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Centro de Estudios
Distributivos, Laborales y Sociales

Maestría en Economía
Facultad de Ciencias Económicas

UNIVERSIDAD NACIONAL DE LA PLATA

Female Labor Force Participation in Latin America: Evidence of Deceleration

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Documento de Trabajo Nro. 181
Marzo, 2015

ISSN 1853-0168

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Abstract

This paper documents changes in female labor force participation (LFP) in Latin America exploiting a large database of microdata from household surveys of 15 countries in the period 1992-2012. We find evidence for a significant deceleration in the rate of increase of female LFP in the 2000s, breaking the marked increasing pattern that characterized the region for at least 50 years. The paper documents and characterizes this fact and examines various factors that could be driving the deceleration. Through a set of simple decompositions the paper helps to disentangle whether the patterns in female LFP are mainly accounted for by changes in the distribution of some direct determinants of the labor supply decision (e.g. education), or instead they are chiefly the consequence of some more profound transformation in behavior.

JEL codes: J2, J1
Keywords: female labor force participation, Latin America, decompositions

* This paper is part of a larger project on "Enhancing women labor market participation and economic empowerment through better policies in Latin America", jointly developed by CEDLAS-UNLP and CIEDUR, with the support of the International Development Research Centre (IDRC) of the Canadian government. Correspondence to Leonardo Gasparini, gasparinilc@gmail.com. We would like to thank Carolina Garcia Domench, Pablo Gluzmann and Víctor Funes for their assistance and suggestions. We are also grateful to Carolina Robino, Guillermo Cruces, Alma Espino, Jorge Paz, Martín Tetaz, Facundo Albornoz and seminar participants at AAEP (Posadas, 2014), Network of Inequality and Poverty (UNGS, 2014) and Conference on Social Protection (IDRC and IPC, Brasilia, 2014) for valuable comments and suggestions. Errors are the exclusive responsibility of the authors.

1. Introduction

The increasing participation of women in the labor markets is among the most salient economic and social transformations in the world over the last fifty years. Latin America has not been an exception: on average, while in the 1960s only two out of ten prime-age women in the region were either working or looking for a job, that proportion climbed to more than six out of ten at the beginning of the 2010s. The process of increasing female labor force participation, remarkably steep and uninterrupted, contrasts against a backdrop of turbulent economic and social dynamics that have characterized Latin America in the last half century.

In this paper we take a look at the changes in female LFP in Latin America over the period 1992-2012 by exploiting a large dataset of microdata from household surveys (SEDLAC, 2014). Survey microdata allows a closer monitoring of the developments in the labor market than census data, as information is collected on a yearly basis, and contributes to a richer analysis, as surveys include a wider set of potential covariates of labor decisions.

We believe this paper makes three contributions to the rich literature that documents and analyzes labor participation in Latin America with a gender perspective.[1] First, it provides careful evidence on female labor force participation in Latin America based on microdata from a large set of national household surveys, which were previously standardized to increase the comparability of the results across countries. Second, it unveils a potentially interesting fact, which to our knowledge has not been highlighted yet: after around half a century of marked growth in female labor force participation, there are signs of a widespread and significant deceleration in the entry of women into the Latin American labor markets. That deceleration seems to have been taking place since the early/mid-2000s, and it applies to all groups of women, but particularly to those married, and in more vulnerable households. Third, through a set of simple decompositions the paper helps to disentangle whether the patterns in female LFP are mainly accounted for by changes in the distribution of some direct determinants of the labor supply decision (*e.g.* education) , or instead they are chiefly the consequence of some more profound transformation in behavior.

The rest of the paper is organized as follows. In section 2 we discuss some issues regarding the measurement of labor force participation in Latin America, including data sources. Section 3 presents the main patterns of

[1] See Amador *et al*., 2013; Chioda, 2011; Elías and Ñopo, 2010; World Bank, 2012, among others.

female labor force participation over time. The decision to participate in the labor market is determined by preferences and opportunities that are strongly dependent on personal and family factors, such as education, age, marital status or the number of children. In section 4 we characterize patterns in labor participation over time by groups defined by these variables. In section 5 we implement the decompositions for the changes in female LFP and discuss the main results, while in section 6 we take a look at the impact of changes in the sectoral structure of the economy on the share of female employment. Section 7 closes with some concluding remarks.

2. Data and measurement issues

Although the concept of *being in the labor force* is in principle simple to grasp, the precise definition imply significant conceptual challenges and is often empirically hard to implement without ambiguities. Typically, a person is in the labor force if she is either employed or actively seeking a job, two concepts which are difficult to define accurately.

On the one hand, a person is employed if she is regularly engaged in an economic activity. The idea is simple, but raises some issues difficult to solve: what is an "economic activity"? What implies to be "regularly" engaged? The national statistical offices of Latin America typically measure employment using the ILO guidance[2], nonetheless the definitions leave enough room for statistics to diverge across countries, even when a similar general definition is applied.

On the other hand, the concept of being "actively seeking a job" is also full of ambiguities, and it is difficult to capture in a typical household survey or census, as it requires a detailed inquiry on all the activities that a person carried out with the aim of finding a job. The heterogeneity across countries in measuring employment is magnified when measuring labor force participation (LFP). Being aware of these comparability problems does not mean dismissing the use of data altogether. With all their limitations surveys still provide valuable information, being the best available sources to generate useful statistics of labor and socio-economic variables.

[2] The International Labour Organization (ILO) takes a particular definition: the employed are "those persons who during a specified brief period such as one week or one day, (a) performed some work for wage or salary in cash or in kind, (b) had a formal attachment to their job but were temporarily not at work during the reference period, (c) performed some work for profit or family gain in cash or in kind, or (d) were with an enterprise such as a business, farm or service but who were temporarily not at work during the reference period for any specific reason" (ILO, 1988).

The practical definition of employment raises some relevant conceptual debates. We briefly discuss two of the most important ones. First, under the usual definition a person who works one hour in a week is classified as "employed", although her attachment to the labor market is very loose. Second, some activities, such as housework and children rearing, are not counted as employment when they are not performed for wage or salary, as it is the typical situation for housewives. Of course, this is a controversial issue that is particularly relevant for studying female labor force employment. In this paper we follow the usual practice of including only the *market* activities as employment, although we believe that there are areas in which a wider, more comprehensive definition of employment should be applied (*e.g.* social protection, labor benefits).

There are two main data sources to study labor force participation: household surveys and censuses. Relying on household survey data has two main drawbacks. The first one is the typical statistical limitation of working with samples instead of the whole population, while the second one is the scarcity of national surveys in decades before the 1990s. Mainly due to these reasons, part of the literature has used censuses as the main source of data to study long-run trends in labor force participation (*e.g.* Chioda, 2011).

Despite these arguments, two characteristics of this study tip the scales towards the use of household survey data: (i) our focus is on the developments of the labor markets in the last two decades, when the system of national household surveys was already fully developed in most Latin American countries, and (ii) we are interested in studying the interactions between labor force participation and other variables that are reported in household surveys, but typically not in censuses, such as income or earnings.[3] Using survey data allows a closer monitoring of the developments in the labor market, as information is collected on a yearly basis and not every ten years as in censuses, and also allows a richer analysis, as much more variables are collected in a typical survey than in a typical census, both variables that help measuring labor force participation with more precision, and variables that are potential covariates of LFP.

All the statistics in this paper are obtained by processing microdata from household surveys, which are part of the Socioeconomic Database for Latin America and the Caribbean (SEDLAC), jointly developed by CEDLAS at the

[3] Incomes are reported in some cases, such as the census of Brazil.

Universidad Nacional de La Plata and the World Bank's LAC poverty and gender group (LCSPP). SEDLAC contains information on almost 300 household surveys in 25 LAC countries. In this paper we use microdata for 15 Latin American countries for the period 1992-2012, covering all countries in mainland Latin America, with the exception of Colombia and Guatemala (Table 2.1). While the first one has a consistent and comparable body of National Household Surveys only for the 2000s, Guatemala does not have a consolidated system of surveys yet. Most household surveys included in the sample are nationally representative; the exceptions are Argentina and Uruguay before 2006, where surveys cover only urban population which nonetheless represents more than 85% of the total population in both countries.

Household surveys are not uniform across Latin American countries, and in several cases not even within a country over time. The issue of comparability is of a great concern. We have made all possible efforts to make statistics comparable across countries and over time by using similar definitions of variables in each country/year, and by applying consistent methods of processing the data (see SEDLAC, 2014).

We present unweighted average statistics for Latin America as a way to summarize an enormous bulk of information. Additionally, to compute averages we constructed a balanced panel filing the gaps where surveys were missing by interpolating information from adjacent surveys, as several countries in the region do not have National Household Surveys each year.

Most of the analysis on labor supply is restricted in this study to people aged 25 to 54 years old.[4] We prefer to isolate our analysis from factors that are more related to the issue of youth employment than to gender employment. Also, we limit our analysis to people younger than 55, since employment in older people has other determinants and dynamics (*e.g.* the relevance of a pension system).

3. Trends in female labor force participation

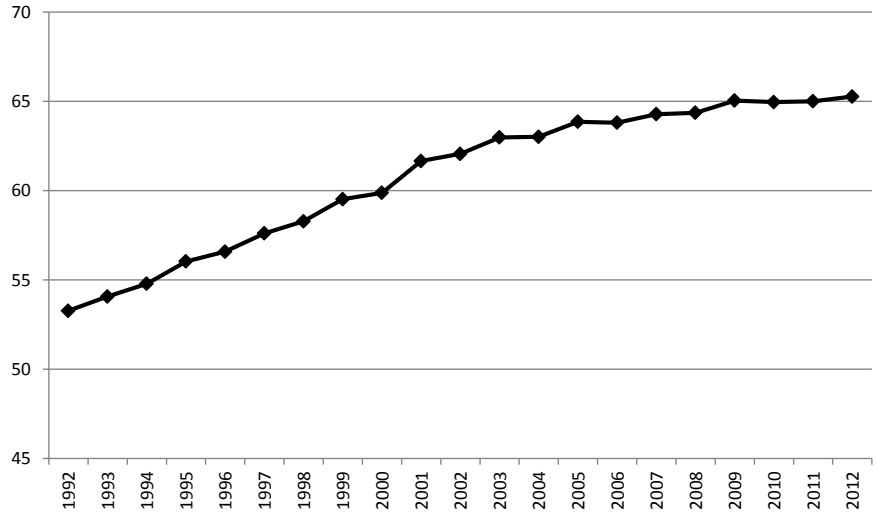
The strong increase in female LFP is arguably one of the central stylized facts about the dynamics of the Latin American labor markets in the second half of the XX century. The evidence drawn from census data suggests that this increasing pattern was steep and uninterrupted over that period (Chioda and Demombynes, 2010). Based on census data, Chioda (2011) reports that the LFP of married women increased from 11% in 1960 to 40% in the early 2000s. The growth was significant but slowed down in the 1960s, and speeded up in the

[4] The international literature also often chooses this age bracket (*e.g.* Blau and Kahn, 2013).

following decades. The remarkable rise in female LFP over the last half century was achieved by both married and unmarried women, following a pattern initiated some decades before in the developed world (Chioda, 2011).

In contrast to other more historical approaches, in this study we focus the analysis in the latest two decades (period 1992-2012) exploiting annual information drawn from National Household Surveys, which allows us a closer and more detailed view of the labor market dynamics in Latin America. One of our main findings is that while the process of increasing female LFP continued at high speed in the 1990s, it substantially lost pace in the 2000s, in particular in the second half of that decade (Figure 3.1). While the female LFP rose at a rate of 0.81 percentage points per year between 1992 and 2005, that rate went down to 0.20 percentage points between 2005 and 2012. The contrast between a strong increase in female LFP during the 1990s and a substantial deceleration in the 2000s is one of the main facts to be explored in this study. [5]

Figure 3.1: Female labor force participation
Latin America 1992-2012, unweighted means. Women aged 25-54.



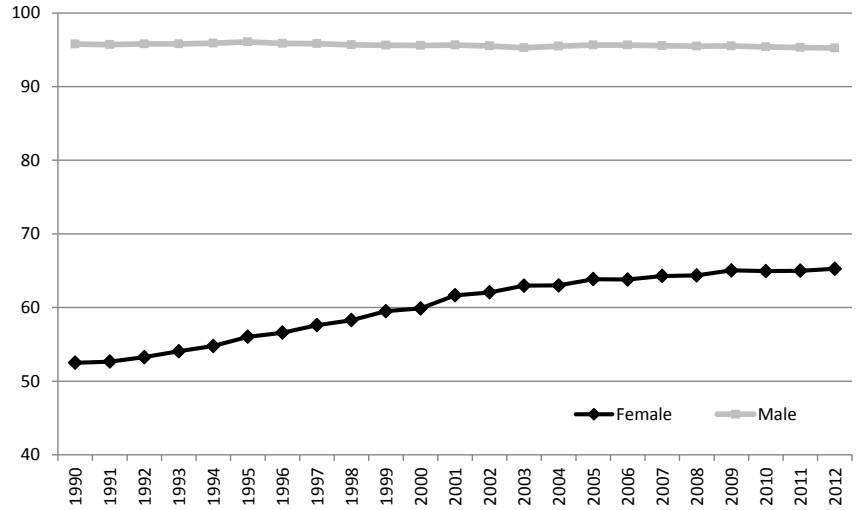
Source: own calculations based on microdata from national household surveys.

The LFP of prime-age males in Latin America is typically very high and relatively stable: it remained fluctuating around 95.7% from the early 1990s to

[5] Naturally, this pattern is not representative of all Latin American countries, but sufficiently generalized to drive the mean: Argentina, Bolivia, Brazil, Chile, Costa Rica, Mexico, Panama, Paraguay and Venezuela have experienced a deceleration in the growth of female LFP in the early-to-mid-2000s after at least more than one decade of fast growth.

mid-2000s, and then slowly decreased to 95.2% in 2012 (Figure 3.2).[6] This pattern suggests that the increase in female LFP in the 1990s and part of the 2000s is fully a gender phenomenon, while the stagnation in the second half of the 2000s may be in part, but only in part, be traced to some negative more general forces with impact in the LFP.

Figure 3.2: Female and male labor force participation
Latin America 1992-2012, unweighted means. Adults aged 25-54.



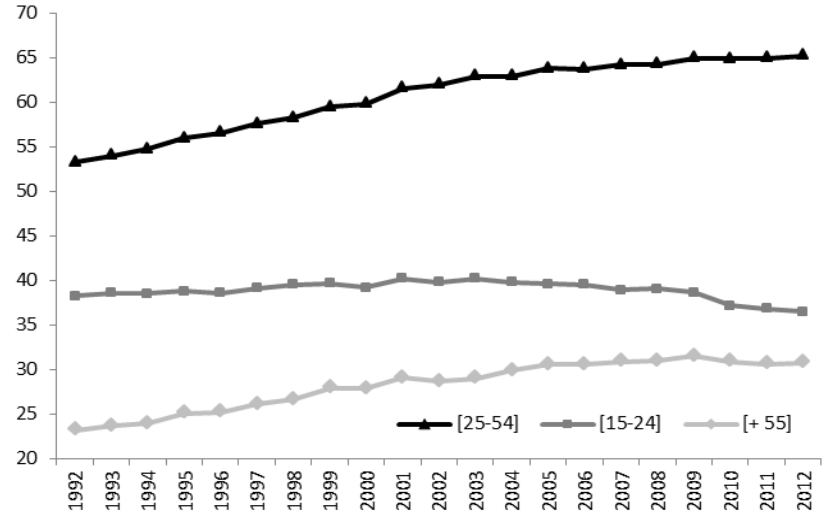
Source: own calculations based on microdata from national household surveys.

There are substantial differences in female LFP by age group, not only in levels but also in trends (Figure 3.3). LFP of young females (aged 15 to 24) is significantly lower than among prime-age women; more interestingly, the time patterns have also been dissimilar. Young women's LFP stayed unchanged in the 1990s and declined since the mid-2000s. On average for the region, the share of young females participating in the labor force fell by two points between 2002 and 2012. The increase in schooling rates is likely one of the main drivers of the decreasing participation of young women in the Latin American labor markets (Chioda 2011, Marchionni *et al*. 2012, Gasparini and Marchionni 2014). It is also interesting to notice that the change from stable to decreasing LPF for young females occurred at the same time as the change from rapid to slow increase of prime-age women's LFP, which may call for a factor that affects both groups similarly. Participation among old-age women

[6] Given the differences in trends, the male-female gap in LFP plunged from 42.5 percentage points in the early 1990s to 34 in the early 2000s, and then more slowly fell to reach a value of 30 in 2012.

(+55) is lower (below 30%) and followed a similar pattern to that for their prime-age counterparts.[7]

Figure 3.3: Female labor force participation by age
Latin America 1992-2012, unweighted means. Women aged 15-64.



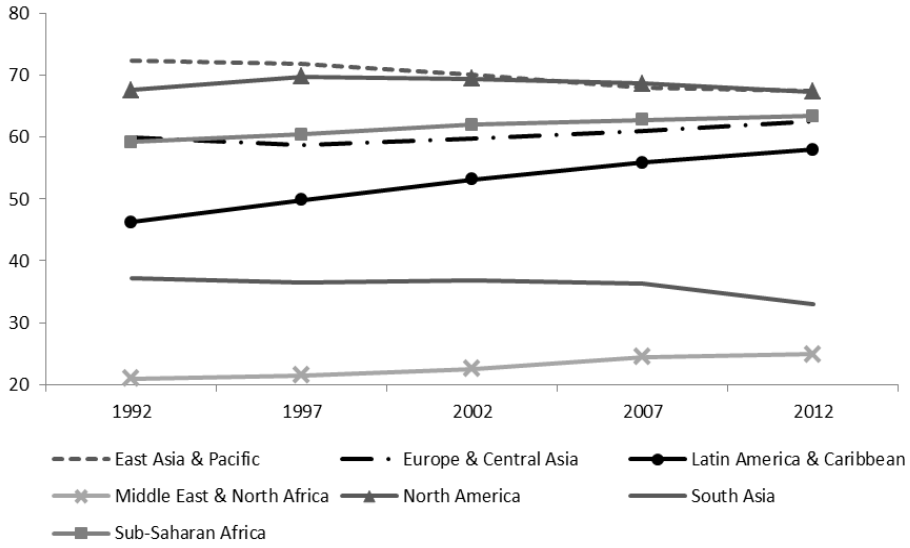
Source: own calculations based on microdata from national household surveys.

When placed in international perspective, the increase in female LFP in Latin America has been particularly strong. The position of Latin America in the international ranking of female LFP has not changed in the last two decades but the gap with the top regions has substantially shrunk (Figure 3.4).[8]

Figure 3.4: Female labor force participation in the World
Regions of the World 1992-2012. Women aged 15-64.

[7] Employment and unemployment have also exhibited specific patterns by decade. The more turbulent labor markets in the 1990s were characterized by a strong increase in female LFP, employment, and unemployment. Instead, the stronger labor situation in the 2000s witnessed a slower increase in female LFP, slower entry of women into jobs, and declining unemployment levels (Gasparini and Marchionni, 2014).

[8] Notice that the figure refers to the age range 15-64, and hence includes changes in labor participation in youths and the older women, groups that we exclude from the analysis.



Source: own calculations based on World Development Indicators.

We have shown that the growth in female LFP in Latin America was strong during the 1990s but debilitated recently, especially since the mid-2000s. In the next section we present evidence on the patterns across different population groups.

4. Characterizing changes in female labor participation

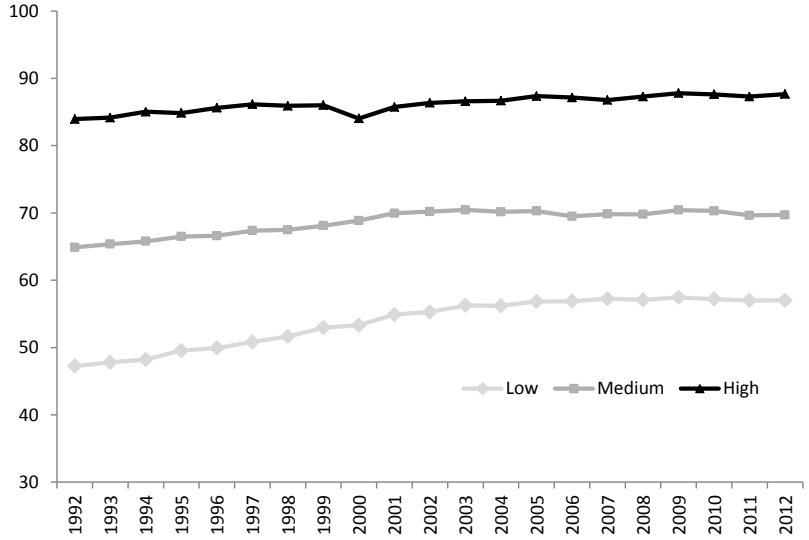
Working women are not a random sample of the female population: the decision to participate in the labor market is determined by preferences and opportunities that are strongly dependent on personal and family factors, such as education, age, marital status or number of children. In this section we characterize female workers in terms of these variables, with a particular focus on changes over time.

Education is one of the main determinants of the LFP among women. On average, while the probability of being labor active is 57% for a Latin American prime-age woman with low education (without a secondary school degree), it is 88% for a woman with high education (with a tertiary degree). This gap of about 30 percentage points has been rather unchanged in the last decade after a reduction of 7 points in the 1990s (Figure 4.1).

The evidence suggests some similarities and some significant differences in the patterns of entry into the labor market across education groups. First, LFP increased over the two decades for all groups, although the increase was slower in the 2000s. The contrast between decades is much more marked for those

women without a tertiary degree. While in the 1990s the LFP increased 8 points for those with low education and 2.4 points for those with tertiary education, in the 2000s the rates were similar: 1.7 and 1.3, respectively. Therefore, although the nature of the changes were similar across education groups, most of the action took place for women with low (and to a lesser extent medium) education, which are also the majority in the Latin American prime-age female population. Women without a tertiary degree strongly entered the labor market in the 1990s, but substantially slowed down this behavior in the early to mid-2000s.[9]

Figure 4.1: Female labor force participation by education
Latin America 1992-2012, unweighted means. Women aged 25-54.

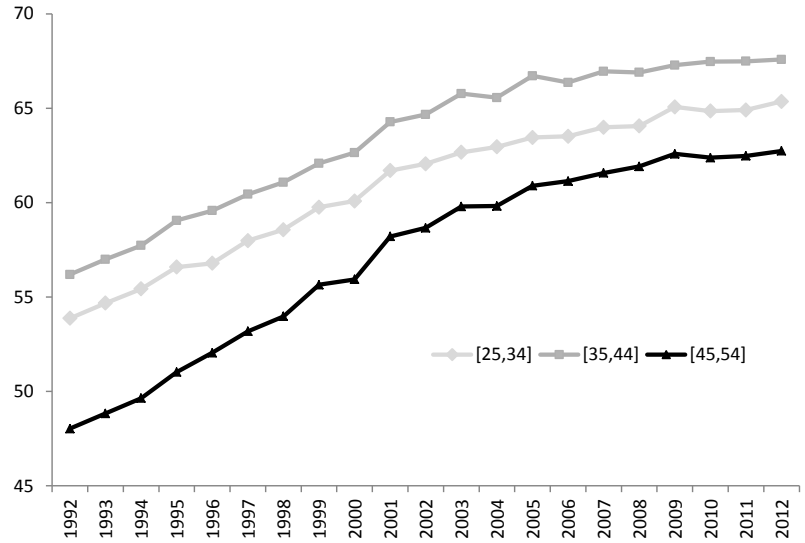


Source: own calculations based on microdata from national household surveys.
Note: Low education=less than complete secondary, medium education=maximum education is complete secondary or incomplete tertiary, high education=maximum education is complete tertiary.

The increasing trend in LFP over the 1990s and early 2000s, and the deceleration of growth rates since mid-2000s is common across age groups among prime-age women, but labor participation grew faster for the older group in the 1990s, shrinking the gap in LFP between age-groups (Figure 4.2).

[9] Interestingly, the pattern is very different in the intensive margin. While weekly hours of work did not change much for the rest of the female workers, the group of low education experienced a fall of 3 hours in the 1990s and almost an additional hour in the 2000s. Two phenomena are consistent with this observation: first, the intense entry into the labor market could have mostly occurred in part-time jobs; and second, there could have been a more generalized reduction of hours for all working women (not only the new entrants).

Figure 4.2: Female labor force participation by age group
Latin America 1992-2012, unweighted means. Women aged 25-54.

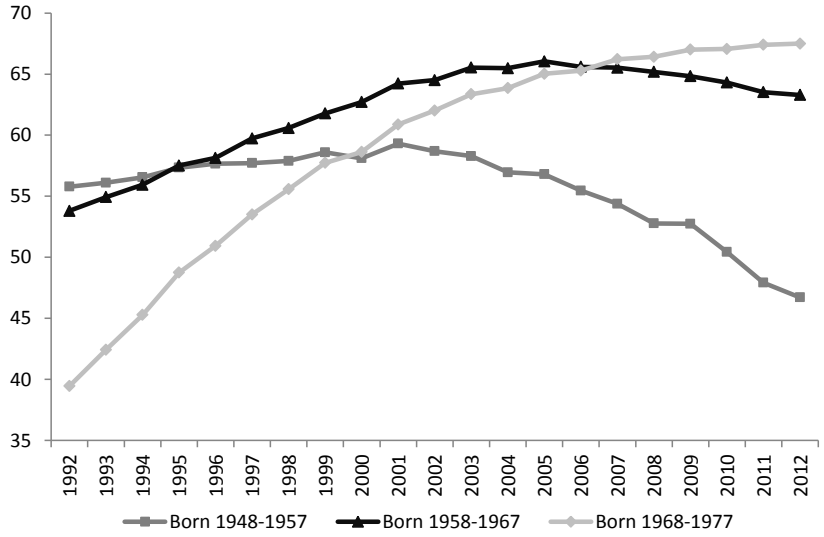


Source: own calculations based on microdata from national household surveys.

The analysis of female LFP by age cohorts provides some interesting results and unveils the recent deceleration in the growth of female LFP. Consider the three cohorts in Figure 4.3: the first cohort includes women born between 1948-1957, those born between 1958-1967 are in the second cohort, and the youngest group of females, born between 1968-1977, constitutes the third cohort. Besides all cohorts present the typical inverse-U shape for the LFP-age profile, the younger the cohort the higher the profile, suggesting a long term pattern of increasing female LFP. For instance, female LFP at the average age of 40 was 55.8% for the first cohort, 64.5 for the second, and 67.5% for the third, that is, a large jump between the two first cohorts and a small one for the youngest cohort.

The increasing height of the participation profiles over the cohorts suggests that the overall rate of female LFP is subject to inertia. The following example illustrates the point. In a given year the pool of females aged 25-54 include many that belong to older cohorts. These older cohorts typically have lower education and other cultural factors that go against higher labor participation. In the following years these women are replaced in the pool aged 25-54 by younger cohorts. Other things equal, this replacement tends to increase the average rate of female LFP. Interestingly, the overall rate of female LFP in Latin America experienced a deceleration in the 2000s, despite this factor of inertia.

Figure 4.3: Female labor force participation by cohort
Latin America 1992-2012, unweighted means.



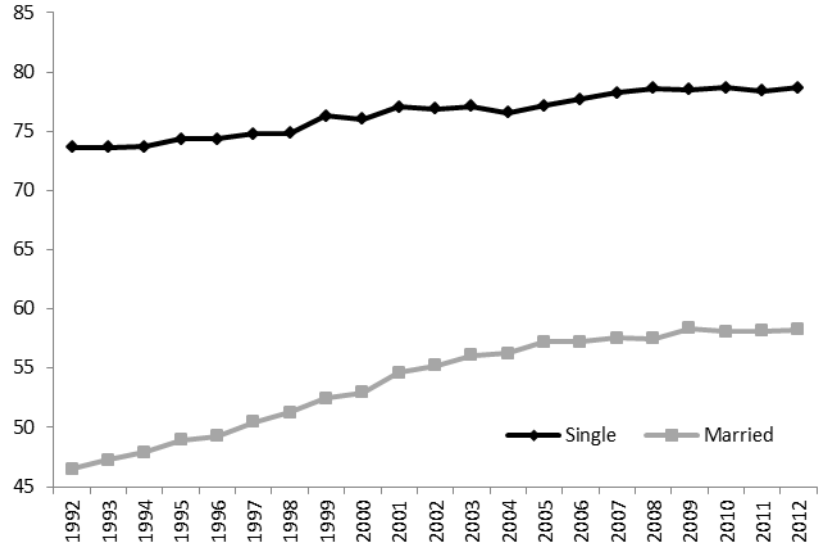
Source: own calculations based on microdata from national household surveys.

The deceleration could also be traced in cohort-specific patterns in the LFP-age profiles. For example, note the difference in the rates of growth of LFP of the second cohort over the 1990s and the third cohort over the 2000s. When women in the second cohort went from 30 to 40 years old (on average), their labor participation grew by 10.7 percentage points, while LFP increased only by 5.5 points for women in the youngest cohort at the same age.

The female decision of participating in the labor market has been closely linked to the marital status, in particular to the presence of a male spouse in the household. Women living under the same roof of a male breadwinner are substantially less likely to engage in labor market activities. In Figure 4.4 we divide prime-age women according to whether they live or not with a partner, either in a legal marriage or a consensual union. Not surprisingly, the LFP in the "single" category, which includes women who in principle are the breadwinners of their households, is much higher than in the "married" category (more than 20 percentage points in 2012). Similarly to the developments in other regions of the world, in Latin America the increase in female LFP was specially marked among married women. LFP among unmarried women was already high and increased at lower rates. For both groups the rapid increase came to a halt in the early 2000s; that stop is

particularly evident among the married, since it contrasts with the dramatic growth in the previous decade.[10]

Figure 4.4: Female labor force participation by marital status
Latin America 1992-2012, unweighted means. Women aged 25-54

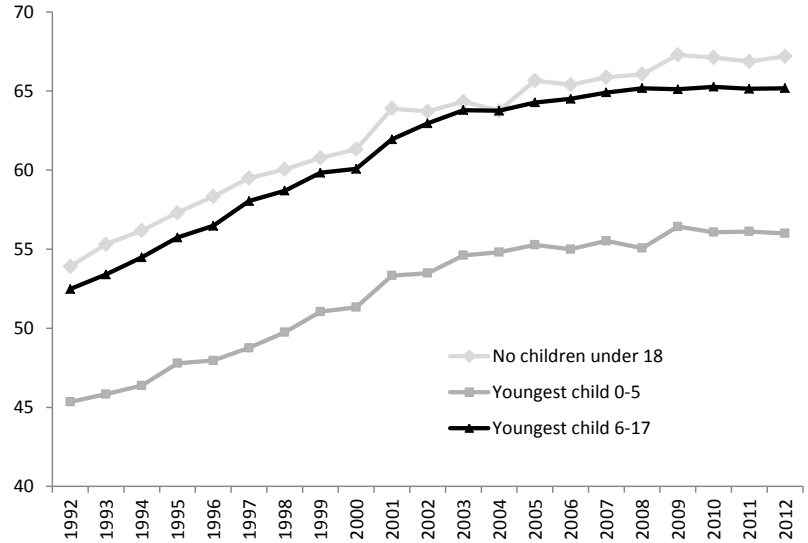


Source: own calculations based on microdata from national household surveys.
Note: Married=living with a partner (legally married or not).

The presence of children and their ages are relevant determinants of female labor market decisions. In Latin American societies, mothers are usually the main children caregivers, what compromises their possibilities to actively engage in work activities. The evidence in Figure 4.5 is consistent with this idea: the younger the children the lower the mothers labor participation. In 2012, the LFP rate was 67% for prime-age women with no children under 18 years old, while for women with children under 5 the rate was only 56%. The time trends for the three groups are similar, although the contrast between the 1990s and the 2000s is a little more marked for those women with children between 6 and 17.

[10] The patterns for hours of work were significantly different: for both groups they fell in the 1990s and stayed roughly unchanged in the 2000s.

Figure 4.5: Female labor force participation by age of children
Latin America 1992-2012, unweigthed means. Women aged 25-54.

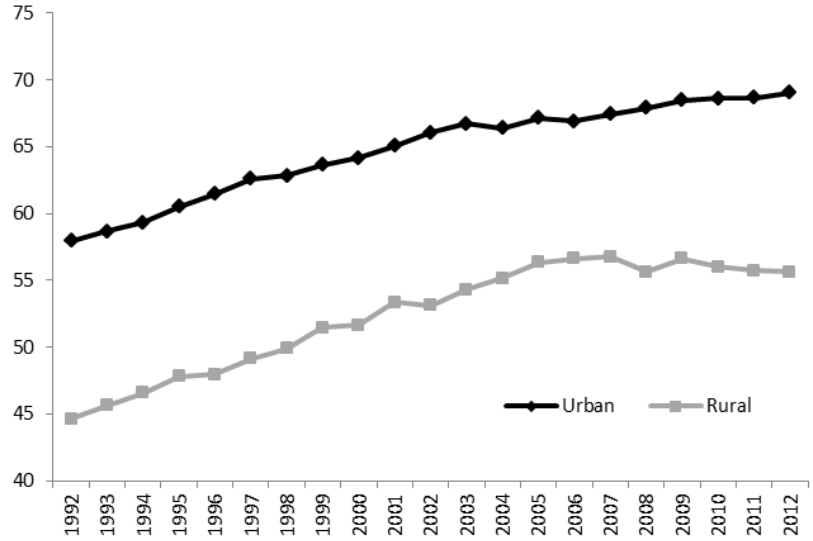


Source: own calculations based on microdata from national household surveys.

When comparing geographic areas, we find that the pattern of rapid increase in the 1990s and the slowdown of the 2000s is more marked among rural women. On average for the region, female LFP in rural areas grew 8.5 points in the 1990s and just 2.5 in the 2000s (Figure 4.6).[11]

[11] The large gap in female LFP between rural and urban areas estimated with household survey data may be due to the ambiguities in the definition of labor force participation. In rural areas is more common to find household members who help in a family productive undertaking, but do not receive a formal payment or even do not have a regular assignment to that activity. Although household surveys typically include a question aimed at capturing these work situations, an individual in this condition not always declares to be employed.

Figure 4.6: Female labor force participation by area
Latin America 1992-2012, unweighted means. Women aged 25-54.

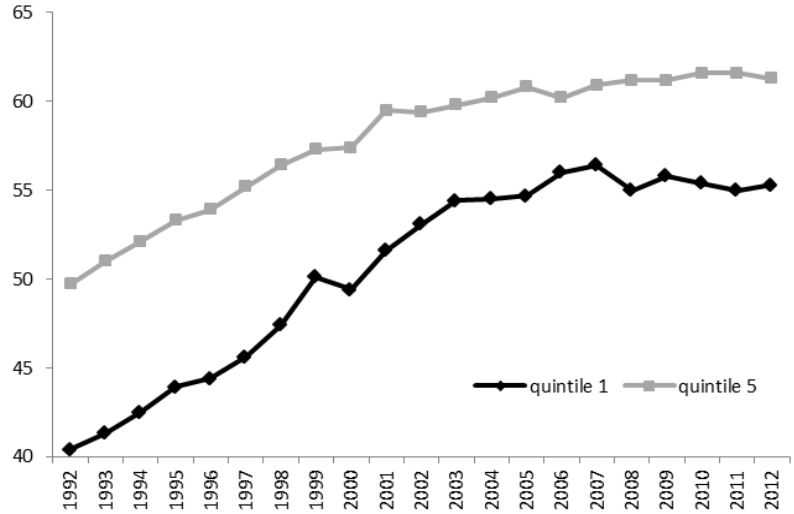


Source: own calculations based on microdata from national household surveys.

Labor decisions are usually taken within a family framework. We have seen that married women tend to work less than unmarried ones, and women with young children are less likely to participate in the labor market. The spouse's income is also correlated with female labor decisions. The relationship is however complex: women married to higher-income partners are not pressed by the economic need to get a paid job, but at the same time they tend to have some characteristics (*e.g.* more education) that make them more prone to participate in the labor market. The evidence suggests that in Latin America women married to higher-income partners tend to work more than the rest. Interestingly, LFP increased more strongly for those women married to low-income partners in the 1990s, but experienced a larger deceleration in this process in the 2000s (Figure 4.7).[12]

[12] Similar patterns arise when grouping women according to their household per capita income. Poorer women tend to participate much less that their richer counterparts. Of course, there is circularity here, since household income depends on female earnings, so the decision of not working by an adult woman likely sends the household to a lower decile. Again, the intensity in the labor participation changes clearly differs across income groups. In the 1990s low-income women entered the labor force at a higher rate than wealthier women (Espino 2005, World Bank 2012). Instead, in the 2000s the increase was much slower, both in comparison with the previous decade, and in comparison with the higher-income groups.

Figure 4.7: Female labor force participation by income of spouse
Latin America 1992-2012, unweighted means. Married women aged 25-54.



Source: own calculations based on microdata from national household surveys.
Note: National quintiles of individual income.

Summing up, the evidence presented so far shows that the pattern of increasing female LFP over the 1990s and the subsequent slowdown since the mid-2000s is a common feature characterizing women from different educational, demographic, geographic, and economic groups. Also, the rate of growth of LFP in the 1990s was faster among women with lower attachment to the labor market (*e.g.* with less education, married), and the deceleration in the 2000s more marked.

5. Decompositions: methodology and results

In order to assess the impact of changes in the distribution of some variables on the aggregate rate of female LFP, we implement a decomposition in which the population of potential female workers (in our case, those aged 25 to 54) are divided according to some covariate of labor participation, say educational levels. The change in the aggregate rate of female LFP over time could be decomposed into two terms: a weighted average of the changes in LFP within groups (the *within* effect) and a weighted average of the changes in the share of women in each group (the *composition* effect).[13] If changes in the distribution of the variable used to define the groups are the main drivers of changes in LFP, the second term will be relatively large.

[13] See Elías and Ñopo (2010) and Amador *et al.* (2013), among others who implement this decomposition.

Analytically, the overall rate of female LFP P_t can be expressed as a weighted average of the LFP rates of all the groups k

$$P_t = \sum_k P_{kt} . \omega_{kt}$$

where P_{kt} is the participation rate for group k at time t and ω_{kt} is the fraction of women in group k at time t. The change in female LFP over time can then be decomposed into a change in participation rates within groups, and changes in the structure of the female population across groups.

$$P_{t+1} - P_t = \frac{1}{2}\left[\sum_k \omega_{kt}(P_{kt+1} - P_{kt}) + \sum_k \omega_{kt+1}(P_{kt+1} - P_{kt})\right] + \frac{1}{2}\left[\sum_k P_{kt}(\omega_{kt+1} - \omega_{kt}) + \sum_k P_{kt+1}(\omega_{kt+1} - \omega_{kt})\right]$$

Rearranging,

$$\Delta P_t = \underbrace{\sum_k \overline{w}_k \, \Delta P_k}_{Within} + \underbrace{\sum_k \bar{P}_k \, \Delta w_k}_{Composition}$$

where $\overline{w}_k = (w_{kt} + w_{kt+1})/2$ and $\bar{P}_k = (P_{kt} + P_{kt+1})/2$, and Δ stands for changes between time t and t +1. We implement this methodology dividing the population alternatively by education, age, marital status, number/age of children and area of residence (urban-rural).[14]

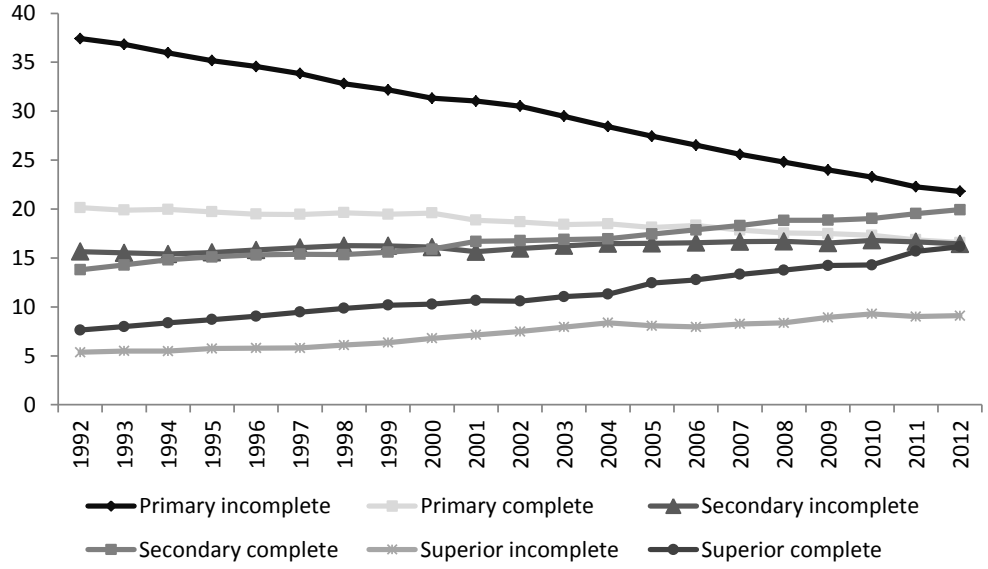
Identifying all the causal links between labor participation and its covariates is extremely difficult and typically requires a structural general equilibrium model, a task extremely arduous to be carried out for one country and impossible for the whole region. Here, we take a more modest approach by performing a set of simple decompositions, which implies assuming that the main determinants of the changes in education (or other covariates) are mostly determined by factors that are not affected by LFP issues, and that the propensity to participate in the margin will be similar than for the mean. At least for education, we believe that these are not very strong assumptions.

We start the discussion of the results focusing on one of the main determinants of the female LFP: education. Latin American countries have experienced a

[14] These variables are chosen because they belong to the intercept between the set of variables identified by the economic theory as relevant determinants of the female labor supply (Killingsworth and Heckman, 1986), and the set of variables commonly included in the Latin American household surveys (SEDLAC, 2013).

remarkable increase in education in the last decades, particularly among women. Figure 5.1 illustrates this phenomenon dividing the population of adult women (aged 25 to 54) into groups according to the educational level attained. The progress has been undeniable: while on average in 1992 more than a third of Latin American adult women had not finished primary school, in 2012 that share fell to around a fifth. On the other hand, the share of adult women with a tertiary degree increased from 8% to 10% in the 1990s, and then strongly climbed to 17% in the following decade.

Figure 5.1: Changes in composition of women by educational level
Latin America 1992-2012, unweighted means. Women aged 25-54.



Source: own calculations based on microdata from national household surveys.

Female LFP is strongly linked to formal education. While on average roughly half of Latin American women with incomplete primary school are active in the labor market, that share climbs to almost 90% for those with a tertiary education degree (Table 5.1).

Table 5.1: Female LFP by education
Average for Latin America, unweighted means. Women aged 25-54.

	Female LFP			Shares		
	1992	2002	2012	1992	2002	2012
Primary incomplete	43.5	50.7	51.7	36.4	29.5	21.0
Primary complete	47.8	56.0	58.0	19.9	18.6	16.4
Secondary incomplete	54.2	61.1	62.3	16.3	16.2	16.5
Secondary complete	63.7	68.2	68.0	13.8	17.1	20.3
Superior incomplete	68.5	75.7	73.9	5.7	7.9	9.3
Superior complete	83.9	86.5	87.8	7.8	10.7	16.5
Total	53.0	62.1	65.7	100.0	100.0	100.0

Source: own calculations based on microdata from national household surveys.

If more women have access to higher educational levels, which are linked to higher labor participation, then the process of education expansion could be the main driver of the global increase in female LFP. The results of the decomposition in Table 5.2 help assessing this hypothesis. On average, female LFP increased 9.1 points in the 1990s.[15] The within effect accounts for 6.6 points, meaning that if no changes in education had occurred in that decade female LFP would have nonetheless increased by that amount. The composition effect suggests that if the propensity to participate in the labor market had not changed within groups over the decade, the female LFP would have nonetheless increased 2.5 points due to a more educated composition of the female population.

Table 5.2: Decomposition of changes in female LFP by education
Latin America, unweighted means. Women aged 25-54.

	1992-2002	2002-2012	1992-2012
Difference	9.1	3.6	12.7
Effects			
Within	6.6	0.9	7.4
Composition	2.5	2.7	5.3

Source: own calculations based on microdata from national household surveys.

Interestingly, while the within effect is dominant in the 1990s it substantially shrinks in the 2000s and becomes dominated by the composition effect. In fact, the latter effect remains stable over time: the education expansion was smooth,

[15] There are some small differences between the figures in these exercises and those reported in previous sections due to some methodological issues related to the implementation of the decompositions. For the same reason there are also small differences across decompositions, which arise mainly because of changes in the number of observations.

implying a stable impact over the female LFP. The small within effect in the 2000s is the result of the negligible increase in female LFP in most education groups, documented in the first panel of Table 5.1.

In summary, the female LFP increase in the 2000s was not only modest compared to the one experienced in the 1990s, but also mostly driven by an enhanced education structure of the female population, as opposite to an autonomous increase in participation within education groups.

As it can be seen from the equations the within and composition effects can be decomposed into the contributions of each educational level. The large relevance of the within effect in the 1990s is mostly accounted for by a strong increase in LFP among women without a secondary degree (Table 5.3). The dramatic fall in the relevance of the within effect in the 2000s is explained by the reduction in the rate of increase of LFP in all educational levels, but again the change in behavior among the less-educated women seems to have been crucial. As for the composition effect, Table 5.3 reveals that while in the 1990s the increase in the shares of both the secondary complete and the tertiary complete groups were equally important in pushing female LFP up, the role of the latter group was crucial in the 2000s. This is consistent with the acceleration in the growth of female college graduates in that decade.[16]

Table 5.3: Within and composition effects by education levels
Latin America, unweighted means. Women aged 25-54.

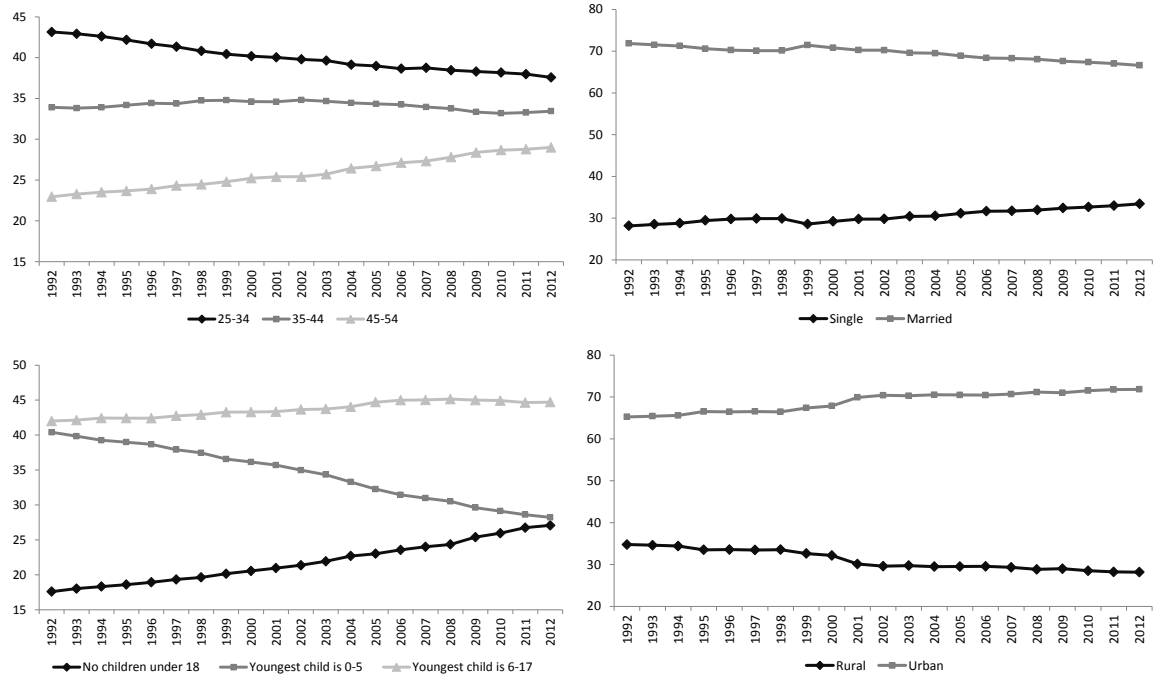
	Within			Composition		
	1992-2002	2002-2012	1992-2012	1992-2002	2002-2012	1992-2012
Primary incomplete	2.1	0.3	2.1	-3.0	-4.6	-7.3
Primary complete	1.7	0.3	1.9	-0.6	-1.3	-1.8
Secondary incomplete	1.2	0.3	1.5	-0.2	0.2	0.0
Secondary complete	0.8	0.1	1.0	2.4	2.2	4.5
Superior incomplete	0.5	-0.1	0.4	1.6	1.0	2.6
Superior complete	0.3	0.1	0.5	2.4	5.1	7.4
Total	6.6	0.9	7.4	2.5	2.7	5.3

Source: own calculations based on microdata from national household surveys.

[16] This general story for the region applies to several countries taken individually, such as Argentina, Honduras and Paraguay. In some economies the within effect in the 2000s is even negative: such is the case in Bolivia, Brazil, Ecuador, Nicaragua and Venezuela. In others, the within effect in the 2000s remains larger than the composition effect, but it is smaller than in the previous decade; Chile, Costa Rica, Panama and Uruguay belong to that group. Finally in a few countries the story seems to have been different: in El Salvador the composition effect dominated in the 1990s but not in the 2000s, while in Peru the within effect picked up in the latter decade.

We should pause here to put a word of caution to these interpretations. The decomposition suggests that for some autonomous reason there was an expansion in education in Latin America, and almost mechanically a more educated pool of women implied higher LFP. In this light the results of the decompositions indicate, for instance, that the policies that were successful in fostering labor participation in the 2000s were mainly the education policies that allowed the expansion of schooling in the previous decades. Of course, the real world could be more complicated. It could be for instance that in the past the government encouraged employment in a sector that requires skilled labor intensively, and that the increased demand stimulated women to get into high school or college to get a job in that sector. In this case it is the sector/employment policy what is triggering the reaction in the rest of the variables. In stressing the results of the decompositions we implicitly assume that these more complicated channels are of second order of importance, which at least for education, we believe it is not a strong assumption.

Figure 5.2: Changes in composition of women by age groups, marital status, number of children, and area of residence
Latin America, unweighted means. Women aged 25-54.



Source: own calculations based on microdata from national household surveys.

We now consider changes in the age structure of the population. A demographic transition is underway in Latin America, implying an aging process of the female population (Figure 5.2). While in the early 1990s 43.4% of that

population was in the [25-34] age group, that share fell to 37.7% in the early 2010s. In contrast, the share in the older age bracket [45-54] climbed from 22.9% to 28.9% over the two decades.

Younger women have a stronger attachment to the labor market than their older counterparts. The gaps, however, have been reduced over time, as women in their forties and fifties strongly increased their LFP over the last decades (Table 5.4). On average in 2012 the LFP was 63% for women aged 45 to 54; 66% for those aged 25 to 34; and 68% for females aged 35 to 44.

Table 5.4: Female LFP by age groups, marital status, number of children, and area of residence

Latin America, unweighted means. Women aged 25-54.

	PLF			Share		
	1992	2002	2012	1992	2002	2012
Age						
25-34	53.7	62.2	65.9	43.4	39.8	37.7
35-44	56.4	64.9	67.9	33.7	34.8	33.4
45-54	47.9	58.5	63.0	22.9	25.4	28.9
Total	53.2	62.1	65.6	100.0	100.0	100.0
Marital Status						
Single	74.6	77.9	78.6	28.2	30.1	34.1
Married	46.2	56.1	59.7	71.8	69.9	65.9
Total	54.2	62.7	66.3	100.0	100.0	100.0
Children						
No children under 18	53.3	63.6	67.4	17.6	21.5	27.2
Youngest child is 0-5	45.4	53.6	56.6	40.6	34.8	28.2
Youngest child is 6-17	52.6	63.0	65.6	41.8	43.7	44.6
Total	49.8	59.8	63.5	100.0	100.0	100.0
Area						
Rural	41.7	49.3	53.0	32.1	29.3	28.2
Urban	57.1	64.1	67.7	67.9	70.7	71.8
Total	51.5	59.2	63.1	100.0	100.0	100.0

Source: own calculations based on microdata from national household surveys.

Given the lower LFP among older women, the demographic transition could have implied a decrease in the overall rate of female LFP. The results of the decomposition in the first panel of Table 5.5 help assessing this hypothesis. As expected, the composition effect is negative: the aging of the female labor force is associated with a fall in participation. However, the size of the effect is small, just 0.1 points, and stable over time.

The marital status is a key covariate of the female labor decisions. In particular, single women (in our definition, those not living with a spouse) are much more prone to work than married women, even when controlling for other observable factors. Unlike other regions of the world where the fertility

decline was accompanied by a sharp drop on the prevalence of marriages, the percentage of married women (both in legal and consensual unions) in Latin America has experienced only a slight decreasing trend, remaining relatively high over the years.[17] On average, the share of single adult women increased from 27.9% in 1992 to 29.8% in 2002 and accelerated to 33.7% in 2012 (Figure 5.2). That pattern may be associated to increasing female LFP, given the higher LFP of single women (Table 5.4).

Table 5.5: Decomposition of changes in female LFP by age groups, marital status, number of children, and area of residence
Latin America, unweighted means. Women aged 25-54.

	1992-2002	2002-2012	1992-2012
Age			
Difference	8.9	3.5	12.4
Effects			
Within	9.0	3.7	12.7
Composition	-0.1	-0.1	-0.3
Marital Status			
Difference	8.5	4.3	11.2
Effects			
Within	8.1	3.5	9.7
Composition	0.4	0.8	1.5
Children			
Difference	10.0	3.7	13.7
Effects			
Within	9.5	3.0	12.6
Composition	0.5	0.7	1.1
Area			
Difference	7.7	3.9	11.6
Effects			
Within	7.2	3.8	10.9
Composition	0.5	0.1	0.7

Source: own calculations based on microdata from national household surveys.

That conjecture is confirmed in Table 5.5: the growth in the share of single women is associated with an increase of female LFP over the two decades. The impact is 0.4 points in the 1990s and 0.8 in the 2000s, when the pattern against marriage picked up. The contribution of the two groups to the change in the two effects was similar in sign, but different in size (second panel in Table 5.4). In fact, it is the change in behavior among married women what drives the marked contrast between the strong within effect in the 1990s and the milder effect in the next decade.

[17] For instance, Fussell and Palloni (2004) point out on the presence of persistent marriage regimes in Latin America.

Our next covariate is the number of children. There have been strong changes in fertility in Latin America (Gasparini and Marchionni 2014, Chioda 2011), the share of adult women without children substantially rose from 17.6% in 1992 to 21.5% in 2002 and 27.2% in 2012 (Figure 5.2). Given that women with no kids are more prone to participate than the rest, these changes in fertility may be associated to an increase in LFP.

The results in the third panel of Table 5.5 confirm this presumption, while making clear the difference in the relative relevance of this effect in the two decades under analysis. The fertility factor was smaller in the 1990s, especially in comparison with the strong increase in LFP within each category of women. Instead, in the 2000s the change in fertility patterns was stronger, while the within-group increases in LFP were weaker, combining for a more sizeable relative impact: around a fourth of the increase in the aggregate LFP rate in the region is accounted for by changes in fertility, mainly by the sharp increase in the share of adult women without children. Naturally, the link between fertility and labor decisions is strong, and the causal relationships may be intricate, so these results should be taken just as a suggestion that fertility changes, for whatever reasons that they took place, may be one relevant determinant of changes in female LFP.

Two facts suggests that a decomposition by area (urban-rural) may be worthwhile: on the one hand women living in urban areas tend to participate more in the labor markets than their rural counterparts (fourth panel of Table 5.4), while on the other hand the share of women living in cities has increased over the last decades (Figure 5.2). The interpretation of the decomposition however is in this case trickier than for the rest. If for instance the increase in the share or urban population is only related to exogenous urban-rural differences in birth rates, then the result in the fourth panel of Table 5.5 reflects a causal link. In this case the spatial gap in the population growth is responsible for 0.5 points in the increase in female LFP in the 1990s and 0.1 points in the 2000s. Instead, if the increase in the share or urban population is mainly the result of inactive or unemployed people moving from rural areas to cities seeking a job, then the results are harder to interpret.

To close this section we divide the population of adult women into 18 groups formed by the intersection of three of the main determinants of female LFP identified above: marital status, education and children (Table 5.6). For almost all groups female LFP increases strongly in the 1990s and decelerates in the 2000s, in some cases it even falls (the exception is the group of females with a college degree and no children).

Table 5.6: Female LFP by groups of marital status, education, and children

Latin America, unweighted means. Women aged 25-54.

			Female LFP			Shares		
			1992	2002	2012	1992	2002	2012
Married	Low	No children under 18	41.9	53.0	54.7	9.5	9.6	10.4
		Youngest child is 0-5	37.5	44.3	45.3	27.9	21.9	14.1
		Youngest child is 6-17	44.8	54.6	56.2	26.5	25.0	21.9
	Medium	No children under 18	58.7	65.9	67.3	2.2	3.3	4.8
		Youngest child is 0-5	54.6	61.2	59.3	7.0	6.6	7.3
		Youngest child is 6-17	60.5	64.7	66.2	5.6	7.4	8.9
	High	No children under 18	75.4	82.1	89.3	1.0	1.8	3.1
		Youngest child is 0-5	77.8	81.8	81.1	2.5	3.1	3.8
		Youngest child is 6-17	80.3	85.3	86.1	2.2	3.1	4.3
Single	Low	No children under 18	69.0	71.6	73.9	3.5	3.7	4.2
		Youngest child is 0-5	75.5	78.6	75.5	2.7	2.5	2.0
		Youngest child is 6-17	76.3	81.2	81.7	5.7	5.9	5.9
	Medium	No children under 18	81.2	84.2	86.8	1.0	1.6	2.4
		Youngest child is 0-5	89.3	87.0	83.5	0.6	0.6	1.0
		Youngest child is 6-17	85.3	90.5	86.9	1.0	1.7	2.5
	High	No children under 18	95.0	91.9	93.4	0.6	1.1	1.8
		Youngest child is 0-5	95.5	94.7	96.3	0.2	0.2	0.4
		Youngest child is 6-17	92.7	96.0	94.6	0.5	0.8	1.2
Total			50.5	60.5	64.6	100.0	100.0	100.0

Source: own calculations based on microdata from national household surveys.

Note: Low education=less than complete secondary, medium education=maximum education is complete secondary or incomplete tertiary, high education=maximum education is complete tertiary.

The results of the decomposition using this grouping confirm the contrast between a strong within effect that dominates the changes in female LFP in the 1990s, and a milder effect in the 2000s that becomes dominated by the composition effect (Table 5.7). It should be noticed that most of the composition effect comes from changes in the educational structure of the female population.

Table 5.7: Decomposition of changes in female LFP by groups of education, marital status and children

Latin America, unweighted means. Women aged 25-54.

	1992-2002	2002-2012	1992-2012
Difference	10.0	4.0	14.0
Effects			
Within	7.2	1.1	8.1
Composition	2.8	2.9	5.9

Source: own calculations based on microdata from national household surveys.

6. Exploring changes in employment

A change in the structure of employment may foster female LFP. Autonomous expansions in sectors more friendly to women employment may lead to a surge in the aggregate rate of female LFP even with unchanged propensity to employ women within jobs.

Implementing the same decomposition as in the previous section is unfeasible, since unlike education, age or marital status, job characteristics are only defined for employed women. Instead, we carry out a decomposition that accounts for changes in the share of women in total employment. The strong entry of women in the labor force was translated into a substantial increase in the participation of females in total employment. Restricting the sample to workers aged 25 to 54, the share of women in total workers increased strongly from 36.5% in 1992 to 40.5% in 2002, and then more slowly to 42.4% in 2012.

This change may be driven by two forces; on the one hand the women-to-men ratio may be increasing in all sectors, and on the other hand the distribution of employment may be shifting toward jobs with a higher women-to-men ratio. Formally, the change in the share of female workers in total employment can be written as

$$\Delta\left(\frac{E_f}{E}\right)=\sum_s \frac{E_{st+1}}{E_{t+1}}\Delta\left(\frac{E_{fs}}{E_s}\right)+\sum_s \frac{E_{fst}}{E_{st}}\Delta\left(\frac{E_s}{E}\right)$$

where E is the number of people employed, f stands for women, t is time, s labels the economic sector, and Δ stands for changes between time t and $t+1$. Hence, for instance, E_{fst} is the total number of women employed in sector s at time t. The first term in the decomposition captures the impact of changes in the propensity to employ women within sectors (the *within effect*) while the second one captures the impact of changes in the structure of employment across sectors (the *composition effect*).

We first implement this decomposition dividing workers according to their main jobs into 10 economic sectors: primary activities, low-tech industry (food, clothing), rest of industries, construction, commerce, utilities and transportation, skilled services (finance, business services), public administration, education and health, and domestic services.

Table 6.1 reflects an increasing trend in the share of women in all sectors over time. The pace of that increase was heterogeneous. In particular, on average it was a bit slower in the 2000s compared to the previous decade. That

deceleration was particularly evident in more unskilled sectors such as primary activities, low-tech industries, commerce, and domestic services.

Table 6.1: Share of women in each sector, and employment structure by sector

Latin America, unweighted means. Women aged 25-54.

Sector	Share of women in employment			Sectoral structure		
	1992	2002	2012	1992	2002	2012
Primary activities	16.3	20.3	22.8	17.3	16.9	14.6
Food, clothing	47.5	51.0	49.0	9.4	8.3	7.6
Rest of manufacturing	18.5	20.0	21.9	6.7	5.5	4.8
Construction	2.6	3.3	4.3	7.0	6.8	7.7
Commerce	46.3	50.7	53.4	22.7	23.8	24.7
Utilities & transportation	10.6	11.4	13.3	7.3	6.9	7.4
Skilled services	33.8	36.3	40.5	4.7	5.9	7.4
Public administration	29.8	34.9	40.5	6.3	5.9	6.6
Education & Health	60.8	62.8	65.3	14.3	15.0	14.2
Domestic services	87.6	91.2	93.0	4.5	5.0	4.9
Total	36.7	40.5	42.7	100.0	100.0	100.0

Source: own calculations based on microdata from national household surveys.
Note: the first panel shows the participation of female workers in total employment by sector, while the second panel presents the sectoral structure of employment.

The structure of employment experienced some changes over time (see the three last columns in Table 6.1). While the share of employment in primary activities and the manufacturing industry continued a decreasing path initiated decades ago, some sectors gained participation. Interestingly, while in the 1990s education & health, and domestic services - two sectors with a high women-to-men ratio- were in the growing group, in the 2000s construction, utilities and transportation and public administration - three sectors with lower than average women-to-men ratio - took that place.

The results of the decompositions capture these patterns (Table 6.2). While the composition effect was positive in the 1990s (*i.e.* it helped the increase in female share in total employment), it became negative, although virtually null in the 2000s. This piece of evidence adds another possible explanation to the deceleration in the growth in female LFP in the 2000s: the change in the structure of employment may have benefited less the entry to women into the labor markets, as compared to changes in the previous decade. The evidence suggests however that probably this effect has been small. [18]

[18] The within effect is positive in both decades, although somewhat higher in the 1990s.

Table 6.2. Decomposition of changes in the share of women in employment by sector of activity
Latin America, unweighted means. Women aged 25-54.

	1992-2002	2002-2012	1992-2012
Difference	3.8	2.2	6.1
Effects			
Within	2.9	2.5	5.3
Composition	0.9	-0.2	0.9

Source: own calculations based on microdata from national household surveys.

7. Concluding remarks

We presented evidence for a significant deceleration in the rate of increase of female LFP in the 2000s, breaking the marked increasing pattern that characterized the region for at least 50 years. Explaining this pattern is not an easy task, since a large number of factors surely interplay to generate the labor market outcomes that we observe in the data. In this paper we took a first step toward that goal, by analyzing whether the patterns in female LFP are mainly accounted for by changes in the distribution of some direct determinants of the labor supply decision, or instead they are chiefly the consequence of some more profound transformation in behavior.

The results of the decompositions suggest that changes in education, marriage, fertility and location (*i.e.* the composition effect) all favored a more intense labor market involvement of women. Adult females are now more educated, have less children and are more likely to be single than two decades ago. In this scenario, even with the same conditional propensity to participate, the overall female LFP should increase. The relative contribution of these factors to the observed increase in female LFP was significant in the 1990s, but more decisive in the 2000s. Without the observed educational and demographic changes in the female population, the deceleration in the growth of female LFP in Latin America in the 2000s would have been even more marked. Unlike the education and demographic transformations, changes in the sectoral structure of the economy seem to have had a much milder impact on female LFP.

There are several potential causes of the deceleration in the within component of the growth in female LFP that we analyze in a companion document (Gasparini and Marchionni, 2014). A possible cause of the slowdown in the growth rate of female LFP may be that participation levels are reaching a ceiling or a natural rate that is mainly determined by cultural factors. As any

share, LFP has a ceiling that in the case of Latin American females could be lower than in other regions, for various cultural and economic reasons.[19] In this scenario the LFP will not continue increasing, or will be doing it very slowly, even when the region continues to grow. Another possibility is that this deceleration is just temporary and responds to some transitory circumstances. The strong economic growth that experienced the region in the 2000s allowed a surge in earnings and social protection benefits that may have retarded the entry of women into the labor market. Without a more pressing need to seek for a job, given the higher earnings of their spouses or the protection of the new social programs, some women may have delayed their decision to participate in the labor market. The fact that the deceleration of the increase in female LFP occurred in coincidence with a strong rise in GDP growth rates is consistent with this story.

[19] A plateau in female participation has also emerged in the US and other developed countries since around the 1990s (Blau and Kahn, 2013; Goldin, 2006 and 2014).

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Table 2.1: National Household Surveys used in this study

	Name of survey	Acronym	Surveys used
Argentina	Encuesta Permanente de Hogares Puntual	EPH	1992-2012
	Encuesta Permanente de Hogares Contínua	EPH-C	
Bolivia	Encuesta Integrada de Hogares	EIH	1992, 1993, 1997, 1999-2002,
	Encuesta Nacional de Empleo	ENE	2005, 2007-2009, 2011, 2012
	Encuesta Contínua de Hogares	ECH	
	Encuesta de Hogares	EH	
Brasil	Pesquisa Nacional por Amostra de Domicilios	PNAD	1992, 1993, 1995-1999, 2001-
Chile	Encuesta de Caracterización Socioeconómica Nacional	CASEN	1992, 1994, 1996, 1998, 2000,
Costa Rica	Encuesta de Hogares de Propósitos Múltiples	EHPM	1992-2010, 2012
	Encuesta nacional de hogares	ENAHO	
Ecuador	Encuesta de Condiciones de Vida	ECV	1994, 1995, 1998, 1999,
	Encuesta Nacional de Empleo, Desempleo y Subempleo	ENEMDU	2003-2012
El Salvador	Encuesta de Hogares de Propósitos Múltiples	EHPM	1995, 1996, 1998-2012
Honduras	Encuesta Permanente de Hogares de Propósitos Múltiples	EPHPM	1992-1999, 2001-2011
Mexico	Encuesta Nacional de Ingresos y Gastos de los Hogares	ENIGH	1992, 1994, 1996, 1998, 2000,
Nicaragua	Encuesta Nacional de Hogares sobre Medición de Nivel de Vida	EMNV	1993, 1998, 2001, 2005, 2009
Panama	Encuesta de Hogares	EH	1995, 1997-2012
Paraguay	Encuesta Integrada de Hogares	EH, EIH	1995, 1997, 1999, 2001-2011
	Encuesta Permanente de Hogares	EPH	
Peru	Encuesta Nacional de Hogares	ENAHO	1997-2012
Uruguay	Encuesta Continua de Hogares	ECH	1992, 1995-1998, 2000-2012
Venezuela	Encuesta de Hogares Por Muestreo	EHM	1992, 1995, 1997-2012