Recent trends in Latin American fertility

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Abstract

After decomposing childbearing into the contributions of (1) entry into motherhood and (2) children that mothers have, we detect a new fertility pattern in the region: the age-30 proportion of mothers, which had changed little in the past, has dropped substantially in Latin America in the 1990s, suggesting that the social imperative of early motherhood, which has long prevailed in the region, is weakening. The analysis is based on cohort estimates from the four waves of Latin American censuses between 1970 and 2000. In addition, surveys conducted in 14 Latin American countries in 2006 show a strong link between childlessness and higher education across several cohorts. We discuss whether the recent increase in childlessness reflects a shift towards later childbearing or whether it may signal an emerging retreat from universal childbearing in the region. In turn, the data show that the decline of fertility of mothers continues, although slowly.

1. Introduction

Latin America is quickly approaching fertility replacement levels. Although the pace of fertility decline has been uneven across countries[1] (Guzmán et al. 1996), recent data show that more than half of the 20 Latin American countries had total fertility rates (TFR) close or below replacement levels by 2005 (Population Reference Bureau 2007). This group includes the four largest countries in the region: Brazil, Mexico, Colombia and Argentina, as well as five populations that have already crossed the replacement threshold (with TFR lower than 2.1): Uruguay, Chile, Costa Rica, Puerto Rico and Cuba. Fertility patterns and trends at these low levels may be strongly determined by women's behavior regarding entrance to maternity, that is, by first-birth-rate levels and age-schedules. If motherhood continues to be almost universal and at early ages, it seems unlikely that the region will eventually reach the very low fertility levels observed in several European and East Asian countries (Kohler, Billari and Ortega 2002). Conversely, if larger proportions of Latin Americans opt to have their first birth at older ages, or to remain childless, the region could reach very low fertility levels sooner than later.

Until now, a distinctive feature of the process of fertility decline in Latin America was that it took place without major changes in the onset of family formation, as indicated by fairly stable rates and ages at first union and first birth (Rosero-Bixby 1996, 2004, Mensch, Singh and

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[1] For example, Mexico and Brazil have experienced a rapid and sharp fertility transition over the last thirty years; Chile, Uruguay and Argentina already displayed a relatively low level of fertility in the 1970s and the reduction in fertility rates has been moderate thereafter. In Guatemala, Bolivia, Honduras, Paraguay and Nicaragua, fertility rates remain relatively high at present (United Nations 2007).

Casterline 2005). It seems, however, that Latin America has entered into a new stage of the fertility decline process in recent years. The proportion of women under 30 who have made the transition to motherhood has dropped significantly in most Latin American countries in the past decade. In Costa Rica, for instance, the estimated proportion of women who would be mothers by age 30, according to the rates of the study year, fell from above 80% to about 65% from 1995 to 2005. Drawing on the European experience, this article discusses whether this reduction in motherhood rates among young adults reflects a novel shift in the starting age of childbearing, an emerging retreat from universal childbearing, or a combination of both.

The study of childlessness among younger groups adds a complementary perspective to earlier research. Previous studies on childlessness in developing countries have been traditionally confined to the end of the reproductive span, that is, among women in the oldest reproductive age groups, usually over age 40. Under the assumption that the desire for children is practically universal in developing countries, childlessness has been typically attributed to involuntary infecundity. The comparison of data from the World Fertility Surveys and the Demographic and Health Surveys reveals that permanent childlessness has diminished in Latin America since the 1970s (United Nations 2004). Yet, the proportion of childless women aged 25 to 49 has recently increased in several countries of the region (Rutstein and Shah 2004), suggesting that childbearing is intentionally postponed (or foregone) by an increasing proportion of young adults.

This article documents the levels and trends of childlessness among young adult women in 16 Latin American countries between 1970 and 2000 with data from four waves of population censuses. It also identifies factors that are associated with childlessness using individual-level data from a 2006 series of surveys conducted in 14 Latin American countries. The article focuses primarily on *cohort* fertility, given that it has been shown that *period* indicators of fertility may be distorted by what Ryder called "demographic translation" effects (Ryder 1964), also known as *tempo* effects in more recent literature (Bongaarts and Feeney 1998). For example, while *period* total fertility rates are as low as 1.2 and 1.3 in several European countries, the lowest estimates of complete *cohort* fertility in those countries are in the order of 1.5 to 1.7 births among cohorts born circa 1970 (Sardon 2006). The persistent postponement of births biases downwards the estimates of period fertility rates, because there can be a recuperation of fertility at older ages. However, it is well documented that, in general, "later means fewer" children (Rindfuss and Bumpass 1976) or even none.

1.1. The Latin American demographic context

Considering the far-reaching economic, social and political transformations that Latin America experienced in the second half of the 20th century, it remains somewhat of a puzzle that demographic indicators of family formation, such as age at first union and age at first birth, have shown, until very recently, so little change (Heaton, Forste and Otterstrom 2002). During these past decades, major structural transformations affected the organization of society, particularly the expansion of mass education, rapid urbanization and internal rural to urban migration, as well as the transition to democratic governments in the political domain. Women's education and employment levels, which are well known to influence family formation, also increased rapidly during this period. The participation of women in the labor force, for instance, increased from around 20% in the 1950s to over 50% in the 1990s, albeit with large differences according to country, area of residence, age and educational level (ECLAC 2007). The increase was particularly sharp after the debt crisis that affected the region in the 1980s and the subsequent economic restructuring of the 1990s. The deterioration of the economy, increasing unemployment and precarious attachment to the labour force rendered the traditional male breadwinner family model unsustainable (Jelin and Diaz-Muñoz 2003). Yet, early life course transitions, such as the transition to first union and motherhood, changed remarkably little (Fussell 2005).

Fertility in the Latin American region as a whole declined from 5.9 births per woman in 1950-1955 to 2.5 in 2000-2005 (United Nations 2007). However, as mentioned above, this rapid and sustained process of fertility decline was not accompanied by a gradual delay in the onset of childbearing, as has been the norm in European countries (Sobotska 2004). In the early 1990s, relatively low fertility coexisted with traditional patterns of family formation –early nuptiality and young motherhood– in many Latin American countries. Fussell and Palloni (2004) argue that the explanation for this distinct Latin American pattern[2] lies in the strong cultural emphasis on family ties. According to these authors, the value placed on family networks, which represent the primary safety net guarding against economic and social instability, would explain the persistence of nearly universal and early family formation in spite of major changes in the economic, political and social spheres.

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[2] Fertility patterns in Eastern Europe also reflect the atypical coexistence of very low fertility and early transition to childbearing, but an upward trend towards later motherhood has recently started (Council of Europe 2005).

Traditional patterns, however, are not unchangeable, and it is reasonable to expect that behavior regarding motherhood will eventually change in the face of modernizing forces, such as women's education and salaried work, particularly when the average desired family size has declined to about two children in most Latin American countries (Westoff and Bankole 2002). Younger cohorts, particularly if they have had access to higher education, are likely to reach adulthood with different aspirations regarding marriage and family, work life, economic self-sufficiency and lifestyle than their mothers and grandmothers, as has occurred in Western societies (Crimmins, Easterlin and Saito 1991). Delaying childbearing could be a suitable strategy to pursue higher education, to establish themselves in the labour market, to build their couple relationship before child-rearing, and also to deal with unstable life conditions or uncertainty in the economic context (Adsera and Menéndez 2006).

2. Data and methods

Drawing on the classic study of the decline of fertility in Europe that decomposed childbearing into marriage and marital fertility indexes (Coale and Watkins 1986), the starting point in this article is the following identity that decomposes total fertility F into two different processes: (1) the proportion of women who became mothers or motherhood rate *M*, and (2) the fertility of mothers or *G* rate, which is simply the additional number of children that mothers have:

$$F = M \, (G + 1)$$

Our trend analysis is based on *cohort* estimates of *F* and *M* from the four waves of censuses conducted in 16 Latin American countries since 1970. The *G* rate is derived from the above identity. We focus on *M* at ages 25-29, which the data shows represents 87% (5% SD) of complete *M* in Latin America (cohorts in these data reach complete *M* by age 40). And we focus on *G* in the age bracket 30-34, which includes 80% (5% SD) of complete *G* in each cohort. In some analyses, we estimate complete *M* and *G* for cohorts born in the 1970s from the quasi-complete figures at ages 25-29 and 30-34, respectively, using relations derived from the data. The census data were taken from several sources, including the UN Demographic Yearbook, as well as online census data on the web from the IPUMS project (Minnesota Population Center 2008), the University of Costa Rica (CCP 2008), and the census offices in Colombia, Brazil, Chile, Mexico, Nicaragua and Honduras.

This decomposition of fertility in *M* and *G* was used in an earlier study of the prospects of below-replacement fertility in fifteen metropolitan areas of Latin America (Rosero-Bixby 2004).

For comparison purposes, we also use the most recent estimates of cohort *M* and *G* for 22 European countries, which correspond to the cohorts born circa 1970. The lowest estimates of cohort total fertility in this group of European countries are in the order of 1.5 to 1.7 births. The estimates come from the European Demographic Observatory (Sardon 2006) and the countries are: Austria, Bulgaria, Croatia, Czech Republic, Denmark, England and Wales, Finland, Greece, Hungary, Ireland, Latvia, Netherlands, Norway, Poland, Portugal, Romania, Russia, Serbia, Slovakia, Slovenia, Spain and Sweden (countries with no available estimates for 1970s cohorts were not considered). In addition, we use published cohort estimates of completed-*M* and *M* at age 27 for five cohorts in 23 developed countries (Frejka and Sardon 2007) to identify an intra-cohort relationship between these two figures, that we use to estimate a scenario of completed-*M* in the 1970s birth cohorts in Latin America.

In order to examine in more detail recent trends in motherhood rates, we use vital statistics data on first births in Chile and Costa Rica in the period 1980-2006. These are the only countries in the region with accessible and reliable series of numbers of births by birth-order. We estimate the time series of *period-M* at age 30 (sum of age specific first-birth rates) as well as the *period* median age at motherhood (i.e. when 50% of women reach motherhood) in these two countries.

In complementary analyses of factors associated to childlessness, we use micro-data from surveys conducted in 14 Latin American countries in 2006, as part of the Latin American Public Opinion Project (LAPOP 2008) of the "Americas Barometer" of the Vanderbilt University[3]. These are national representative surveys of adult women and men aged 18 and over, with a sample size of around 1,500 in each country. These surveys target political themes such as voting participation, tolerance, and support of democracy, citizens' rights, and the like. However, by including questions on the number of children and socioeconomic status, these surveys offer a rare opportunity for comparing the co-factors of the prevalence of childlessness in several cohorts and across 14 Latin American countries. Using logistic regression, this article estimates cross-sectional effects on the probability of being childless, contrasting results across three age or cohort groups (women aged 20-29, 30-39 and 40-49 in 2006). The covariates included in the model are: urban residence, educational level, occupation, household wealth (a 0 to 1 scale built by counting up to 11 household assets), religion and religiosity, trust in neighbors (an indicator of social capital measured with a 0 to 1 scale), satisfaction with life (an indicator of self-

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[3] The countries are Mexico, Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica, Panama, Colombia, Ecuador, Bolivia, Peru, Paraguay, Chile, and the Dominican Republic.

perceived wellbeing measured with a 0 to 1 scale), and sources of news, since some authors postulate an important role of television (*telenovelas*, in particular) for the diffusion of modern lifestyles and family values in Latin America (Potter, Schmertmann and Cavenaghi 2002). Age and marital status are included as controls, and interactions between age and several covariates are also explored.

3. Results

Figure 1 (part B) shows the remarkable drop in the *G* rate or fertility of mothers from cohorts that were aged 30 to 34 in the 1970 wave of censuses (born around 1940) to analogous cohorts in the 2000 censuses and thus born around 1970. At these ages, about 80% of the final *G* fertility of the cohort is usually completed in Latin America. The oldest cohorts were at their peak reproductive ages in the 1960s, and the youngest cohorts in the 1990s. Most countries went from a *G* rate of four or five children to a rate of around two children in these 30 years. The exceptions are, on the one hand, Argentina and Uruguay that already had a *G* rate of about two births in 1970, which has changed little since then, and, on the other hand, Honduras and Guatemala, the only ones with *G*-rates higher than three births in 2000.

[Figure 1 about here]

Trends are different in the proportion *M* of motherhood at the 25-29 age bracket (Figure 1, part A), when close to 90% of the final cohort-*M* is usually completed in Latin America. First, there is no clear pattern of change from 1970 to 1990. In some countries, such as Chile and Peru, there are falls of about 10 percentage points in *M*, whereas in most countries, including the four regional giants, Brazil, Mexico, Argentina and Colombia, the *M* change from 1970 to 1990 is only about two percentage points in any direction. In contrast, between the last two waves of censuses, from 1990 to 2000, there is a clear drop in *M* in almost all countries. With the exceptions of the Dominican Republic and Paraguay, the *M* proportion reached its historic low in the 2000 wave of censuses.

Period indicators of *M* can show trends in a sharper way. Figure 2 shows the evolution over time in the *period-M* at age 30 and the *period* median age of entry into motherhood in Chile and Costa Rica, the only Latin American countries with long enough series readily available. Three points come out from Figure 2: (1) there are no clear trends before 1990; (2) starting in about 1990, there is a clear increase of almost three years in the median age at first birth over a period of about 10 years; and (3) there is a sharp drop of almost 20 percentage points in *M* in the decade of

1990. The *M* proportion of mothers is below 65% at the end of the series. Considering that in the past no more than 10% of women entered motherhood after age 30, this might imply that as many as one in four women could end her reproductive life childless. This is, however, a naïve interpretation of a *period-M* that may be down-biased by the shift in *tempo* of first birth. It is plausible that women will enter motherhood after age 30 in significantly higher proportions than in the past, if recent changes are driven mostly by a temporal postponement of the first birth.

[Figure 2 about here]

Going back to the census-based cohort estimates of *G* and *M*, in order to include younger cohorts (born in the 1970s) in trend analyses, we completed the final ten years of the *G* rate for cohorts born around 1970 (observed until about age 32), as well as the final ten years of the *M* proportion for women born around 1975 and observed until about age 27 in the 2000 wave of censuses. To complete the cohort *G* rate, we estimated a simple regression model with *G* in the same cohort 10 years earlier as the predictor variable, using fixed effects estimates in the panel of 16 Latin American countries. The resulting equation for a cohort *c* was (standard errors in parentheses):

$$G_{40-44}^{c} = 0.335 + 1.145 \times G_{30-34}^{c}$$

$$(0.20) \qquad (0.07) \qquad\qquad R^2 = 0.92$$

To complete *M* we followed the same procedure as Frejka and Sardon (2007) and assumed that the rate in the coming ten years would be the same as in the previous ten-year period in the same country and ages. However, this assumption corresponds to a traditional scenario of very low proportions of women starting childbearing in their thirties, which used to be the pattern until recently. It is quite plausible that women in younger cohorts who did not started childbearing in their twenties will do it in their thirties, which will result in substantially higher rates of late transition to motherhood, as in Europe. We thus assumed, as an alternative scenario, that young Latin American cohorts will behave as the European counterparts and we completed the M proportion with a relationship derived from the panel data for 23 countries and five cohorts in the Frejka and Sardon (2007) article, tables 1 and 3. The resulting European equation, estimated with a fixed effect regression model in the logits, for a cohort *c* was[4]:

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[4] Since the R-squared of 0.55 in the prediction equation is less than optimal for forecasting purposes, we consider this as just an alternative scenario.

$$\text{logit}(M^c_{final}) = -0.426 + 3.953 \times M^c_{27}$$

$$(0.69) \qquad (0.97) \qquad\qquad R^2 = 0.55$$

Figure 3 shows the box plots[5] for complete *G* and *M* in the 16 Latin American countries and in each of the four census waves, plus our prediction for the wave of 2010 (two scenarios for *M*). These are cohort estimates of quasi-complete *G* and *M*, which will be observed in the census wave of 2010 for the 1970 cohorts. The figure also includes boxes of *G* and *M* for 22 European countries with available estimates for cohorts born around 1970. It also shows the *M* box in the hypothetical scenario that the 1975 cohort would complete *M* with high rates of late motherhood, like in Europe. Overall, this figure confirms the precipitous fall in *G* from cohorts born around 1930 (median of 5.7 births) to those born around 1960 (median of 2.6 births). The fall has somehow stalled for the cohorts born about 1970 (median 2.3 births), well above the European median of about one birth per mother in the 1970 cohorts.

[Figure 3 about here]

For the complete *M* proportion –the main focus in this article–, there is no clear trend when one moves from the 1935 cohorts to the 1965 cohorts. The median *M* hovers above 90% motherhood, although in the 1965 cohorts there are signs that a decline has started. In contrast, the cohorts born by 1975 seem to be heading towards lower *M* (median of 86%), close to the *M* level in the European cohorts of 1970 (median of 83%). However, as indicated by the dashed box in the figure, if the 1975 cohorts have been just delaying the onset of childbearing and will have their first birth in their thirties, as in Europe, complete-*M* (median of 91%) will change little and will stay above 90% median value. In this scenario, the only change will thus be in the age at first birth. Reality may follow a path between these two scenarios, with a median *M* between 86% and 91%. Colombia is an extreme case with large differences between the two scenarios. Only 70% of women aged 25-29 were mothers in the 2005 census (our 1975 birth cohort), compared to 82% of the 1965 cohort in the 1993 census. Our estimates of the completed *M* for the 1975 cohort range from 77% –if we assume the continuation of the 1965 cohort first-birth rates– to 90% –if we assume the adoption of first-birth patterns similar to Europe–.

To what extent are *M* and *G* related to each other? Is fertility of second and higher order births influenced by the rate of entrance into motherhood? Lower *M* usually means later age at first

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[5] The line in the middle of the box indicates the median value of the distribution; the extremes of the box indicate the 25 and 75 percentiles.

birth and a reduced exposure-time for having second and higher order births. This exposure effect would be strong in a natural fertility setting. But even under perfectly controlled fertility conditions, later may mean fewer births, particularly for the tail of the age-distribution of women who start childbearing by age 40. However, if a lower M comes from a retreat from reproduction by large numbers of couples, further fertility of those who choose to have children may or may not be lower than in the previous situation in which women with low fertility desires were part of the pool of mothers. If there is a general reduction in fertility preferences, a reduced M will go hand-in-hand with a reduced G. If in some societies, however, there is a divide between couples who opt out of parenthood and couples more oriented towards family and children, one will not observe an association between G and M or the association may even be inverse.

Figure 4 shows the cross-sectional associations between the national levels of M and G in five successive Latin American cohorts and a recent European cohort. It is clear from the figure that the association between these two fertility components has changed over time. If one excludes the outliers Argentina and Uruguay from cohorts born in the 1930s and 1940s, there is almost no association between G and M in these cohorts. A positive and clear association takes shape in more recent generations of women, particularly in the 1950s and 1960s cohorts. However, the association weakens in the 1970s cohorts[6]. Moreover, an inverse relationship can be observed in the 1970s European cohorts: in societies with lower proportion of women who are mothers, fertility of mothers tends to be higher. This inverse association seems peculiar at first. However, it may simply mean that when M falls below a certain threshold, those women with lower fertility preferences are removed from the pool of mothers, that is, women who would have one child at most may be the ones who opt out of motherhood, leaving a self-selected group of women with higher fertility preferences in the pool of mothers, which, consequently, results in a higher G-rate.

[Figure 4 about here]

What factors increase the likelihood of being childless (even if only temporarily) among young adults? Are these factors acting differently than in earlier cohorts? Table 1 shows the results of a multivariate analysis on the probability of being childless in the 9,000 respondents of the LAPOP surveys of the Americas Barometer 2006. We present separate models for all women aged 20-49

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[6] The scatter graph for the 1970 cohort M that was predicted with the European relationship differs little from the one shown in Figure 4. The correlation coefficient is 0.70, compared to 0.66 in Figure 4.

and for each of the ten-year age brackets, that is, for ten-year cohorts with central birth years at 1980, 1970 and 1960. All models include controls for age and country.

[Table 1 about here]

As expected, there is a clear and positive effect of education on childlessness (Castro Martin and Juarez 1995). College-educated women have about four times higher odds of being childless compared to women with no education or incomplete elementary school. This effect does not differ much in young and old cohorts. Working women, in turn, have twice higher odds of childlessness than housewives, but this effect is present and significant only in younger cohorts. However, the direction of causality in this relationship cannot be determined from the available data; i.e. we cannot tell whether women are childless because they are in the labor force or whether they are more likely to be in the labor force because they are childless. Women who get the news mostly from newspapers are more likely to be childless, whereas the opposite occurs among women who get the news mostly from TV. The model does not show clear effects on childlessness from residing in urban or metropolitan areas, once we control for education, or from the indicators of social capital in the community (measured by the trust scale). Contrary to the popular view that religious affiliation and church attendance have a strong influence on women's fertility behavior in Latin America, our data show no effect of these factors on childlessness.

The effects on childlessness of the scales of wealth and satisfaction-with-life deserve a closer look. The odds ratios show that the direction of these effects reversed in younger cohorts. This change of direction is statistically significant as shown by the interaction effects included in the all-ages model. The change consists of wealthier or more satisfied-with-life women being less likely to be childless in older cohorts and more likely to be childless in younger cohorts. Among younger women, going from zero to one on the wealth scale increases almost three-times the odds of being childless, whereas among older cohorts it reduces the odds to about one-third. Regarding satisfaction with life, going from zero to one on the scale more than doubles the odds of being childless among younger women and reduces the odds by 30% in older women. If these were truly *cohort* effects, as opposed to *age* effects, they would stand for a dramatic generational change: childlessness now seems linked to happiness and wealth, contrary to what occurred only a generation ago in which childless women reported being less happy and less wealthy. Nevertheless, we should interpret these cross-sectional relationships with caution, because of possible reverse causality and the confounding effects of age and cohort.

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Figure 5 re-examines the robust effect of education on the motherhood proportion *M* among women aged 25-29 with the two most recent censuses data in nine Latin American countries. The educational gap in *M* is large and persistent over time. Having a college education seems particularly important for two reasons: (1) the *M* gap for college is larger than for lower educational levels, and (2) college-educated women are the only group with a clear reduction in *M* over time in the nine countries. In Costa Rica, for example, only 43% of women aged 25-29 who attended college are mothers in the 2000 census, compared to 76% and 84% of women with high-school and primary education respectively. Moreover, in this country, the proportion of mothers among college-educated women fell 15 percentage points from the 1984 to the 2000 census, whereas the *M* proportion remained fairly stable in the other two educational groups. Among college-educated women, *M* dropped 14 percentage points in Panama, 11 points in Mexico, 9 points in Colombia, 7 points in Argentina and Brazil, 5 points in Nicaragua, and 1 point in Venezuela.

[Figure 5 about here]

Therefore, the fall in the *M* proportion among women with college education seems to be a key factor in understanding the emerging retreat from childbearing in Latin America observed in recent years. Another key factor in understanding this trend is the growing numbers of women receiving a college education. In the age bracket 25-29, the percentage of women who attended college increased in the last two censuses by 18 points in Chile, 15 points in Colombia, 10 points in Venezuela, 8 points in Argentina, Costa Rica and Nicaragua, although only 1-3 points in Panama, Brazil and Mexico (Table 2). In the 2000 wave of censuses, college-educated women in this age bracket range from low levels of 11% in Brazil and 14% in Mexico and Nicaragua to a high 32% in Argentina and Chile, and 27% in Colombia and Venezuela.

[Table 2 about here]

In a quick exercise to estimate the impact of the changing educational composition on *M*, we computed, for the nine countries in Figure 5, a hypothetical *M* for the 2000 census wave assuming that the educational composition was that of the 1990 census wave. The result of this exercise is presented in Table 2 and suggests that educational improvement might be responsible for all of the observed national change in *M* in Argentina, Brazil, Chile, and Venezuela and for about half of the *M* change in Colombia, Costa Rica, Mexico and Nicaragua. In other words, about half the decline in *M* in these four countries (and 80% in Panama) comes from *M* reductions within educational groups, mostly among women with a college education, meaning

that factors other than the improvement in women's education should also be considered to fully understand the recent decline in *M*.

If the recent enhancement in women's education explains a great portion of the recent drop in the motherhood proportion, why then did past educational improvements not produce a similar result? The answer might be that educational improvements in the past occurred mostly at the primary and secondary levels and, as Figure 5 suggests, in most countries there are only small differences in *M* at these lower educational levels. It is college education that seems to make a difference in the timing and level of transition to motherhood.

4. Discussion

This article documents the growing proportion of Latin American women in their twenties and early thirties who have not made the transition to motherhood. This emerging trend certainly means a shift in the region toward a later onset of childbearing but it could also mean that some are even giving up having children. Until recently, one of the singular demographic features of the region was that rapid and sustained fertility decline occurred without a concomitant change in the timing of union formation or in the onset of childbearing. Early and almost universal childbearing persisted in spite of radical changes in the demographic, economic, social and political spheres. There is, however, recent evidence that young cohorts are departing from this traditional pattern, and that Latin American women are waiting longer to become mothers. Although age at first birth had remained fairly stable since the 1970s, the data presented from the 2000 wave of censuses reveals that the proportion of women aged 25 to 29 who are still childless increased in almost all the countries analyzed. Data from vital statistics for Chile and Costa Rica also corroborate this new trend towards later motherhood.

The emerging trend in childbearing postponement raises the question about whether it will lead to an increase in permanent childlessness –voluntarily chosen or because of age-related infecundity– in the region, as has been the case in European countries countries (González and Jurado-Guerrero 2006, Tanturri and Mencarini 2008). Our estimates of the proportion of women born in 1975 who will eventually become mothers are not conclusive: an important drop could take place if these women follow the traditional pattern of low rates of transition to motherhood beyond age 30, but no significant drop would take place if there is a recovery with high rates of transition to motherhood among women in their thirties, as in many European countries. Nevertheless, the increase in childlessness in the customarily prime ages of reproduction (25 to

29), even if transitory, deserves attention. It signals an important change in societies where the social imperative of motherhood has been traditionally strong and where women who wished to postpone their first birth or remain childless were commonly stigmatized as selfish. Latin American cultural constructions of femininity have been strongly influenced by women's symbolic and social roles as mothers (Jelin 1990). Nowadays, motherhood continues to play a central role in women's lives, but there has been an expansion of women's non-familial identities and roles, possibly rendering the deferment of childbearing an acceptable option.

Beyond the normative context, economic constraints and competing opportunities are also likely to play a major role in shaping decisions and behaviors regarding childbearing. In the face of enhanced female labor market prospects, increased economic insecurity, or rising conjugal instability, delayed childbearing might become an increasingly common strategy for facing uncertainty, as has occurred in Europe (Billari, Liefbroer and Philipov 2006). The impact of economic instability on family formation, as well as variations in the perception, tolerance and reactions to economic insecurity across educational strata and social contexts, deserve further attention (Bernardi, Klärner and Lippe 2007).

It is not evident whether these changes should be interpreted under the lens of the second demographic transition (van de Kaa 1987). The validity of that framework to explain recent family changes in Latin America is at the centre of contemporary debates (Quilodrán 1999, García and Rojas 2001). Divergent views persist on whether to interpret recent family dynamics as an outcome of diffusion processes of new cultural patterns or as a reflection of the lack of social cohesion within excluded sectors (Arriagada 2002). Some demographic features of Latin American societies, such as the high prevalence of consensual unions or frequent union disruption, can be linked both to modernity and to exclusion, to tradition and to innovation, depending on the social group we focus on (Castro Martin 2002). The delayed onset of childbearing, however, can be unequivocally labelled as innovative behaviour. Furthermore, our education-specific trend analysis has shown that it is precisely the highly educated strata who have taken the lead in this behavioural change. In fact, a great deal of the overall increase in childlessness among young adults is due to the upgraded educational composition of the population. We argue that major educational improvements in the past did not have a comparable impact on the timing of motherhood because they were focused on the universalization of primary education. In contrast, the more recent expansion of secondary education and particularly of college education is becoming a powerful force in restructuring the transition to adulthood and, consequently, the process of family formation (Grant and Furstenberg 2007). In some countries, nonetheless, there is more to delayed fertility than a shift in the educational

distribution of the population. In Nicaragua, Mexico, Costa Rica, Colombia, and Panama, for instance, we have documented significant changes in the proportion of mothers within educational strata or, more precisely, within the college-educated group.

The multivariate analysis of a recent survey across 14 Latin American countries also reveals that high educational attainment is the most influential factor predicting childlessness among women of all ages. Hence, although our data do not allow us to link the recent increase in childlessness at young adulthood to "post-materialist" values (Lesthaeghe and Moors 1995, van de Kaa 2001), such as the search for individual autonomy or gender equality, the fact that highly educated women are the main protagonists of the observed trend points towards a change in values and competing life priorities that discourage early childbearing.

It is not certain whether a delayed childbearing pattern will spread across the entire population. Latin America continues to display some of the highest levels of inequality in the world (Portes and Hoffman 2003) and the social processes that bring about family change in different social strata remain quite heterogeneous. Furthermore, the large socioeconomic divide that characterizes many Latin American societies may act as an insurmountable barrier against the diffusion of social values regarding family, parenthood and the optimal calendar for adulthood transitions. Yet, it seems clear that the social imperative of early motherhood that prevailed during most of the twentieth century has started to weaken and that we are witnessing an increasing de-standardization of the life course.

There are multiple areas in which this research could be expanded in the future. One logical extension is to test cohort differentials regarding the timing and the determinants of the transition to motherhood within a life course framework, using retrospective birth histories from survey data. The problem is that, since childbearing postponement is an emerging trend, it might be visible only in recent data, and not many Latin American countries have conducted demographic surveys in recent years. An additional direction for analysis would be to examine the prevalence and correlates of childlessness among men, since socio-cultural expectations and competing opportunities shaping attitudes, decisions and fertility behavior are fundamentally gendered.

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Figure 1. *M* proportion and *G* rate in Latin American countries over four census waves
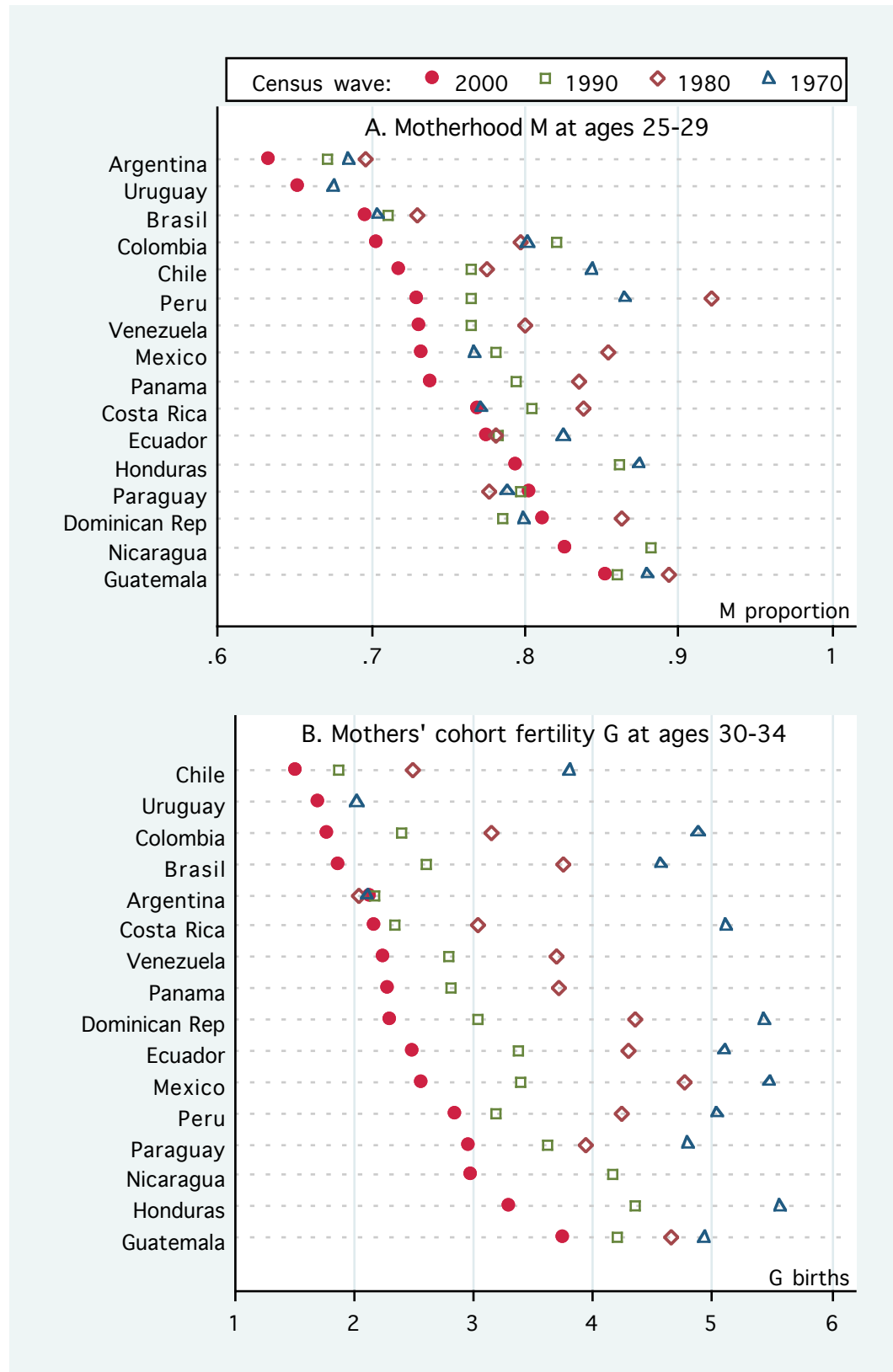
Figure 2. Trend in motherhood proportion at age 30 and median age at motherhood. Period rates in Costa Rica and Chile
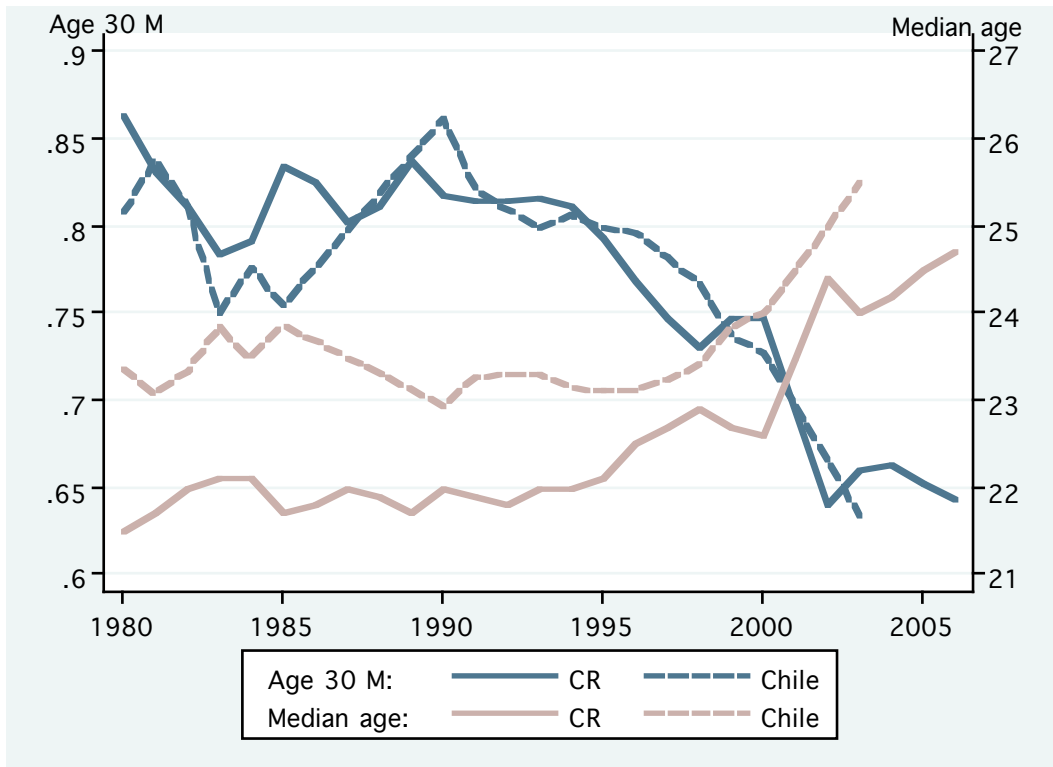
Figure 3. Trend in the approximately final *G* and *M* in five cohorts of 16 Latin American countries and in the 1970 cohort of 22 European countries.
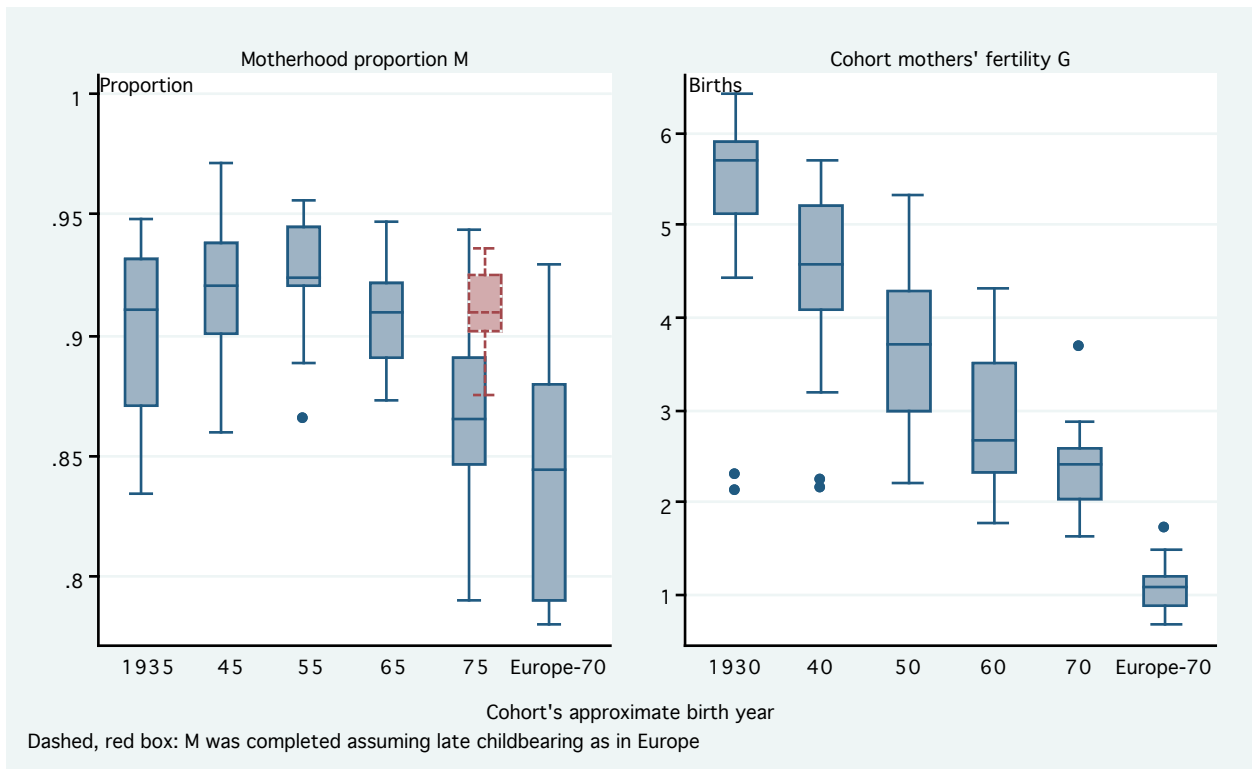
Figure 4. Cross-sectional relationships between *G* and *M*. Latin American (LA) countries cohorts 1930-1970 and Europe cohort 1970

Note: the two outliers in 1930 are Argentina and Uruguay; the outlier in 1940 is Argentina.
R is the correlation coefficient (excluding the outliers)

Figure 5. Motherhood proportion *M* at age 25-29 by education in the two most recent censuses, selected countries

Table 1. Logistic regressions on the probability of being childless. LAPOP-2006 surveys, in 14 Latin American countries

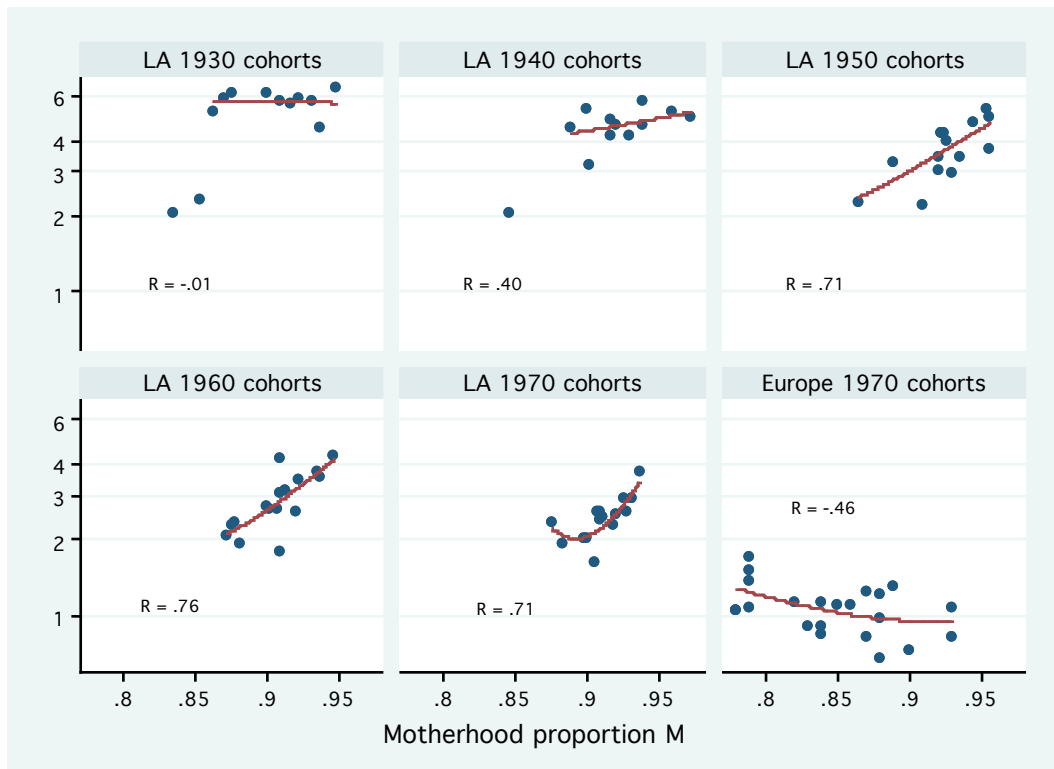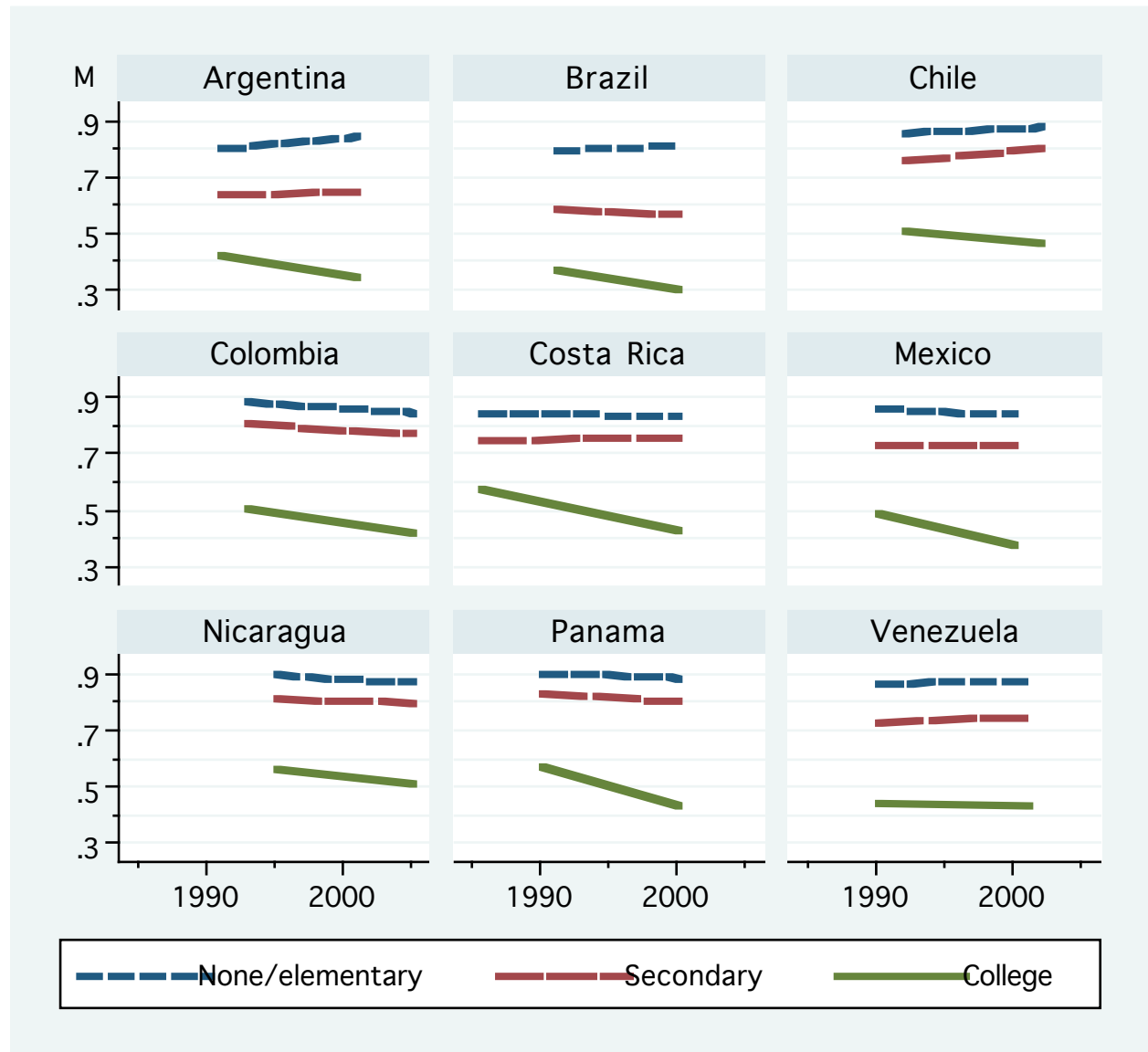| Explanatory variables	Total		Age 20-29		Age 30-39		Age 40-49	
	Odds Ratio	P>|z|	Odds Ratio	P>|z|	Odds Ratio	P>|z|	Odds Ratio	P>|z|
(N)	(8,925)		(3,717)		(2,802)		(2,406)	
Marital status								
With no couple	1	Ref.	1.00	Ref.	1	Ref.	1	Ref.
Common law union	0.09	0.00	0.08	0.00	0.10	0.00	0.16	0.00
Married	0.07	0.00	0.09	0.00	0.05	0.00	0.11	0.00
Place of residence								
Metropolitan	0.89	0.29	0.77	0.07	1.15	0.58	1.22	0.50
Other Urban	0.80	0.07	0.77	0.09	1.13	0.66	0.59	0.16
Rural	1	Ref.	1.00	Ref.	1	Ref.	1	Ref.
Education								
Incomplete elementary	1	Ref.	1.00	Ref.	1	Ref.	1	Ref.
Completed elementary	1.44	0.04	1.24	0.36	1.66	0.17	1.82	0.12
High school	1.70	0.00	1.70	0.01	1.58	0.15	1.78	0.10
College	3.72	0.00	4.06	0.00	3.61	0.00	5.19	0.00
Occupation								
Housewife	1	Ref.	1.00	Ref.	1	Ref.	1	Ref.
White-collar / student	2.03	0.00	2.69	0.00	1.26	0.32	0.94	0.83
Blue-collar	1.48	0.00	1.71	0.00	1.11	0.63	1.37	0.21
Religion								
Catholic	1	Ref.	1.00	Ref.	1	Ref.	1	Ref.
No Catholic	1.08	0.45	1.21	0.13	0.74	0.20	1.17	0.55
No religion	1.03	0.83	1.26	0.25	0.79	0.51	0.55	0.34
Church attendance								
Weekly vs. less than weekly	1.09	0.30	1.11	0.33	0.82	0.28	1.28	0.27
Trust scale (0 - 1)	1.08	0.55	1.07	0.70	0.84	0.53	1.25	0.54
TV informed scale (0 - 1)	0.62	0.00	0.54	0.00	0.66	0.18	0.77	0.48
Paper informed scale (0 - 1)	1.42	0.01	1.37	0.06	1.47	0.16	1.43	0.29
Satisfied with life scale (0 - 1)	2.26	0.00	2.23	0.00	1.63	0.17	0.71	0.44
Wealth scale (0 - 1)	2.85	0.00	2.97	0.00	4.33	0.00	0.31	0.05
Age groups and interactions								
20-29	1	Ref.						
30-39	1.22	0.62						
40-49	9.43	0.00						
Life satisfaction and								
Age 30-39	0.58	0.17						
Age 40-49	0.35	0.02						
Wealth and								
Age 30-39	1.23	0.61						
Age 40-49	0.24	0.00						

All regressions included controls for age (continuous) and country (13 dummy variables).
Source: LAPOP surveys project data online at http://encuestas.ccp.ucr.ac.cr/Lapop.html

Table 2. Educational composition and *M* proportion in women aged 25-29 in the two most recent censuses

Country year	Educational composition of women				*M* proportion			
	None / elementary	High school	College	Total	None / elementary	High school	College	Total
Argentina								
1991	50	25	25	100	.81	.65	.43	.67
2001	38	30	32	100	.85	.65	.36	.63
Percent *M*-change explained by education								**100**
Brazil								
1991	67	23	10	100	.80	.59	.38	.71
2000	60	29	11	100	.82	.58	.31	.69
Percent *M*-change explained by education								**100**
Chile								
1992	37	48	15	100	0.86	0.77	0.51	0.76
2002	23	45	32	100	0.88	0.81	0.47	0.72
Percent *M*-change explained by education								**100**
Colombia								
1993	56	32	12	100	.89	.81	.51	.82
2005	26	47	27	100	.85	.78	.43	.70
Percent *M*-change explained by education								**63**
Costa Rica								
1984	52	34	14	100	.85	.76	.58	.78
2000	48	31	21	100	.84	.76	.43	.73
Percent *M*-change explained by education								**51**
Mexico								
1990	56	32	12	100	.87	.74	.50	.78
2000	39	47	14	100	.85	.74	.39	.73
Percent *M*-change explained by education								**51**
Nicaragua								
1995	58	35	7	100	.90	.82	.57	.85
2005	52	34	14	100	.88	.81	.52	.80
Percent *M*-change explained by education								**50**
Panama								
1990	32	46	21	100	0.91	0.84	0.58	0.81
2000	31	45	24	100	0.89	0.81	0.44	0.75
Percent *M*-change explained by education								**19**
Venezuela								
1990	54	29	17	100	0.88	0.74	0.45	0.76
2001	46	27	27	100	0.88	0.76	0.44	0.73
Percent *M*-change explained by education								**100**