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7 Nuptiality Trends and Fertility Transition in Latin America*

LUIS ROSERO-BIXBY

Introduction

The purpose of this chapter is to determine the role played by nuptiality changes in the fertility transition in Latin America. As other contributions to this book show, most Latin American countries have reduced substantially their fertility since 1960 approximately. In this chapter we examine the extent to which changes in marriage patterns explain this generalized fertility decline.

Fertility transition in Europe occurred without the help of nuptiality changes, or even in spite of a marriage boom (Hajnal 1956; Watkins 1981; Dyson and Murphy 1985). Late age at marriage and widespread spinsterhood had brought about moderate levels of fertility long before the European transition, in what Coale has called a 'first' transition (Coale 1973). In developing countries, in contrast, prevalent patterns of almost universal and precocious marriage have suggested that important fertility decline can occur because of nuptiality changes. Several studies have, indeed, showed meaningful effects of marriage changes, particularly in East Asia. For example, Mauldin and Berelson (1978) found that delayed marriages account for 35–40 per cent of birth rate reductions in ten developing countries with major fertility declines. Cho and Retherford (1974) also estimated an important contribution of nuptiality to birth rate declines in seven Asian populations between 1960 and 1970, which range from 23 per cent in Taiwan to 102 per cent in the Philippines.

The literature on nuptiality and its effect on fertility in developing countries has been dominated by observations from Asia and tropical Africa, however. Nuptiality and family patterns in Latin America are intermediate between those in Western Europe and those in Asia or Africa (Merrick 1986; De Vos 1987). The female mean age at marriage is 22 years and the proportion of never married women by age 50 is 13 per cent in Latin America as a whole, figures that contrast with, for example, 19 years and 2 per cent respectively in South Asia (United Nations 1988: table 5). Regional trends in Latin American nuptiality and their impact on fertility have not been well documented.

A distinctive characteristic of most Latin American countries is the high

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proportion of consensual unions (Camisa 1978; Quilodrán 1985). Over 50 per cent of couples are in consensual unions in several Central American and Caribbean countries. About half of these couples eventually legalize their union, which has suggested that de facto unions might be serving a function as trial marriages (Goldman and Pebley 1981). Instability is high in many consensual unions though, especially in early months of the union (Rosero-Bixby 1978). This high instability results in two other typical Latin American patterns: (1) considerable proportions of households headed by women, and (2) high circulation of formerly-married adults who, together with young unmarried adults, join other households (De Vos 1987). These lateral family extensions aside, a nuclear family structure clearly dominates in the region (Merrick 1986).

In studying the impact of nuptiality on fertility it is important to distinguish direct from indirect effects (Caldwell *et al.* 1980; Smith 1983). Direct, or exposure-time, effects are those conceptualized by Davis and Blake (1956) in their framework of intermediate fertility variables as affecting exposure to intercourse, namely: (1) age of entry into sexual unions, (2) permanent celibacy, and (3) reproductive periods spent after or between unions. Indirect effects include those mediated through other intermediate variables, such as frequency of intercourse, infecundity, and contraception. An example of indirect effects is the 'catching-up' behaviour of late marriages. Another example is the probable formation of role definitions antithetical to high fertility in a period of adolescent or adult status before marriage. Indirect effects are thus changes in marital fertility caused by nuptiality. Estimating these indirect effects is a rather complicated exercise, beyond the scope of this chapter. Most of the analyses here assume that indirect effects of nuptiality on fertility were negligible, i.e. that marital fertility is essentially independent of nuptiality patterns. In populations with little or no birth control—hence in the early stages of fertility transition—the exposure-time effect overshadows indirect effects, if any. The direct effect, however, becomes irrelevant when fertility control is widespread (Smith 1983).

Although this chapter does not address the vast topic of the determinants of nuptiality, some considerations about the causes of nuptiality change are necessary to put in perspective the analysis of its effect on fertility.

In his 'multi-phasic demographic response' theory, Davis (1963) postulates a sort of social strategy to cope with demographic strains brought about by mortality declines. One of these responses is celibacy and late marriage; another is birth control. Nuptiality, in this view, is thus complementary to fertility rather than an intermediate fertility determinant. The Davis perspective is in line with Malthus's 'preventive checks' and it is supported by European history, where populations indeed used marriage restraints to regulate their growth. If this 'nuptiality value' operated in Latin America, one should see declines in nuptiality preceding the fertility transition, especially in the post-war years, as a consequence of the mortality decline that swept the region in those years.

Another viewpoint is that essentially the same set of factors produce marriage delay and fertility control, as part of a broader movement of social change and

modernization. Increased education, urbanization, expanded labour-markets, and the improved status of women are some of the postulated common determinants of both variables. Widespread socio-economic differentials in nuptiality support this viewpoint. For example, WFS data show that the proportion married is systematically and substantially higher in rural settings and among women with no or low education (Casterline *et al.* 1984). If this viewpoint holds, nuptiality should decrease (later marriages and higher celibacy) contemporarily with fertility transition, and the impact of the former on the later would be hard to sort out.

In a third perspective, cultural factors, including family systems and ideational shifts, are the paramount determinants of nuptiality change (and of fertility change too) (Caldwell *et al.* 1980). Nuptiality and fertility could be influenced by an entirely different set of factors and nuptiality changes could go in any direction during the fertility transition.

Data and Methods

This analysis, which covers the period from 1950 to the early 1980s, is based on nuptiality data for the age-specific distribution of women by marital status in four rounds of population censuses (one per decade) conducted in the region in these years. Nuptiality data from censuses conducted prior to 1980 were taken from the United Nations Demographic Yearbook (1958, 1968, 1976, and 1982). Census data for the 1980s come from national publications.

The study includes sixteen of the twenty Latin American countries. Bolivia, Haiti, Honduras, and Nicaragua were excluded because at least three census observations were not available. These four countries account for 5 per cent of the population in the region in 1980. Since El Salvador did not take a census in the 1980s, some estimates for this country are based on the 1985 DHS.

Fertility surveys conducted in the 1970s and 1980s complemented the census information on nuptiality. When possible, two surveys (the earliest available in the 1970s and the latest available for the 1980s) were considered for each country in the data base. Survey estimates served mainly to validate census data. Table 7.1 shows the source and year of the information on nuptiality used in each country.

Since data on differential fertility by type of union are scarce, this chapter does not address the issue of the impact of changes in the type of union (if any) on the fertility transition. Consensual unions are included in the present analysis, but they are treated equivalently as legal marriages. Unless stated otherwise, the terms marriage and married couple will be used to mean both legal and consensual marriages.

Information on fertility originates from CELADE (1988). Estimates for the first quinquennium of each decade (updated by 1988) were used. For brevity these are referred to as 1950, 1960, 1970, and 1980. Census data on nuptiality are also referred to as if they correspond to these years, even though several censuses were taken a few years later.

An index analogous to Coale's index of marriage, I_m, was used to summarize

Table 7.1. Latin America: nuptiality data sources

Country	Population censuses				Surveys	
	1950s	1960s	1970s	1980s	1970s	1980s
Argentina	—	1960	1970	1980	—	—
Brazil	[a]	1960	1970	1980	—	DHS-86
Chile	1952	1960	1970	1982	—	—
Colombia	1951	1964	1973	1985	WFS-76	DHS-86
Costa Rica	1950	1963	1973	1984	WFS-76	CDC-86
Cuba	1953	—	1970	1981	NAT-79	—
Dominican Rep.	—	1960	1970	1981	WFS-75	DHS-86
Ecuador	1950	1962	1974	1982	WFS-79	DHS-87
El Salvador	1950	1961	1971	—	—	DHS-85
Guatemala	1950	1964	1973	1981	—	DHS-87
Mexico	—	1960	1970	1980	WFS-77	DHS-87
Panama	1950	1960	1970	1980	WFS-75	CDC-84
Paraguay	1950	1962	1972	1982	WFS-79	DHS-87
Peru	—	1961	1972	1981	WFS-78	DHS-87
Uruguay	—	1963	1975	1985	—	—
Venezuela	1950	1961	1971	1981	WFS-77	—

Notes: CDC = Collaboration with the Centers for Disease Control; NAT = National survey.

[a] The 1950 census did not ask for consensual unions.

nuptiality levels (Coale 1967). This indicator, henceforth called the in-union index, describes a weighted average of the age-specific proportions of women in legal or consensual union, with weights that give more importance to the peak reproductive ages. The weights are the proportion of children that a cohort with fertility as that of the Hutterites would have in each age-group. Because of the weights, observed changes in the index already give some idea of the impact of nuptiality patterns on fertility. The age-specific proportions of Hutterites' fertility used as weights are (Coale 1967: 209):

Ages	15–19	20–24	25–29	30–34	35–39	40–44	Total
Factors	0.124	0.227	0.207	0.184	0.167	0.091	1.000

Four additional indicators were computed to describe the following components of nuptiality:

1. A consensual union index, computed as a weighted average of age-specific proportions of couples in consensual unions, using Coale's weights. This index shows the importance of consensual unions, relative to both consensual and legal unions. Once again, since the peak reproductive ages receive larger weights, the index shows the importance of consensual unions for reproductive purposes.

2. The proportion of teenagers (age-group 15–19) ever in union. By measuring the frequency of precocious marriages, this proportion is an alternative indicator of the age of entry into sexual unions.

3. The proportion of never married women in the age-group 40–44, as a measure of permanent celibacy. Although this proportion refers to women who have never been in either a legal or a consensual marriage, it is likely that some censuses classify women separated from a consensual marriage as 'never married'.

4. A marital disruption index, computed as a weighted average of age-specific proportions of women who are widowed, separated or divorced, using Coale's weights. This index gives an idea of the loss of reproductive time due to marital disruption, assuming that fertility among these women is null.

It is worth noting that several censuses (especially the oldest ones) did not ask for the marital status 'separated'. The indicators of permanent celibacy and marital disruption were not computed for these censuses.

The technique of decomposition of fertility changes into marriage pattern and marital fertility components (Cho and Retherford 1974) was used to estimate the direct, or exposure-time, effect of nuptiality changes on fertility transition. The following equation estimates the percentage change in the TFR, C_m, between times 0 and 1, attributable to changes in age-specific proportions of women in union (see formula's derivation in Appendix 7.1):

$$C_m = 100 \frac{\sum_i \left(\frac{f_{i0}}{m_{i0}} + \frac{f_{i1}}{m_{i1}}\right) \Delta m_i}{2 \sum_i \Delta f_i}, \qquad (1)$$

where the second subscripts refer to times 0 and 1, f_i is the ASFR in age-group i, m_i is the age-specific proportion of women in union; and the operator Δ indicates change over time, so $\Delta m_i = m_{i1} - m_{i0}$.

This relation assumes that births occur in unions exclusively. An estimate based on surveys in rural areas of four Latin American countries indicates that the proportion of births occurring not in a legal or consensual union averages 3 per cent across all age-groups (Rosero 1978: table 31). This relation also assumes that marital fertility is independent of nuptiality patterns, i.e. that there are no indirect effects of nuptiality on fertility. This assumption seems appropriate only before or during the early stages of the fertility transition. Results obtained with this relation can be larger than 100 per cent and negative. A larger-than-100-per-cent nuptiality contribution means that nuptiality changes explain all the observed fertility change and more. A negative result indicates that nuptiality changes offset the observed fertility decline by C_m per cent. The formula, applied to the age-group 15–19 alone, served also to estimate the impact of nuptiality on fertility among teenagers.

Results

Table 7.2 presents the in-union index and its four components. Figs. 7.1 and 7.2 help to analyse the substantial amount of information in this table.

The comparison of survey and 1980s census estimates gives insights about the validity of census information (Fig. 7.1). Both estimates are, in general, consistent. In particular, there is a striking consistency between surveys and census estimates in Guatemala, Mexico, Brazil, Peru, and Paraguay. The largest discrepancies

Table 7.2. *Latin America: indices of proportion in-union, consensual union, teenagers in union, celibacy, and marital disruption*

Country	Population censuses				Surveys	
	1950s	1960s	1970s	1980s	1970s	1980s
In-union index per 000						
Argentina	n.a.	616	616	633	n.a.	n.a.
Brazil	n.a.	644	621	644	n.a.	645
Chile	552	572	586	580	n.a.	n.a.
Colombia	555	604	593	582	611	591
Costa Rica	581	626	623	611	616	640
Cuba	646	n.a.	715	676	694	n.a.
Dominican Republic	n.a.	690	671	607	647	618
Ecuador	631	671	658	658	639	686
El Salvador	585	608	643	n.a.	n.a.	673
Guatemala	695	724	721	716	n.a.	712
Mexico	n.a.	690	690	682	679	668
Panama	646	647	655	693	652	752
Paraguay	518	582	593	629	615	638
Peru	n.a.	642	659	637	630	629
Uruguay	n.a.	617	625	612	n.a.	n.a.
Venezuela	567	627	615	600	633	n.a.
Consensual union index per 000						
Argentina	n.a.	100	131	159	n.a.	n.a.
Brazil	n.a.	70	80	138	n.a.	173
Chile	77	67	53	79	n.a.	n.a.
Colombia	221	202	215	349	297	399
Costa Rica	165	153	178	208	208	246
Cuba	422	n.a.	375	399	335	n.a.
Dominican Republic	n.a.	577	542	610	641	654
Ecuador	273	263	289	309	316	353
El Salvador	555	501	549	n.a.	n.a.	592
Guatemala	708	597	548	465	n.a.	412
Mexico	n.a.	173	169	153	151	172
Panama	603	506	583	598	n.a.	587
Paraguay	356	282	269	247	263	281
Peru	n.a.	293	321	310	283	376
Uruguay	n.a.	85	102	150	n.a.	n.a.
Venezuela	448	403	337	339	n.a.	n.a.
Teenagers in union per 000						
Argentina	n.a.	98	108	122	n.a.	n.a.
Brazil	n.a.	148	126	168	n.a.	148
Chile	89	95	92	92	n.a.	n.a.
Colombia	163	158	135	152	150	142
Costa Rica	149	163	151	155	153	202
Cuba	205	n.a.	296	288	244	n.a.
Dominican Republic	n.a.	249	222	211	274	220
Ecuador	176	196	195	189	184	193
El Salvador	195	206	204	n.a.	n.a.	300
Guatemala	317	290	284	279	n.a.	262
Mexico	n.a.	187	212	206	192	199
Panama	244	213	266	207	199	292
Paraguay	128	122	117	144	165	165
Peru	n.a.	161	170	145	140	130
Uruguay	n.a.	98	124	113	n.a.	n.a.
Venezuela	213	214	161	189	202	n.a.

Permanent celibacy per 000						
Argentina	n.a	139	116	104	n.a	n.a.
Brazil	n.a	96	97	88	n.a	46
Chile	156	151	134	135	n.a	n.a
Colombia	224	185	159	123	86	74
Costa Rica	187	163	142	140	109	74
Cuba	*	n.a	*	34	46	n.a
Dominican Republic	n.a	165	166	82	20	23
Ecuador	*	*	115	106	89	48
El Salvador	*	*	*	n.a	n.a	28
Guatemala	*	*	*	64	n.a	28
Mexico	n.a	*	73	74	122	140
Panama	*	*	66	79	51	22
Paraguay	*	*	*	*	80	131
Peru	n.a	145	106	91	51	31
Uruguay	n.a	122	108	98	n.a	n.a
Venezuela	*	*	*	138	28	n.a
Marital disruption index per 000						
Argentina	n.a.	22	39	44	n.a.	n.a.
Brazil	n.a.	71	68	64	n.a.	99
Chile	59	54	54	61	n.a.	n.a.
Colombia	80	58	62	103	127	132
Costa Rica	68	55	49	67	100	124
Cuba	*	n.a.	*	171	135	n.a.
Dominican Republic	n.a.	34	34	150	214	209
Ecuador	*	*	66	64	108	82
El Salvador	*	*	*	n.a.	n.a.	178
Guatemala	*	*	*	73	n.a.	104
Mexico	n.a.	*	64	65	69	66
Panama	*	*	145	54	143	88
Paraguay	*	*	*	*	116	29
Peru	n.a.	37	49	58	96	97
Uruguay	n.a.	32	64	80	n.a.	n.a.
Venezuela	*	*	*	105	160	n.a.

Note: * = The census did not ask for the category 'separated'.

occur in Panama, but these seem to be due to the time-lag between surveys and census, coupled to a genuine increase in the index. The comparison in Venezuela, the Dominican Republic, Cuba, and, perhaps, Costa Rica and Colombia, suggests that census data might slightly underestimate the proportion in union.

The in-union index ranges between about 600 and 700 per thousand women (Fig. 7.2). Although this index is not strictly comparable to Coale's I_m index, it is noteworthy that in Asian and African populations I_m ranges between 750 and 900, whereas in West Europe just before the fertility transition it ranges between 350 and 500 (Coale 1973). Nuptiality patterns in Latin America are thus intermediate when compared to the extremes presented by Coale. The range observed in 1980 is similar to that in 1960 and 1970. The ranking of countries is stable too, except for Panama and the Dominican Republic. Guatemala, Mexico, Ecuador, and Cuba consistently rank at the top, and Colombia and Chile at the bottom of the classification by this index. Panama presents a considerable increase and the Dominican Republic a substantial decrease in this proportion over time.

The Tukey box plots in Fig. 7.2 show a rather stable distribution of countries

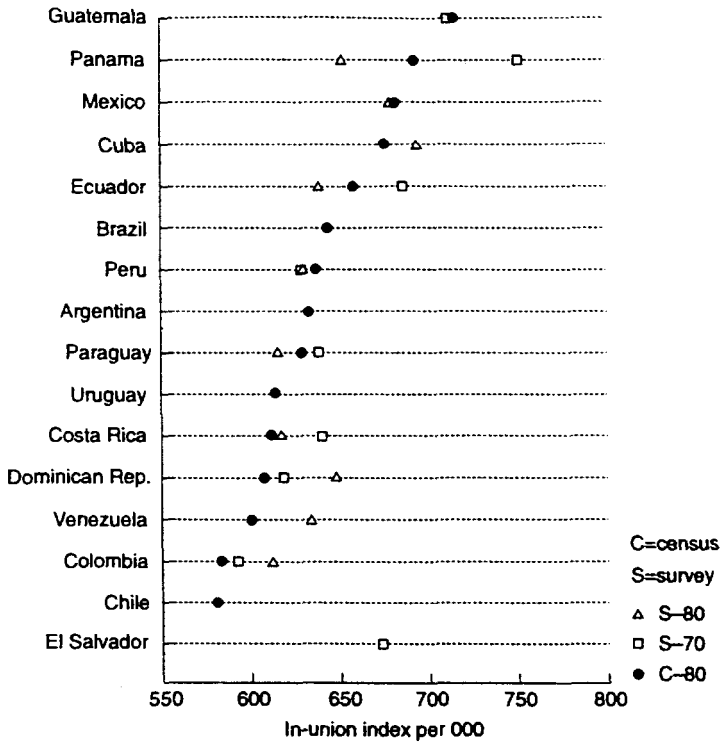

Fig. 7.1. ***Latin America: in-union index, 1980 censuses and surveys***

by the in-union index, except in the 1950s. The regional median of the proportion in union increased from 58 per cent in 1950 to 63 per cent in 1960, and it remained around this level across censuses and surveys of the 1970s and 1980s. The second part of Fig. 7.2 shows that an increase in this proportion occurred in practically all Latin American countries in the 1950s. In contrast, in the 1960s, 1970s, and between surveys, the number of countries with rising proportions in union counterbalanced the number with declining proportions.

How were these trends influenced by the components of nuptiality mentioned before? The most clear regional trend was a decline in the proportion of permanent celibacy from a median of 19 per cent in 1950 to 9 per cent in 1980. This was in part compensated, since 1960, with an increasing marital disruption index, whose median value changed from 4.6 per cent in 1960 to 6.7 per cent in 1980. The regional median proportion of consensual unions increased from 28 per cent in 1960 to 32 per cent in 1980, whereas the median proportion of teenagers in union remained stable at around 17 per cent (medians computed from Table 7.2).

The distributions of changes in the four nuptiality indicators, depicted in Fig. 7.3, show that in the 1950s all of the countries reduced the proportion of consensual unions, permanent celibacy, and marital disruption, whereas no dominant

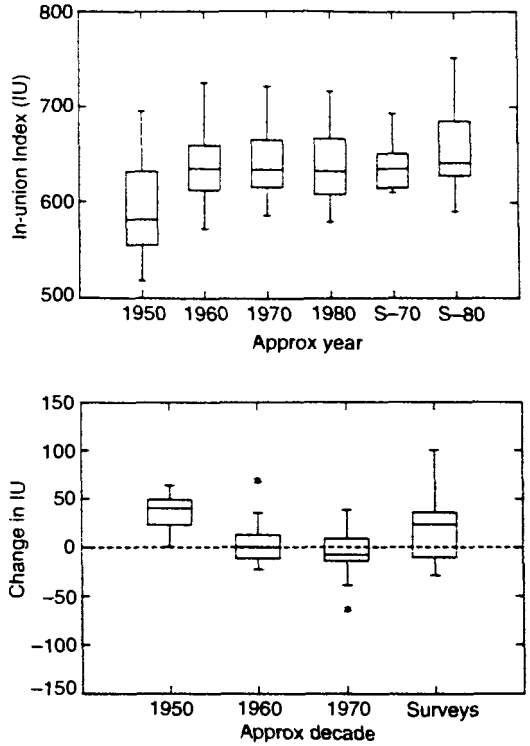

Fig. 7.2. ***Latin America: Level and change in the in-union index***

Note: In the Tukey box plots, the box indicates the range from the 25th to the 75th percentile, the central line in the box is the 50th percentile, and the lines outside the box continue until the 90th and 100th percentile; values beyond these percentiles are graphed individually

trend occurred in teenage unions. In other words, the nuptiality surge of the 1950s took place not because of an earlier age at union, but because of an increased prevalence of legal marriages. The dramatic increase in life expectancy in the region between 1945 and 1965 (Merrick 1986) probably contributed to the observed decline in marital disruption in the 1950s, by reducing the proportion of widows.

Fig. 7.3 also demonstrates that an upward trend in consensual unions is under way in Latin America. Since 1960, the number of countries where consensual unions are increasing outweighs the number where they are decreasing. In particular, all countries with two fertility surveys have seen an increase in this proportion between the surveys. A predictable effect of this pattern is a growth in the proportion of illegitimate births. For example, according to the United Nations Demographic Yearbooks, between 1960 and 1980, the proportion of out-of-legal-marriage births has increased from 16 per cent to 28 per cent in Chile, from 23 per cent to 35 per cent in Costa Rica, and from 24 per cent to 31 per cent in Argentina.

A striking finding in Fig. 7.3 is the lack of any systematic trend in the age at marriage, as measured by the proportion of teenagers in union. There are, of

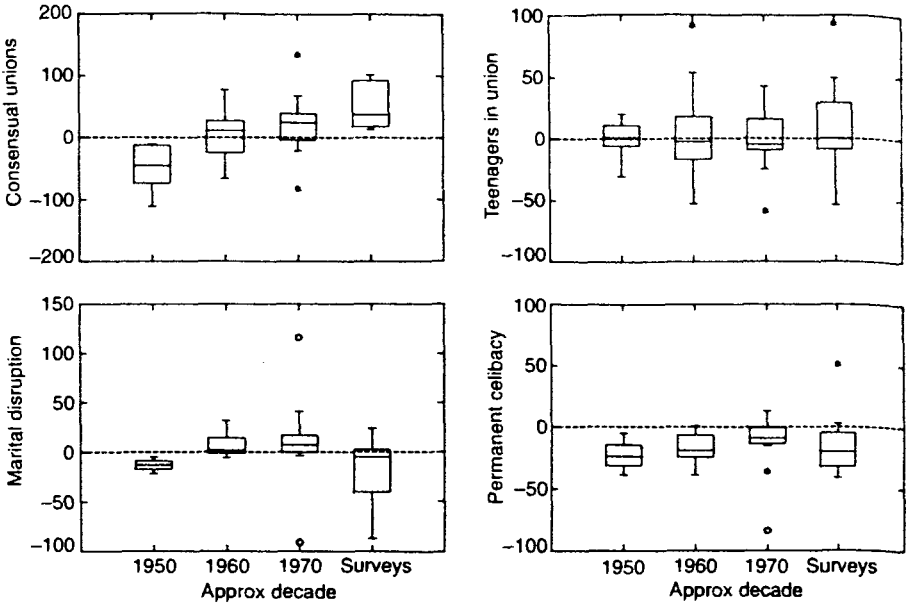

Fig. 7.3. ***Latin America: changes per decade in the four components of nuptiality***

course, countries where this proportion has declined by as much as 5 percentage points, but there are also countries where it has increased by almost 10 percentage points.

The data presented thus far suggest that regional patterns of change in nuptiality hardly could contribute to the fertility transition in Latin America. To verify this, country fertility trends are linked to nuptiality changes.

According to estimates from CELADE (1988), the median TFR of the sixteen countries under study fell from about 6.5 children in 1950 and 1960 to less than 4 children in 1980. In three-fourths of the countries the TFR slightly increased or did not change in the 1950s. In all of the countries, except Argentina and Uruguay, the TFR declined in the 1960s, in some by more than 2 children. In the 1970s, the TFR declined again almost everywhere. In each decade, the median TFR reduction was about 1 child.

How do these TFR figures correlate with the in-union index analysed previously? The scatterplot in Fig. 7.4 shows minimal correlation among them. The Gaussian Bivariate Ellipsoids, which enclose approximately half of the observations and whose shape and orientation give an idea of covariation, move horizontally from 1950 to 1960, indicating an increase in nuptiality and no change in TFR, and they move down in 1970 and 1980, which indicates a constant nuptiality index and a declining TFR. The horizontal orientation of the 1950 ellipsoid and the almost circular shape of the other three ellipsoids also indicate a lack of association.

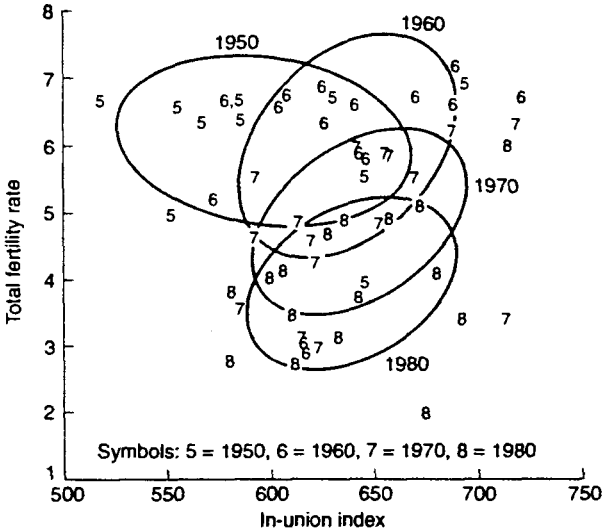

Fig. 7.4. *Latin America: TFR and in-union index 1950–1980*

For TFR changes larger than 0.10, Table 7.3 presents the estimates of the impact of nuptiality on fertility, computed with the method of decomposition described before. In the 1950s, from the five countries with meaningful changes, the TFR increments in El Salvador, Chile, and especially Costa Rica appear to have been caused mainly by a marriage boom. The small TFR decline in Guatemala

Table 7.3. *Latin America: TFR and the % change explained by changes in the proportions in union*

Country	TFR[a]				Change explained (%)		
	1950	1960	1970	1980	1950s	1960s	1970s
Argentina	3.12	3.06	3.12	3.13	n.a.	*	*
Brazil	5.93	5.93	4.61	3.78	–	20	–29
Chile	5.00	5.21	3.59	2.79	93	–6	5
Colombia	6.58	6.58	4.67	3.84	*	10	9
Costa Rica	6.65	6.87	4.29	3.48	236	3	6
Cuba	3.97	4.63	3.44	1.97	n.a.	n.a.	13
Dominican Republic	7.29	7.21	5.56	4.16	n.a.	15	43
Ecuador	6.74	6.74	5.92	4.91	*	18	2
El Salvador	6.38	6.76	6.03	5.15	71	–43	–39
Guatemala	6.95	6.74	6.36	6.05	–96	14	20
Mexico	6.62	6.62	6.25	4.12	n.a.	–2	4
Panama	5.57	5.83	4.89	3.43	–35	–11	–8
Paraguay	6.68	6.68	5.55	4.74	*	–6	–45
Peru	6.63	6.63	5.90	4.93	n.a.	–22	27
Uruguay	2.71	2.88	2.98	2.74	n.a.	*	43
Venezuela	6.34	6.34	4.89	4.05	*	25	5

Note: * = absolute change in the TFR lower than 0.10.

[a] TFR was computed for ages 15 to 44.

and the small increase in Panama are in part so small because nuptiality counterbalanced larger changes that took place in marital fertility (note the negative sign in the percentage of change explained).

With regard to the fertility transition from 1960 to 1980, Table 7.3 suggests the following clusters of countries:

1. The sharpest TFR declines (about 2 children in a decade) were only modestly (10 per cent or less) fuelled by nuptiality. This is the case for Costa Rica and Colombia in the 1960s and Mexico in the 1970s. In Cuba—the other case of dramatic decline—there is no nuptiality data for 1960, but comparing the 1953 and 1970 censuses (Table 7.2) one concludes that a post-revolution boom of marriages took place in the 1960s, which probably prevented fertility from declining even faster. The waning of that boom seems responsible for some of the TFR decline in the 1970s.

2. Nuptiality has made meaningful contributions to somewhat important fertility reductions in the Dominican Republic and Venezuela. In the Dominican Republic, in particular, the TFR fell from 7.2 to 4.2 children and marriage patterns contributed to this decline by an estimated 15 per cent in the 1960s and 43 per cent in the 1970s.

3. Nuptiality has contributed moderately (less than 20 per cent) to mild TFR declines in Ecuador and Guatemala.

4. Oscillating marriage trends resulted in swings in the TFR effects in Brazil, Peru and Chile. The case of Brazil is the most prominent. A fifth of the TFR reduction from 5.9 to 4.6 in the 1960s appears caused by nuptiality, but a marriage boom seems to have impeded a TFR decline 29 per cent larger in the 1970s, which has been a major cause of a deceleration in the Brazilian fertility transition.

5. Nuptiality has persistently retarded the fertility decline in El Salvador, Paraguay, and Panama. Particularly in El Salvador, the somewhat modest TFR decline in the 1960s and 1970s would have been about 40 per cent larger if increases in the proportion of women in union had not occurred.

Even though nuptiality did not substantially contribute to the regional reduction of the TFR according to these results, it is possible that marriage patterns have concentrated their influence on a limited range of ages. This limited effect seems particularly plausible with regard to teenage fertility. To examine this hypothesis, Table 7.4 presents estimates of the effect of the proportion of teenagers in union on fertility rates in the age-group 15–19. A clear regional pattern emerges from the estimates for the 1960s: in five countries almost all of the decline (79 per cent or more) originated in reductions of teenage unions; and in another three countries, about one third of the decline is explained by this factor. For the 1970s, however, a huge variability inhibits drawing any regional pattern in the relationship between nuptiality and fertility among Latin American teenagers.

Table 7.4. Latin America: teenage fertility and the % change explained by the changes in the proportion in union

Country	ASFR 15–19				Change explained (%)		
	1950	1960	1970	1980	1950s	1960s	1970s
Argentina	62	61	68	77	n.a.	80	99
Brazil	83	83	68	58	n.a.	79	–184
Chile	84	85	84	69	*	*	0
Colombia	91	91	76	66	*	87	–57
Costa Rica	119	115	106	98	*	80	–27
Cuba	65	120	138	68	n.a.	n.a.	21
Dominican Republic	166	164	117	97	n.a.	34	102
Ecuador	140	140	121	98	*	33	13
El Salvador	142	165	151	134	23	–11	–143
Guatemala	174	161	143	141	125	20	*
Mexico	115	115	110	92	n.a.	*	20
Panama	145	145	133	100	*	–101	48
Paraguay	95	95	88	82	*	86	–324
Peru	130	130	86	85	n.a.	–11	*
Uruguay	60	63	65	63	n.a.	*	*
Venezuela	155	155	116	94	*	98	–39

Note: * = Absolute change in the teenage fertility rate lower than 5.

Conclusions

This chapter examined the role of marriage patterns in the fertility transition in Latin America. The evidence from census data refutes the expectation that, in the region as a whole, the role of nuptiality has been meaningful. There are, of course, a few countries where nuptiality has been an important factor for TFR decline, as in the case of the Dominican Republic. There are also countries, such as El Salvador, where increases in marriage prevented important TFR declines. But the most compelling evidence comes from the cases of rapid fertility decline, i.e. from Costa Rica, Colombia, Cuba, and Mexico, where nuptiality made only modest, if any, contributions.

The former conclusion has to be qualified when one speaks about teenage fertility. Changes in the proportion of teenagers in union in the 1960s caused, indeed, important reductions in teenage fertility in eight Latin American countries.

Prior to the onset of fertility transition, a clear regional increase in the proportion married took place, some of it probably caused by a reduction in widowhood. This trend translated in TFR increases of some significance in three countries. Dyson and Murphy (1985) have used some of this evidence to document their 'ski jump effect', which, they suggest, might trigger fertility transition.

The lack of identifiable regional upward trends in the age at marriage is a striking result of this analysis. This result is in accord with findings from the WFS that explicitly pointed out that 'in the Americas there is only a modest trend towards later marriage' (WFS 1984: 14). Contrasting with this stability, celibacy clearly

has diminished and, starting in 1960, marital disruption has slightly increased in the region.

The findings of diminishing celibacy and no trend toward later marriage are against the expectation that demographic strains might produce 'preventive checks' in marriage patterns. The increasingly rapid demographic growth in the post-war years did not produce the multiphasic response in nuptiality postulated by Davis. These results are also contrary to the hypothesis that modernization brings about, more or less mechanically, delays in age at marriage in developing countries. Moreover, they suggest that nuptiality and fertility are influenced by quite different sets of factors.

Given that Latin America has undergone an important process of urbanization and modernization, the pattern of a more or less constant age at marriage suggests that the entry into unions depends more on cultural factors than on socio-economic change. This is somewhat puzzling given the wide socio-economic differentials in marriage patterns documented by the WFS and other studies in Latin America and elsewhere (Casterline *et al.* 1984). The combination of these differentials with a modernization process should produce an upward trend in age at marriage. The lack of such a trend in Latin America might indicate that the socio-economic differentials do not denote a causal relationship. It also suggests that within some socio-economic strata, age at marriage might have declined.

A final finding that should be pointed out is the upward trend in the prevalence of consensual unions. Since the relationship between type of union and fertility is complex and poorly understood (Merrick 1986), the demographic effect of this rise is hard to disentangle. What does seem clear is that a surge in illegitimate births is probably under way in Latin America.

Appendix 7.1: Formulae for Decomposing Fertility Changes

Assuming no out-of-union births, the following relation links fertility rates (f) with marital fertility rates (g) and the proportion in union (m):

$$f = m\,g \tag{1}$$

which results in the following first-order difference equation for changes from time 0 to 1:

$$\Delta f = g_0\,\Delta m + m_0\,\Delta g + \Delta m\,\Delta g \tag{2}$$

where the operator Δ represents changes over time

$$\Delta f = f_1 - f_2;\ \Delta m = m_1 - m_0;\ \Delta g = g_1 - g_0. \tag{3}$$

The three terms at the right hand side of equation (2) decompose fertility change into that resulting from nuptiality change alone, marital fertility change alone, and the joint contribution of both factors, respectively. The third term in the equation—the joint

effect—is usually small and it can be ignored without meaningful loss of precision. Under the assumption that the joint effect distributes evenly between the two sources of change, the following approximate relations estimate the proportional contributions of nuptiality (Cm) and marital fertility (Cg):

$$Cm = [g_0 \Delta m + (\Delta m \Delta g/2)] / \Delta f \tag{4}$$

and

$$Cg = [m_0 \Delta g + (\Delta m \Delta g/2)] / \Delta f \tag{5}$$

where

$$Cm + Cg = 1. \tag{6}$$

Substituting in equation (4) $g = fm$ and reordering:

$$C_m = 100 \frac{(\frac{f_0}{m_0} + \frac{f_1}{m_1}) \Delta m}{2 \Delta f}. \tag{7}$$

This relation is good for estimating the contribution of Δm in specific age-groups i. In order to break up changes in the TFR, which is the sum of the age-specific f_i, formula (8) becomes:

$$C_m = 100 \frac{\sum_i (\frac{f_{i0}}{m_{i0}} + \frac{f_{i1}}{m_{i1}}) \Delta m_i}{2 \sum_i \Delta f_i}, \tag{7}$$

where the subscript i represents age-groups and the subscripts 0 and 1 represent time.

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