The Educational Gradient of Low Fertility in Latin America

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INTRODUCTION

The Latin American region has experienced some demographic changes that enable a discussion on the likelihood of the beginning of a second demographic transition in several countries in the region. In this vein, there are several issues associated with recent changes. For example, there is the debate regarding a possible cohabitation boom with components different from the traditional cohabitation in Latin America (Esteve, Lesthaeghe, and Lopez-Gay, 2012). The pattern of early sexual initiation, childbearing, and union formation and the chances of a possible break up is discussed by Bozon, Gayet, and Barrientos (2009). Esteve, López-Ruiz, and Spijker (2013) discuss the paradox of union formation stability with education expansion in the region. Regarding fertility trends in the region, Cavenaghi and Alves (2009) discuss the most recent fertility patterns based on DHS surveys applied in several countries in the region. More associated with fertility and the postponement of first childbearing, Rosero-Bixby, Castro-Martín, and Martín-Garcia (2009) emphasize the role of college education in the retreat of early and universal childbearing. The focus of this paper will deviate from the discussion about the likelihood of a second demographic transition in the region, in order to concentrate in the future chances of below replacement fertility in some countries, with special attention to educational expansion.

Some Latin American countries are clearly below replacement level already in the beginning of the first decade of this century, such as Cuba, Chile, Costa Rica, and Puerto Rico. Others are about to enter or have just entered the below replacement level's club (depending on the source of data collection and measurement technique chosen) such as Uruguay, Brazil, Argentina, Colombia, and Mexico (Rosero-Bixby, Castro-Martín, and Martín-Garcia, 2009). This paper will focus on the countries mentioned in the latter group.

Bozon et al. (2009) access modern Latin American sexual behavior in a life course perspective. They show the operation of a gender specific teenage sexual socialization in the region, where young men are encouraged to sexual initiation as early as possible, while

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social control is focused on young females. Postponement of sexual debut is valued. The valuation of virginity would imply sexual debut in the timing of first union. This sexual double standard is a cultural characteristic prevalent in Latin American and Mediterranean countries. The authors state clearly the connection (path) first intercourse, union formation, and birth of the first child. Social differences in the timing of female sexual debut are connected with the same differences in first union. A separation between sexual debut and first union is growing in some Latin American countries analyzed by the authors. The authors mention a Teenage Latin American paradox: fertility has declined historically in the region, moving towards replacement level in several countries, but without clear delayed childbearing. Age at first child is persistently low and stable among age cohorts. The authors indicate that the more educated group of women is starting to show some postponement behavior with an increasing of childless women. This paper will explore the role of this group of more educated women (college educated or with tertiary education) in the promotion of crucial changes of the fertility curve.

To the extent that age at union formation affect total fertility rate (TFR), Esteve, López-Ruiz, and Spijker (2013) also focus on the role of educational expansion in the postponement of union formation. The paradox is that union formation has not historically declined with the expansion of educational attainment in the region. Other trends, such as the increasing share of cohabitation would help to explain this lack of composition effect in the explanation of the postponement of union formation in the region. The authors talk about a compensating effect in cohabitation that would explain the absence of a strong postponement trend. The existence of such a compensating effect points to the operation of an expansion in the share college educated women and a subsequent decline in fertility. This link between the expansion of college educated women and fertility decline was also stressed by Rosero-Bixby, Castro-Martín, and Martín-Garcia (2009). This link between fertility and tertiary education as the driving force behind the operation of a new low fertility pattern in the region is a proposition that will be adopted by this paper in the exercises to be performed.

Five countries are included in the analysis: Brazil, Mexico, Colombia, Argentina, and Uruguay. Brazil, Mexico, and Colombia are Latin American countries with a more recent completion of the demographic transition, while Argentina and Uruguay are South Cone countries that have presented an early decline of fertility. The comparison of these five countries using the lenses of fertility and education attainment may be enlightening with respect to the perspective of below replacement fertility in the region.

The paper starts with a presentation of the stylized facts regarding total and age specific fertility (TFR and ASFR) rates by educational level in the five countries. The education composition of women in reproductive age by age in all five countries complements the picture.
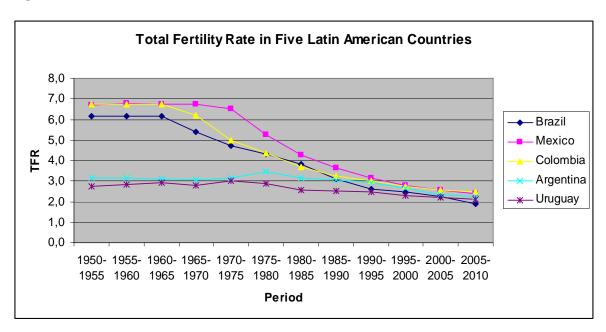
Given the trends in fertility by education and the education composition of women in the five countries, we perform a decomposition to explain the most recent fertility variation. Is the variation in fertility due to a change in the fertility profile by education or due to improvements in education? Or is it case that both vectors play an important role in fertility decline? These questions are answered with the performance of a decomposition exercise.

Finally, the perspective of below replacement fertility in the region in the near future is evaluated by the projection of a future pure composition effect, with the projection of woman education attainment in these countries.

STYLIZED FACTS OF FERTILITY AND EDUCATION

The most recent historical trend in total fertility rates of the five countries studied is presented in Figure 1 and Table 1[1]. The picture shows that the South Cone's Argentina and Uruguay were the most advanced countries in the region's demographic transition. They already presented a pattern of low fertility in the fifties of last century, while the other three countries still presented a pattern of high fertility.
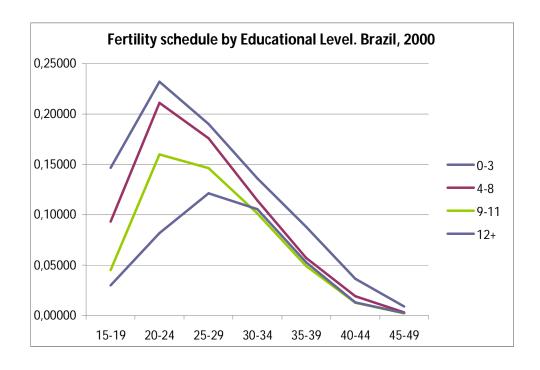
Figure 1:

The stylized facts of Brazilian fertility between 2000 and 2010, by education, are presented in Figure 2 below and in Table 2[2]. The profile of age specific fertility rates (fertility shape) is different between women with at least some tertiary education and the other education groups. As total fertility rate declines in age groups, there is a convergence in level and shape among the three lower education groups, while the group of women with tertiary education remained with a different fertility shape. There was not a decline in total fertility rate by all education groups, there was a decline in the two lower education groups (0 to 3 and 4 to 8) and an increase in the higher educational groups (9 to 11 and 12 or more). As a

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[1] All tables in the paper are presented in the appendix.

[2] All Age Specific Fertility Rates and Total Fertility Rates were calculated based on the demographic censuses and using the correction factors derived from Brass' P/F correction techniques. Only the Mexican calculation were made without these corrections because the numbers differed from the estimated ones presented by CELADE and by the UN- Population Division.

consequence of this temporal process, there is a convergence trend in the fertility level, with a maintained difference in the shape.
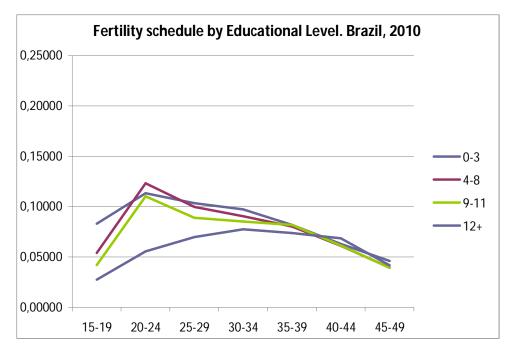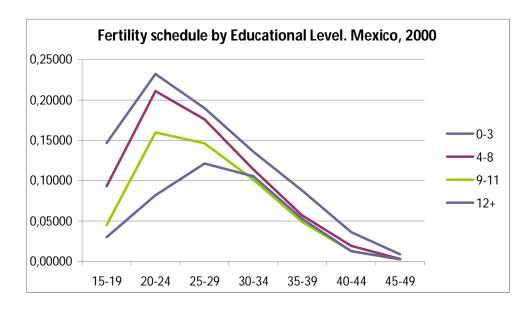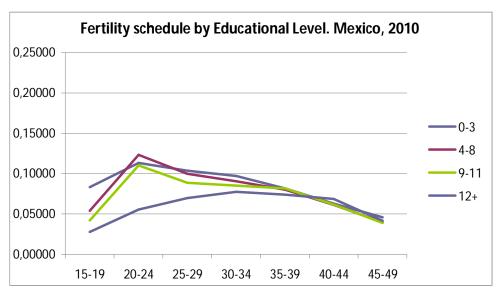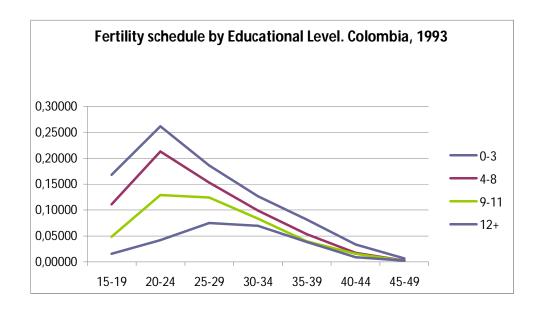
Figure 2:

Fertility schedule by Educational Level. Brazil, 2000

Fertility schedule by Educational Level. Brazil, 2010

Figure 3:

Fertility schedule by Educational Level. Mexico, 2000

Fertility schedule by Educational Level. Mexico, 2010

The shape of the fertility curves of the Mexican case, presented in Figure 3, confirm the division of the profiles in two groups: women in all lower education groups and women in tertiary education. There is also the convergence in levels of fertility among all education groups, as in the Brazilian case previously analyzed. Despite the fertility decline in TFR, unlike in the Brazilian case, Mexican fertility did not approach the replacement level as it is presented in Table 3.

Figure 4:

Fertility schedule by Educational Level. Colombia, 1993

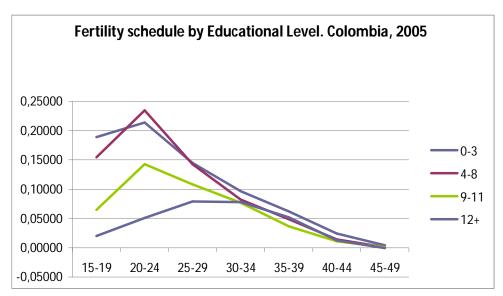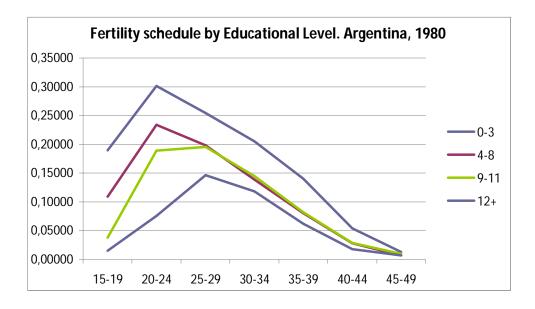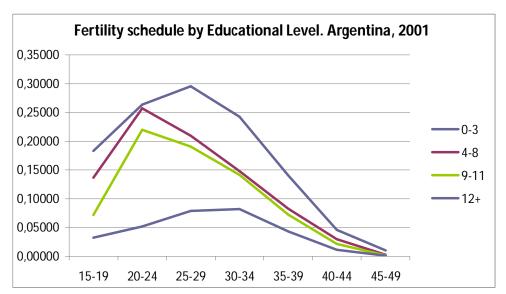Fertility schedule by Educational Level. Colombia, 2005

Figure 4 depicts the case of Colombia. The duality in the shape of fertility curves between lower education groups and tertiary education is also observed. Regarding the level of fertility by education groups, the fertility decline between 1993 and 2005 does not lead to a dual differentiation as in the case of Brazil and Mexico. As Table 4 indicates, TFR in 2005 is already below replacement in Colombia.
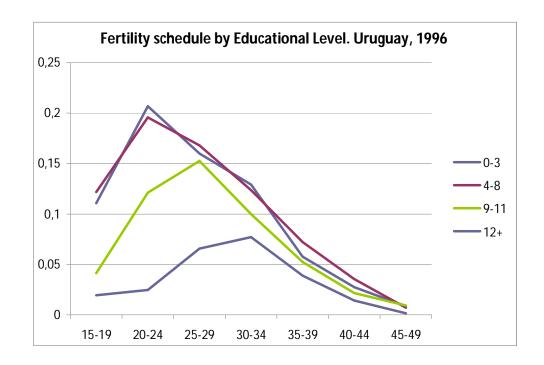
Figure 5:

Fertility schedule by Educational Level. Argentina, 1980

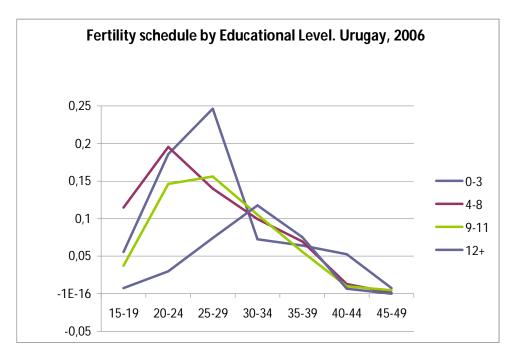Fertility schedule by Educational Level. Argentina, 2001

Although the time reference in the Argentine case does not advance in the first decade of the current century, the change in fertility shape between 1980 and 2001 also confirms the duality in shape between the low education groups and tertiary education as displayed in Figure 5. The decline in level is less pronounced than it could be expected, as the TFR in 2001, well above replacement level, indicates (see Table 5). Different from the other Latin American countries, TFR of women with tertiary education presented a sharp decline.

Figure 6:

Fertility schedule by Educational Level. Uruguay, 1996

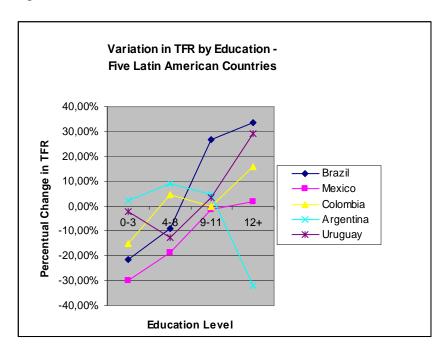Fertility schedule by Educational Level. Urugay, 2006

The case of Uruguay also conforms to the patterns observed in the previous countries, not only indicating a decline in the fertility level (not yet below replacement in 2006 as shown in Table 6) but also a shape division between the low education groups and women with tertiary education. The 2006 data is not derived from a survey, rather than the demographic

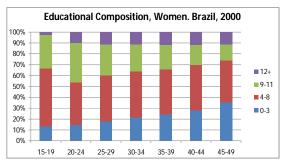census (IPUMS), which may explain some of the observed fluctuation among the age specific fertility rates.

In summary, the stylized facts presented so far point to a difference of level and shape in ASFRs by education groups and countries. Invariably, women with tertiary education present a lower fertility level and a late age peak in the profile of the ASFR curve (mainly in the age group from 30 to 34 years). TFR among women with tertiary education is increasing among several countries, but it is still the lowest level of fertility among all education groups. Figure 7 illustrates the growth in TFR for all education groups. In almost all countries analyzed fertility TFR declines in the low education groups and increase in the high school level, and tertiary education.

Figure 7:

Figures 8.1 to 8.3 and Tables 7 to 11 present the composition of women by education and age groups. All five countries analyzed have experienced a fundamental change in the education composition, with a major decline in the share of the two lower groups of education and an increase in the share of high school and tertiary education groups. In Brazil, Colombia, and Uruguay the observed growth is divided between high school and tertiary education which are both important segments. Mexico and Argentina present a growth more concentrated in tertiary education, with a smaller segment of women in high school.

Figure 8.1:

Educational Composition, Women. Brazil, 2000

Educational Composition, Women. Mexico, 2000

Educational Composition, Women. Brazil, 2010

Educational Composition, Women. Mexico, 2010

Figure 8.2:

Educational Composition, Women. Colombia, 1993

Educational Composition, Women. Argentina, 1980

Educational Composition, Women. Colombia, 2005

Educational Composition, Women. Argentina, 2001

Figure 8.3:

Educational Composition, Women. Uruguay, 1996

Educational Composition, Women. Uruguay, 2006

A DECOMPOSITION EXERCISE: COMPOSITION VERSUS RATES

The decomposition exercise is comprised by the calculation total fertility rates (TFRs)[3] for each country in the two periods considered (t=1 or t=2). TFRs are also calculated for each group of mother education (k=1,…,4). In order to calculate TFRt and TFRtk, it is necessary to generate schedules of age specific fertility rates for each period and mothers' education group (ASFRtk). The percentage of each k educational group in each age interval is given by the age specific education composition in period t (ASECtk). Let us index j for age groups.

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[3] All adjusted by the Brass P/F technique, except for the case of México.

$$TFR_1 = 5*\sum_j\sum_k (ASFR_{1k}*ASEC_{1k}) \qquad (1)$$

$$TFR_2 = 5*\sum_j\sum_k (ASFR_{2k}*ASEC_{2k}) \qquad (2)$$

$$\blacktriangle TFR = TFR_2 - TFR_1 \qquad (3)$$

$$TFRec = 5*\sum_j\sum_k (ASFR_{1k}*ASEC_{2k}) \qquad (4)$$

$$TFRre = 5*\sum_j\sum_k (ASFR_{2k}*ASEC_{1k}) \qquad (5)$$

$$\text{Compostion Effect} = TFRec - TFR_1 \qquad (6)$$

$$\text{Rate Effect} = TFRre - TFR_1 \qquad (7)$$

The composition effect explains the pure impact of mothers' education composition in a two period fertility decline, while the rate effect explains the pure impact of ASFRs (the fertility curve) in a two period fertility decline.

BOX 1:

DECOMPOSITION EXERCISE - TFR BY EDUCATION		BRAZIL	MEXICO	COLOMBIA	ARGENTINA	URUGUAY
(1)	TFR(1)	2,61	2,88	2,95	3,62	3,01
(2)	TFR(2)	2,17	2,42	2,52	2,92	2,60
(3)=(2)-(1)	D-TFR	-0,44	-0,46	-0,43	-0,70	-0,41
(4)	TFR-ES(2)	2,12	2,63	2,50	3,10	2,61
(5)	TFR-ASFR(2)	2,50	2,52	2,93	3,68	2,92
(6)=(4)-(1)	D-ES	-0,49	-0,25	-0,45	-0,52	-0,40
(7)=(5)-(1)	D-ASFR	-0,11	-0,36	-0,02	0,05	-0,09
(8)=(6)+(7)	TOT. MAIN EFF.	-0,59	-0,61	-0,47	-0,46	-0,49
(9)=(6)/(8)	SHARE-FALL-ES	0,82	0,41	0,96	1,12	0,81
(10)=(7)/(8)	SHARE-FALL-ASFR	0,18	0,59	0,04	-0,12	0,19
(11)=(3)-(8)	INTERACTION RES.	0,15	0,15	0,04	-0,24	0,08

The comparative analysis of the decomposition in all five countries is presented in Box 1. The data presented in line 3 of Box 1 shows that the absolute fertility decline in all countries analyzed was very similar[4] regardless the initial level of fertility, except for Argentina, that presented a larger fertility decline[5]. A comparison of lines 6 and 7 shows that, except for the case of Mexico, the largest magnitude of the decline in TFR was due to

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[4] The TFRs calculated with the traditional Brass' correction are a little bit overestimated, while the uncorrected fertility profiles tend to underestimate TFRs.

[5] The decomposition in the Argentine case is the one that did not include a period 2 towards the completion of the first decade of the current century.

changes in the education composition, as opposed to changes in the fertility profile for each education group of women. As line 9 indicates, the share of education composition in the explained fertility decline was around 80% of the decline, more in the case of Argentina and less in the case of Mexico. Except for the case of Mexico, the role of changes in the fertility profiles of age groups is negative, but with smaller magnitude, in the case of Argentina the effect was even positive.

BOX 2:

	EDUCATION GROUP	ROLE ED.GR.ES	ROLE ASFR-ED.GR
BRAZIL	0-3 years	-0,28	-0,16
	4-8 years	-0,46	-0,11
	9-11 years	0,18	0,12
	12+ years	0,07	0,04
	TOTAL	-0,49	-0,11
MEXICO	0-3 years	-0,24	-0,06
	4-8 years	-0,31	-0,16
	9-11 years	0,11	-0,10
	12+ years	0,20	-0,04
	TOTAL	-0,25	-0,36
COLOMBIA	0-3 years	-0,35	-0,14
	4-8 years	-0,47	0,09
	9-11 years	0,24	0,01
	12+ years	0,13	0,03
	TOTAL	-0,45	-0,02
ARGENTINA	0-3 years	-0,46	0,02
	4-8 years	-0,65	0,16
	9-11 years	0,08	0,06
	12+ years	0,52	-0,20
	TOTAL	-0,52	0,05
URUGUAY	0-3 years	-0,28	0,01
	4-8 years	-0,50	-0,19
	9-11 years	0,26	0,03
	12+ years	0,12	0,06
	TOTAL	-0,40	-0,09

The analysis of Box 2 clarifies which education group was more important explaining the observed variation in the composition and rate effects. In terms of the education group composition effect, clearly the improvement in high education groups is the driving force explaining the fertility decline, but the vector explaining TFRs decline is the decline in the two lower education groups, while the composition of the high education groups favored an

increase in TFR. In terms of the rate effect, the driving force explaining the fertility decline due to age specific fertility rates is the decline in the rates of low education groups. In fact, although the level of TFR in tertiary education is quite low (below replacement) in all countries, the observed trend is one of a small temporal increase in TFR for this education group, with exception of Mexico and Argentina.
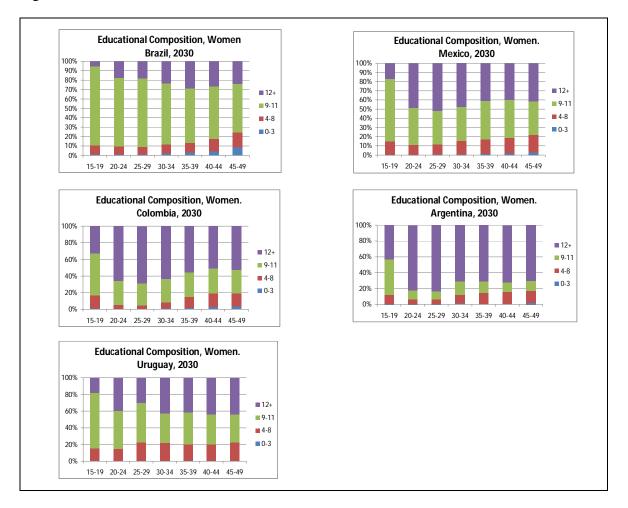
As a conclusive statement of this decomposition exercise, it is surprising that there is a great deal of similarity in the pattern of fertility decline among these five countries in the region. Although a counterfactual decomposition exercise can not be regarded as a study of socioeconomic determinants, the results are sufficiently robust to suggest that the dynamics of formal education in the region is sufficient to determine a very strong composition effect in the fertility decline.

IS BELOW REPLACEMENT FERTILITY A TREND IN THE REGION?

The second decomposition is prospective. It evaluates the chances of fertility decline between 2010 and 2030 if the fertility schedule (ASFRs) remains the one observed in the last census and the mothers' educational composition changes in accordance with a projection of education. This is calculated just like the composition effect described above, in the previous decomposition, while the projection of mothers' education is performed by the estimation of a multinomial logit model specified in an age, period, and cohort (APC) components.

Figure 9 and Table 12 present the projection of mother's education composition by age and countries in 2030. The projection is an extrapolation of several demographic censuses of these five countries, fit by an APC model and extrapolating the period and cohort trends. In 2030 the two lower education groups will practically disappear from all countries.   The differences among these countries are associated with the share of women with high school or college degree. Argentina and Colombia are the two countries with a higher predicted prevalence of women in tertiary education. Brazil is the country with the lowest prevalence of women with tertiary education. Mexico and Uruguay are positioned in an intermediary situation.

Figure 9:

Educational Composition, Women. Brazil, 2030

Educational Composition, Women. Mexico, 2030

Educational Composition, Women. Colombia, 2030

Educational Composition, Women. Argentina, 2030

Educational Composition, Women. Uruguay, 2030

BOX 3:

	BRAZIL	MEXICO	COLOMBIA	ARGENTINA	URUGUAY
2010	2,17	2,42	2,37	2,68	2,45
2020	2,02	2,38	2,10	2,31	2,43
2030	1,92	2,34	1,91	2,09	2,34
Lower Bound	1,14	2,07	1,46	1,50	1,56

Box 3 summarizes the projection exercise. The prospective education expansion will favor a decline in TFR until 2030. Brazil and Colombia will be clearly below replacement in 2030. The result for Brazil is more impressive, since the projected education expansion in Brazil is not so much in favor of a high prevalence of women with tertiary education. Colombia and Argentina are more favored with the education expansion biased towards

women with tertiary education. The fertility decline is predicted to be lower in the case of Mexico and Uruguay.

The last line in Box 3 gives the lower bound of fertility decline in 2030 if the fertility schedule of women with tertiary education is the one measured in the latest observed point (2010 in most countries). This gives the potential fertility decline if all women in reproductive ages reach tertiary education. Fertility would be very low in the Brazilian case (1.1), and it would be low (around 1.5) in Colombia, Argentina, and Uruguay. Only Mexico would present a fertility level close to the replacement level.

Although the education projections of the countries until 2030 lead to a smooth fertility decline towards below replacement level, the potential fertility decline caused by a more radical educational expansion in these countries would lead to a fertility decline more in the direction of the lowest low fertility levels (below 1.5).

FINAL REMARKS

This paper is written in the context of several demographic changes that are taking place in the Latin American region. Some of these changes are associated with the cohabitation boom and the postponement of childbearing, leading to the discussion on the possibility that the region is entering the second demographic transition.

Although the second demographic transition is not the main focus of this paper, the likelihood of total fertility rate below replacement level and of lowest low fertility in the region is a major concern of the paper. The paper performs two decomposition exercises.

The first decomposition separates the effect of education composition of women from the effect of age specific fertility rates by education. Although the paper shows clearly different fertility profiles among the four education groups, with a more pronounced difference in the profile of women with tertiary education, the most recent demographic dynamics indicates less temporal changes in the profiles and more temporal changes in the educational composition of women. The share of education composition in the explained fertility decline in the decomposition was around 80% of the total decline, only in the Mexican case the share was around half. Thus, the dynamics of formal education in the region is sufficient to determine a very strong composition effect in the observed fertility decline.

The second decomposition is prospective. Assuming the continuity of compositional effects of women's education, the education composition of women in reproductive age is projected until 2030. The exercise led to a smooth fertility decline until 2030, a little below the replacement level. Part of this smooth decline is due to the fact that the two lower education groups had already declined in the beginning of the exercise. If this is true, in the next decades only large expansions towards tertiary education could accelerate a sharp

decline in fertility. Another more radical exercise showed that the potential fertility decline caused by a complete educational expansion in tertiary education among these countries would lead to a fertility decline more in the direction of the lowest low fertility levels (below 1.5).

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APPENDIX

TABLE 1   Total Fertility Rate in Five Latin American Countries

PERIOD	Brazil	Mexico	Colombia	Argentina	Uruguay
1950-1955	6,2	6,7	6,8	3,2	2,7
1955-1960	6,2	6,8	6,8	3,1	2,8
1960-1965	6,2	6,7	6,8	3,1	2,9
1965-1970	5,4	6,7	6,2	3,0	2,8
1970-1975	4,7	6,5	5,0	3,1	3,0
1975-1980	4,3	5,3	4,3	3,4	2,9
1980-1985	3,8	4,3	3,7	3,2	2,6
1985-1990	3,1	3,6	3,2	3,1	2,5
1990-1995	2,6	3,2	3,0	2,9	2,5
1995-2000	2,5	2,8	2,8	2,6	2,3
2000-2005	2,3	2,5	2,6	2,4	2,2
2005-2010	1,9	2,4	2,5	2,3	2,1

Source: CELADE - División de Población de la CEPAL - Revisión 2012

TABLE 2 – Total Fertility Rate and Age Specific Fertility Rates by Education- Brazil - 2000 and 2010.

2000	TFT = TEF _ 2000				
	IDADE	0-3	4-8	9-11	12+
0,09986	15-19	0,18442	0,11743	0,03975	0,02683
0,15788	20-24	0,26499	0,21981	0,08274	0,02474
0,12204	25-29	0,17178	0,14512	0,08661	0,04418
0,07878	30-34	0,10823	0,08387	0,05910	0,04533
0,04431	35-39	0,07094	0,04298	0,02813	0,02398
0,01590	40-44	0,02935	0,01346	0,00730	0,00563
0,00255	45-49	0,00460	0,00193	0,00065	0,00067
2,60655	**TFT**	**4,17160**	**3,12295**	**1,52133**	**0,85687**

2010	TFT = TEF _ 2010				
	IDADE	0-3	4-8	9-11	12+
0,07935	15-19	0,15582	0,13787	0,04805	0,01095
0,12314	20-24	0,20493	0,19005	0,11510	0,03018
0,10266	25-29	0,14393	0,12036	0,10160	0,06003
0,07311	30-34	0,08444	0,06903	0,07216	0,07129
0,03983	35-39	0,04582	0,03669	0,03692	0,04348
0,01280	40-44	0,01699	0,01142	0,01055	0,01172
0,00214	45-49	0,00352	0,00164	0,00131	0,00095
2,16510	**TFT**	**3,27726**	**2,83535**	**1,92849**	**1,14300**
	2010/2000	0,78561	0,90791	1,26764	1,33392
	Variação	-21,44%	-9,21%	26,76%	33,39%

Source: Demographic Censuses 2000 and 2010, IBGE, Brazilian Census Bureau

TABLE 3- Total Fertility Rate and Age Specific Fertility Rates by Education-

Mexico - 2000 and 2010.

TFT = TEF _ 2000

IDADE	
15-19	0,06681
20-24	0,15773
25-29	0,15237
30-34	0,11134
35-39	0,06075
40-44	0,02138
45-49	0,00490
TFT	**2,87636**

TFT = TEF _ 2000

IDADE	0-3	4-8	9-11	12+
15-19	0,14661	0,09336	0,04516	0,03002
20-24	0,23221	0,21102	0,15978	0,08193
25-29	0,19007	0,17596	0,14622	0,12120
30-34	0,13603	0,11407	0,10121	0,10568
35-39	0,08793	0,05718	0,04896	0,05280
40-44	0,03637	0,01912	0,01256	0,01282
45-49	0,00882	0,00309	0,00225	0,00256
TFT	**4,19019**	**3,36902**	**2,58070**	**2,03501**

TFT = TEF _ 2010

IDADE	
15-19	0,04411
20-24	0,08703
25-29	0,08415
30-34	0,08487
35-39	0,07872
40-44	0,06385
45-49	0,04133
TFT	**2,42030**

TFT = TEF _ 2010

IDADE	0-3	4-8	9-11	12+
15-19	0,08303	0,05400	0,04206	0,02758
20-24	0,11328	0,12328	0,11011	0,05565
25-29	0,10350	0,09961	0,08879	0,06976
30-34	0,09718	0,09046	0,08525	0,07747
35-39	0,08171	0,08015	0,08171	0,07380
40-44	0,06296	0,06124	0,06150	0,06848
45-49	0,04585	0,03957	0,03908	0,04157
TFT	**2,93756**	**2,74157**	**2,54251**	**2,07150**

2010/2000	0,70106	0,81376	0,98520	1,01794
Variação	-29,89%	-18,62%	-1,48%	1,79%

Source: Mexico, Demographic Censuses, 2000 and 2010, IPUMS.

TABLE 4- Total Fertility Rate and Age Specific Fertility Rates by Education-

Colombia - 1993 and 2005.

TFT = TEF _ 1993					
IDADE					
15-19	0,09647				
20-24	0,17378				
25-29	0,13996				
30-34	0,09677				
35-39	0,05645				
40-44	0,02170				
45-49	0,00408				
TFT	**2,94602**				

TFT = TEF _ 1993				
IDADE	0-3	4-8	9-11	12+
15-19	0,16801	0,11085	0,04881	0,01565
20-24	0,26156	0,21282	0,12887	0,04178
25-29	0,18628	0,15326	0,12433	0,07502
30-34	0,12643	0,09897	0,08364	0,06977
35-39	0,08149	0,05367	0,03972	0,03815
40-44	0,03372	0,01714	0,01533	0,00894
45-49	0,00641	0,00268	0,00171	0,00255
TFT	**4,31955**	**3,24698**	**2,21208**	**1,25934**

TFT = TEF _ 2005					
IDADE					
15-19	0,06632				
20-24	0,10854				
25-29	0,09223				
30-34	0,06779				
35-39	0,04125				
40-44	0,01427				
45-49	0,00221				
TFT	**1,96305**				

TFT = TEF _ 2005				
IDADE	0-3	4-8	9-11	12+
15-19	0,18896	0,15436	0,06452	0,01992
20-24	0,21389	0,23440	0,14256	0,05101
25-29	0,14462	0,14292	0,10840	0,07877
30-34	0,09644	0,08243	0,07665	0,07775
35-39	0,06221	0,04858	0,03679	0,05198
40-44	0,02418	0,01437	0,01127	0,01283
45-49	0,00433	0,00122	0,00072	-0,00035
TFT	**3,67314**	**3,39133**	**2,20452**	**1,45955**
2005/1993	0,85035	1,04446	0,99658	1,15898
Variação	-14,96%	4,45%	-0,34%	15,90%

Source: Colombia, Demographic Censuses, 1993 and 2005, IPUMS.

TABLE 5- Total Fertility Rate and Age Specific Fertility Rates by Education- Argentina - 1980 and 2001.

TFT = TEF _ 1980

IDADE	
15-19	0,07938
20-24	0,18194
25-29	0,18969
30-34	0,14466
35-39	0,08809
40-44	0,03212
45-49	0,00867
TFT	**3,62277**

TFT = TEF _ 1980

IDADE	0-3	4-8	9-11	12+
15-19	0,18943	0,10894	0,03763	0,01502
20-24	0,30112	0,23372	0,18911	0,07541
25-29	0,25415	0,19836	0,19531	0,14640
30-34	0,20524	0,13886	0,14474	0,11845
35-39	0,14051	0,08056	0,08225	0,06201
40-44	0,05420	0,02791	0,02865	0,01801
45-49	0,01271	0,00704	0,00991	0,00679
TFT	**5,78685**	**3,97700**	**3,43800**	**2,21043**

TFT = TEF _ 2001

IDADE	
15-19	0,09101
20-24	0,14158
25-29	0,14039
30-34	0,11882
35-39	0,06738
40-44	0,02233
45-49	0,00258
TFT	**2,92043**

TFT = TEF _ 2001

IDADE	0-3	4-8	9-11	12+
15-19	0,18294	0,13666	0,07206	0,03260
20-24	0,26346	0,25734	0,21968	0,05173
25-29	0,29547	0,20960	0,19068	0,07859
30-34	0,24277	0,14779	0,14145	0,08204
35-39	0,14037	0,08273	0,07261	0,04344
40-44	0,04613	0,02948	0,02155	0,01137
45-49	0,01043	0,00251	0,00137	0,00093
TFT	**5,90789**	**4,33060**	**3,59702**	**1,50356**
2001/1980	1,02092	1,08891	1,04625	0,68021
Variação	2,09%	8,89%	4,63%	-31,98%

Source: Argentina, Demographic Censuses, 1980 and 2001, IPUMS.

TABLE 6- Total Fertility Rate and Age Specific Fertility Rates by Education- Uruguay - 1996 and 2001.

TFT = TEF _ 1996		TFT = TEF _ 1996				
IDADE		**IDADE**	0-3	4-8	9-11	12+
15-19	0,09195	15-19	0,11053	0,12179	0,04115	0,01936
20-24	0,15344	20-24	0,20674	0,19578	0,12109	0,02479
25-29	0,14761	25-29	0,15986	0,16805	0,1526	0,06578
30-34	0,11239	30-34	0,12929	0,12355	0,09996	0,077
35-39	0,06010	35-39	0,0577	0,07214	0,05255	0,03897
40-44	0,02841	40-44	0,0275	0,03541	0,02168	0,01421
45-49	0,00761	45-49	0,00858	0,00702	0,00936	0,00157
TFT	**3,00757**	**TFT**	**3,50101**	**3,61870**	**2,49200**	**1,20836**

TFT = TEF _ 2006		TFT = TEF _ 2006				
IDADE		**IDADE**	0-3	4-8	9-11	12+
15-19	0,06177	15-19	0,05564	0,11483	0,03741	0,00753
20-24	0,12948	20-24	0,18587	0,1955	0,14605	0,02995
25-29	0,13902	25-29	0,24628	0,13997	0,15622	0,0743
30-34	0,10144	30-34	0,07253	0,09925	0,10506	0,1177
35-39	0,06596	35-39	0,0644	0,06938	0,05588	0,07557
40-44	0,01858	40-44	0,05259	0,01269	0,0099	0,00658
45-49	0,00332	45-49	0,00739	0,00119	0,00477	-6E-06
TFT	**2,59784**	**TFT**	**3,42352**	**3,16412**	**2,57645**	**1,55813**

			0-3	4-8	9-11	12+
		2005/1993	0,97787	0,87438	1,03389	1,28945
		Variação	-2,21%	-12,56%	3,39%	28,95%

Source: Uruguay, Demographic Censuses, 1996 and 2006, IPUMS.

TABLE 7- Education Composition – Brazil

Educational Composition

2000	0-3	4-8	9-11	12+	TOTAL
15-19	0,132	0,532	0,315	0,022	1,000
20-24	0,149	0,393	0,359	0,100	1,000
25-29	0,180	0,422	0,289	0,109	1,000
30-34	0,217	0,425	0,247	0,110	1,000
35-39	0,244	0,418	0,221	0,118	1,000
40-44	0,283	0,415	0,185	0,116	1,000
45-49	0,355	0,387	0,147	0,110	1,000

Educational Composition

2010	0-3	4-8	9-11	12+	TOTAL
15-19	0,053	0,313	0,569	0,066	1,000
20-24	0,069	0,259	0,466	0,207	1,000
25-29	0,109	0,274	0,408	0,209	1,000
30-34	0,166	0,309	0,335	0,189	1,000
35-39	0,214	0,337	0,285	0,164	1,000
40-44	0,278	0,329	0,246	0,147	1,000
45-49	0,356	0,282	0,224	0,139	1,000

Source: Demographic Censuses 2000 and 2010, IBGE, Brazilian Census Bureau

TABLE 8- Education Composition – Mexico

Educational Composition

2000	0-3	4-8	9-11	12+	TOTAL
15-19	0,069	0,340	0,475	0,115	1,000
20-24	0,093	0,291	0,311	0,305	1,000
25-29	0,108	0,296	0,299	0,296	1,000
30-34	0,141	0,307	0,266	0,286	1,000
35-39	0,207	0,331	0,201	0,260	1,000
40-44	0,268	0,363	0,159	0,210	1,000
45-49	0,350	0,357	0,131	0,162	1,000

Educational Composition

2010	0-3	4-8	9-11	12+	TOTAL
15-19	0,027	0,268	0,550	0,155	1,000
20-24	0,041	0,162	0,332	0,466	1,000
25-29	0,064	0,208	0,316	0,411	1,000
30-34	0,089	0,246	0,315	0,350	1,000
35-39	0,102	0,257	0,314	0,327	1,000
40-44	0,142	0,266	0,277	0,316	1,000
45-49	0,204	0,295	0,212	0,289	1,000

Source: Mexico, Demographic Censuses, 2000 and 2010, IPUMS.

TABLE 9- Education Composition – Colombia

Educational Composition

1993	0-3	4-8	9-11	12+	TOTAL
15-19	0,14027	0,5201078	0,2995958	0,040031	1,000
20-24	0,15628	0,4276085	0,2814713	0,1346411	1,000
25-29	0,17387	0,4169232	0,2630218	0,1461897	1,000
30-34	0,20659	0,4084081	0,2428233	0,1421742	1,000
35-39	0,27138	0,4011578	0,201269	0,1261975	1,000
40-44	0,34116	0,3992015	0,161373	0,0982659	1,000
45-49	0,41128	0,3868508	0,1343036	0,0675634	1,000

Educational Composition

2005	0-3	4-8	9-11	12+	TOTAL
15-19	0,06111	0,3354129	0,5123509	0,0911264	1,000
20-24	0,07677	0,2382682	0,4144029	0,2705592	1,000
25-29	0,10577	0,2686049	0,3526193	0,2730052	1,000
30-34	0,14049	0,3264182	0,3076417	0,2254536	1,000
35-39	0,16377	0,3579526	0,2826178	0,1956571	1,000
40-44	0,19365	0,367134	0,2550193	0,1841921	1,000
45-49	0,25047	0,3637352	0,2169287	0,1688643	1,000

Source: Colombia, Demographic Censuses, 1993 and 2005, IPUMS.

TABLE 10- Education Composition – Argentina

Educational Composition

1980	0-3	4-8	9-11	12+	TOTAL
15-19	0,06648	0,48454	0,32114	0,12784	1,000
20-24	0,08205	0,44570	0,15354	0,31872	1,000
25-29	0,11811	0,45936	0,13675	0,28578	1,000
30-34	0,15228	0,47874	0,12252	0,24645	1,000
35-39	0,18447	0,50831	0,10720	0,20002	1,000
40-44	0,21883	0,52613	0,09277	0,16227	1,000
45-49	0,25301	0,54469	0,07722	0,12508	1,000

Educational Composition

2001	0-3	4-8	9-11	12+	TOTAL
15-19	0,0227	0,3378	0,5028	0,1367	1,000
20-24	0,0296	0,2699	0,1673	0,5333	1,000
25-29	0,0363	0,2846	0,1484	0,5306	1,000
30-34	0,0477	0,3193	0,1366	0,4964	1,000
35-39	0,0621	0,3605	0,1288	0,4486	1,000
40-44	0,0801	0,3810	0,1248	0,4141	1,000
45-49	0,1013	0,4048	0,1121	0,3818	1,000

Source: Argentina, Demographic Censuses, 1980 and 2001, IPUMS.

TABLE 11- Education Composition – Uruguay

Educational Composition

1993	0-3	4-8	9-11	12+	TOTAL
15-19	0,02037	0,4709452	0,4491645	0,0595228	1,000
20-24	0,01489	0,3627636	0,3972185	0,2251234	1,000
25-29	0,01862	0,4239034	0,321715	0,2357659	1,000
30-34	0,02487	0,4627501	0,2981969	0,2141866	1,000
35-39	0,02758	0,4407034	0,3386952	0,1930263	1,000
40-44	0,04858	0,4552165	0,3040652	0,192134	1,000
45-49	0,07046	0,5114178	0,2500916	0,1680303	1,000

Educational Composition

2005	0-3	4-8	9-11	12+	TOTAL
15-19	0,01149	0,3449912	0,540357	0,1031626	1,000
20-24	0,01294	0,2789629	0,3065662	0,4015358	1,000
25-29	0,01642	0,3063542	0,3121884	0,3650377	1,000
30-34	0,01577	0,2995988	0,3272613	0,3573664	1,000
35-39	0,02137	0,3680355	0,2711306	0,3394676	1,000
40-44	0,02639	0,4029904	0,2510701	0,3195542	1,000
45-49	0,02961	0,3938281	0,2502035	0,3263598	1,000

Source: Uruguay, Demographic Censuses, 1996 and 2006, IPUMS.

TABLE 12: EDUCATION COMPOSITION – APC PROJECTIONS

BRAZIL - PROJECTION APC					MEXICO - PROJECTION APC			
Educational Composition					Educational Composition			
2030	0-3	4-8	9-11	12+	2030	0-3	4-8	9-11	12+
15-19	0,009	0,099	0,840	0,052	15-19	0,005	0,092	0,727	0,177
20-24	0,013	0,087	0,728	0,172	20-24	0,005	0,063	0,423	0,509
25-29	0,016	0,080	0,721	0,183	25-29	0,006	0,075	0,383	0,536
30-34	0,024	0,090	0,654	0,232	30-34	0,010	0,082	0,398	0,509
35-39	0,033	0,103	0,577	0,286	35-39	0,016	0,108	0,443	0,433
40-44	0,049	0,130	0,558	0,263	40-44	0,022	0,113	0,442	0,422
45-49	0,090	0,160	0,515	0,236	45-49	0,033	0,123	0,398	0,445
COLOMBIA - PROJECTION APC					ARGENTINA - PROJCETION APC			
Educational Composition					Educational Composition			
2030	0-3	4-8	9-11	12+	2030	0-3	4-8	9-11	12+
15-19	0,011	0,157	0,507	0,325	15-19	0,006	0,117	0,446	0,431
20-24	0,005	0,054	0,280	0,661	20-24	0,004	0,062	0,113	0,821
25-29	0,005	0,045	0,264	0,686	25-29	0,006	0,060	0,097	0,836
30-34	0,012	0,072	0,282	0,635	30-34	0,009	0,114	0,167	0,710
35-39	0,022	0,127	0,296	0,555	35-39	0,010	0,136	0,144	0,709
40-44	0,030	0,161	0,301	0,509	40-44	0,012	0,148	0,121	0,719
45-49	0,035	0,159	0,279	0,527	45-49	0,018	0,159	0,117	0,706
URUGUAY - PROJECTION APC								
Educational Composition								
2030	0-3	4-8	9-11	12+				
15-19	0,001	0,161	0,659	0,179				
20-24	0,001	0,146	0,459	0,394				
25-29	0,003	0,220	0,482	0,295				
30-34	0,004	0,222	0,349	0,425				
35-39	0,003	0,204	0,377	0,417				
40-44	0,003	0,202	0,361	0,434				
45-49	0,005	0,226	0,332	0,437				