Less advanced sectors in the Latin American fertility transition

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Demographic change in Latin America has been driven by the behaviour of the middle and upper strata. Given that fertility and mortality in these groups are now relatively low, future changes will mainly come from the behaviour of less advanced sectors. This paper analyses the contribution of these less advanced groups to the decline in fertility, distinguishing between the "distribution effect" and the "rates effect". In less advanced sectors the desired number of children is lower than the actual number, with early marriage and limited use of modern contraceptives continuing to be the rule. Even so, these groups have entered the demographic transition. A number of countries have recently seen falls in their fertility rates due to the contribution of women with low levels of education: in the late transition countries behaviour is heterogeneous, while in the advanced transition countries the greatest contribution is being made by women with primary education.

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I

Introduction

It is generally acknowledged by those studying population issues that rather than just a **transition**, which describes changes in the components of a population, it makes sense to speak of **transitions**, and this holds true for the particular case of fertility. It is valid for Latin America as a region, owing to the variations between countries, and also when each country is considered separately, as demographic behaviour varies between social sectors and places of residence.

Changes in the behaviour of a country's demographic variables are the result, then, of what happens within each sector, while at the same time they are affected by the movement of people between sectors, i.e., by social mobility. Thus, for example, when there is upward mobility, resulting in a larger percentage of the population behaving in a way characteristic of middle and upper sectors, the transition will advance, even though behaviour may not necessarily have changed within any of the social groups. The relative weight of these two factors has been shifting, however. Because demographic changes have largely been associated with the behaviour of the middle and upper strata, there is an expectation that future tendencies will be associated chiefly with what happens in the groups that are less advanced in the transition. These groups have now shown unmistakable signs of having commenced their own transition. The basis for this claim is that the transition has tended to continue over the last two decades despite economic stagnation which in many countries has actually increased the percentage of people living in poverty. It is difficult, however, to establish precisely what the determining factors are in this process.

As a result of this situation it has been suggested, for example, that there may be a fertility transition model specific to low-income social groups, differing from the nineteenth-century European model and from that followed by the middle and upper sectors of Latin America during the first half of the twentieth century. While economic and social development seems to have been the contextual key to the transition in these latter, it may be that the continuous declines seen recently among low-income strata in the Latin American countries are better explained by the pressure of economic need, heightened at times of crisis.

Factors of both types have probably had a large influence. Although the crises of recent decades in Latin America might have caused fertility to decline, poor sectors have probably been influenced too by the general process of development in the region. Although development has not translated in recent years into better incomes, employment and living conditions for certain sectors of the population (in some cases, things have worsened), it has been reflected in other aspects, such as the expansion of education and health care, the growth of communications, greater economic participation by women, and thence the emergence of new attitudes towards procreation associated with the use of modern family planning methods. The argument that the fall in fertility in poor sectors has largely been due to overall development is supported by the fact that in some better-developed countries this decline began before the crisis of the 1980s.

Consideration has also been given to the fact that once the demographic transition has begun (in association with the development aspects referred to), demographic variables, along with other related social indicators such as education and health care, acquire a degree of inertia that makes them, by their nature and characteristics, relatively independent of short-term movements in the economy. Consequently, it is feasible to alter the behaviour of these variables by means of specific social policies, something that would also help explain why their downward tendency continues during periods of crisis.

It is well known that the transition begins latest in the lower social strata, whose members are poor and relatively uneducated. This situation is found in rural areas where most of the population lives under these conditions, in deprived urban populations and in indigenous populations, where poverty is compounded by cultural and linguistic barriers to health and family planning information.

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Although there are studies analysing differences in mortality and fertility between social sectors, these are restricted in scope and are not always comparable between countries and over time. The information available for identifying longer-term trends generally stratifies the population in two ways: by place of residence (urban/rural) and by the mother's level of education (number of years' schooling or stage reached in the education system).

To study what is happening with the fertility trends of less advanced sectors, and what contribution they are making to demographic change in the countries, the evolution of the total fertility rate and proximate determinants will be analysed by the mother's level of schooling, since this variable has great discriminatory power (Cleland, 2002; Cleland and Rodríguez, 1988; United Nations, 1995; Weinberger, Lloyd and Blanc, 1989). A multivariate analysis applied in the United Nations study cited shows that in Latin America the inverse relationship between the mother's education and her fertility has proved to be stronger than any other. Almost all the regression coefficients are the highest and most significant statistically, after geographical and sociodemographic variables have been considered. This would seem to confirm that education is the variable that best captures fertility differences between sociodemographic and economic groups. In what follows, women with no or very little education (0 to 3 years of schooling or incomplete primary) will be treated as the least advanced groups in the demographic transition.

The main sources of information are the national case studies of the World Fertility Survey (WFS), population censuses and vital statistics for the 1970s, and the Demographic and Health Surveys (DHS)[1] for the 1980s and 1990s and for the years closest to 2000.

II

The demographic and fertility transition in Latin America

There are numerous studies of the demographic transition in Latin America that indicate its peculiarities, chiefly as compared to the European process.

The pre-transition situation in the early twentieth century was characterized by life expectancy at birth E(0) of some 30 years and a total fertility rate (TFR) of about 6 children (Pérez Brignoli, 1994). One of the characteristics distinguishing the Latin American pre-transition from that of Europe is the higher level of fertility observed, attributed to earlier marriage and a lower percentage of women remaining single in the Latin American countries (Zavala de Cosío, 1992).

Mortality was the first indicator to begin falling in Latin America, slowly in the early part of the twentieth century, more noticeably from 1930 onward (Arriaga, 1974), and then universally after the Second World War. The region attained an average E(0) of 52 years and an infant mortality rate (IMR) of 127 per thousand in the period 1950-1955 (ECLAC/CELADE, 2004). The greatest progress was made in the next two decades, with E(0) exceeding 60 in the 1970s. The region now has an E(0) of 70 (nine countries exceed this figure) and an IMR of about 33 per thousand.

Fertility declined much later than mortality. As the second half of the twentieth century began, average fertility in Latin America was about 6 children per woman and showed a slightly rising tendency until the early 1960s. This upward trend in fertility was probably due to the earlier declines in mortality, which increased the number of years during which a woman might become pregnant and was associated with better health conditions for procreation. The higher marriage rates seen in the 1950s and 1960s also seem to have been influential (Zavala de Cosío, 1992). Only in the second half of the 1960s did any major change take place in the average number of children per woman, which began its decline towards the present level of 2.7, less than half the figure of 35 years ago. This drop coincided with the so-called second contraceptive revolution in Europe, i.e., with the spread of modern contraceptive methods, including sterilization, abortion also playing what may have been a very important part in this process. The speed with which fertility fell is

[1] These surveys are financed by a United States Agency for International Development (USAID) project and conducted by Macro International Inc.

also at variance with the process followed by the developed countries, although Latin American fertility is still higher than theirs. In Europe, particularly, fertility has fallen to unexpectedly low levels that are well below replacement rate, something only Cuba has experienced in the region.

The information currently available on the demographic and fertility transition in Latin America indicates that all the countries have now embarked upon it to a greater or lesser degree. Experiences have varied greatly, however. Table 1 gives a typology of the countries, grouping them into categories by their fertility rates in the middle of the last century and in the period 1995-2000.

In this way, categories have been created that take into account the level and trend of fertility in the last 50 years. Whereas 16 of 20 countries in the region had very high fertility in 1950-1955, in the latest half-decade none was in this category and 14 were in the medium-low, low and very low fertility groups. To sum up, the following situations have been identified: i) countries that have gone from very high to high fertility (Guatemala); ii) countries that have gone from very high to medium-high fertility (five countries); iii) countries that have gone from very high to medium-low fertility (nine countries); iv) countries that have gone from very high to low fertility (Brazil); v) countries that have gone from high to low fertility (Chile); vi) countries that have gone from medium-high to very low fertility (Cuba); vii) countries that have remained at a medium-low level (Argentina); viii) countries that have gone from medium-low to low fertility (Uruguay). Cuba is the only country whose total fertility rate is below the replacement level.

For this study, the aim was to select countries in each of the different situations. Paradoxically, this was not possible for the countries that made the transition earlier and are furthest advanced with it (Argentina, Cuba and Uruguay), as information on fertility by social stratum is not available.

TABLE 1

Latin America: Classification of countries by fertility level, 1950-1955 and 1995-2000[a]
(Total fertility rate in these periods)

Fertility level 1950-1955	Fertility level 1995-2000					
	Very high: 5.5 and over	High: 4.5-5.4	Medium-high: 3.5-4.4	Medium-low: 2.5-3.4	Low: 1.8-2.4	Very low: under 1.8
Very high: 5.5 and over		Guatemala (5.0)	Bolivia (4.4) Haiti (4.4) Honduras (4.4) Paraguay (4.2) Nicaragua (3.9)	El Salvador (3.2) Peru (3.2) Ecuador (3.1) Venezuela (3.0) Dominican Republic (2.9) Colombia (2.8) Mexico (2.8) Panama (2.8) Costa Rica (2.6)	Brazil (2.5)	
High: 4.5-5.4					Chile (2.2)	
Medium-high: 3.5-4.4						Cuba (1.6)
Medium-low: 2.5-3.4				Argentina (2.6)	Uruguay (2.4)	
Low: 1.8-2.4						
Very low: under 1.8						

Source: ECLAC/CELADE (2004).

[a] The figures in brackets are the total fertility rate (TFR) for 1995-2000.

III

The fertility transition in less advanced groups

Not all social groups have participated in the same way in the fertility shift, which generally began in the mid-1960s. The data available cover the 1970s, 1980s and 1990s, and in certain cases there is information for some year around 2000, so that there is enough material to arrive at some conclusions.

In the 1970s, the total fertility rate of the "no schooling" group generally remained above 5.5 children per woman. The TFR of women with little schooling (incomplete primary or 1 to 3 years of schooling) was lower, but of the same order. The latest data indicate that, other than in countries with low fertility, less advanced groups have maintained a TFR of over 4 children and, in some cases, of over 5.5. There have been declines even in the countries where total fertility rates are still high, though, because they formerly had values of close to 7 children. To sum up, fertility has recently shifted in the least advanced groups, but relatively high values persist (table 2, and see table 3 below).

The fact that most of the groups in table 2 (classified by educational level) fall above the diagonal reveals a change of categories translating into a fall in TFR values. This does not hold so true, however, for less advanced groups in the high-fertility countries, since about half of the 11 that had "very high" fertility in the 1970s are still in this category. Nonetheless, three have moved into the "high" category and three into the

TABLE 2

Latin America (six countries): Classification of groups by women's educational level, 1970s and 1995-2000[a] [b]
(Total fertility rate)

Fertility level 1950-1955	Nivel de fecundidad 1995-2000					
	Very high: 5.5 and over	High: 4.5-5.4	Medium-high: 3.5-4.4	Medium-low: 2.6-3.4	Low: 1.8-2.5	Very low: under 1.8
Very high: 5.5 and over	Honduras-A (7.1) Honduras-B (6.1) Bolivia-A (7.1) Bolivia-B (5.8) Ecuador-A (6.2)	Ecuador-B (5.4) Honduras-I (4.8) Mexico-A (4.7)	Colombia-A (4.1) Mexico-B (3.7) Ecuador-I (3.6)			
High: 4.5-5.4			Colombia-B (3.6)	Mexico-I (3.1) Chile-A (2.8)[c]		
Medium-high: 3.5-4.4		Bolivia-I (4.6)		Ecuador-S (2.6)	Chile-B (2.4)	
Medium-low: 2.6-3.4				Honduras-S (2.9) Bolivia-S (2.7)	Colombia-S (2.2) Mexico-S (2.2) Chile-I (2.4) Chile-S (2.4)	
Low: 1.8-2.5						
Very low: under 1.8						

Source: Table 3.

[a] A: no schooling; B: incomplete primary education; I: intermediate education; S: secondary education and above.
[b] The figures in brackets are the total fertility rate (TFR) for 1995-2000.
[c] The value of 2.8 for Chile-A represents the functional illiteracy signified by 0-3 years of education.

TABLE 3

Latin America (eight countries): Relative distribution of the female population aged 15-49 and total fertility rate (TFR)
(TFR by educational level, various sources)[a] [b]

Fertility level, country and source	Source 1 (1970s)		Source 2 (1980s)		Source 3 (1990s)		Source 4 (around 2000)	
	Women %	TFR	Women %	TFR	Women %	TFR	Women %	TFR
High fertility								
Guatemala (DHS 1987, 1995, 1998)	–	–	100	5.6	100	5.1	100	5.0
No schooling	–	–	38	7.0	28	7.1	25	7.1
Incomplete primary	–	–	35	5.6	47	5.1	49	5.2
Complete primary	–	–	12	3.9	–	–	–	–
Secondary and above	–	–	15	2.7	25	2.7	25	3.0
Medium-high fertility								
Bolivia (1976 census; DHS 1989, 1994, 1998)	100	6.5	100	4.9	100	4.8	100	4.2
No schooling	43	7.6	18	6.1	12	6.5	8	7.1
Basic education	30	6.5	36	5.9	36	6.0	29	5.8
Intermediate education	12	4.0	16	4.5	16	4.9	14	4.6
Secondary education and above	15	4.0	30	2.9	36	2.7	49	2.7
Honduras (EDENH 1975, 1983; ENESF 1991; DHS 1996)	100	7.0	100	6.3	100	5.2	100	4.9
No schooling	42	7.5	24	8.0	15	7.0	12	7.1
1-3 years	28	7.3	26	7.7	26	6.4	23	6.1
4-6 years	23	5.9	28	5.8	35	4.9	37	4.8
7 years and over	7	3.3	22	3.3	24	3.1	28	2.9
Medium-low fertility								
Ecuador (ENF 1979; ENDESA 1987; ENDEMAIN 1994, 1999)	100	6.6	100	4.3	100	3.6	100	3.3
No schooling	10	8.6	8	6.4	5	6.2	4	5.6
Primary	55	7.0	48	5.2	43	4.4	40	4.2
Secondary and above	35	3.5	44	3.0	52	2.8	56	2.6
Higher	–	–	–	–	12	2.1	15	1.9
Colombia (ENFC 1976; EPDS 1986; ENDS 1995; DHS 2000)	100	4.7	100	3.3	100	3.0	100	2.6
No schooling	21	7.1	6	5.4	4	5.0	3	4.1
Primary	55	5.2	49	4.2	37	3.8	32	3.6
Secondary and above	24	2.7	45	2.5	59	2.5	50	2.4
Higher	–	–	–	–	–	–	15	1.5
Mexico (WFS 1976; END 1982; ENADID 1992, 1997)	100	6.3	100	4.7	100	3.5	100	2.7
No schooling	34	7.5	12	7.2	15	5.6	6	4.7
Incomplete primary	38	6.8	32	5.5	23	4.3	17	3.7
Complete primary	18	4.6	19	4.2	20	3.2	22	3.1
Secondary and above	10	3.2	37	3.0	42	2.4	55	2.2
Low fertility								
Chile (Censuses/records 1970, 1982, 1992)	100	3.9	100	3.0	100	2.5	–	–
0-3 years	31	5.3	13	3.9	7	2.8	–	–
4-6 years	28	4.4	25	3.4	17	2.4	–	–
7-9 years	10	3.4	35	2.9	24	2.4	–	–
10 years and over	31	2.5	27	2.3	52	2.4	–	–
Brazil (DHS 1986, 1996)	–	–	100	3.4	100	2.5	–	–
No schooling	–	–	7	6.5	5	5.0	–	–
Incomplete primary	–	–	67	5.1	33	3.3	–	–
Complete primary	–	–	-	3.1	–	2.4	–	–
Secondary and above	–	–	26	2.5	62	1.6	–	–

Source: Schkolnik and Chackiel (1998); national Demographic and Health Surveys, various years, www.measuredhs.com.

[a] Educational level categories are not necessarily comparable across sources. The table was constructed with a view to making categories consistent for the sources of a given country.

[b] DHS: Demographic and Health Surveys; EDENH: Encuesta Demográfica Nacional de Honduras; ENADID: Encuesta Nacional de la Dinámica Demográfica; END: Encuesta Nacional Demográfica; ENDEMAIN: Encuesta Demográfica y de Salud Maternal e Infantil; ENDESA: Encuesta Demográfica y de Salud Familiar; ENDS: Encuesta Nacional de Demografía y Salud; ENESF: Encuesta Nacional de Epidemiología y Salud Familiar; ENF: Encuesta Nacional de Fecundidad; ENFC: Encuesta Nacional de Fecundidad Colombia; EPDS: Encuesta de Prevalencia, Demografía y Salud; WFS: World Fertility Survey.

"medium-high". Of the three that were in the "high" category, meanwhile, one has moved down into the "medium-high" and the other two into the "medium-low" category. It also transpires that the least advanced groups in the countries that are furthest ahead in the transition generally had lower fertility in the initial period, and in Chile they actually attained low fertility in the recent period. All groups with a higher level of education are in the medium-low and low fertility categories, and also show a decline over the period considered.

According to the general demographic transition model, as has been seen, fertility also appears to have started falling among the least advanced groups and, as expected, this decline seems to have begun later than the decline in mortality. This sequence can be appreciated in the study by Schkolnik and Chackiel (1998). The demographic imbalance created by mortality declining in relation to fertility, which has been seen at the outset of other demographic transition processes (Zavala de Cosío, 1992), is also found in this case. Large falls in childhood mortality may follow on once the fertility shift has been triggered, mainly because of biological factors (longer average interval between births, fewer births at high-risk ages, lower parity). Thus, the interplay between these variables appears to produce a powerful downward tendency in them both.

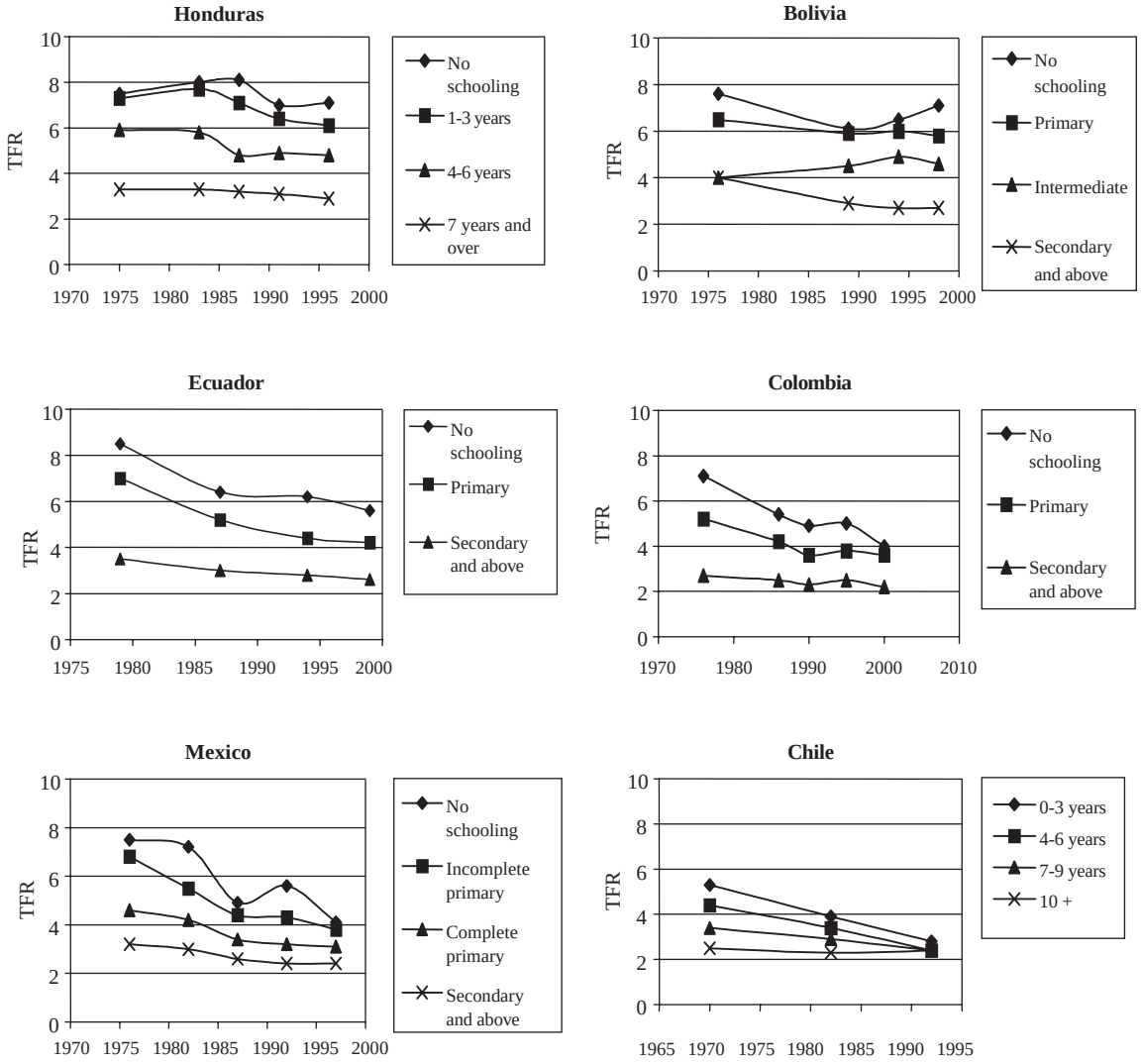
The information available is fragmentary and does not show clearly whether the fertility decline in less advanced sectors was preceded by an increase, as happened at the national level in most of the region's countries during the 1950s (Chackiel and Schkolnik, 1992). This phenomenon has been detected in some countries, however, albeit in differing form. For example, a 1987 survey in Haiti shows total fertility rates higher than those of the past in all social groups, and Honduras displays an increase in the groups that were least advanced in the 1970s (table 3 and figure 1). The likelihood at present is that the decline in mortality, particularly among infants, is enhancing the factors that bear down on fertility rather than those that tend to increase it, as the motives and mechanisms needed to limit the number of children are in place to a greater extent. It is also possible that the increase occurred before the period analysed, in some cases in conjunction with what happened in the country as a whole during the period 1950-1960. A study by Guzmán and Rodríguez (1993) appears to confirm this through its analysis of pre-transitional fertility trends by place of residence. The authors link this development to rising marriage rates in the 1950s, better sanitary conditions and the economic expectations of couples.

Figure 1 shows, although the information available is unsatisfactory, that the gap in total fertility rates by the mother's educational level has risen or remained stable in the countries that are least advanced in the transition. This is the situation illustrated here by Honduras and Bolivia. In the case of countries that are further advanced in the transition, such as Mexico, Colombia and above all Chile, however, a tendency towards convergence is seen, owing to a sharper decline in the fertility of less advanced groups. These have scope for reducing their total fertility rate, while more highly educated groups have already attained low rates and further declines will probably be small. Infant mortality among their children apparently fell early in the twentieth century, and their fertility is likely to have declined in the years following the Second World War. In summary, as already mentioned and as exemplified in figure 1, the decline in fertility by social stratum in these latter countries might be expected to result in a general tendency towards convergence at low values.

Data from certain Demographic and Health Surveys of the late 1990s and early 2000s give an idea of what has happened recently with trends in both fertility and infant mortality. As already pointed out, a number of studies have formulated hypotheses concerning the effect that the crisis has had on these variables. In particular, the belief is that the crisis and economic adjustment measures did not halt the decline either in infant mortality or in fertility, and that demographic changes have become detached from the development process. Furthermore, the crisis increased the desire to have fewer children, owing to the difficulty of ensuring a good upbringing. This being so, fertility is expected to carry on declining among the less advanced groups. The data show that the behaviour of the different social sectors has been heterogeneous. For example, the recent trend in the average number of children shows that the less advanced sectors have generally continued with this process, although less rapidly than in the past in a number of cases. In sectors with higher levels of education, the total fertility rate is tending to stabilize, usually at values that are still higher than those seen in the developed world, although low-fertility countries in the region have now attained rates close to or below the replacement level (table 3).

FIGURE 1

Latin America (six countries): Total fertility rate, by mothers' educational level, five-year periods between 1970 and 2000
(Selected countries)



Source: Table 3.

IV

The contribution of less advanced groups to national demographic transitions

This section will analyse changes in fertility attributable to factors of two types, seeking to identify the importance of each of them. These factors are, firstly, changes in a population's social mobility (using as a proxy the proportion of women of child-bearing age in the different groups categorized by educational

level) and, secondly, changes in fertility rates that take place within each educational group, and thus are not attributable to social mobility.

On the one hand, then, there is the possible impact of changes in the educational profile of a population on its average fertility, i.e., how much the fertility rate varies with changes in the educational structure of a population in the absence of any alterations in fertility attributable to other factors within each group. For example, at time 2 a population might have a larger proportion of women with an intermediate or high level of education than at time 1, which is the kind of shift implicit in social mobility. If women conform to the fertility of the group they are in, fertility will fall just because women with more education make up a larger proportion of the total population.

On the other hand, fertility rates are affected by other factors that operate within groups and have no relation to the distribution of women by social stratum or educational level. In this case, a population's fertility rate might change between time 1 and time 2 even in the absence of any educational progress (in the case of women of child-bearing age). This could be due to a larger supply of contraceptives, the implementation of family planning policies, or indeed the adoption by women in the least advanced groups of new reproductive patterns for other reasons, perhaps in response to a period of economic crisis.

To carry out this analysis, recourse has been had to a typification (standardization) procedure used in Weinberger and others (1989), which showed the important contributions made by both factors in the experience of four Latin American countries in the 1970s and 1980s. In the present paper, as in a previous work (Schkolnik and Chackiel, 1998), the same procedure has been applied to a larger number of countries, this time including information from more recent periods. The exercise gives an overall idea of the contribution from the two factors specified, but it is not robust when variations in the total fertility rate are very small, since the sensitivity of the results to minor inaccuracies in the estimates could lead to faulty conclusions.

Table 4 shows the change in fertility attributable to the educational profile of women (the "distribution effect") and the change within groups attributable to other factors (the "rates effect"), displaying both the absolute contribution (magnitude) and the percentage contribution of each to the total change in the rate between two times.

To calculate the weight of the "distribution effect" and the "rates effect", the following procedure was used. First, the following total fertility rates were calculated:

— $TFR(1)$, the total fertility rate at time 1 (combination of the rates for the different educational groups at time 1, weighted by the proportion of each group in the total at time 1).
— $TFR(2)$, total fertility rate at time 2 (combination of the rates for the different educational groups at time 2, weighted by the proportion of each group in the total at time 2).
— $TFR(HE)$, hypothetical total fertility rate arrived at by combining the rates for the different educational groups at time 1, weighted by the proportion of each group in the total at time 2.
— $TFR(HT)$, hypothetical total fertility rate arrived at by combining the rates for the different educational groups at time 2, weighted by the proportion of each group in the total at time 1.

Using these four rates, the following comparisons were made:

— $TFR(2) - TFR(1)$ = total real change between time 1 and time 2;
— $TFR(HE) - TFR(1)$ = change that would have occurred if the educational profile alone had altered.
— $TFR(HT) - TFR(1)$ = change that would have occurred if the fertility rates of each educational group were the only variable to have altered.

In turn, the ratio

$$(TFR(HE) - TFR(1))/(TFR(2) - TFR(1))$$

indicates the proportion of the total change attributable to the effect of education alone, termed the "distribution effect". Analogously, the change expected when the only alteration is in the rates of each group (the "rates effect") is calculated:

$$(TFR(HT) - TFR(1))/(TFR(2) - TFR(1))$$

The sum of the two effects may be slightly different from 1 owing to the interaction of the two factors.

The calculations made bore out the findings of Weinberger and others (1989): both factors play a very important role in countries' fertility changes, and the contribution of the "rates effect" would seem, in most of them, to be greater than that of the "distribution effect", especially in cases where low fertility has already been attained. The results, which appear in table 4, are illustrated for three countries in figure 2. It can be seen from the table that this is generally the outcome in Ecuador, Mexico, Colombia and Chile, with some exceptions in Mexico and Colombia.

TABLE 4

Latin America (six countries): Contribution of the "rates effect", the "distribution effect" and fertility changes within each group to the change in the total fertility rate (TFR)[a] [b]

Country and sources	Fertility					
	1970s		1980s		Around 2000	
	Absolute contrib.	Percentage contrib.	Absolute contrib.	Percentage contrib.	Absolute contrib.	Percentage contrib.
Bolivia (1976 census; DHS 1989, 1994, 1998)						
"Rates effect"	-0.9	62	0.1	-97	-0.1	10
"Distribution effect"	-0.8	50	-0.2	166	-0.4	89
Groups:						
No schooling	-1.5	55	0.4	-64	0.6	-120
Basic	-0.6	24	0.1	-38	-0.2	130
Intermediate	0.5	-8	0.4	-68	-0.3	90
Middle or above	-1.1	29	-0.2	70	0.0	0
Honduras (EDENH 1975, 1983; DHS 1991/92, 1996)						
"Rates effect"	0.3	-58	-0.9	80	-0.1	44
"Distribution effect"	-0.7	138	-0.2	23	-0.2	55
Groups						
No schooling	0.5	-67	-1.0	23	0.1	-9
1 to 3 years of education	0.4	-44	-1.3	39	-0.3	50
4 to 6 years	-0.1	11	-0.9	33	-0.1	24
7 years and over	0.0	0	-0.2	5	-0.2	35
Ecuador (WFS 1979; DHS 1987; Sur. 1994, 1999)						
"Rates effect"	-1.4	86	-0.5	73	-0.2	74
"Distribution effect"	-0.3	21	-0.2	32	-0.1	28
Groups:						
No schooling	-2.2	15	-0.2	1	-0.6	12
1 to 6 years of education	-1.8	70	-0.8	90	-0.2	38
7 years and over	-0.5	15	-0.2	9	-0.2	50
Mexico (WFS 1976/77; Sur. 1982, 1992, 1997)						
"Rates effect"	-0.7	39	-1.0	92	-0.4	56
"Distribution effect"	-1.0	66	-0.1	25	-0.4	57
Groups:						
No schooling	-0.3	11	-1.6	22	-0.9	27
Incomplete primary	-1.3	70	-1.2	34	-0.6	34
Complete primary	-0.4	13	-1.0	22	-0.2	12
Above primary	-0.2	6	-0.6	22	-0.2	27
Colombia (WFS 1976; DHS 1986, 1995, 2000)						
"Rates effect"	-1.0	64	-0.2	52	-0.3	76
"Distribution effect"	-0.8	54	-0.3	62	-0.1	24
Groups:						
No schooling	-1.7	28	-0.4	10	-0.9	11
Primary	-1.0	64	-0.4	90	-0.2	24
Secondary and above	-0.2	8	0.0	0	-0.3	65
Chile (Census and records 1970, 1982, 1992)						
"Rates effect"	-0.8	83	-0.5	96	–	–
"Distribution effect"	-0.3	34	-0.3	44	–	–
Groups:						
0 to 3 years of education	-1.4	42	-1.1	26	–	–
4 to 6 years	-1.0	35	-1.0	49	–	–
7 to 9 years	-0.5	15	-0.5	34	–	–
10 years and over	-0.2	8	0.1	-9	–	–

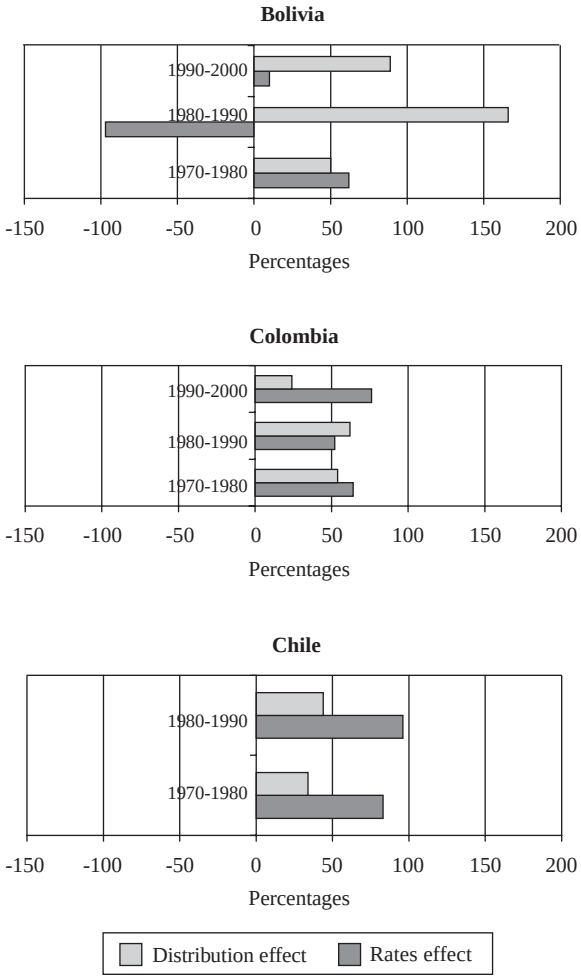
Source: Prepared by the authors on the basis of table 3.

[a] See section IV, fifth paragraph, for a description of the "rates effect" and the "distribution effect". See also table 3, note b, for the full names of surveys.

[b] In Bolivia (1980s) and Honduras (1970s), the contributions calculated for the educational groups are not consistent with the overall results, owing to inaccuracies in the sources.

FIGURE 2

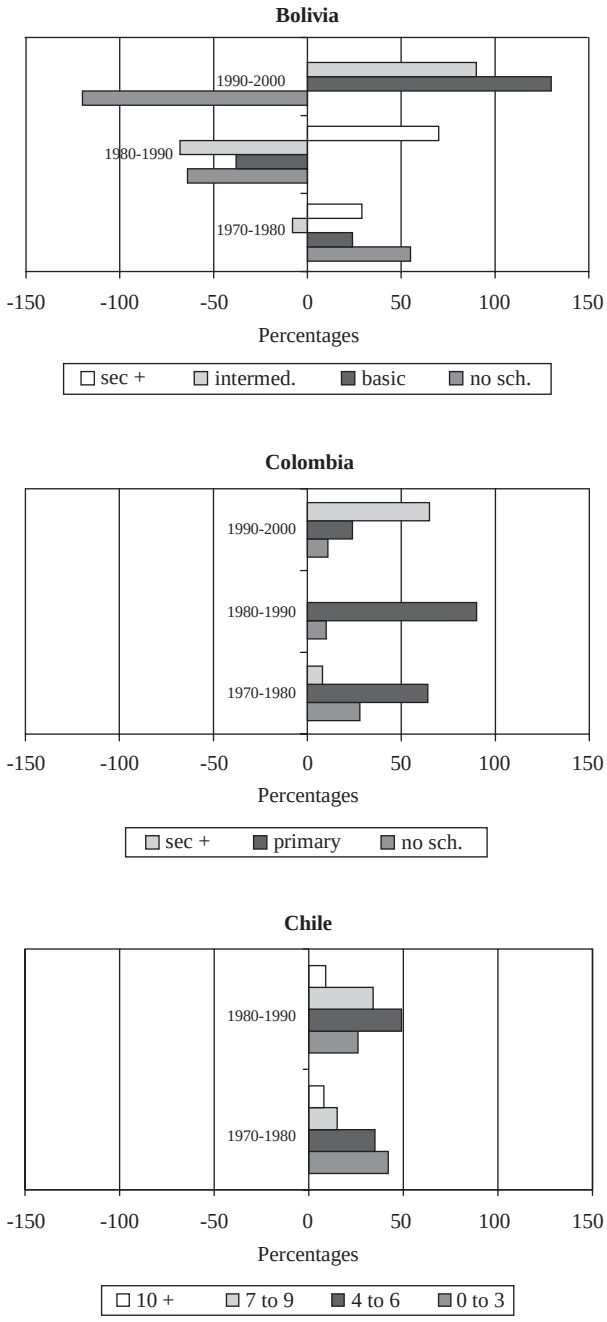
Latin America (three countries): Contribution made by the "rates effect" and the "distribution effect" to changes in national fertility levels, by educational group, 1970s, 1980s and 1990s



Source: Table 4.

FIGURE 3

Latin America (three countries): Contribution made by the rates of each educational group to changes in national fertility levels, 1970s, 1980s and 1990s



Source: Table 4.

In the countries that are furthest advanced in the transition, the "rates effect" increases in the latest period, this being the result of more widespread changes in fertility within the different social groups, and of a lessening of change in the educational structure. Consequently, something similar is seen when the differences between countries are examined in the light of the stage in the transition they are going through. In Chile, for example, the contribution of the "rates effect" to the change in the TFR is over 80%, reaching 96% in the latest period, while in Bolivia and Honduras it is generally the "distribution effect" that predominates. There might be some irregularities in these two countries owing to deficiencies in the quality

of the data and the robustness of the exercise, given the small size of the TFR reduction.

The percentage contribution of each of the groups by educational level was calculated by taking the change which had occurred in each educational group in the period between surveys and weighting it by the weight of the group as given by the average distribution by educational level in the two sources considered. The contribution of each group to the change in fertility is presented in the same table 4 and illustrated in figure 3. The greatest contribution to the decline in fertility is made, on the whole, by the groups with "primary" education or "1 to 6 years of schooling". Although in some cases the largest declines in absolute numbers are seen among women without schooling, in the advanced transition countries the contribution of this group to the drop in fertility is less, owing to their loss of relative weight in the population following the universalization of basic education (table 3).

To illustrate what happens in countries in the early stages of the transition, the cases of Bolivia and Honduras were taken (table 4). In Bolivia, the greatest changes in fertility between the 1970s and 1980s were at the extremes and the greatest contribution to the decline was made by the "no schooling" group (55%), which exhibits a larger absolute change and a higher relative weight. In the 1980s, the data for Bolivia are affected by the lack of robustness already referred to as being a potential problem when changes are small, and this might explain why the "rates effect" tends to raise fertility. In the latest period (late 1990s) the greater contribution of women with basic education can be seen. In Honduras, behaviour is more akin to that of countries that are further advanced in the transition, the greatest contributions being made by women with 1 to 6 years of schooling.

To sum up, in recent years the main contributions to the decline in fertility are no longer found to be due to groups with high levels of formal education, with the expectation of this then spreading to others. This is probably due to the fact that these sectors experienced the major demographic changes before 1970, even in countries that were behind in the transition. Seemingly, current declines in fertility are due primarily to the contribution of the least educated women, mainly those who have had basic schooling, since in many countries women without schooling have come to represent a very low percentage of the population.

V

The proximate determinants of fertility

As previous sections have shown, the least advanced social sectors have begun their transition in recent years, even in high-fertility countries. Notwithstanding the changes in these groups, their fertility is still high and they are still socially and economically disadvantaged. As has been mentioned, furthermore, the motives and mechanisms giving rise to the transition in these groups are probably not the same as in the European model of the nineteenth century and in the middle and upper sectors of Latin America.

The influence of social changes on fertility is exercised through a set of proximate determinants that have to do with exposure to conception, pregnancy and childbirth (Davis and Blake, 1956; Bongaarts, 1978 and 1982). In what follows, information provided by the Demographic and Health Surveys and other surveys will be used to discuss primarily the behaviour of the proximate determinants that might have had a major impact on the decline in fertility among the least advanced groups.

It has been observed that the factors associated with the fertility decline in European countries might have been present among more educated women in Latin America. In Europe, an important role was played at the outset of the transition by marriage practices (less frequent and later) and, subsequently, by the increased prevalence of modern contraceptives (Zavala de Cosío, 1992).

In Latin America, however, women in the lower strata seem not to have been following these patterns where nuptiality is concerned, and to have done so only partially with contraception. This cannot be attributed to a desire to have large families, however, since the number of children they claim to want is not that different from the ideal family size declared by women with a higher level of education. Indeed, the ideal number of children declared in surveys by women from less advanced groups (table 5) is quite low and, while systematically higher, does not differ that much from the number given by more educated women. For

TABLE 5

Latin America (11 countries): Total fertility rate and intermediate variables by women's educational level at different stages in the evolution of fertility levels[a]

Fertility level	Educational level																								
	TFR	Ideal no. children	Age 1st union	CU	Modern CU	TFR	Ideal no. children	Age 1st union	CU	Modern CU	TFR	Ideal no. children	Age 1st union	CU	Modern CU	TFR	Ideal no. children	Age 1st union	CU	Modern CU	TFR	Ideal no. children	Age 1st union	CU	Modern CU
Low			**Total**					**No schooling**					**Primary**					**Intermediate**					**Secondary and above**		
Brazil																									
DHS 1986	3.4	2.8	21.2	66.2	56.5	6.5	3.3	19.4	47.3	39.5	5.1	2.9	20.4	67.1	57.7	3.1	…	…	69.9	…	2.5	2.5	25.0	72.9	61.2
DHS 1996	2.5	2.3	21.1	76.7	70.3	5.0	2.7	18.8	64.1	56.6	3.3	2.5	19.7	71.9	66.1	2.4	…	…	80.1	…	1.6	2.2	22.2	81.8	75.0
Medium-low			**Total**					**No schooling**					**Primary**					**Intermediate**					**Secondary and above**		
Mexico																									
DHS 1987	4.0	3.0	19.9	52.7	44.6	4.9	4.4	17.3	23.7	19.2	4.4	3.2	19.3	52.0	44.8	3.4	…	…	62.0	…	2.6	2.4	22.7	69.8	57.9
ENADID 1997	…	…	…	67.6	56.0	4.1	…	…	45.0	…	3.8	…	…	58.8	…	3.1	…	…	68.6	…	2.4	…	…	74.0	…
Dominican R.																									
DHS 1986	3.7	3.4	18.5	49.8	46.5	5.3	3.6	16.8	35.7	32.4	4.3	3.5	17.6	49.0	46.7	2.9	3.1	21.3	55.2	…	2.1	3.1	22.4	55.5	49.6
DHS 1991	3.3	3.1	19.0	56.4	51.7	5.2	3.5	16.6	41.5	37.8	4.3	3.3	17.6	55.2	52.3	3.5	2.9	20.9	59.2	51.7	2.7	2.9	22.9	61.4	53.7
DHS 1996	3.2	3.2	19.3	63.7	59.2	5.0	3.7	16.3	53.1	50.7	4.3	3.3	17.6	64.5	61.0	3.4	…	…	64.5	…	2.4	2.9	22.7	65.2	58.7
Colombia																									
WFS 1976	4.7	4.1	19.2	…	…	7.1	4.9	18.5	…	…	5.2	4.1	19.1	…	…	2.7	3.4	19.8	…	…	2.5	3.1	22.2	62.9	…
DHS 1986	3.2	2.7	20.8	64.8	52.4	5.4	3.4	18.1	50.7	42.8	4.2	2.9	20.1	62.0	49.2	2.5	2.4	22.1	71.8	60.6	1.5	2.4	22.7	81.4	66.5
DHS 1990	2.8	2.6	21.0	66.1	54.6	4.9	3.1	18.7	52.6	44.0	3.6	2.8	19.7	63.3	51.8	2.4	2.4	22.0	69.4	57.8	1.6	2.4	22.9	76.8	64.2
DHS 1995	3.0	2.5	21.5	72.2	59.3	5.0	3.3	18.5	58.0	45.4	3.8	2.8	19.7	70.4	56.6	2.6	2.3	21.9	74.7	62.7	1.8	2.3	23.0	77.1	64.5
DHS 2000	2.6	2.3	21.4	76.9	64.0	4.0	2.9	18.6	72.7	55.5	3.6	2.5	19.8	77.0	62.1	2.4	…	…	77.7	…	1.5	2.2	22.9	77.2	66.0
Ecuador																									
DHS 1987	4.2	3.0	20.1	44.2	35.8	6.4	3.6	18.4	18.5	15.4	5.2	3.3	19.2	41.0	34.6	3.1	2.6	20.9	54.8	…	2.3	2.6	21.9	56.7	43.5
CDC 1994	3.6	2.7	20.7	56.8	44.4	6.2	3.6	18.6	26.0	20.3	4.4	2.9	19.5	50.7	40.1	2.8	2.4	21.4	66.1	52.0	2.1	2.4	24.9	74.3	54.8
CDC 1999	3.3	2.5	21.0	65.8	50.0	5.6	3.1	18.5	45.8	35.1	4.1	2.8	19.6	60.5	46.1	2.9	2.5	21.3	70.8	53.6	1.9	2.4	25.0	78.6	60.0
Peru																									
WFS 1977	5.3	4.4	18.4	41.3	…	7.3	4.0	17.6	20.6	…	6.8	4.0	18.3	48.8	…	5.1	3.3	20.1	68.3	…	3.3	…	…	…	…
DHS 1986	4.3	2.7	20.5	45.8	23.0	7.0	3.2	18.7	19.1	7.6	6.1	2.9	19.1	39.3	17.1	4.7	2.4	21.2	61.9	…	2.9	2.5	23.3	69.1	…
DHS 1992	4.0	2.5	21.1	59.0	32.8	7.1	3.0	18.7	35.5	11.6	5.1	2.6	19.0	51.3	24.0	3.1	2.3	21.4	65.6	39.6	1.9	2.4	23.2	73.2	47.9
DHS 1996	3.5	2.5	20.9	64.2	41.3	6.9	3.1	18.7	38.3	18.8	5.0	2.7	19.1	59.0	34.9	3.0	…	…	70.2	…	2.1	2.3	23.0	75.4	49.3
DHS 2000	2.9	2.4	21.4	68.9	49.7	5.1	2.9	18.8	50.2	33.0	4.1	2.6	19.2	63.5	43.8	2.4	…	…	74.6	…	1.8	2.3	23.5	75.5	57.1
El Salvador																									
DHS 1985	4.2	3.6	19.0	47.3	44.3	6.0	4.7	17.7	36.5	35.5	4.4	3.7	18.7	48.4	45.6	3.5	2.7	20.1	52.0	45.4	2.3	2.6	22.8	63.9	56.0
CDC 1993	3.8	…	19.4	53.3	48.0	5.1	…	17.2	43.4	41.8	3.8	…	18.4	51.0	46.6	3.1	…	20.2	59.5	51.9	2.3	…	23.6	67.5	54.3
CDC 1998	3.6	…	19.5	59.7	54.1	4.8	…	17.3	49.6	…	3.6	…	18.4	51.8	n.d	3.2	…	20.1	61.8	…	2.4	…	23.4	67.8	n.d
Medium-high			**Total**					**No schooling**					**Primary**					**Intermediate**					**Secondary and above**		
Bolivia																									
DHS 1989	5.0	2.6	20.3	30.3	12.2	6.1	2.8	20.0	11.5	2.4	5.9	2.6	19.8	24.8	8.3	4.5	2.5	19.9	38.4	16.8	2.9	2.5	21.3	49.4	23.8
DHS 1994	4.8	2.5	20.6	45.3	17.8	6.5	2.7	20.2	22.7	3.0	6.0	2.5	19.7	39.2	11.4	4.9	2.5	19.5	46.7	17.1	2.7	2.4	21.6	61.4	30.3
DHS 1998	4.2	2.6	20.9	48.3	25.2	7.1	2.7	20.2	19.4	7.6	5.8	2.7	19.7	38.1	17.6	4.6	…	…	53.3	…	2.7	2.5	22.1	63.6	36.7
Paraguay																									
DHS 1990	4.7	3.9	20.9	48.4	35.2	6.7	5.0	19.4	28.2	19.9	6.2	4.2	20.0	43.3	31.2	4.5	…	…	47.4	…	3.2	3.3	23.3	62.4	46.1
CDC 1995/96	4.4	3.6	21.0	50.7	41.3	6.9	4.7	18.7	32.6	26.7	5.5	3.9	20.0	43.0	35.5	4.7	3.1	21.1	51.4	42.3	3.0	3.0	24.6	64.4	51.4
CDC 1998	4.3	…	…	57.4	47.7	6.2	…	…	36.5	30.9	5.8	…	…	52.9	41.3	5.0	…	…	53.7	45.8	3.0	…	…	69.4	58.5
High			**Total**					**No schooling**					**Primary**					**Intermediate**					**Secondary and above**		
Guatemala																									
DHS 1987	5.5	3.8	18.6	23.2	19.0	7.0	4.7	17.7	9.8	8.6	5.6	3.5	18.7	29.5	24.3	…	…	…	…	…	3.9	2.9	22.8	53.3	46.2
DHS 1995	5.1	3.6	19.0	31.4	26.9	7.1	4.6	17.8	14.1	12.7	5.1	3.6	18.7	32.5	28.3	…	…	…	…	.	2.6	2.7	22.3	63.1	51.2
DHS 1998/99	5.0	3.4	19.3	38.2	30.9	6.8	4.4	17.8	19.4	16.0	5.2	3.4	19.0	38.4	31.3	…	…	…	…	…	2.9	2.7	21.9	68.0	53.6
Haiti																									
DHS 1994/95	4.8	3.3	20.8	18.0	13.2	6.1	3.6	20.1	11.3	8.4	4.8	3.2	20.7	19.7	15.2	…	…	…	…	.	2.5	2.9	23.9	34.2	23.2
DHS 2000	4.7	3.1	20.5	28.1	22.8	6.4	3.5	19.3	21.9	19.4	5.1	3.1	20.1	29.3	23.1	…	…	…	…	.	2.5	2.7	24.8	39.3	29.7

Source: Ferrando (2003).

[a] TFR: Total fertility rate; CU: Prevalence of contraceptive use; Modern CU: prevalence of modern contraceptive use; CDC: Centers for Disease Control and Prevention.

example, the ideal number of children for women without schooling is 2.7 in Brazil and Bolivia, 2.9 in Colombia and Peru, and 3.1 in Ecuador, while among those with more education it ranges from 2.2 to 2.4 in the same countries. What this means is that the gaps between observed and desired fertility in less advanced groups are large (for example, 5.0 against 2.7 in Brazil, 5.6 against 3.1 in Ecuador, 5.1 against 2.9 in Peru, 7.1 against 2.7 in Bolivia, 6.4 against 3.5 in Haiti). The cases of Colombia and Peru, for which 1970s data are available, also show that less educated women did not always want such small families as they claim to in recent surveys. It seems that in recent decades there has been a shift towards a smaller ideal family size among women in all social groups, including the lowest strata, although the motives of each group may be different.

The studies that have been done on the main proximate determinants of fertility (nuptiality, postpartum infertility, contraception and abortion) show that contraception is the variable which has been decisive in bringing down fertility in the region. This seems to hold true for the least advanced groups, which have increased their use of contraceptives, including modern ones. Abortion has been excluded from the studies owing to lack of information, although there are indications that it may be playing a major role in all social sectors (Ferrando, 2003).

Owing to urbanization, the expansion of education, improvements in the status of women and the efforts of family planning programmes, among other factors, information about contraceptives and how to obtain them has spread widely in the region's countries and in the different social groups. By and large, contraceptive use increases with formal education coverage. Two patterns of use corresponding to different social sectors can be distinguished, and these are linked to the level of fertility in each country (tables 5 and 6). On the one hand there are countries that generally have high and medium fertility and where contraceptive behaviour differs greatly between the groups with the highest level of education and those with the lowest (e.g., Guatemala, Bolivia and, to a lesser extent, Nicaragua). On the other hand, there are the countries, generally with lower fertility, where contraceptive behaviour differs less between these groups and where less educated women have taken up contraception on a larger scale (such as Brazil and Colombia).

In the first group of countries, the most recent surveys show a large difference in modern contraceptive use between women with less and more education (16% against 54% in Guatemala, for instance, and 8% against 38% in Bolivia) and a relatively low take-up of female sterilization, as can be seen in table 6 (11% against 24% in Guatemala and 4% against 8% in Bolivia). Generally speaking, this latter method is more prevalent among more educated women in these countries. In the second group of countries there is less difference in modern contraceptive use between more and less educated women (57% against 75% in Brazil and 56% against 65% in Colombia), with a high level of female sterilization in all groups (46% against 36% in Brazil and 39% against 23% in Colombia), possibly because family planning programmes emphasize this method. In the countries where fertility has fallen most, female sterilization is most prevalent among less educated women, which has given rise to doubts as to whether its users have chosen it voluntarily or have been induced to adopt this method because there are no other options available or they lack information about them. This behaviour is probably due in part to the older age structure of women in the less educated group, which makes them more likely to have had recourse to sterilization. More recent generations of women, by contrast, have had greater access to other methods of contraception.

To sum up, when uneducated women are compared between these two groups of countries, the differences in total fertility rates are found to be associated with differences in the use of modern contraceptive methods, chiefly female sterilization.

Certain aspects of reproductive behaviour and the family size that eventually results are linked to women's nuptial behaviour (age at marriage, frequency of unions, the proportion remaining permanently single, time spent within unions, etc.).

As mentioned, in the early stages of the fertility transition in the countries of Western Europe, later marriage and an increase in the proportion of women remaining single both had a decisive impact (Zavala de Cosío, 1992). Likewise, indicators of nuptiality for women from middle and upper social sectors in Latin America reveal behaviour which, while it may be less extreme, is broadly similar. The age at which women with intermediate or higher education enter their first union is generally around 24 (table 5), and the percentage of women who are still single when their childbearing years are over is higher than in the other groups. Among less educated women, patterns of nuptiality have been less influential than contraception in bringing fertility down. Among more educated women, on the other hand, these patterns have played (and are playing) a more important role.

TABLE 6

Latin America (six countries): Total fertility rate and percentage of women using contraceptives, by method and educational level

Fertility level	Total fertility rate	Use of any method	Using modern methods								Using traditional methods				No method	Total
			Total modern methods	Pill	IUD	Injection	Vaginal	Condom	Female sterilization	Male sterilization	Total trad. meth.	Rhythm	Withdrawal	Others		
High																
Guatemala 1998/99	5.0	38.2	30.9	5.0	2.2	3.9	0.0	2.3	16.7	0.8	7.2	5.7	1.5	0.1	61.8	100
No schooling	6.8	19.4	16.0	1.2	0.3	2.3	0.0	0.7	11.4	0.0	3.4	2.8	0.6	0.0	80.6	100
Primary	5.2	38.4	31.3	5.9	0.9	4.1	0.0	2.0	17.3	1.2	6.8	5.4	1.4	0.3	61.6	100
Middle and above	2.9	68.0	53.6	9.0	8.3	5.8	0.2	5.7	23.7	1.0	14.3	11.1	3.3	0.0	32.0	100
Medium-high																
Bolivia 1998	4.2	48.3	25.2	3.8	11.1	1.1	0.0	2.6	6.5	–	23.1	20.0	2.3	0.8	51.7	100
No schooling	7.1	19.4	7.6	0.5	2.8	0.2	0.0	0.4	3.7	–	11.9	9.9	0.4	1.5	80.6	100
Basic	5.8	38.1	16.4	2.5	6.6	0.8	0.0	1.4	5.1	–	21.7	18.0	2.5	1.2	61.9	100
Intermediate	4.6	53.3	27.5	6.8	10.0	1.1	0.0	2.2	7.4	–	25.9	22.0	3.0	0.9	46.7	100
Secondary and above	2.7	65.2	38.3	4.9	18.5	1.7	0.1	4.7	8.3	–	26.9	24.4	2.4	0.2	34.8	100
Nicaragua 2001	3.2	68.6	66.1	14.6	6.4	14.3	–	3.3	25.3	0.5	2.5	1.5	1.0	–	31.4	100
No schooling	5.2	52.1	50.4	8.9	2.0	14.4	–	1.1	21.4	0.0	1.8	1.1	0.6	–	47.9	100
Primary 1-3	4.2	67.4	65.8	13.4	2.9	16.4	–	2.2	27.9	0.6	1.6	0.8	0.7	–	32.6	100
Primary 4-6	3.3	74.5	72.4	16.8	7.0	15.4	–	3.2	27.4	0.5	2.0	1.4	0.6	–	25.5	100
Secondary	2.5	73.0	69.7	17.7	9.0	12.9	–	4.4	24.0	0.7	3.3	1.8	1.5	–	27.0	100
Higher	1.7	72.7	68.3	11.5	11.9	10.7	–	6.5	26.6	0.3	4.5	3.0	1.5	–	27.3	100
Medium-low																
Peru 2000	2.9	68.9	50.4	6.7	9.1	14.8	0.6	5.6	12.3	0.5	17.5	14.4	3.2	0.9	31.1	100
No schooling	5.1	50.2	33.0	2.8	4.0	11.9	0.0	0.8	11.8	0.9	15.2	13.0	2.2	2.0	49.8	100
Primary	4.0	63.5	43.8	5.5	4.0	15.7	0.4	2.8	13.8	0.4	18.4	15.2	3.2	1.4	36.5	100
Secondary	2.4	74.6	56.7	8.0	11.9	16.8	0.8	6.6	11.6	0.5	17.3	13.6	3.8	0.6	25.4	100
Higher	1.8	75.5	58.1	7.8	15.6	9.9	0.9	11.3	10.8	0.6	17.3	14.9	2.4	0.1	24.5	100
Colombia 2000	2.6	76.9	64.0	11.8	12.4	4.0	0.8	6.1	27.1	1.0	12.3	6.0	6.3	0.7	23.1	100
No schooling	4.0	72.7	55.5	8.0	2.6	2.0	0.5	2.1	39.3	0.0	15.7	3.6	12.1	1.5	27.3	100
Primary	3.6	77.0	62.1	12.7	9.7	2.8	0.5	4.5	30.3	0.5	14.1	5.6	8.4	0.9	23.0	100
Secondary	2.4	77.7	66.7	12.6	14.5	5.6	1.0	6.8	24.1	1.5	10.5	5.6	4.9	0.5	22.3	100
University	1.5	75.4	63.5	7.2	17.5	3.1	0.9	10.3	22.7	0.9	11.8	9.5	2.3	0.2	24.6	100
Low																
Brazil 1996	2.5	76.7	70.3	20.7	1.1	1.2	0.1	4.4	40.1	2.6	6.1	3.0	3.1	0.3	23.3	100
No schooling	5.0	64.1	56.6	7.2	0.8	0.4	0.0	2.2	45.7	0.3	6.8	2.7	4.1	0.7	35.9	100
1-3 years	3.6	69.2	63.7	14.1	0.5	0.8	0.0	2.1	44.9	1.1	5.0	2.0	3.0	0.5	30.8	100
4 years	3.0	75.0	68.8	20.9	1.0	0.9	0.1	3.6	40.4	1.9	5.8	2.6	3.2	0.4	25.0	100
5-8 years	2.4	80.1	74.5	27.3	1.0	1.5	0.0	5.1	36.9	2.7	5.5	2.4	3.1	0.1	19.9	100
9-11 years	1.7	83.1	75.4	23.0	1.5	1.9	0.0	6.0	38.8	4.1	7.6	4.6	3.0	0.1	16.9	100
12 or over	1.5	85.7	76.3	19.4	3.3	0.8	0.4	8.8	35.7	8.0	9.1	6.4	2.7	0.3	14.3	100

Source: Ferrando (2003) and Demographic and Health Surveys.

The indicators of nuptiality derived from the Demographic and Health Surveys show that uneducated women are more exposed to conception than those who are more highly educated, both because a smaller percentage of them are single and because they spend more time in unions over similar periods and enter their first union at an early age. This age is younger than that at which more educated women enter their first union, but by contrast with the previous case, no differences are seen in this respect between countries with different levels of fertility (table 5).

The duration of breastfeeding, a fundamental component of postpartum infertility, has also been regarded as a very important proximate determinant of fertility that affects exposure to the risk of pregnancy, the intervals between births and the final fertility level. Because breastfeeding prevents ovulation, prolonging postpartum amenorrhoea, a decline in fertility might be expected to be associated with longer periods of breastfeeding.

Prolonged breastfeeding has traditionally been the ideal in Latin America, emphasis being laid on the importance of mother's milk for the health and future development of the child, particularly in the most disadvantaged sectors of society. The latest surveys have revealed some heterogeneity in the reported duration of breastfeeding, however, which ranges from a national average of eight months in the Dominican Republic to 22 months in Peru (table 7).

TABLE 7

Months of breastfeeding by women's educational level in selected countries of Latin America at different stages of the demographic transition

Fertility level	Educational level									
	Total		No schooling		Primary		Secondary		Higher	
	TFR	Breast-feeding	TFR	Breast-feeding	TFR	Breast-feeding	TFR	Breast-feeding	TFR	Breast-feeding
High										
Guatemala										
DHS 1987	5.6	20.6	7.0	22.9	5.6	20.1	3.3	14.4	–	–
DHS 1995	5.1	19.8	7.1	22.2	5.1	19.0	2.7	11.0	1.8	9.6
DHS 1998/99	5.0	19.9	6.8	21.4	5.2	19.0	2.9	13.6	–	–
Medium-high										
Bolivia										
DHS 1989	4.9	16.2	6.1	17.8	5.9	17.3	4.5	15.2	2.9	12.3
DHS 1994	4.8	17.5	6.5	20.7	6.0	18.0	4.9	15.2	2.7	15.1
DHS 1998	4.2	17.5	7.1	20.5	5.8	18.4	4.6	15.8	2.7	15.9
Nicaragua										
ESF 1992/93	4.5	12.3	6.8	15.9	4.7	12.2	3.4	9.6	2.4	9.4
DHS 1998	3.9	12.2	6.1	17.6	4.7	14.1	2.7	8.4	1.5	6.0
DHS 2001	3.2	17.0	5.2	20.2	3.8	18.4	2.5	14.7	1.7	9.4
Medium-low										
Peru										
DHS 1986	4.5	16.3	7.0	–	6.1	–	4.7	–	2.9	–
DHS 1992	3.5	17.3	7.1	21.9	5.1	19.3	3.1	14.8	1.9	10.3
DHS 1996	3.5	19.5	6.9	22.4	5.0	19.9	3.0	19.5	2.1	15.0
DHS 2000	2.9	21.6	5.1	25.4	4.0	21.9	2.4	22.0	1.8	17.4
Dominican Republic										
DHS 1986	3.7	9.4	5.3	12.7	4.3	10.0	2.9	7.2	2.1	6.2
DHS 1991	3.3	5.9	5.2	16.6	3.8	7.1	2.8	5.2	2.6	2.5
DHS 1996	3.2	7.6	5.0	14.2	3.0	9.1	2.6	6.5	1.9	4.4
Colombia										
DHS 1986	3.3	11.1	5.4	12.4	4.2	11.9	2.5	9.5	1.5	–
DHS 1990	2.9	8.5	4.9	13.7	3.6	9.4	2.4	7.8	1.6	4.9
DHS 1995	3.0	11.3	5.0	12.2	3.8	12.6	2.6	10.6	1.8	7.8
DHS 2000	2.6	13.1	4.0	9.9	3.6	16.9	2.4	12.6	1.5	6.4
Low										
Brazil										
DHS 1986	3.4	–	6.5	–	5.1	–	3.1	–	2.5	–
DHS 1996	2.5	7.0	5.0	5.8	3.3	7.6	2.4	6.5	1.6	7.5

Source: Demographic and Health Surveys (various years), www.measuredhs.com, and ESF (Encuesta sobre Salud Familiar) in Nicaragua.

When the average number of months' breastfeeding by women's educational level is observed, Demographic and Health Survey data show that there are differences here as there are with the other variables, and that it tends to diminish as years of education increase. This behaviour is also seen in other countries and seems to be a consequence of the faster pace of urban life, greater involvement by women in work outside the home, inadequate knowledge of the benefits of breastfeeding and the easy availability of alternative foodstuffs. It has been pointed out that one reason for the decline in breastfeeding is that health institutions have developed routines and practices which do not favour it, such as separating mothers from their newborn children, establishing rigid feeding hours, using feeding bottles and distributing free samples of other types of foods (Rodríguez-García, Schaefer and Yunes, 1990).

Uneducated women breastfeed for longest (between 10 and 25 months) and no significant changes have been observed in this variable within each country over time, which means that it clearly has not been an influence on changes in fertility levels, at least in the last few years. The same surveys also show that, among uneducated women, breastfeeding actually has a shorter duration in countries with lower fertility, such as Colombia and the Dominican Republic, than in countries with higher fertility, such as Guatemala and Bolivia. Although breastfeeding goes on for longer in these latter, favouring lower fertility, this is obviously not enough to offset the effects on fertility of lower contraceptive use.

VI

Conclusions

As with every known demographic transition process, the least advanced groups in Latin America (taking women with primary-level education or none as a proxy) have now also reached the stage of declining fertility, probably triggered by an earlier drop in infant mortality. What is more, the fertility of these groups has fallen in almost all the region's countries, irrespective of their stage in the demographic transition and the fertility level from which they set out or which they have now reached. Data from the most recent Demographic and Health Surveys confirm this development.

In the most advanced transition countries there is now a discernible tendency for the different social groups to converge downwards towards low levels, although there are still differences by education level. Furthermore, current TFR levels among the least advanced groups are still high in relation to the regional average. In high- and medium-fertility countries there is a substantial gap between groups by educational level, and the TFR of the less advanced groups has declined less or, in some cases, even increased. It still falls into the high-fertility category in these countries, generally exceeding five children per woman.

Regarding the contribution made by social mobility and changes within sectors to the decline in the TFR, the results indicate that both factors were important in the early stages of the transition (1960s and 1970s), with the second always preponderating. In recent years, changes have been associated more with what has happened within less advanced groups. In the last decade, declining fertility in the countries has been mainly due to the contribution of women with a low level of education. Behaviour has been more heterogeneous in the countries that are least advanced in the transition, while in the more advanced ones the greatest contribution has been more clearly attributable to women with primary education.

Women in the least advanced groups, whose desired family size is not far different from that of more educated women, do not behave like the latter when it comes to delaying marriage, but continue to marry early. Contraceptive use has been observed to increase among them, however, albeit (as was to be expected) to a lesser extent than among more educated women. There are differences between the countries observed in this respect: in lower-fertility countries, the contraceptive behaviour of women with a low level of education differs less from that of their more educated counterparts in terms of their use of modern contraceptive methods, especially sterilization. Sterilization is actually used more by less educated women, perhaps in part because the decision to do so has not always been wholly voluntary but has been

conditioned by lack of access to and information about other options. In the higher-fertility countries, contraceptive use is low and this is undoubtedly keeping the fertility of the least advanced groups high.

To sum up, the drop in infant mortality (mainly brought about by exogenous factors) would appear to have triggered the decline in fertility in less advanced groups, and this has coincided with the expansion of education, the desire for a smaller number of children and a larger supply of contraceptives, although access to these is still very restricted for these sectors. Possible future declines in infant mortality, which is still high among these groups, could lead to larger drops in fertility in future. In the final analysis, however, any really significant change would seem to depend on how effectively less educated women can narrow the gap between the number of children they wish to have and the number they actually do have.

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