to be relatively high for the very young (teenagers and those in their early twenties) and for the elderly (the 65-plus age group), probably reflecting somewhat lower attendance ratios in secondary and higher educational institutions, and less complete social security

FEMALE LABOUR PARTICIPATION RATES

Age group	Egypt 1966	Mozambique 1970	Ghana 1970	Netherlands 1971	Denmark 1970	Norway 1970	Finland 1970
15-19	.073	.323	.392	.493	.478	.298	.336
20-24		.327	.614	.556	.675	.484	.626
25-29	.078	.314	.650	.252	.587	.348	.677
30-44	.053	.309	.739	.230	.561	.279	.676
45-49		.348	.779	.231	.554	.349	.642
50-54	.051	.355	.790	.214	.505	.351	.589
55-59		.351	.755	.183	.410	.320	.494
60-65	.017	.339	.711	.126	.261	.245	.292
65		.244	.475	.028	.053	.056	.036

The first three are all low-income countries in Africa, yet female participation rates run the entire gamut from extremely low in Egypt through moderate in Mozambique to very high in Ghana. The Netherlands and Denmark are both high-income industrialized countries of Northern Europe, yet rates are much higher in the latter (except for adolescents), just as they are in Finland as against Norway, although both are Scandinavian countries. Differences in statistical methods are no doubt part of the problem, but much more is involved. As stated in the text, female labour participation rates are clearly the result of a large number of factors, many of which are specific to the particular country or area concerned. Even within a given area the situation can change substantially in fairly short spaces of time; this is evident from the substantial increases in female participation rates which have occurred in a number of the high-income industrial countries in recent years.

coverage for the elderly. From the age of 25 to the age of 50 participation rates tend to be quite similar to those in France; nearly all males are participating members of the labour force during these most active adult years.

The divergence among countries occurs primarily in the 50-65 age groups. Male participation rates throughout this age range are relatively high in El Salvador and Venezuela —well above the French rates; whereas in Argentina and Brazil they decline rapidly, particularly in the more developed regions in the two countries, and are well below the French level.

In overall terms, while there is some variation in male labour participation rates among the different countries, this

is much less than in the case of female participation rates; and the general level is also closer to that found in France. If male participation rates should move toward the French 'target' rates, as assumed in several of the simulation exercises, the result would be a significant decline in the male labour force in El Salvador and in Venezuela, but little overall change in Argentina and Brazil.

In the study of possible changes in labour participation rates, and the effect they might have on the size of the labour force, all these elements should be considered in combination; the total result may easily be quite different from that obtained by taking any single aspect in isolation. The major factor here is that the changes might produce opposing

Table 22
SELECTED COUNTRIES AND AREAS: ESTIMATED MALE LABOUR PARTICIPATION RATES

Age group	Argentina 1960		Brazil 1970		El Salvador 1960	Venezuela 1960	France 1968
	Urban North	Urban South	Less-developed urban	Developed urban	Urban	Urban	
10-14	.052	.061	.081	.075	.108	.080	.025
15-19	.630	.659	.485	.487	.602	.530	.528
20-24	.876	.884	.841	.842	.878	.899	.826
25-29	.857	.964	.926	.920	.941	.963	.951
30-44	.970	.974	.937	.941	.962	.972	.972
45-49	.946	.938	.894	.896	.963	.964	.949
50-54	.879	.841	.834	.807	.954	.940	.914
55-59	.738	.643	.799	.694	.935	.906	.825
60-64	.587	.469	.583	.525	.907	.790	.657
65-69	.490	.357	.548	.372	.868	.700	.300
70 and over	.332	.224	.266	.155	.682	.490	.100

trends in the male and in the female labour force: participation rates for women could rise substantially, thereby greatly increasing the number of women in the labour force, but male participation rates are more likely to decline and so partially offset such an increase.

The potential overall impact of changes in participation rates can be deduced from the projections of the second exercise, where it is assumed that by the end of the century urban participation rates move to the 'target' 1968 French level (see table 23).

As the figures show, such changes would be of some importance everywhere, but there is considerable variation from one urban area to another. The weakest impact would be in El Salvador. Urban female participation rates are already relatively high in that country, so that a shift to the French level would

result in only a 30 per cent increase in the size of the female labour force—substantial, but much smaller than in the other countries. And as the active population will be expanding very fast, the assumed change in participation rates accounts for a more moderate 28 per cent of the total projected increase in the female labour force. Male participation rates are also quite high in El Salvador, so that assimilation to those of France would markedly reduce the male labour force, although still not very greatly in relation to the total projected increase up to the end of the century. Finally, since the assumed change produces opposing effects on the male and the female labour forces, these largely offset each other and the size of the labour force as a whole is little affected. The impact on the female labour force would be a good deal more pronounced in

Table 23
RELATIVE IMPACT OF CHANGES IN LABOUR PARTICIPATION RATES
ASSUMED IN THE SECOND SIMULATION EXERCISE

	<i>Percentage change in size of labour force in 2000 due to changes in labour participation rates</i>			<i>Percentage of increase in labour force 1970-2000 due to changes in labour participation rates</i>		
	<i>Total</i>	<i>Male</i>	<i>Female</i>	<i>Total</i>	<i>Male</i>	<i>Female</i>
Argentina						
urban North	10.8	-4.0	57.1	23.7	-11.9	67.5
urban South	14.4	-1.2	64.1	29.1	-3.5	65.6
Brazil						
urban less-developed	21.9	0.5	87.8	25.4	0.8	58.2
urban developed	15.4	3.5	48.9	17.8	4.7	41.7
El Salvador: urban	2.7	-8.1	30.7	3.3	-11.2	27.9
Venezuela: urban	8.7	-8.5	66.7	11.6	-14.5	50.0

Venezuela, but otherwise the situation is much the same as in El Salvador, and the overall effect would be quite moderate.

In Argentina and Brazil the incidence of the assumed change would be considerably greater: the female labour force would be much enlarged, and as male participation rates are lower there would be less of an offsetting decrease in the male labour force (which would actually increase in Brazil). As a result, the total labour force would increase substantially, and the shift in labour participation rates would account for a sizable part of the projected increase in both countries.

The foregoing remarks are all based on the assumption that by the end of the century labour participation rates will have fully reached the French levels. In so far as they move in that direction, but to a lesser degree, as assumed in other simulation exercises, the impact is of course modified, but still of the sort discussed here.

The substantial variations from one country to another mean that this is another aspect which will need to be closely followed up to determine trends in any particular area. Clearly, concern will be primarily with female participation rates, where there is great scope for change in all countries, with consequent large potential increases in the female labour force, and where the factors which might bring about such change are likely to be quite specific to the area concerned. Possible changes in male labour participation rates would have a much smaller impact on the male labour force, and are more uniform and probably easier to predict.

While possible changes in labour participation rates are of considerable importance, it should again be stressed that they are not the major factor in the

rapid projected growth of the labour force. Even in the second experiment, where the impact of changing participation rates is greatest, it accounts for only 3 per cent to 29 per cent of the total projected increases; in the other exercises its relative importance is less. The paramount factor is the increase in the population in the active age groups.

(iii) *Trends in individual areas.* The next aspect to be considered is where the aggregate increase is likely to be concentrated, and the probable rates of increase which this implies in the different areas of the countries analysed. Since population growth in the active age groups is the major determinant of the increase in the labour force, the earlier observations on general population shifts and rates of total population growth in the different areas provide the essential background, and the discussion here should be read in that context.

In rural-urban terms, of course, it is primarily the cities which will have to cope with the problem of adequate employment opportunities in the decades ahead. Even if there should be very little rural-urban migration the bulk of the increase will occur in the urban areas. In the first exercise, where little migration is assumed, it is nevertheless in the urban areas that around 85 per cent of the total increase in the labour force to the end of the century is found in Argentina and Venezuela, and over two-thirds in Brazil; only in El Salvador is the proportion slightly less than one-half. If substantial migration is assumed nearly all the increase will take place in the urban areas. Thus, in the third exercise (substantial migration but less massive than in the second exercise) less than one-sixth of the increase in the labour force is in the rural area even in El Salvador, and in the other countries the proportion is negligible.

In general, then, pressures for additional employment opportunities are, to say the least, unlikely to be rapidly intensified in the rural areas; but prevailing conditions vary greatly. If large-scale migration continues labour shortages might possibly develop in some rural areas, particularly in the rural South in Argentina, but perhaps also in Venezuela or the developed rural area in Brazil; and in any case it is improbable that employment opportunities will be a serious problem here.²⁹ In El Salvador or the less-developed rural area in Brazil, however, the rural employment problem is likely to remain of much greater importance. At least until 1970 the rural labour force was still increasing very rapidly in El Salvador, and moderately rapidly in the less-developed region of Brazil, and if these rates of increase continue, pressures for employment will of course be stepped up. Moreover, even if large-scale migration should sharply slow down the expansion in the coming decades, the pressures in such areas have already been built up to the point where they will probably remain severe for a long time. But it is still true that, from the national point of view, the employment problem will not necessarily be concentrated in areas like these. In El Salvador slightly over half of the increase in the labour force will occur in the rural areas if there is no significant migration, but to the extent that migration to the cities takes place on a larger scale, the problems will shift to the urban area even here. And in Brazil less than one-

²⁹ This does not mean that the problem of low rural incomes, or even rural poverty, will necessarily disappear in such areas. More or less adequate employment opportunities should certainly improve these conditions, but their elimination is likely to depend on other factors outside the scope of this study.

fifth of the increase will be produced in the less-developed rural area, even if there is little migration; in so far as migration occurs the proportion will be still smaller.

Setting aside the strict rural-urban division and thinking instead in terms of low-income areas, there are two such areas in the countries analysed which will probably be of major concern in this respect. The first, as already noted, is the rural area in El Salvador. If migration trends pursue the pattern of the recent past, half the labour force increment will be in the rural area, and even if more migration takes place, a significant part of the increase is likely to occur there for some years to come. The second is the less-developed region in Brazil, where if there is little migration (as in the first exercise), well over 40 per cent of the total increase in Brazil's labour force will originate, and well over 30 per cent even with large-scale migration (as in the third exercise). Most of this growth will take place in the cities of the region, but at all events the employment problem will have to be dealt with to a major extent within the less-developed region of the country.

It is in the urban areas, however, that the bulk of the increase will occur, and as unemployment here tends to be more overt, and to exert greater social and political pressures, it is of particular interest to determine how fast the urban labour force is likely to expand. Much will depend on the scale of migration, and on how much labour participation rates change, and the range of possibilities can be determined by examining the results of the first exercise (little change from the 1970 situation) and the third exercise (substantial change, but less extreme than the changes assumed in the second exercise). The relevant figures

from these two exercises are presented in table 24.

As the figures show, with the partial exception of Argentina, the labour force in the urban areas will expand greatly during the 30-year period of the projections. Given the assumptions of the first exercise, the labour force in the urban South in Argentina will increase by only about one third, i.e., at an average rate of 1 per cent per annum. With the assumptions of the third exercise the increase will be about twice as large; and in the urban North it will be significantly bigger with either set of assumptions. Possible changes in labour participation rates are of considerable importance in the urban areas of Argentina, particularly in the South. In the urban South fertility rates have already declined to quite low levels and the rate of natural increase in the active age groups will be fairly slow; and as close to two thirds of the labour force was already concentrated in the area in 1970, migration can no longer have such powerful impact. Thus, if there is no change in labour participation rates, the labour force in the urban South, with or without migration, will increase only to a fairly moderate extent,³⁰ and it is the possibility of a substantial increase as a result of rising participation rates that induces it with an element of flexibility; this is of considerable importance in Argentina. The major point to note is that the increase in the urban labour force in Argentina will be fairly moderate whatever the assumptions made; again the situation is clearly differentiated from that in most of the rest of the region.

³⁰ In the third exercise, with its assumption of large-scale migration, the labour force would increase by only about 45 per cent up to the end of the century if labour participation rates remained constant. The difference between this

In all the other urban areas considered the increase in the labour force will be much bigger. Even if there is no large-scale migration the labour force at the end of the century will be about $2\frac{2}{3}$ times its 1970 size in the less-developed urban area in Brazil, and the range then stretches upward to $3\frac{1}{4}$ times the 1970 size in the urban area in El Salvador. If there is substantial rural-urban migration, which has been the case in most regions in the past and is likely to be in the future, the increases will be still larger. In the projections of the third exercise the urban labour forces increase to around $3\frac{1}{2}$ times their 1970 size by the end of the century, except in El Salvador, where the corresponding figure is 4.8 times. As can be seen from the table, although there is some variation, such figures imply that up to the end of the century urban labour forces can be expected to increase at rates ranging around 4 per cent per annum.

Such rates are extremely high, and virtually ensure that the problem of urban employment will remain a central concern in most of the region at least until the end of the century.³¹ Nevertheless, it is very important to note that, in one

figure and the 63 per cent increase shown in the table reflects the impact of the assumed changes in participation rates.

³¹ The difficulty of absorbing an increase of this magnitude in a modern, urban-oriented pattern of industrial development can be illustrated by referring again to favourable post-World War II experiences. In 1955-1970, a period during which Japan's gross product increased at an average rate of close to 11 per cent per annum, employment increased at annual rates of 3 per cent in the industrial sector and 3.9 per cent in the industrial and services sectors combined. In Italy and West Germany, where the gross product increased at around 6 per cent per annum during the period, employment in the industrial and services

Table 24
**PROJECTED INCREASES IN THE LABOUR FORCE IN
 SELECTED URBAN AREAS, 1970 TO 2000**

	<i>Argentina</i>		<i>Brazil</i>		<i>El Salvador</i>	<i>Venezuela</i>
	<i>Urban North</i>	<i>Urban South</i>	<i>Urban less-developed</i>	<i>Urban developed</i>	<i>Urban</i>	<i>Urban</i>
Size of the labour force in 2000 (1970 = 100)						
Exercise I	187	134	265	285	325	299
Exercise III	182	163	349	350	479	323
Actual rates of increase, 1965-1970 (per cent per annum)	3.0	1.9	4.9	5.8	3.4	4.9
Rates of increase projected in exercise I						
1970-1980	2.2	1.1	3.3	3.8	4.0	4.0
1980-1990	2.1	0.9	3.3	3.4	4.0	3.6
1990-2000	2.0	1.0	3.3	3.4	4.0	3.6
Rates of increase projected in exercise III						
1970-1980	2.3	1.8	5.5	4.6	6.3	4.5
1980-1990	2.2	1.9	4.0	4.2	5.2	3.9
1990-2000	1.6	1.8	3.3	4.0	4.6	3.6

sense, the period of maximum pressure has already passed in many of the urban areas of Latin America. As table 24 shows, in most of them the rate of increase in the later 1960s was higher than that projected for the decades

ahead. Thus the pressure for employment, in so far as the growth rate of the labour force is an adequate measure of it, can be expected to ease in many urban areas.

sectors combined increased at annual rates of 2.4 per cent and 1.8 per cent, respectively. Such past experience indicates that modern-type industrial expansion, even when very rapid, tends to be achieved with only moderate increases in employment in the high-productivity sectors.

The reason for this slower rate of increase is again linked to the extent to which the shift to the cities has already occurred, and has been analysed earlier in relation to the population as a whole. A more precise appreciation of the labour force situation would require estimates which take into account past

changes in urban labour participation rates, and these have not been made. With that margin of uncertainty, it is nevertheless clear that the period of most rapid expansion of the urban labour force in Venezuela occurred during the 1950s; although still very high, the rate of increase has already fallen from that peak level and can be expected to decline further in the decades ahead. The same general pattern is characteristic of Argentina and Brazil, although the fluctuations have been more moderate, and, in Brazil, the period of most rapid increase was also more recent.³²

The only urban area considered where that period manifestly lies ahead is El Salvador's. Rural-urban migration in that country has been limited, and has not been a major factor in the increase in the urban labour force in recent years. Even apart from migration the urban labour force will tend to increase somewhat faster in the years ahead as a result of population growth in the active age groups; and if substantial migration to the cities should begin, the increase, as shown by the figures in the table, could be very rapid indeed.

But although the growth rate of the labour force is very important, it is not the only determinant of the pressure for employment opportunities. A further basic factor is the prevailing situation: that is, how much pressure has already been built up. If the past very rapid increase in the urban labour force has led

to a situation where a large pool of unemployed or under-employed has already been formed, a slowing of the rate of increase may mean only that the pool of under-employed will expand less rapidly; it will not necessarily shrink, and so the pressures for employment will not necessarily diminish. The number of unemployed will decline only if new employment opportunities are created faster than the labour force is increasing, and since the labour force will continue to increase very quickly in most urban areas, this will be difficult to achieve.

The magnitude of existing pressures could well be the main consideration in such circumstances, and this is one of the critical aspects of the transition from a basically rural to a basically urban population structure. The transition has tended to be a rapid one in many countries, involving mass migration which for a 20-to-30-year period has produced a galloping increase in the urban labour force. If the urban economic structure has been sufficiently dynamic and flexible to cope with this influx (although severe problems are unlikely to have been avoided even in the best of circumstances), the passing of the transition period will bring lower rates of increase and the urban employment problem may become more manageable. If, on the other hand, the transitional influx has tended to overwhelm the urban economy, the passing of the transition period and a slower growth rate of the labour force may not, in itself, generate any fundamental change. Such conditions probably vary widely from one extreme to the other in the different urban areas of the region.

Another aspect of the passing of the transitional phase is the effect this will have on the composition of the urban labour force. The very high rates of

³² There are also important regional differences in these countries. The period of most rapid increase has passed in most urban areas; the possible exception is the less-developed urban region of Brazil, where the already rapid expansion might speed up temporarily if migration should increase.

increase in the recent past in many urban areas are a reflection of the large influx of rural workers. Rural migrants have probably often accounted for one-third to one-half of the increment in the urban labour force, and workers with a still limited experience of urban life have formed a sizable proportion of the urban total. As the period of transition passes migrants will be of declining importance and the situation will change. New entrants in the urban labour force will increasingly be dominated by those who were born, or at least have grown up, in the cities, and those with limited experience of urban life will no longer constitute a substantial part of the total labour force. Expectations, and responses, may well change in these altered circumstances, and the pressures for adequate employment opportunities may take somewhat different forms.

A final aspect of the growth of the labour force worth noting is that it often differs significantly from the growth of the population as a whole. This results to a large extent from changing age structures. As was pointed out earlier, the transition to higher rates of population growth, which occurred in many countries in the 1940s, initially tended to cause a sharp increase in the number of children, and this bulge then began working its way gradually through the different age groups, with corresponding changes in the age structure. The downturn in fertility rates, too, as far as it goes, produces changes in the age structure. In the individual areas within a country migration can cause further shifts, as it affects particularly the very young; and, finally, changes in labour participation rates can cause labour force trends to diverge from those of the population as a whole, particularly in the urban areas. The possible extent of such divergence can be quite

substantial, as illustrated by results from the projections of the first and the third simulation exercise (see table 25).

In Argentina, the labour force of the country as a whole increases marginally less than the total population in the first exercise (little change from the 1970 situation), but in all the other countries it increases more, even in this exercise; in the third exercise, with substantial assumed changes, its growth rate is higher than that of the population in all countries, and the divergence is much greater. In area terms there are also significant differences, and considerable variation from one area to another; in particular, the labour force in some rural areas may increase less than the population, while the relation is reversed in the cities.

One implication of these divergences is simply that population trends are often a poor indicator for estimating changes in the labour force. In most countries of the region the labour force probably increased a good deal less rapidly than the population as a whole from around 1940 to the mid-1950s, whereas since about 1960 the relationship has been reversed. This sort of situation is important as it is one factor in the emerging employment problem. Comparative trends in the individual areas are more complex and there is even more need to keep such possible divergences in mind.

A second implication is that such divergences reflect shifts in activity rates (total labour participation rates),³³ and thus affect trends in per capita income levels, quite apart from changes in levels

³³ Activity rates, defined as the ratio of the total labour force to the total population, are of course nothing more than a measure of the concept under discussion.

of productivity. There was a good deal of variation in activity rates in 1970, and as the above discussion indicates they may change substantially in the decades ahead. Illustrative figures for 1970 and 2000 with the projections of the third simulation exercise are shown in table 26.

Argentina again stands apart, with the activity rate at a considerably higher level in 1970. The total figures for the other countries are quite similar, but within Brazil (as to a lesser extent within Argentina) there is a good deal of difference along regional lines, with the activity rate in the more developed region distinctly higher. These higher activity rates in Argentina (and in the more developed regions) mean that per capita incomes in those areas will be bigger, even apart from possible differences in productivity per member of the labour force; in effect, a given volume of

production per worker is shared with a smaller number of inactive persons.

With the assumptions of the third exercise activity rates everywhere will rise substantially, and in general the disparities will be reduced. Part of the rise is the result of the very rapid increase in the labour force which will occur in most of the region, and this poses the vital problem of adequate employment opportunities. But a further major factor is the less rapid growth of the non-active population, and this can be an important factor in raising per capita incomes; it is the relatively immediate economic benefit that results from a decline in fertility rates.

Changes of this sort can be of considerable importance. From around 1940 to the mid-1950s total activity rates probably fell significantly in many countries of the region, and this tended to hold down the increase in per capita incomes;

Table 25
SELECTED COUNTRIES AND AREAS: PROJECTED SIZE OF THE
POPULATION AND OF THE LABOUR FORCE IN 2000

(1970 = 100)

	<i>Exercise I</i>		<i>Exercise III</i>	
	<i>Population</i>	<i>Labour force</i>	<i>Population</i>	<i>Labour force</i>
Argentina: total	142	141	134	150
South rural	124	113	82	82
South urban	134	134	145	163
Brazil: total	237	244	212	257
less-developed rural	196	191	98	96
developed urban	263	285	279	350
El Salvador: total	280	291	255	286
Urban	311	325	433	479
Venezuela: total	248	274	229	282
Urban	273	299	262	323

Table 26
SELECTED COUNTRIES AND AREAS: ACTIVITY RATES

	1970	2000 (projections of the third exercise)
Argentina: total	37.9	42.6
urban North	35.4	41.1
urban South	39.1	43.8
Brazil: total	31.7	38.4
less-developed urban	28.1	35.1
developed urban	35.0	43.8
El Salvador: total	31.6	35.5
Venezuela: total	30.6	37.6

that is, given the improvement in productivity per member of the labour force which occurred, there was a smaller increase in per capita incomes because the number of inactive persons per member of the labour force was rising. The reversal of this trend probably began around 1960 in much of the region, and in the projections of the third simulation takes a sharply opposite turn. With the rise in activity rates shown, even if there were no increase in productivity per member of the labour force, per capita incomes would rise by well over 20 per cent by the end of the century in Brazil and Venezuela, for example.

(iv) *Changes in the structure of the labour force.* In addition to the changes in size, there are likely to be major changes in the structure of the labour force in most of the region. The most important of these is the continuing shift toward a predominantly urban labour force. Its nature and significance has already been analysed above, and all that is necessary here is to emphasize the extent to which

the labour force in the region is likely to be urban by the end of the century. In 1970 the great bulk of it was already urban in the more highly developed regions of Argentina and Brazil, and in Venezuela; but a major proportion of the total was still rural in the other regions of Brazil and in El Salvador. Even with the assumption of little change in the first exercise there is a steady rise in the relative importance of the urban labour force everywhere, and if substantial migration continues the shift will of course be much greater. Given the assumptions of the third exercise, over two-thirds of the labour force will be urban at the end of the century in El Salvador, and the proportion rises to well over 90 per cent in the more developed regions of Argentina and Brazil (see table 27).

A second major change which is likely to occur relates to the structure of the labour force by sex. In 1970 males heavily dominated the labour force everywhere, but the relative importance

of women will probably increase in the decades ahead. To some extent this aspect of the changing structure of the labour force is linked to the rural-urban shift: since in the rural areas the proportion of the labour force formed by male workers (generally around 90 per cent of the total) is larger than in the cities, the movement to the urban areas will itself tend to increase the relative importance of women in the labour force as a whole. But most of the prospective change here will occur to the extent that labour participation rates shift toward Western European levels. As was discussed earlier, such a shift could result in a very large increase in the number of working women, whereas the number of active males would be more likely to decline, and the structure of the labour force would change accordingly. The extent of the change which might occur is indicated in the projections of the third

exercise (see table 28). Males will still constitute around 70 per cent of the total labour force in the different countries—and about two-thirds in the urban areas—but the projected shift is nevertheless quite substantial.

Finally, notable changes in the age structure of the labour force are also likely. In 1970 the labour force in Latin America was a very young one: young adults accounted for about half of the total, and teenagers for a further 15-20 per cent. The proportion of older to younger workers was therefore rather low, and this may have significant implications: on the one hand, a young labour force has obvious advantages in that young workers are more flexible and more easily trained, qualities which in a rapidly changing economic structure can be of considerable value; on the other hand, the older but still fully active members of the labour force are apt to

Table 27

SELECTED COUNTRIES: PERCENTAGE DISTRIBUTION OF THE LABOUR FORCE BETWEEN RURAL AND URBAN AREAS

	1970		2000 (projections of exercise I)		2000 (projections of exercise III)	
	Rural	Urban	Rural	Urban	Rural	Urban
Argentina: total	20.0	80.0	19.1	80.9	11.4	88.6
North region	43.1	56.9	38.3	61.7	27.0	73.0
South region	12.3	87.7	10.6	89.4	6.6	93.4
Brazil: total	44.3	55.7	36.6	63.4	20.5	79.5
less-developed region	58.4	41.6	50.4	49.6	27.8	72.2
developed region	14.9	85.1	11.5	88.5	5.9	94.1
El Salvador: total	58.9	41.1	54.1	45.9	31.2	68.8
Venezuela: total	24.5	75.5	17.8	82.2	13.4	86.5

Table 28
**SELECTED COUNTRIES AND AREAS: PERCENTAGE COMPOSITION
 OF THE LABOUR FORCE, BY SEX**

	1970		2000 (projections of exercise III)	
	Male	Female	Male	Female
Argentina: total	78.0	22.0	69.6	30.4
North urban	73.2	26.8	67.6	32.4
South urban	75.6	24.4	67.5	32.5
Brazil: total	79.5	20.5	70.6	29.4
less-developed urban	74.9	25.1	64.5	35.5
developed urban	71.6	28.4	67.8	32.2
El Salvador: total	83.0	17.0	72.9	27.1
Urban	70.6	29.4	65.4	34.6
Venezuela: total	80.6	19.4	70.0	30.0
Urban	77.0	23.0	66.9	33.1

be more stable and more experienced; and as the economy becomes more complex—in particular as the industrial sector expands—these aspects of the question are likely to carry increasing weight. In the high-income industrial countries the balance between the two large adult age groups is much more even (in France in 1968, for example, young adults formed about 46 per cent of the labour force and the older active adult group 42 per cent) and this will probably be a factor of some importance.

Within the region labour force age structures already varied considerably in 1970, and, as noted, are likely to change further in the years to come. They also vary a great deal within each country, both by area and by sex, and the national aggregates, and changes in those aggregates, may not be very meaningful unless this is taken into account. The

1970 figures for these different groupings are shown in table 29, along with the end-of-the-century results from the projections of the third exercise, to give an idea of the sort of changes likely to occur.

At the national level young adults are of similar relative importance in all countries; the differences tend to be concentrated more in the relative importance of teenagers and the active older adult group. Again Argentina stands apart, this time because the labour force is not as young as in the other countries, with the proportion of more experienced older adults substantially larger. In area terms the proportion of teenagers is higher in the rural labour force, and in general in the less highly developed regions, but particular patterns of migration flows can have an important and varying impact on age structures.

Finally, the female labour force is much younger than the male labour force, and a somewhat different age classification would make this contrast still greater; within the young adult labour force women tend to be much more heavily concentrated in the first half of the age range (20-29) than men.

As the age structure of the population as a whole gradually changes and—more important in the decades immediately ahead—to the extent that labour participation rates shift toward Western European levels, labour force age structures will themselves alter. While in general the labour force can be expected to be somewhat more mature, and experienced, at the end of the century, there are substantial differences in respect of how and how far this is likely to occur.

With the projections of the third exercise the changes in the rural areas are quite small, but too much importance should not be attached to these figures.³⁴ Perhaps the most significant rural change is the consistent rise in the relative importance of the over-65 group in the labour force, caused by the draining away of the more active age groups through migration.

The changes in all the other groups are much more substantial. The greatest shift occurs in the structure of the urban female labour force, where the move-

ment of labour participation rates towards the Western European levels is the primary factor in producing a sharp decline in the relative importance of teenagers and a counterbalancing increase in that of active adults, usually concentrated in the more mature adult group. At the end of the century the age structure of the female labour force much more closely resembles that of the male labour force. The male labour force itself changes in a similar way, but to a much lesser extent. And of course the shift in the total urban labour force, being the sum of the male and female age structures, is also of the same nature.

But as aggregation proceeds a divergence between the different countries becomes increasingly clear, and at the total national level is quite marked. In all the countries analysed the labour force becomes somewhat more mature, but the sense in which this is true varies from one country to another. In Argentina the age structure of the labour force shifts manifestly closer to that characterizing the high-income industrial countries: the relative importance of teenagers declines, and this is offset by an increase in that of the more mature but still fully active adult age group, which was already of considerably greater relative importance than in the other countries considered.

In these other countries the relative importance of teenagers also decreases, but the offsetting gain appears to a much greater extent in the young adult age group. In Brazil the relative increase is somewhat greater in the more experienced adult group, and so the change is more similar to that in Argentina, but in El Salvador and in Venezuela the relative increase is heavily concentrated in the young adult group.

As a consequence, at the end of the century Argentina is further removed

³⁴ As has been pointed out before, labour participation rates in the rural areas are probably less meaningful than those in the urban areas, and little or no change in them has been assumed in the third exercise. The changes shown in the table therefore reflect changes in the structure of the population as a whole, which in its turn can be greatly influenced by migration; and here too caution must be used because of the way in which migration is treated in the model.

Table 29
**SELECTED COUNTRIES: PERCENTAGE COMPOSITION OF THE LABOUR
 FORCE, BY AGE GROUP**

	1970				2000 (projections of exercise III)			
	10-19	20-39	40-64	65 +	10-19	20-39	40-64	65 +
Total labour force								
Argentina	13.7	47.7	34.7	3.9	9.3	48.0	38.9	3.8
Brazil	19.8	50.5	27.1	2.6	13.7	53.3	30.6	2.4
El Salvador	23.1	47.8	24.9	4.3	17.5	53.9	25.8	2.8
Venezuela	17.5	50.4	28.6	3.4	12.5	55.7	29.3	2.5
Rural labour force								
Argentina, North	18.3	38.3	36.4	7.0	16.0	39.7	33.6	10.6
Argentina, South	12.9	35.2	44.0	7.9	11.6	38.1	36.2	14.1
Brazil, less-developed	23.2	45.8	27.2	3.8	27.1	42.2	23.8	6.9
Brazil, developed	24.0	46.9	26.2	2.9	21.1	45.9	28.2	4.8
El Salvador	27.2	44.7	23.8	4.3	25.9	44.4	24.4	5.3
Venezuela	22.9	41.3	30.1	5.7	20.0	45.9	27.5	6.6
Urban labour force								
Argentina, North	16.7	51.9	28.5	2.9	10.5	50.7	36.4	2.4
Argentina, South	12.4	50.0	34.5	3.1	8.0	48.8	40.2	2.8
Brazil, less-developed	17.5	51.8	28.3	2.4	13.3	55.3	29.7	1.7
Brazil, developed	15.3	55.6	27.7	1.4	9.2	55.9	33.5	1.5
El Salvador	17.1	52.2	26.5	4.2	13.8	58.2	26.4	1.6
Venezuela	15.8	53.4	28.2	2.6	11.3	57.3	29.6	1.8
Male urban labour force								
Argentina, South	10.6	49.0	37.0	3.4	7.6	48.4	41.1	2.9
Brazil, developed	11.4	56.7	30.3	1.6	8.5	56.6	33.4	1.5
El Salvador	15.8	51.5	28.0	4.7	13.2	57.7	27.3	1.8
Venezuela	14.5	52.9	29.8	2.9	10.3	56.9	30.7	2.1
Female urban labour force								
Argentina, South	18.0	53.1	26.7	2.2	9.3	49.7	38.3	2.7
Brazil, developed	25.2	53.1	20.8	0.9	10.4	54.4	33.7	1.5
El Salvador	20.4	54.0	22.7	2.9	14.8	59.1	24.8	1.3
Venezuela	20.1	55.3	22.7	1.8	13.2	58.1	27.4	1.3

from the other countries in this respect than was the case in 1970; the proportion of the labour force accounted for by teenagers and young adults is much lower in Argentina, while the proportion of older, more experienced, workers is much higher than in the other countries. The basic explanation is again the earlier beginning of the population transition. It will not be until the next century that a similar evolution can lead to a corresponding maturing of the labour force in the other countries.