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Trends in age at first union and first child in Latin America: Stability across more educated cohorts

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Abstract

In this article we document trends in age at first sexual inter-course, first conjugal union and first child for cohorts of women born in 12 Latin American countries between 1940 and 1980. We examine the relationship between years of schooling and age at first sex, first union and first child to shed light on the following paradox: if years of schooling delay union formation and childbearing, why more educated cohorts do not form unions and have children at later ages compared to less educated ones? Logistic regression results show that the expected delays in first sexual inter-course, union formation and childbearing due to educational expansion have been offset by changes in behavior within educational groups over time. At each educational level women born in the 1980s have been forming unions and having children earlier than women with analogous years of schooling born 40 years before. These results question the automatic impact of education and stress the importance of the social and cultural context in which educational expansion is taking place. This paper shows that the relative position of women in the education system is more important than the absolute number of years of accumulated schooling. The number of desired children has remained stable over this period, with no significant differences according to education level; contraception use, even at young ages, has grown in this period.

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INTRODUCTION

Latin America has gone through major family transformations in recent decades. Total fertility rates have decreased throughout the region. In 1970, fertility rates were above 3 children per woman in all Latin America countries (from Mexico to Argentina) with the only exception of Uruguay. By 2010, all countries but Bolivia, Guatemala, Haiti, were below that level and a growing minority of them had already reached the 2.1 replacement level (e.g. Brazil, Chile, Costa Rica, Cuba, El Salvador and Uruguay) (CELADE, 2013). As a result, the average household size has decreased, from nearly 4.6 to 3.8 persons per household in countries like Ecuador, Peru and El Salvador. Marriage has undergone an intense process of deinstitutionalization, mainly due to the rapid increase in unmarried cohabitation (Esteve, Lesthaegue & García, 2013), which has boomed across all social groups and regions of Latin America. As a consequence, the percent of children born out wedlock has spiked, from 17% to 39% between 1970 and 2000 (Castro et al, 2011).

Such family transformations have occurred in years of great economic, social and political change. Economically, Latin America went over periods of severe economic difficulties and more recent periods of economic expansion. Female activity rates have increased from 38.1% to 52.5% between 1990 and 2010 (CELADE, 2013) and education has expanded considerably. School attendance rates at Primary level are technically universal in all countries and the average number of years of schooling has grown an average of 4,5 years between women older than 20 years old, born in the 1940s and those born in1980.

Despite these transformations, women's age at first union and first child has remained quite stable across cohorts and over time (Fussel & Palloni, 2004; Esteve, López & Spijker, 2013; Castro & Juárez, 1995; Heaton, Forste & Otterstrom, 2002; Rodríguez, 2008). This has been a puzzling characteristic of Latin American family systems that has set this region apart from other areas of the world where the surge of non-conformist family forms (e.g. low fertility, high cohabitation, more children out of wedlock, high union stability) has occurred in parallel with delays in union formation and childbearing[3].

This stability paradox has been already the basis of important work. In 2004, Fussell and Palloni attributed the persistence of early and nearly universal family formation in Latin America to the value placed in family networks in a context economic turmoil. Consistent with this argument, Esteve, Lestheague & García (2012) found out that despite recent increases in non-marital cohabitation and single motherhood, more than 40% of cohabiting couples and about 60% of single mothers were co-residing with at least one parent/parent in law, a percent that had not decreased among recent cohorts. All in all, these results underline the importance of family support to young people and single mothers.

On the specific relationship between education attainment and union formation and childbearing, Castro & Juárez (1995) explored the relationship between women's education and childbearing using Demographic and Health Survey Data from 26 developing countries, including 10 from Latin America. Fertility differentials by education were present in all

[3] Precisely, it has been the lack of postponement that has led some authors to question the Latin America's fit to the Second Demographic Transition.

countries, but the effect varied across Latin America. They compared DHS data with World Fertility Data (produced on average 10 years before) to examine if the cross-sectional gradient between education and fertility was consistent with the time trend. They found that fertility behavior within analogous educational groups had changed during the inter-survey period to the extent of offsetting the expected delays in childbearing due to educational expansion. Along the same line, Heaton, Forste & Otterstrom (2002) were puzzled by the fact that trends in first sexual intercourse, union and childbearing were relatively flat as measured by birth cohorts, urging researchers to pay further attention to the lack of correlation between the individual level and the long-term social change. Regarding age at union formation, Esteve and colleagues (2013) demonstrated, using census micro data, that the expected postponement in age at union formation due to educational expansion was offset by earlier union formation (mostly through non-marital cohabitation) among the least educated and formally largest groups.

The stability paradox, should not underestimate the importance of education (Heaton et al. 2002; Castro & Juárez 1995; Wulf & Singh 1991; Heaton & Forste 1998). Indeed, in comparative perspective, Latin American stands as the region in which the relationship between education and fertility behavior is strongest (Castro, 1995). Using DHS data for 9 Latin American countries in the lately 80s, Castro and Juárez performed a multivariate analysis to examine through which mechanisms education was having its largest influence on fertility. Results pointed out that the socioeconomic dimension of education. High education was closely correlated to socioeconomic status and status with low levels of fertility. Nevertheless, the authors found out that there were no significant differences in desired fertility across educational groups, which suggest that social diffusion processes may have homogenized reproductive norms across social strata. Despite homogeneous goals in fertility, the gap between wanted an observed fertility varied by educational group, being largest among the lower educated women. The size of the gap was mostly attributable to differences in contraceptive practices across educational groups.

Finally, Rodríguez (2008) investigates and discusses about the causes related to the high adolescent fertility that persists in the region. He argues that although modernity tends to produce a postponement of the union also encourages anticipate the age of sexual initiation. As a result, an earlier sexual initiation can lead to an increase in adolescent fertility if not accompanied by effective contraception. The author refers to the concept of truncated sexual modernity, which basically defines the fault in this capacity of protection, it attaches to three aspects: First, it is attributable to institutional reluctance (family and social) about premarital adolescent sexuality, denying the autonomy of young people on this issue and, therefore, restricting their access to sexual and reproductive health; secondly, to the context of social inequality, where the lack of labor, education and life opportunities for young people, especially poor, the cost of adolescent motherhood is reduced, even raising its value as a mechanism to make sense to life. Finally, the very familiar culture of the region, that assumes the costs of early reproduction.

Despite the mounting evidence on the strong correlation between education and age at union formation and childbearing, the cohort and overtime stability in age at union formation and childbearing in Latin America still remains a puzzle. Compared to previous research, this article focuses mainly on the stability paradox regarding age at first union and first child and presents additional data that may contribute to understand the paradox. It

raises three further questions: i) Are the years of schooling in absolute terms a good indicator to capture the social position of women?; ii) have changed preferences about the number of desired children in the most educated cohorts regarding those less educated, and exists differences by educational level in a same cohort?, and iii) How has changed the use of contraception at younger ages during the last years?

Regarding first question, we examine the relationship between years of schooling and age at first union and first child using a relative distribution of years of schooling based on the quartiles specified for each cohort. Hence, instead of comparing groups with the same amounts of schooling across cohorts, we will compare women based on their relative position within their cohorts. It has been commonly argued in Latin American that educational expansion has not contributed to eradicate social inequality but to reproduce it (BID, 1999). If this is the case, the absolute number of years of schooling may not be as relevant as the women's position within the educational hierarchy with respect to women of the same cohort. Castro and Juarez (1995) showed that the socioeconomic dimension of education was the most decisive factor for fertility. If the increase in years of schooling has not involved a substantial change of this dimension, it is likely that the effect of educational expansion does not exert the desired impact.

For the second question, we examine the extent to which the ideal family size has changed across cohorts and educational groups, as suggested by Castro and Juárez (1995), based on similar data from the 1980s. Have preferences in ideal family size have changed? Are there significant differences by years of school? The stability of this variable can indicate certain homogeneity of social behavior not only among cohorts, but also by education level in a same cohort.

In relation to third question, Rodríguez (2008) suggests that contraception may be playing a decisive role in the level of adolescent fertility, contributing to stability in the age at first child. We investigate patterns of contraceptive use among young women, controlling for education level, sexual debut and if they have children. All these variables are important to understand the role of contraception among young women. First, education is related to age at first sexual intercourse, and with knowledge about contraception. Secondly, controlling sexual debut variable to avoid misinterpretation is essential, given the fact that the exposure to sexuality originates the need of contraceptive methods. Finally, it is important to know whether women used contraception before having their first child.

I. DATA

We use data from 37 Demographic and Health Surveys held in 12 Latin American countries from 1986 to 2012. DHS data come from representative surveys of women age 15-49 that have between 4.000 to 53.000 cases depending on the country and year. Table 1 shows the characteristics of the samples included in our analyses. DHS coverage in terms of years and countries is not homogeneous. DHS data offer retrospective information about women. We are interested in the following main variables: age at first sexual intercourse, age at first union, and age at first child. For each variable, we created a dichotomous variable to identify women who had experienced first sex, first union or first child before age 18. The percent of women who had experienced such events before age 18 is an indirect measure of the mean age at union formation with the advantage of not requiring complete cohorts to get this estimate. As long a cohort has reached the 18 years of age, this figure can be estimated. We have made sensitivity analyzes with alternative ages (for example, 20 and 22) and the results are similar to those obtained in this research. Besides, it is strongly correlated to the median and age at first union or first child.

Table 1. DHS, by country, year of survey, cohorts, and total number of women over 20 years observed in the study. Latin America region

Country	Year of interview						Cohorts	Women >20 years
	1985-89	1990-94	1995-99	2000-04	2005-09	2010-12		
Bolivia	1989	1993-94	1998	2003-04	2008	-	1940-89	48,879
Brazil	1986	-	1996	-	-	-	1940-79	14,735
Colombia	1986	1990	1995	2000	2004-05	2009-10	1940-89	100,176
Dominican Rep.	1986	1991	1996	2002	2007	-	1940-89	58,087
Ecuador	1987	-	-	-	-	-	1940-69	3,535
Guatemala	1987	-	1995	-	-	-	1940-79	13,448
Haiti	-	1994-95	-	2000	2005-06	2012	1940-89	29,527
Honduras	-	-	-	-	2005-06	2011-12	1950-89	31,378
Mexico	1987	-	-	-	-	-	1940-69	6,754
Nicaragua	-	-	1998	2001	-	-	1940-89	20,246
Paraguay	-	1990	-	-	-	-	1940-69	4,565
Peru	1986	1991-92	1996	2000	2003-08	2012	1940-89	111,793
Totals: 12 countries 37 surveys	**6**	**6**	**7**	**6**	**6**	**4**	**-**	**443,123**

To analyze change over time, we used a cohort perspective. All women who were 20 years or older at the time of the interview were included in the analysis. The number of cohorts varies from country to country subject to data availability, but in general they were born between 1940 to 1989.

Using multiple DHS for a single country, we have gathered data of the same cohort at different points (ages) in time. As a result, we have gained in sample size. We have performed sensitivity analysis to examine if women's responses within cohorts are consistent over time. Results are consistent except for age at first sexual intercourse in

Bolivia, Colombia, Dominican Republic, Haiti and Peru. In these countries, the percent of women of the same cohort who reported to have had sex before age 18 increased over age. Our models include age at response to control for the age at response bias introduced by the age at which women responded the questionnaire. Cohorts have been grouped in ten years intervals: 1940-49, 1950-59, 1960-69, 1970-79 and 1980-89.

Finally, we constructed two measures of educational attainment based on years of schooling. The first one, groups years of schooling into four categories: less 5 years, 6-8, 9-12, 13 and more. The second one measures the relative position of each woman's education according to the educational distribution of her cohort. We have used four categories using quartiles as threshold for each group. The first category groups the 25% of women with less years of schooling. As education expands, the number of years of schooling that correspond to each quartile grows up.

II. RESULTS

a) Cohort trends in age at first sexual intercourse, first union and first child

Table 2 shows data on the percent of women who have experienced first sexual intercourse, first union and first child before age 18 by cohort and country of residence. The higher the percent, the more women of that cohort had experience the corresponding event before age 18. If the percent is stable across cohorts, it means that women from later cohorts were forming their first unions and having their first children at similar ages than women from earlier cohorts. The percent of women that had **first sexual intercourse** by age 18 in Latin America was on average 50%. Mexican and Brazilian women born before the 1970s show the lowest percents in sexual debut by age 18 (below 50%). By contrast, women from the Dominican Republic, Nicaragua, Haiti and Colombian women born since the 1970 show the highest prevalence of sexual debut by age 18 (above 60%). Cohort trends do not depict a clear pattern expect of Dominican Republic, Colombia, Haiti and Brazil. In these countries, results show that recent cohorts have had their sexual debut at earlier age compared to women from older cohorts.

Regarding age at **first union** (marriage or cohabitation), the percent of women ever in union by age 18 was around 40%. In Central America, at least 50% women had formed their union before age 18. This percentage is much lower in Mexico and South America, hardly above 40%, which suggest later transition to first union compared with the countries in Central America. Brazil stands out as the country with the lowest percent of women ever in union by age 18. Despite differences across countries, cohort trends over are fairly stable. The slight variations that we observe between cohorts do not depict a clear trend. In the Dominican Republic, the percent of women ever in union by age 18 has remained stable at the 50% level. Similar stability is observed in Colombia, Brazil, Bolivia and Haiti. Only Peruvian, Honduran and Paraguayan women show some postponement signs between the two most recent cohorts, although they need to be interpreted with caution.

Table 2. % women aged older 20 who had first intercourse, first union or first birth before age 18, by cohort, according to country.

Country	First intercourse					First union					First Birth				
	40s	50s	60s	70s	80s	40s	50s	60s	70s	80s	40s	50s	60s	70s	80s
Bolivia	49%	52%	55%	54%	53%	34%	35%	36%	33%	32%	27%	27%	29%	29%	30%
Brazil	35%	40%	47%	54%	.	31%	30%	32%	31%	.	20%	20%	23%	25%	.
Colombia	48%	47%	50%	62%	72%	37%	32%	30%	32%	32%	28%	24%	23%	28%	29%
Dominican Republic	62%	56%	53%	59%	63%	60%	51%	47%	51%	49%	40%	33%	31%	35%	35%
Ecuador	48%	51%	46%	.	.	41%	41%	38%	.	.	29%	30%	27%	.	.
Guatemala	55%	58%	59%	54%	.	47%	52%	53%	48%	.	35%	37%	40%	37%	.
Haiti	50%	54%	59%	62%	66%	34%	32%	36%	35%	32%	23%	23%	25%	25%	22%
Honduras	.	60%	57%	59%	56%	.	53%	49%	50%	46%	.	38%	36%	38%	36%
Mexico	45%	45%	38%	.	.	43%	43%	37%	.	.	32%	31%	29%	.	.
Nicaragua	59%	62%	61%	61%	57%	54%	57%	58%	58%	52%	43%	43%	43%	42%	40%
Paraguay	46%	46%	51%	50%	.	35%	32%	34%	27%	.	24%	23%	27%	23%	.
Peru	50%	50%	50%	49%	51%	37%	33%	32%	29%	27%	28%	27%	25%	23%	23%

Source: Demographic Health Survey, DHS.

Finally, table 2 provides information on the percent of women who had their **first child** before age 18. Compared to first sexual inter-course and first union, the percent of mothers by age 18 is lower: 30% of women were mothers by age 18. Cross-national variations in age at first child are closely correlated to country differences in age at first union. The highest proportions of mothers at age 18 are found in Central America (typically above 30 and even 40%) and the lowest in Mexico and South America (at 30% or lower). As it was for the percent of women ever in union, Brazil has the lowest percentage of mothers at age 18 of all countries. Cohort trends do not show any consistent pattern, except for being mostly stable. The percent of women in Nicaragua who were mothers by age 18 changed from 43% to 40% between cohorts in the 1940s and the 1980s. Peruvian women are the only ones that show steady but modest declines in the percent of mothers by age 18 (from 28% to 23% between 1940s and 1980s cohorts), suggesting a delay in childbearing.

b) Female educational expansion

Table 3 shows the distribution of women by years of schooling and the cohort specific quartiles from the cumulative distribution of years of schooling. To illustrate cohort trends, we show data for the earliest and most recent cohorts available in each country.

Table 3. Percentage distribution of women aged older 20, by years of schooling they have completed, by cohorts, and quartiles of years of schooling.

Country	Cohorts	Years of schooling				Years of schooling quartil		
		<5	6-8	9-12	13+	Q1	Q2	Q3
Bolivia	1940s	73%	10%	9%	8%	0	2	6
	1980s	22%	13%	39%	25%	6	12	13
Brazil	1940s	71%	11%	11%	7%	2	4	7
	1970s	39%	26%	31%	5%	4	7	11
Colombia	1940s	71%	11%	13%	5%	2	4	7
	1980s	17%	11%	47%	25%	8	11	13
Dominican Republic	1940s	67%	20%	7%	6%	2	4	7
	1980s	13%	18%	44%	24%	8	11	12
Ecuador	1940s	50%	28%	16%	5%	2	5	7
	1960s	22%	32%	32%	14%	6	8	12
Guatemala	1940s	77%	12%	10%	1%	0	1	5
	1970s	60%	17%	18%	4%	0	3	7
Honduras	1950s	58%	24%	3%	16%	1	4	6
	1980s	26%	35%	20%	19%	5	6	12
Haiti	1940s	92%	4%	3%	1%	0	0	1
	1980s	38%	20%	30%	11%	4	8	11
Mexico	1940s	60%	25%	12%	3%	1	4	6
	1960s	30%	24%	35%	10%	4	7	9
Nicaragua	1940s	64%	19%	13%	4%	0	3	6
	1980s	31%	25%	36%	9%	4	8	11
Peru	1940s	61%	9%	17%	12%	1	5	10
	1980s	10%	15%	44%	31%	8	11	13
Paraguay	1940s	57%	26%	11%	5%	3	5	6
	1970s	25%	38%	32%	5%	6	6	11

Source: Demographic Health Survey, DHS.

During the last four decades, women's education has expanded dramatically. About sixty percent of women born in the 1940s had less than 5 years of schooling and no more than 10% had 13 years of schooling. Between the earliest and most recent cohorts, the percentage of women with less than 5 years of school at least halved and the percent of with more than 13 years at least doubled in all countries. As an example, the percent of Dominican Republic women with 13 or more years of school rose from 6 to 24% between the cohorts born in the 1940 and those born in the 1980s. Educational expansion has increase the number of years of schooling associated to each quartile. In Peru, the years of school that set the 25% of women with the lowest level of education increased from 1 to 8 between the earliest (1940s) and most recent cohort (1980s).

c) First sexual inter-course, first union and first child by years of school

Table 4 shows the percent of women that had their sexual debut, first union and first child before the age 18 by years of schooling and country of residence. We compare the results between the earliest and most recent cohort in each country.

Table 4. % women aged older 20 who had first intercourse, first union or first birth before age 18, by years of schooling and cohort, according to country.

Country	Cohort	First intercourse				First union				First birth			
		<5	6-8	9-12	> 13	<5	6-8	9-12	> 13	<5	6-8	9-12	> 13
Bolivia	1940s	55%	52%	32%	14%	38%	37%	21%	8%	30%	29%	15%	4%
	1980s	73%	75%	53%	24%	54%	55%	29%	5%	52%	53%	26%	5%
Brazil	1940s	42%	26%	17%	10%	37%	23%	13%	6%	24%	14%	10%	2%
	1970s	66%	61%	38%	30%	46%	36%	14%	7%	38%	29%	9%	2%
Colombia	1940s	56%	37%	27%	11%	44%	29%	21%	10%	33%	22%	13%	6%
	1980s	86%	87%	72%	56%	62%	58%	28%	8%	58%	56%	25%	8%
Dominican Republic	1940s	71%	58%	34%	15%	69%	56%	36%	12%	47%	36%	20%	5%
	1980s	90%	88%	60%	35%	83%	80%	44%	16%	72%	61%	27%	8%
Ecuador	1940s	57%	47%	33%	16%	48%	42%	26%	11%	35%	31%	15%	7%
	1960s	74%	57%	32%	10%	60%	50%	25%	7%	48%	36%	14%	5%
Guatemala	1940s	61%	36%	31%	23%	54%	32%	20%	14%	39%	26%	12%	18%
	1970s	67%	50%	27%	6%	61%	45%	21%	1%	48%	34%	13%	3%
Honduras	1950s	73%	54%	45%	24%	65%	49%	25%	21%	48%	32%	21%	11%
	1980s	75%	66%	43%	25%	67%	56%	31%	15%	56%	43%	21%	10%
Haiti	1940s	52%	33%	31%	33%	34%	26%	19%	33%	24%	11%	19%	33%
	1980s	78%	69%	57%	43%	49%	32%	20%	8%	37%	21%	11%	2%
Mexico	1940s	58%	30%	21%	16%	55%	30%	19%	5%	41%	24%	8%	0%
	1960s	61%	46%	22%	10%	61%	46%	21%	7%	51%	34%	14%	3%
Nicaragua	1940s	69%	53%	31%	18%	63%	47%	29%	26%	52%	37%	18%	0%
	1980s	82%	69%	35%	22%	79%	67%	27%	11%	67%	50%	18%	0%
Peru	1940s	64%	47%	29%	13%	48%	30%	21%	7%	37%	23%	14%	2%
	1980s	76%	73%	54%	26%	56%	54%	26%	5%	54%	47%	20%	4%
Paraguay	1940s	57%	40%	16%	14%	44%	32%	12%	2%	32%	19%	5%	0%
	1970s	70%	54%	34%	26%	52%	29%	9%	0%	42%	25%	9%	0%

Source: Demographic Health Survey, DHS.

Two main conclusions arise. First, women with more years of schooling are less likely to have experienced first sexual intercourse, union or child before age 18 than women with less amounts of schooling. Hence, years of schooling delay transitions to union formation and childbearing in all countries. For example, 37% of Peruvian women born in the 1940s with less than 5 years of school were mothers by age 18, compared to only 2% among women with 13 or more years of formal education. Second, cohort trends shot that the percent of women who had sexual intercourse, had been in union or had children before age 18 has increased in all educational groups but the highest level. This implies that women born in recent years are speeding up their sexual activity, first union and first child compared to women born earlier with the same amounts of schooling. By bringing forward the age at first sex, first union and first child, these women are offsetting the postponement effect that the expansion of education should have had on the cohort's aggregate behavior. The three lowest educational categories show the highest change over time. For instance, the percent

of Bolivian women with less than 5 years of schooling that had been in union by age 18 went up from 38% to 54% between cohorts born in the 1940s and the 1980s.

d) Decomposing cohort trends: educational expansion or rate change?

We now turn to logistic regression as way of standardizing cohort trends by changes in rates and changes in the educational distribution. All models control by the age of the respondent as we have noticed lack of consistency in the cohort responses at different ages (see Data section). Table 5 summarizes the main results. It shows the logistic regression coefficients (odds ratio) of the most recent cohort. In all models, the earliest cohort is taken as a reference. There are three dependent variables: One for sexual intercourse, one for first union and the last one for first child before age 18. We have computed three models for each dependent variable. Model 1 has two variables: cohort and age at response. Model 2 adds years of schooling as categorical variable to model 1. Model 3 uses instead the relative distribution of schooling based on quartiles. Values above 1 indicate that women of the most recent cohorts are more likely to have experienced the event (sexual intercourse, union or child) before age 18 compared to women from the earliest cohort. Values below 1 indicate that the probability has decreased and, thus, that there has been some postponement.

Table 5. Probabilities (odds ratio) of having the first sexual intercourse, first union or first child before age 18 by cohort and country.

Coefficients estimated from 3 logistic regression models.

Country and cohort	First Intercourse			First union			First birth		
	M1	M2	M3	M1	M2	M3	M1	M2	M3
Bolivia (1980s vs. 40s)	1,5*	2,6*	1,3*	0,9	1,4*	0,8*	1,1	1,8*	0,9
Brazil (1970s vs. 40s)	3,3*	4,5*	3,1	1,2	1,6*	1,0	1,4*	1,9*	1,1
Colombia (1980s vs.40s)	3,9*	9,4*	5,3*	0,9*	2,1*	1,0	1,1	2,9*	1,4*
Dominican Republic (1980s vs. 40s)	1,5*	5,6*	1,5*	0,8*	2,8*	0,7*	0,9	2,8*	0,8*
Ecuador (1960s vs. 40s)	0,8	0,9	0,6	1,0	1,1	0,8	0,9	1,0	0,7
Guatemala (1970s vs. 40s)	1,3	1,8*	1,3	0,8	1,2	0,8	0,9	1,2	0,8
Honduras (1980s vs. 50s)	0,8	0,9	0,7*	0,7*	0,7*	0,8	0,8	1,0	0,7*
Haiti (1980s vs. 40s)	2,1*	3,5*	1,6*	0,6*	1,1	0,4*	0,8	1,5*	0,5*
Mexico (1960s vs. 40s)	0,9	1,0	0,5*	0,8	0,8	0,4*	0,9	1,1	0,5*
Nicaragua (1980s vs. 40s)	1,3	1,8*	0,9	1,1	1,4	0,7	1	1,3	0,7*
Peru (1980s vs. 40s)	1,3*	3,1*	1,7*	0,6*	1,5*	0,7*	0,8*	1,7*	0,9*
Paraguay (1970s vs. 40s)	1,2	1,1	0,7	0,9	0,9	0,6	1,1	1,0	0,7

Source: Demographic Health Survey, DHS.

Regarding first sexual intercourse, model 1 yields significant coefficients in 6 out of the 12 countries. In all these countries, women born in recent years are more likely to have had sex before age 18 than women born in earlier years. For example, Colombian women born in the 1980s are 4 times more likely to have had sex before age 18 than women born in the 1940s. With regard to women ever in union, recent cohorts of women do not show a clear difference with respect to the oldest one. Coefficients are statistically significant in 5 countries and, when significant, they not show large differences. Cohort trends are less concluding when it comes to age at first child. Women born in the 1970s or the 1980s are

not statistically significantly different from earlier ones, which confirm again the stability pattern.

Model 2 adds years of schooling into model 1. Thus, model 2 hold years of schooling constant. At every category of years of schooling, women born in recent years (i.e. 1970s or 1980s) are more likely to have had first sex, first union or first child by age 18 compared to women born in earlier years (i.e. 1940s or 1950s). The cohort coefficients are almost always statistically significant and well above 1, which indicates that, regardless of years of schooling, women are speeding up their sexual debut, first union, and first child. With regard to sexual activity, at the same years of school, Colombian women born in the 1980s are 9.4 times more likely to have experienced sexual intercourse before age 18 than women born in the 1940s.

Results of models 1 and 2 show that the cohort stability derived from model 1 was indeed the result of two offsetting forces: educational expansion pushing in the direction of postponement (i.e. later transitions) and changes within educational categories pushing in the opposite direction (i.e. earlier transitions). This suggests a deflationary process of years of schooling as education expands. To illustrate this point, model 3 uses an alternative classification of years of schooling based on quartiles.

e) What does a relative measure of education bring to the story?

In Model 3 we use a relative measure of years of schooling based on quartiles. Each woman's years of schooling is classified according to her relative position within her cohort. Hence, a women with 9 years of school may belong to different quartiles depending on the cohort she was born. For instance, a Dominican woman with 7 years of education belongs to the 25% more educated women if she was born in the 1940s and to the 25% less educated if she was born in the 1980s. Results show that the cohort coefficients are closer to those of model 1, proving that there are no significant cohort changes when a relative measure of education is taking into account instead of an absolute measure of it. Compared to model 1, model 3 has the advantage that it captures the negative gradient of years of schooling. All in all, model 3 suggests that advances in females educational have not changed dramatically women's sexual, union and childbearing behaviors. This finding is consistent with the arguments that educational expansion in Latin America has not contributed to eradicate socio-economic differences among social groups.

f) Have there been significant changes in the ideal family size?

The ideal family size can be used as measure of preference. DHS surveys asked women about the number of children they would like to have. Variations of these responses between cohorts may indicate a change in the normative context of fertility, for example, a preference for fewer children. But most important is to examine whether there are differences by educational level. Besides, the answer to the question is very sensitive to the age and the number of children women have at the time of the interview.

Table 6 shows standardized ideal family sizes by years of schooling and year. These figures are standardized by age and number of children at the time of the interview within each country. Therefore, they are comparable across educational groups and over time but not

across countries. Time trends in ideal family size show a modest decline over the last decades. In neither country this decline represents more than 0.8 children per woman. In Bolivia, it decreased from 2.5 to 2.4 children per woman between 1985-89 and 2005-09. In Colombia it decreased between 2.8 to 2.3 and in Peru from 2.6 to 2.4.

Table 6. Mean desired family size adjusted by woman's age and number of living children, by years of schooling, year of DHS interview, according to country.

Country	Year of interview	Total	Years of schooling				Dif 13years - <5
			<5	6-8	9-12	+13	
Bolivia	1985-1989	2,5	2,4	2,6	2,7	2,9	0,5
	2005-2009	2,4	2,2	2,2	2,4	2,6	0,4
Brazil	1985-1989	2,6	2,6	2,6	2,5	2,5	-0,2
	1995-1999	2,4	2,4	2,3	2,4	2,3	-0,1
Colombia	1985-1989	2,8	2,8	2,6	2,6	1,7	-1,1
	2010-2012	2,3	2,3	2,2	2,2	2,3	0,0
Dominican	1985-1989	3,4	3,4	3,4	3,3	3,5	0,1
Republic	1995-1999	3,2	3,3	3,2	3,1	3,1	-0,1
	2005-2009	3,0	3,2	3,0	2,9	3,0	-0,3
Ecuador	1985-1989	3,0	3,1	3,0	2,8	2,7	-0,3
Guatemala	1985-1989	3,3	3,5	2,8	2,7	2,1	-1,4
	1995-1999	3,4	3,7	3,1	2,8	2,7	-1,0
Haiti	1990-1994	3,2	3,3	3,1	3,0	2,2	-1,1
	2010-2012	2,8	2,9	2,8	2,7	2,8	-0,1
Honduras	2005-2009	3,0	3,1	2,9	2,7	2,6	-0,5
	2010-2012	2,9	3,1	2,9	2,6	2,7	-0,4
Mexico	1985-1989	3,0	3,3	2,9	2,6	2,5	-0,8
Nicaragua	1995-1999	2,7	2,9	2,5	2,5	2,5	-0,5
	2000-2004	2,8	3,1	2,6	2,5	2,3	-0,8
Paraguay	1990-1994	3,9	4,1	3,8	3,6	3,6	-0,5
Peru	1985-1989	2,6	2,6	2,5	2,5	2,5	-0,1
	1995-1999	2,5	2,5	2,4	2,4	2,5	0,0
	2010-2012	2,4	2,4	2,3	2,3	2,4	0,0

Source: Demographic Health Survey, DHS.

Surprisingly, there are no large variations across educational groups. Peru and Dominican Republic show no differences by years of schooling. In Colombia and Haiti we observe rather modest differences by years of schooling. And Mexico and Guatemala show a 1 child gap between the lowest and highest educated women. All in all, our data supports the claim that trends in ideal family sizes are relatively homogenous across educational groups and do not show major shifts during the last decades. Nevertheless, as widely known, fertility rates are well above desired fertility levels despite recent fertility declines, which leads to think about the use of contraception.

g) Has increased use of contraception among young women?

Is the early and stable onset of childbearing related to the lack of efficient contraception at early ages in contexts where sexual initiation has also remained stable or becoming earlier? What percent of mothers by age 18 had used contraception before giving birth to her first

child? Table 7 shows that less than 30% of women mothers by age 18 had used contraception before giving birth to their first child (except in Colombia, Brazil and Dominican Republic). It also shows that this figure has increased over cohorts, especially among women born after 1970, although its prevalence is not widespread. Two thirds of women who became adolescent mother reached their first pregnancy without the use of any contraception method.

Table 7. Percentage of women older 20 years old, having first child before age 18, using contraception before the first birth, by years of schooling and cohort, according to country

Country	Cohort	Years of schooling				Total
		<5	6-8	9-12	13+	
Bolivia	1940s	0%	3%	0%	0%	0%
	1980s	8%	11%	21%	27%	14%
Brazil	1940s	5%	18%	17%	0%	7%
	1970s	38%	53%	58%	100%	45%
Colombia	1940s	2%	3%	10%	21%	2%
	1980s	30%	38%	43%	49%	38%
Dominican Republic	1940s	1%	1%	5%	0%	1%
	1980s	21%	31%	36%	45%	31%
Ecuador	1940s	1%	0%	5%	0%	1%
	1960s	1%	5%	5%	0%	4%
Guatemala	1940s	0%	1%	0%	0%	0%
	1970s	2%	5%	8%	0%	3%
Honduras	1950s	1%	2%	0%	0%	1%
	1980s	8%	18%	17%	30%	15%
Haiti	1940s	0%	0%	0%	0%	0%
	1980s	7%	22%	10%	0%	11%
Mexico	1940s	0%	0%	0%	0%	0%
	1960s	1%	5%	10%	0%	4%
Nicaragua	1940s	0%	0%	0%	0%	0%
	1980s	15%	20%	29%	0%	19%
Peru	1940s	2%	3%	4%	8%	2%
	1980s	18%	22%	38%	49%	28%
Paraguay	1940s	2%	3%	22%	0%	3%
	1970s	3%	7%	0%	0%	5%

Source: Demographic Health Survey, DHS.

Contraception use is highest among the most of educated women even if we only show data for those who were mother before age 18. Nevertheless, given the low number of mothers among the higher educated groups, generalizations about the data need to be made with caution.

From a logistic regression model we calculate the propensity (odds ratio) of having ever used some form of contraception by women at age 18 at the time of the interview. These models control by the educational level of women, if they have initiated sexually and if they have had children.

Tabla 8. Odds ratio of having ever used some form of contraception by women at age 18, by year of observation

Country	Year of DHS					
	1985-1989	1990-1994	1995-1999	2000-2004	2005-2009	2010-2012
Bolivia	1	2,0*	2,3*	3,3*	3,7*	-
Colombia	1	1,8	3,8*	6,6*	9,1*	16,2*
Dominican Republic	1	1,1	1,8*	2,9*	4,7*	-
Haiti	-	1,0	1,8	1,6*	2,9*	-
Peru	1	1,7	3,2*	3,1*	9,2*	12,5*

Source: Demographic Health Survey, DHS.

*sig<0,05.

Table 8 shows the results. The first year of observation in each country is the reference year of the data. The propensity to use contraception clearly increases over time, independent of the level of schooling of adolescents, their exposure to risk of pregnancy or their condition as adolescent mother. For example, Colombian women aged 18 had a 9.1 times higher propensity in 2005 and 16.2 higher in 2010 using contraception than their peers in 1986. Similar increases were seen in Peru as well as in the rest countries. These results suggest that the use of contraception before having the first child has increased in all social groups.

III. DISCUSSION

In this article we have examined cohort trend in age at first sexual intercourse, first union and first child in 12 Latin American countries that despite having differences in levels show remarkably stable patterns over time, but first sexual intercourse where recent cohorts in some countries have had their sexual debut at earlier age compared to women from older cohorts.

This has happened during years of substantial educational expansion, during which the proportion of women with less than 5 years of schooling has halved and the percent with 9 or more years has at least doubled in the majority of countries. Because of the well -known association between years of schooling and the age at which major demographic transitions occur (i.e. union formation and childbearing), the lack of postponement in Latin American over more educated cohorts presents a paradox, the stability paradox. This article has shed light on the stability paradox by uncovering the mechanisms by which it has been possible. To this end we have used all DHS data available for Latin America.

Logistic regression models have shown that the expected delays in first sexual inter-course, union formation and childbearing due to educational expansion have been to a large (if not total) extend by changes in behavior within educational groups across cohorts. At each educational level, but most clearly among the least educated, women born in the 1980s are forming unions and having children earlier than women with the same amount of schooling but born 40 years before. Why it has happened?

To answer this question, in this article we have provided additional data. First, we have shown that when adopting a relative measure of education (based on quartiles), cohorts remain stable over time. This clearly suggests that despite gains in absolute years of school it is the relative position within the educational difference what really matters. Women with less education are behaving today as those situated on the same level, but born four decades before.

Second, we have shown that there have not been major changes in ideal family size. Neither we observe differences over years of schooling, nor do we observe changes over time. Again, this finding suggests a strong normative context regarding to social reproductions that shows no clear social gradient.

Finally, the evidence indicates that the use of contraceptives has strongly increased in recent decades. The propensity to use or have used contraception before the first child has increased in all educational groups. The most recent data of the last decade indicate that more than half of the women who were mothers before age 18 had not used any contraception before their first child, a fact that explains the high adolescent fertility that characterizes the region. These results suggest that high adolescent fertility is closely related to an inefficient use of contraceptive methods, as argued Rodriguez (2008). However, the increase in use of contraception in time would not be as consistent with stability in the age at first birth. The proportion of adolescent pregnancy is stable, although more and more women have used contraception before having their first child.

The above findings question the use of education as a discriminatory variable of the nuptial and reproductive behavior of women. While individually, accumulate years of schooling is positively related to the age of marriage and the first child, at the population level, these years are not enough to delay the average age at first marriage and first child. This fact should encourage reflection on the mechanisms through which education influences the behavior of people and also about how this can alter the order of priorities and redefine the life opportunities of people. Despite its nearly universal expansion, the education system has not become a mechanism for equalizing opportunities in all social groups, but their results in terms of quality and efficiency are closely related to socioeconomic and cultural level of origin households. Future research should deepen in the relation between education and social position as well as in the role that the normative context plays in the timing of marriage and fertility in Latin America.

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