

The Effects of Motherhood
on Wages and Labor Force Participation:
Evidence from Bolivia, Brazil, Ecuador and Peru

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Foreword

This study asks a simple question that has significant implications for gender equality. After decades of increasing female participation in the labor market, advances in the labor legislation and persistent gender wage gaps, what are the effects of motherhood on labor force participation and wages in Latin America? Studies in developed countries regularly observe a wage penalty for working mothers, but no previous efforts have been made to explore this key issue in the Latin American region.

Most women become mothers while participating in the labor market, and a typical aspect of the gender division of labor within households is the assignment of childrearing responsibilities to women. In this sense, the empirical analysis of labor market differentials between mothers and nonmothers can shed light on the labor market effects of gender-role specialization. In particular, it can be an important explanatory factor of gender inequalities in the labor market.

The data presented in this report show that mothers with children under 7 years of age participate less in the labor market than those with no children, except for single mothers. Another interesting result is that female labor force participation generally increases with age and decreases with family responsibilities. In contrast to the evidence found in the United States, United Kingdom, Australia and Germany, where mothers earn lower wages than women with no children, the results for Latin America do not show a homogeneous impact of motherhood on wages. While in Peru there exists a penalty for mothers of children under 7, in Bolivia and Brazil there is a premium for being a mother. Ecuador shows no significant effects. This heterogeneity is further investigated by considering public and private sectors, educational levels and age groups. The study finds that wage penalties and premiums are not borne equally among all mothers.

With this publication we hope to contribute to an understanding of the relationship between motherhood and gender equality in the labor market. The study should serve to encourage the Bank to include measures in future lending operations that help women, as well as men, to reconcile their responsibilities at home and at work, including flexible working conditions, parental leave and childcare services accessible to both parents, and the promotion of more equal distribution of childrearing responsibilities. In all of these areas, Latin America could learn from the experiences of some of the industrialized countries.

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Contents

Introduction	1
Data	3
The Effects of Motherhood on Labor Force Participation	4
The Effects of Being a Mother on Wages	9
Conclusions	20
References	21
Appendix I	22
Appendix II	23

Introduction

Despite the narrowing of the gender wage gap in the last few decades, women still earn, on average, less than men, (e.g., Blau and Kahn, 2000). In general, women have less labor market experience than men, a fact that has played a major role in explaining gender wage differentials. One of the reasons for having less labor market experience might be the fact that women face more responsibilities than men in terms of childcare and nurturing. Motherhood takes women away from the labor market or it leads to only part-time work. Studies in industrialized countries usually show that motherhood has a negative impact on wages and labor force participation. This paper studies a similar question (it calculates costs of motherhood in terms of wages and labor force participation) for a group of Latin American countries. The countries chosen for the study are Bolivia, Brazil, Ecuador and Peru because their surveys collect information on the birth mother of each of the children within a household.

According to a number of studies, American women with children earn lower wages than those who do not have any children (Hill, 1979; Korenman and Neumark, 1992, 1994; Waldfogel, 1997, 1998; Lundberg and Rose, 1999; England and Budig, 2001). This child penalty also exists in the United Kingdom (Harkness and Waldfogel, 1997), Australia (Baxter, 1992), Canada (Phipps, Burton and Lethbridge, 2001) and Germany (Harkness and Waldfogel, 1997). A recent study (Sigle-Rushton and Waldfogel, 2004) analyzes the costs of motherhood in terms of lifetime earnings for nine industrialized countries. In general, these studies agree that mothers earn lower wages than women without children. They have established that at least some portion of this unexplained wage difference is due to mothers' lack of labor market experience. However, all these studies also find that some wage differential remains even after controlling for experience.

Waldfogel (1997) uses data from the National Longitudinal Survey of Young Women to investigate the lower wages of mothers. She finds that in pooled cross-sectional models, difference models, and fixed-effects models, the negative effect of children on women's wages is not entirely explained by differences in labor market experience. She considers two alternative hypotheses for the residual penalty associated with motherhood: unobserved pay-relevant differences between mothers and nonmothers, which fixed-effects models show do not account for the child penalty; and part-time employment which does account for some child penalty. However, a residual child penalty factor remains even after controlling for these two factors. Waldfogel (1998) hypothesizes that employers discriminate against women with children. However, she does not find any evidence that strongly supports this idea.

Interestingly, the *family gap* between women with children and women without children has been rising in recent years, according to Waldfogel (1998), whereas the gender gap between men and women has been narrowing. Another factor to take into account is that there is no child penalty for fathers. Indeed, it is well established that married men with children earn more than other men (Korenman and Neumark, 1991).

According to England and Budig (2001), discussions of the child penalty have focused on five mechanisms. First, women may spend time at home caring for children, interrupting their experience and seniority, or at least interrupting full-time employment, which would have enduring effects on wages given returns to experience and seniority. This is the so-called human capital or labor supply explanation. Second, mothers may choose jobs that trade off higher wages for some aspect of "mother-friendliness." Third, mothers may exert less effort (per hour) on the job to conserve effort for household production, and this may affect wages through productivity. The assumption is that nonmothers and men

spend more of their nonemployment hours in leisure rather than childcare, which is presumed to take less energy. Fourth, it is possible that employers discriminate against mothers, treating them worse than other women. Finally, it has been suggested that what appear in analyses to be causal effects of having children may be spurious. In this view, there is heterogeneity in who selects into motherhood on unmeasured variables that also affect earnings. Examples of such factors might be preference for prosperity or career ambition.

The effects on wages of being a mother might differ substantially in Latin American countries compared to industrial countries. The reasons behind these differences arise from different sources. First, there are huge differences in institutional factors regarding labor market practices in industrialized countries compared to developing countries. Second, cultural differences regarding the perception of women in the labor market might also differ in Latin America, which could affect the comparison between mothers and nonmothers in terms of labor force participation and pay.

This paper takes a first look at the costs of motherhood in terms of wages and labor force participation for a group of four Latin American countries: Bolivia, Brazil, Ecuador and Peru. These countries were chosen because their household surveys collect data that allows us to identify the birth mother of each of the children within a household. The paper does not try to test which, if any, one of the potential theoretical models is correct. Its objective is to test if there is an impact and, if so, its direction (penalty, premium or none). The final objective of researching the labor market costs of being a mother is to estimate how much women pay in their lifetime for being mothers. There are three factors that contribute to lower lifetime earnings in developed countries. First, women with children are less likely to participate in the labor market. Second, they are more likely to work part-time. Third, they have lower wages. This paper attempts to analyze some of these aspects for the four countries, looking at labor force participation issues as well as pay differentials.

This study is motivated by several factors. First, it is the first study to analyze the impact of motherhood on wages and labor force participation for Latin American countries. The importance of this question lies in the larger scenario of gender inequality. Most women become mothers while they are participating in the labor market, and a typical aspect of intra-household gender division is the assignment of household responsibilities to women. In this sense, penalties for being a mother may concern most women and add to gender inequality. Therefore, the empirical analysis of labor market differentials between mothers and nonmothers can shed light on the labor market effects of gender-role specialization.¹

Second, the comparison of these results with those of industrialized countries will help design labor market policies that help women to reconcile their responsibilities at home and at work. There is room for Latin American countries to learn from industrialized countries in the area of family-friendly policies.² In industrialized countries, family-friendly policies have been shown to mitigate the negative impacts of motherhood on women's earnings.

The next section of this report describes the data used. Then the effects of being a mother on labor force participation and on wages are discussed.

¹ On the other hand, if well-raised children are considered public goods, motherhood penalties are of interest because they raise an equity problem since mothers are not paid for their contributions to society.

² Family-friendly policies allow workers to meet their family responsibilities, along with their work responsibilities. Examples of family-friendly policies used in developed countries are part-time work, flexible working hours, reforming "maternity leave" into "parental leave," job share schemes and affordable high-quality childcare.

Data

For this study, we used household surveys that contain information on socioeconomic characteristics of the individuals, including, for example, age, gender, education, regional location and job characteristics. The household surveys for each country are the *1999 Pesquisa Nacional por Amostra de Domicílios (PNAD)* for Brazil, the *1998 Encuesta de Condiciones de Vida (ECV)* for Ecuador, the *1999 Encuesta Continua de Hogares (ECH)* for Bolivia and the *2000 Encuesta Nacional de Hogares (ENH)* for Peru. All these surveys are nationwide.

Originally, we thought that it would be possible to include more countries in this study. However, because of lack of data sets with information about motherhood in Latin American countries, the number of countries was reduced to four. Household surveys for these four countries clearly identify the mothers of the children liv-

ing in the household (i.e., the survey asks if the mother of each one of the household members is living in the household, and identifies her). Thus, the surveys provide us with information about the fertility history of women 15 to 49 years old (or 50, depending on the country), as well as other socioeconomic characteristics.

Sample sizes vary substantially from 13,023 individual observations in Bolivia to 352,229 in Brazil.³ We restrict our samples to women between the ages of 14 and 45⁴ living in urban areas. We do not impose further restrictions for the analysis of mothers' labor force participation.⁵ However, when we look at the effect of motherhood on wages, we restrict the sample to those women earning a salary at their job and working more than 1 hour per day but not more than 16 hours per day. Self-employed workers are not included in this analysis given the difficulties in separating returns to labor and capital.

³ This does not necessarily create a problem. However, the fact that sample sizes for some countries go down substantially when we divide the sample must be taken into consideration when analyzing the results.

⁴ The selection of this age range is arbitrary. The idea is to select an age range that has people willing to be parents at some point and, in addition, that if they already are parents, they are likely to have young children.

⁵ To define participation rates we use a question on the employment status in the reference week of the survey. The sum of those who were employed plus those actively seeking employment in the reference week are considered labor force participants. Employment is defined as any market-type activity, paid or unpaid, in any establishment, including home enterprises.

The Effects of Motherhood on Labor Force Participation

The effects of being a mother on women's employment are generally explained in a larger model of the allocation of labor, leisure and home production. We are interested in looking at the differences in labor force participation between mothers and nonmothers. This section analyzes these differences only at a descriptive level, because a regression analysis should deal with the existence of an endogeneity problem between female labor force participation and motherhood.

For this section, the sample is restricted to female workers 14 to 45 years old living in urban areas. Table 1 shows female labor force participation rates and compares mothers to nonmothers in terms of their marital status and educational level. We are interested in comparing female labor force participation among women with different educational levels (horizontal comparison) according to their motherhood status, and also among married and unmarried women (vertical comparison).⁶

We find that mothers of children less than 7 years old participate in the labor force more than nonmothers in Bolivia and Ecuador, while in Peru and Brazil there is no difference between the two groups. In terms of education, more educated women are more likely to participate in the labor market, and this is generally true for mothers and nonmothers. Regarding marital status differences, married women who do not have children usually participate more than mothers, following the typical gender division of

labor within the household. The reverse is true for the unmarried sample. Single mothers participate in the labor market more than single women with no children.

Table 2 shows differences in labor force participation between mothers and nonmothers, according to their marital status and age groups. We analyze three age groups that were chosen arbitrarily: 14-25, 26-35 and 36-45 years old. From the general analysis (without distinguishing between married and unmarried, first panel of table 2), we find that the youngest mothers (14-25 years old) participate more than the youngest group of nonmothers. As shown in the panels that are divided into married and unmarried women, this seems to be explained by the economic need of unmarried young women who must work to support their children. For the other two groups (26-35 and 36-45), nonmothers participate more than mothers. For the married subsample, nonmothers usually work more than mothers for all groups. For the unmarried subsample, the youngest group of mothers usually works more than nonmothers, and the same is true of the middle-aged group (except for Ecuador) and for the 36-45 group (except for Peru). Summarizing, looking at participation rates by age groups and motherhood status shows consistent results to what previous case studies of Latin American countries have found (Psacharopoulos and Tzannatos, 1992). Female participation rates increase with age and decline with family responsibilities.

⁶ Brazil does not have information on marital status, so it is not possible to distinguish between married and unmarried for this country.

Table 1.A. Bolivia. Labor Force Participation by Educational Level and Motherhood Status

All Women	All (n=1941)	Less than High School (n=1108)	High School (n=339)	Some College (n=480)
No children (n=861)	0.32	0.26	0.31	0.44
Children less than 7 (n=658)	0.50	0.50	0.41	0.59
Married Women	All (n=968)	Less than High School (n=576)	High School (n=165)	Some College (n=220)
No children (n=63)	0.46	0.38	0.29	0.70
(n=567)	0.47	0.46	0.36	0.57
Unmarried Women	All (n=973)	Less than High School (n=532)	High School (n=174)	Some College (n=260)
No children (n=798)	0.31	0.26	0.31	0.42
Children less than 7 (n=91)	0.73	0.78	0.70	0.65

Source: Own elaboration using data from the 1999 *Encuesta Continua de Hogares* for Bolivia

Table 1.B. Peru. Labor Force Participation by Educational Level and Motherhood Status

All Women	All (n=3422)	Less than High School (n=1381)	High School (n=1005)	Some College (n=1029)
No children (n=2355)	0.50	0.38	0.51	0.63
Children less than 7 (n=939)	0.49	0.53	0.46	0.59
Married Women	All (n=1535)	Less than High School (n=643)	High School (n=462)	Some College (n=429)
No children (n=696)	0.57	0.56	0.49	0.67
Children less than 7 (n=736)	0.48	0.49	0.39	0.58
Unmarried Women	All (n=1887)	Less than High School (n=738)	High School (n=543)	Some College (n=600)
No children (n=1659)	0.46	0.30	0.52	0.61
Children less than 7 (n=203)	0.68	0.70	0.71	0.63

Source: Own elaboration using data from the 2000 *Encuesta Nacional de Hogares* for Peru.

Table 1.C. Ecuador. Labor Force Participation by Educational Level and Motherhood Status

All Women	All (n=3793)	Less than High School (n=2152)	High School (n=706)	Some College (n=928)
No children (n=1592)	0.50	0.41	0.56	0.65
Children less than 7 (n=1303)	0.57	0.52	0.52	0.72
Married Women	All (n=1969)	Less than High School (n=1093)	High School (n=413)	Some College (n=459)
No children (n=209)	0.54	0.47	0.50	0.67
Children less than 7 (n=1089)	0.53	0.48	0.49	0.70
Unmarried Women	All (n=1824)	Less than High School (n=1059)	High School (n=293)	Some College (n=469)
No children (n=1383)	0.49	0.40	0.57	0.65
Children less than 7 (n=214)	0.74	0.71	0.72	0.85

Source: Own elaboration using data from the 1998 *Encuesta de Condiciones de Vida* for Ecuador.

Table 1.D. Brazil. Labor Force Participation by Educational Level and Motherhood Status

All Women	All (n=80044)	Less than High School (n=55390)	High School (n=16173)	Some College (n=7896)
No children (n=35787)	0.45	0.34	0.64	0.74
Children less than 7 (n=22363)	0.45	0.38	0.56	0.79

Source: Own elaboration using data from the 1999 *Pesquisa Nacional para Amostra de Domicilios* for Brazil

Table 2.A. Bolivia. Labor Force Participation by Age-groups and Motherhood Status

All Women	14-25 (n=939)	26-35 (n=549)	36-45 (n=453)
No children (n=861)	0.25	0.72	0.84
Children less than 7 (n=658)	0.36	0.51	0.62
Married Women	14-25 (n=199)	26-35 (n=404)	36-45 (n=365)
No children (n=63)	0.22	0.69	1.00
Children less than 7 (n=567)	0.31	0.48	0.58
Unmarried Women	14-25 (n=740)	26-35 (n=145)	36-45 (n=88)
No children (n=798)	0.25	0.72	0.77
Children less than 7 (n=91)	0.58	0.73	0.95

Source: Own elaboration using data from the 1999 *Encuesta Continua de Hogares* for Bolivia

Table 2.B. Peru. Labor Force Participation by Age-groups and Motherhood Status

All Women	14-25 (n=1559)	26-35 (n=1041)	36-45 (n=822)
No children (n=2355)	0.36	0.66	0.64
Children less than 7 (n=939)	0.44	0.55	0.58
Married Women	14-25 (n=268)	26-35 (n=643)	36-45 (n=624)
No children (n=696)	0.35	0.60	0.59
Children less than 7 (n=736)	0.33	0.51	0.57
Unmarried Women	14-25 (n=1291)	26-35 (n=398)	36-45 (n=198)
No children (n=1659)	0.36	0.71	0.76
Children less than 7 (n=203)	0.63	0.73	0.74

Source: Own elaboration using data from the 2000 *Encuesta Nacional de Hogares* for Peru

Table 2.C. Ecuador. Labor Force Participation by Age-groups and Motherhood Status

All Women	14-25 (n=1704)	26-35 (n=1155)	36-45 (n=934)
No children (n=1592)	0.43	0.76	0.72
Children less than 7 (n=1303)	0.44	0.59	0.67
Married Women	14-25 (n=452)	26-35 (n=813)	36-45 (n=704)
No children (n=209)	0.43	0.61	0.67
Children less than 7 (n=1089)	0.39	0.56	0.64
Unmarried Women	14-25 (n=1252)	26-35 (n=342)	36-45 (n=230)
No children (n=1383)	0.43	0.82	0.77
Children less than 7 (n=214)	0.62	0.79	0.84

Source: Own elaboration using data from the 1998 *Encuesta de Condiciones de Vida* for Ecuador.

Table 2.D. Brazil. Labor Force Participation by Age-groups and Motherhood Status

All Women	14-25 (n=34,989)	26-35 (n=24,279)	36-45 (n=20,776)
No children (n=25,880)	0.36	0.71	0.67
Children less than 7 (n=7,203)	0.34	0.49	0.54

Source: Own elaboration using data from the 1999 *Pesquisa Nacional para Amostra de Domicilios* for Brazil

The Effects of Being a Mother on Wages

The main focus of this section is on investigating the impact of motherhood on wages in Bolivia, Brazil, Ecuador and Peru.

THE MODEL

The initial approach is to augment a standard cross-sectional earnings function to include indicators for having children in certain age groups. Different specifications about the definition of “motherhood” are going to be presented because the literature about costs of motherhood for developed countries has used different approaches and we would like to make the first paper about this topic in Latin America comparable with each of those studies.⁷

The first specification includes indicators denoting having children less than or equal to 6 years old, having children between 7 and 12 years of age and having children between 13 and 18 years of age.⁸

Observation i 's wage rate, W_i , is assumed to depend on these indicators, as well as on a vector of other observed characteristics, X_i , and an error term, ε_i .

Adopting a log-linear specification,

$$(1) \quad \ln W_i = \alpha + \beta_1 (\text{mother of children less than 7})_i + \beta_2 (\text{mother of children be-$$

⁷ For the selection of the baseline we had two choices. We could select only nonmothers and include a dummy for mothers of children older than 18, or alternatively, we could select as a baseline a group composed by nonmothers as well as mothers of children older than 18 years of age (under the assumption that older children do not pose significant time requirements for mothers). We chose to go with the second option because separating both groups of women did not change the coefficient of “motherhood” and it reduced the observations of the baseline for some of the countries studied.

⁸ These three age ranges are arbitrarily chosen, and they try to represent different needs in the children's lives.

tween 7 and 12) $_i + \beta_3$ (mother of children between 13 and 18) $_i + \eta X_i + \varepsilon_i$

where α , β_1 , β_2 , β_3 and η are parameters to be estimated.

The second specification includes one indicator denoting if the woman has one child younger than 18 years old and another indicator equal to one if the woman has two or more children younger than 18 years old. Let the variable (one child) $_i$ represent having one child, and the variable (two or more children) $_i$ represent having two or more children for the i^{th} individual.

Adopting a log-linear specification,

$$(2) \quad \ln W_i = \alpha + \beta_1 (\text{one child})_i + \beta_2 (\text{two or more children})_i + \eta X_i + \varepsilon_i$$

where α , β_1 , β_2 and η are parameters to be estimated.

The third specification includes continuous variables denoting the number of children in specific age ranges (0 to 6, 7 to 12 and 13 to 18).

$$(3) \quad \ln W_i = \alpha + \beta_1 (\# \text{ of children 0- 6})_i + \beta_2 (\# \text{ of children 7-12})_i + \beta_3 (\# \text{ of children 13-18})_i + \eta X_i + \varepsilon_i$$

where α , β_1 , β_2 , β_3 and η are parameters to be estimated.

The dependent variable is the natural logarithm of the hourly wage in the respondent's current job. Other socioeconomic variables included in the first model are age, age squared, years of education, years of education squared, tenure in the current job (in months), tenure squared, marital status, head of household status and ethnicity. The second model adds two job market characteristics: part-time and public sector status. To control for more detailed job market characteristics, the third model includes one-digit industry indicators as well as one-digit occupation indicators.

Ethnicity is equal to one if the person has ethnic origin and zero otherwise. The definition varies

with the country. For Peru, this definition is based on the language the person usually speaks (i.e., equal to one if the person does not speak Spanish but speaks Quechua, Aymara, etc.). The definition is similar for Bolivia and Ecuador. For Brazil, the definition of ethnicity is based on skin color (equal to one if the color is different from white). Marital status is divided into three categories: never married, 'divorced or widowed' (the reference category) and married (which includes legally married and domestic partners). Part-time status is defined equal to one if the person works less than 35 hours per week and zero otherwise. Finally, a variable denoting actual experience (tenure) is a measure of tenure in the main current job (in months).

A problem that arises because of lack of information in these four Latin American cross-sectional household surveys is that we do not have a good measure of actual lifetime work experience. The only variable available is tenure in the current job. We use this variable to control in some way for actual experience, but the lack of information on actual lifetime work experience can create biases in the motherhood coefficients.⁹

Anderson et al. (2003) show that the gap between potential experience and actual work experience is three years for mothers compared to only around 1.5 years for nonmothers, using a panel data set for the United States. This means that differences in the actual experience between mothers and nonmothers may be due to the fact that they have to leave their jobs when they have children, as well as for other circumstances. Another obvious drawback of the use of cross-sectional analysis is the possibility that mothers are different from nonmothers in ways that are not observed in the data (unobserved heterogeneity).

⁹ If potential experience is greater than actual experience for mothers, by using potential experience for both mothers and non-mothers, we could be biasing the motherhood parameter. The bias is because the motherhood parameter can be capturing the difference in actual experience between the two groups (i.e. if there is a penalty in wages, it can be increased by this difference).

DESCRIPTIVE STATISTICS FOR WAGE REGRESSIONS

The samples for these four Latin American countries include females between the ages of 14 and 45 who are salaried employees and live in urban areas (self-employed workers are not included). Finally, we consider women working more than 1 hour per day but not more than 16 hours per day. Appendix I shows the sample restrictions with the number of observations lost as a result of each of these restrictions for the four countries analyzed.

Table 3 shows means and standard deviations for the four countries, dividing the sample by motherhood status. We show three columns for each country: the first column shows the means for those who do not have children; the second column shows the means for those who have children aged 0 to 6 years old and the third column for those having children 0 to 18 years old. The distinction between the second and third column is due to a data problem in Peru, where we cannot identify mothers with children older than 7 years old. Therefore, we show the second column for all countries in order to achieve comparability with Peru's results. For the second and third columns, we show the results of a t-test for differences in means with asterisks. The natural comparisons are between the means shown in the second column and the first column (mothers 0-6 to nonmothers) and between the third and the first column (mothers 0-18 to nonmothers) as well.

First, nonmothers are compared to mothers of children 0 to 18 years old for the three countries for which we have data that allow us to do so: Bolivia, Brazil and Ecuador.¹⁰ For these countries, mothers are older than nonmothers, with differences of 7 to 8 years. The number of children ranges, on average, between 1.8 and 2.2 children aged less than 18 years old. Since everyone in the sample is a worker, it is natural that they have a fertility rate lower than

¹⁰ The data for Peru does not allow us to compare non-mothers with mothers of children 0 to 18 years old because the survey has information just for mothers of children less than 7 years old.

Table 3. Descriptive Statistics by Motherhood Status

	BOLIVIA			ECUADOR			PERU			BRAZIL		
	Non Mothers	Mothers 0-6	Mothers 0-18	Non-mothers	Mothers 0-6	Mothers 0-18	Non-mothers	Mothers 0-6	Mothers 0-18	Non-mothers	Mothers 0-6	Mothers 0-18
Number of children	0.000 (0.000)	1.284* (0.495)	2.019* (1.053)	0.000 (0.000)	1.343* (0.563)	2.041* (1.031)	0.000 (0.000)	1.172* (0.392)	-	0.000 (0.000)	1.262* (0.523)	1.844* (0.988)
Wage	26.067 (7.702)	30.833* (6.841)	33.857* (7.097)	25.151 (7.612)	31.107* (6.459)	33.333* (6.778)	29.178 (7.964)	30.328 (6.366)	-	26.344 (8.086)	29.828* (6.373)	33.466* (6.912)
Age (in years)	5.621 (5.477)	7.598* (9.681)	9.070* (11.080)	5573.312 (6221.57)	7064.528* (6708.05)	7734.721* (7719.772)	3.453 (3.087)	3.166 (2.851)	-	2.340 (3.295)	2.645* (3.892)	2.819* (4.023)
Wage (in country's monetary unit)	11.085 (4.770)	11.088 (5.297)	11.610 (5.203)	11.273 (4.259)	11.449 (4.365)	11.389 (4.395)	12.485 (3.118)	11.581* (3.561)	-	9.320 (3.854)	8.351* (4.185)	8.169* (4.350)
Years of education	0.134 (0.342)	0.647* (0.480)	0.714* (0.453)	0.155 (0.362)	0.728* (0.445)	0.683* (0.466)	0.260 (0.439)	0.651* (0.478)	-	-	-	-
Married (formal or informal union is equal to one)	8.982 (7.707)	13.745* (8.221)	16.248* (8.081)	7.878 (7.088)	13.657* (7.316)	15.944* (7.738)	10.693 (8.167)	12.747* (6.973)	-	11.025 (8.538)	15.477* (7.130)	19.297* (7.939)
Potential Experience ²	3.757 (4.926)	4.922 (5.436)	6.807* (6.498)	42.712 (55.694)	66.229* (74.086)	80.827* (90.899)	4.285 (6.070)	4.577 (4.786)	-	41.030 (53.485)	49.656* (57.410)	60.750* (67.536)
Tenure (in months)	0.140 (0.348)	0.108 (0.312)	0.143 (0.351)	0.038 (0.192)	0.053 (0.225)	0.047 (0.493)	0.243 (0.429)	0.296 (0.458)	-	-	-	-
Part-time (less than 35 hours of work per week)	0.195 (0.398)	0.284 (0.453)	0.371* (0.484)	0.115 (0.319)	0.254* (0.436)	0.267* (0.442)	0.319 (0.466)	0.446* (0.498)	-	0.162 (0.369)	0.215* (0.411)	0.241** (0.428)
Public (public is equal to one)	0.354 (0.480)	0.314 (0.466)	0.300 (0.459)	0.407 (0.492)	0.426 (0.495)	0.417 (0.493)	0.148 (0.355)	0.280* (0.450)	-	0.499 (0.500)	0.591* (0.492)	0.596* (0.491)
Less than high school	0.183 (0.388)	0.196 (0.399)	0.162 (0.369)	0.207 (0.405)	0.193 (0.395)	0.205 (0.404)	0.299 (0.458)	0.231 (0.423)	-	0.318 (0.466)	0.252* (0.434)	0.243* (0.429)
High school	0.463 (0.500)	0.490 (0.502)	0.538 (0.500)	0.386 (0.487)	0.381 (0.486)	0.378 (0.485)	0.554 (0.498)	0.489 (0.501)	-	0.182 (0.386)	0.157* (0.363)	0.161* (0.367)
Some college	0.415 (0.494)	0.392 (0.491)	0.414 (0.494)	0.132 (0.339)	0.074* (0.261)	0.069* (0.254)	0.025 (0.157)	0.048 (0.215)	-	0.631 (0.482)	0.667* (0.471)	0.690* (0.463)
Ethnicity	0.122 (0.328)	0.127 (0.335)	0.162 (0.369)	0.101 (0.302)	0.114 (0.318)	0.172* (0.378)	0.059 (0.235)	0.048 (0.215)	-	0.026 (0.159)	0.022* (0.147)	0.020* (0.139)
Head of household	Occupations:											
Occ1 – Professionals and technicians	0.213 (0.411)	0.314 (0.466)	0.381* (0.487)	0.184 (0.387)	0.277* (0.448)	0.277* (0.448)	0.404 (0.491)	0.441 (0.498)	-	0.435 (0.496)	0.460 (0.498)	0.447* (0.497)
Occ2 – Directors and officials	0.012 (0.110)	0.049 (0.217)	0.062* (0.242)	0.040 (0.197)	0.063 (0.244)	0.057 (0.233)	0.007 (0.082)	0.011 (0.103)	-	0.112 (0.315)	0.164* (0.370)	0.223* (0.416)
Occ3 – Administrative personnel and intermediate level staff	0.213 (0.411)	0.216 (0.413)	0.176 (0.382)	0.228 (0.420)	0.160* (0.367)	0.178 (0.383)	0.154 (0.362)	0.124 (0.330)	-	0.178 (0.383)	0.188* (0.391)	0.194* (0.396)
Occ4 – Sales workers	0.165 (0.372)	0.088 (0.285)	0.081* (0.273)	0.134 (0.341)	0.140 (0.347)	0.115* (0.319)	0.138 (0.345)	0.086 (0.281)	-	0.045 (0.208)	0.058* (0.234)	0.067* (0.250)

Notes: 1. Significance of two-sample t-test: (*) means significant at 95% confidence level. This two-sample t-test has the following null and alternative hypothesis: Ho: mean (given characteristic for mothers) – mean (given characteristic for non-mothers) = difference = 0; Ha: difference \neq 0; 2. Potential experience in Brazil is defined as (age – years of education – 7) and it is defined as (age – years of education – 6) for the other countries.

Table 3. (cont.) Descriptive Statistics by Motherhood Status

	BOLIVIA			ECUADOR			PERU			BRAZIL		
	Non Mothers	Mothers 0-6	Mothers 0-18	Non-Mothers	Mothers 0-6	Mothers 0-18	Non-mothers	Mothers 0-6	Mothers 0-18	Non-mothers	Mothers 0-6	Mothers 0-18
Occ5 – Service workers	0.348 (0.478)	0.255 (0.438)	0.224* (0.418)	0.291 (0.454)	0.241 (0.428)	0.249 (0.433)	0.203 (0.403)	0.237 (0.426)	-	0.210 (0.407)	0.137* (0.344)	0.134* (0.340)
Occ 6 – Agricultural workers and related	0.000 (0.000)	0.020 (0.139)	0.014 (0.119)	0.021 (0.144)	0.025 (0.157)	0.024 (0.152)	0.017 (0.129)	0.027 (0.162)	-	0.148 (0.355)	0.094* (0.292)	0.078* (0.268)
Occ 7 – Not-agricultural workers	0.049 (0.216)	0.059 (0.236)	0.062 (0.242)	0.103 (0.305)	0.094 (0.292)	0.100 (0.300)	0.076 (0.264)	0.075 (0.265)	-	0.330 (0.470)	0.406* (0.491)	0.419* (0.493)
Occ 8 – Army	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.002 (0.041)	0.000 (0.000)	-	0.004 (0.062)	0.016 (0.126)	0.013 (0.115)
Industries:												
Ind 1 – Agriculture, Fishery and Hunting	0.006 (0.078)	0.029 (0.170)	0.014 (0.119)	0.023 (0.150)	0.028 (0.165)	0.027 (0.161)	0.018 (0.135)	0.032 (0.177)	-	0.082 (0.274)	0.096* (0.294)	0.091 (0.288)
Ind 2 – Mining	0.006 (0.078)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.003 (0.050)	0.001 (0.038)	0.003 (0.058)	0.000 (0.000)	-	0.003 (0.057)	0.004 (0.063)	0.004 (0.060)
Ind 3 - Manufacturing	0.122 (0.328)	0.137 (0.346)	0.119 (0.325)	0.099 (0.300)	0.114 (0.318)	0.113 (0.317)	0.104 (0.306)	0.070 (0.256)	-	0.004 (0.065)	0.016* (0.125)	0.014 (0.116)
Ind 4 – Electricity and Water services	0.006 (0.078)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.005 (0.071)	0.006 (0.077)	0.002 (0.041)	0.000 (0.000)	-	0.001 (0.030)	0.000 (0.019)	0.001 (0.023)
Ind 5 – Construction	0.006 (0.078)	0.000 (0.000)	0.005 (0.069)	0.011 (0.107)	0.005 (0.071)	0.006 (0.077)	0.012 (0.108)	0.000 (0.000)	-	0.106 (0.308)	0.117 (0.322)	0.110 (0.313)
Ind 6 – Trade, hotels and restaurants	0.238 (0.427)	0.186 (0.391)	0.186 (0.390)	0.289 (0.454)	0.282 (0.450)	0.247 (0.432)	0.201 (0.401)	0.215 (0.412)	-	0.003 (0.054)	0.003* (0.058)	0.003* (0.058)
Ind 7 – Transportation	0.018 (0.134)	0.020 (0.139)	0.019 (0.137)	0.031 (0.172)	0.020 (0.141)	0.024 (0.152)	0.037 (0.189)	0.011 (0.103)	-	0.005 (0.069)	0.004* (0.060)	0.004* (0.061)
Ind 8 – Finance, Insurance, and Real Estate	0.079 (0.271)	0.108 (0.312)	0.090 (0.288)	0.088 (0.283)	0.051* (0.220)	0.065 (0.246)	0.067 (0.250)	0.043 (0.203)	-	0.205 (0.404)	0.158 (0.365)	0.147* (0.354)
Ind 9 – Communal Services	0.518 (0.501)	0.520 (0.502)	0.567 (0.497)	0.459 (0.499)	0.492 (0.501)	0.511 (0.500)	0.555 (0.497)	0.629 (0.484)	-	0.019 (0.136)	0.012* (0.108)	0.013* (0.112)
Sample Size	164	102	210	523	394	679	596	186	-	13,405	7,902	15,201

Notes:

1. Significance of two-sample t-test: (*) means significant at 95% confidence level. This two-sample t-test has the following null and alternative hypothesis: Ho: mean (given characteristic for mothers) – mean (given characteristic for non-mothers) = difference = 0; Ha: difference \neq 0; 2. Potential experience in Brazil is defined as (age – years of education – 7) and it is defined as (age – years of education – 6) for the other countries.

the national average.¹¹ The average hourly wage is always higher for mothers and it is expressed in the national money unit.¹² One of the explanations for the significant differences might be that the sample of mothers includes older women that have more experience and, therefore, higher wages. Since we are interested in the comparison of hourly wages among mothers and nonmothers, the regression analysis presented below looks at this relationship in depth.

Regarding levels of education, we did not find statistically significant differences among mothers and nonmothers with the exception of Brazil and Peru, where mothers tend to be less educated than nonmothers, on average. Mothers are more likely to be married, as we might have expected.

Potential experience and tenure are always smaller for nonmothers, which might be in part because of the age difference among mothers and nonmothers. Mothers are more likely to work in the public sector. Mothers are also more likely to be heads of household in Bolivia and Ecuador where around 17 percent of mothers are heads of household. Only 2 percent of Brazilian mothers heads of household.

If we look at the differences in occupational segregation by motherhood status, it is interesting that mothers tend to work more as ‘professionals and technicians’ or ‘directors, officials and legislators’ than nonmothers. In Brazil and Bolivia, mothers are less likely to work in ‘services’ than nonmothers and more likely to work in retail. It is also interesting that there are not many differences in the means of mothers and nonmothers in terms of the industry where they work.

¹¹ According to the World Bank Development Indicators 2002, 1999 fertility rates are equal to 4.02 children per woman for Bolivia, 3.14 for Ecuador, 3.05 for Peru and 2.24 for Brazil.

¹² The monetary units are *reales* for Brazil, *suces* for Ecuador, *bolivianos* for Bolivia and *nuevos soles* for Peru.

REGRESSION RESULTS

Table 4 presents the basic regression results for three models.¹³ The first column controls for age, age squared, years of education, years of education squared, marital status,¹⁴ tenure and tenure squared, head of household status and ethnicity. Model 2 adds part-time status and public sector status. Model 3 adds one-digit occupation and one-digit industry indicators.

The results are heterogeneous. Table 4 shows the results for the three specifications mentioned above for the three models. Because of the heterogeneity in the results, the explanation that follows focuses on results by country.

The results for Bolivia show that there exists a *premium* in term of wages for having children aged 13-18 years old and the (raw) differential in hourly pay is 19.3 percent ($\exp(0.177) - 1$) more for mothers after controlling for the explanatory variables included in Model 3. We also find that the higher the number of children 13-18 years old the higher the wages (looking also at the third specification). This can be because having older children might make it easier for mothers to dedicate energy to their job if these older children help with housework, compared to nonmothers who do have to do housework when they get home. We tested these results looking at the effect of the number of girls and boys in each age group. The results show that having girls between 13 and 18 years old has a positive effect on wages, whereas having boys in this age range is not statistically significant.¹⁵

For Ecuador, we did not find any significant results for the general sample, nor when disaggregating the sample by educational levels or age groups.

¹³ Appendix II shows the complete set of results for the first specification, using Model 3.

¹⁴ Marital status is represented by an indicator equal to one if the person is married or has a domestic partner, and zero otherwise. Brazil does not have information about marital status or part-time status. Therefore, these two variables are not included in the Brazilian regressions.

¹⁵ These results are not reported in this paper.

Table 4. OLS Regressions (Dependent Variable: Natural Logarithm of Hourly Wage)

	BOLIVIA			ECUADOR			PERU			BRAZIL		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
<u>First Specification</u>												
<u>(equation 1)</u>												
Mother of children less than 7 years old	-0.092 (0.089)	-0.069 (0.086)	-0.076 (0.085)	-0.056 (0.053)	-0.068 (0.052)	-0.074 (0.049)	-0.105* (0.060)	-0.114* (0.059)	-0.114** (0.056)	0.074** (0.008)	0.065** (0.008)	0.066** (0.007)
Mother of children between 7 and 12 years old	-0.076 (0.083)	-0.081 (0.081)	-0.117 (0.081)	0.058 (0.054)	0.047 (0.053)	0.067 (0.051)	-	-	-	0.028** (0.009)	0.022** (0.008)	0.026** (0.008)
Mother of children between 13 and 18 years old	0.231** (0.097)	0.181* (0.098)	0.177* (0.099)	0.031 (0.067)	0.027 (0.065)	0.020 (0.063)	-	-	-	0.003 (0.011)	-0.002 (0.010)	0.002 (0.010)
R-squared	0.439	0.480	0.518	0.418	0.437	0.495	0.413	0.463	0.532	0.557	0.603	0.649
<u>Second Specification</u>												
<u>(equation 2)</u>												
One child	0.013 (0.109)	0.045 (0.106)	0.025 (0.105)	0.067 (0.074)	0.055 (0.072)	0.011 (0.069)	-0.091 (0.061)	-0.111* (0.060)	-0.109* (0.057)	0.089** (0.009)	0.083** (0.009)	0.080** (0.008)
Two or more children	-0.025 (0.103)	-0.43 (0.100)	-0.078 (0.104)	0.026 (0.069)	0.011 (0.067)	0.023 (0.066)	-0.183 (0.151)	-0.131 (0.144)	-0.142 (0.122)	0.087** (0.010)	0.079** (0.009)	0.081** (0.009)
R-squared	0.428	0.474	0.513	0.417	0.436	0.494	0.414	0.463	0.532	0.558	0.604	0.649
<u>Third Specification</u>												
<u>(equation 3)</u>												
Number of children less than 7 years old	-0.080 (0.056)	-0.074 (0.056)	-0.073 (0.056)	-0.039 (0.035)	-0.042 (0.034)	-0.041 (0.034)	-0.086 (0.052)	-0.082 (0.051)	-0.085* (0.046)	0.048** (0.006)	0.042** (0.006)	0.044** (0.005)
Number of children between 7 and 12 years old	-0.021 (0.054)	-0.028 (0.054)	-0.043 (0.057)	0.007 (0.035)	0.001 (0.035)	0.016 (0.036)	-	-	-	0.010 (0.006)	0.008 (0.006)	0.011 (0.006)
Number of children between 13 and 18 years old	0.122** (0.055)	0.101* (0.056)	0.090 (0.058)	-0.019 (0.044)	-0.022 (0.044)	-0.021 (0.042)	-	-	-	-0.001 (0.006)	-0.003 (0.006)	0.001 (0.006)
R-squared	0.439	0.481	0.517	0.417	0.437	0.495	0.413	0.463	0.531	0.557	0.603	0.649
Sample Size	374	374	374	1202	1202	1202	782	782	782	28,606	28,606	28,606

Notes:

1. Rows 1 to 3 show the coefficients of the first specification, rows 4 and 5 show the second specification and rows 6 to 8 show the third one.
2. Model 1 controls for age, age squared, years of education, years of education squared, marital status, tenure, tenure squared, head of household status, and ethnicity. Model 2 adds part-time status and public sector status. Model 3 adds one-digit occupation and one-digit industry indicator variables.
3. The variables one child and two or more children are calculated for children aged less than 18 years old. For Peru, this variable means having one child less than 7 years old or two or more children less than 7 years old. This is because children 6 years old or older cannot be identified.
4. * means that the coefficient is statistically significant at a 10% level. ** at 5%.

The results for Peru are similar to those found in developed countries. That is, we find that there is a *penalty* for having children less than 7 years old in terms of wages. The (raw) differential in hourly pay is 10.7 percent ($\exp(-0.114) - 1$) less for mothers using the third model. There is also a *penalty* for having a higher number of children aged less than 7 years old.

In the case of Brazil, we find that there exists a premium for having children less than 7 years old (6.8 percent more than nonmothers), a smaller premium for having children 7 to 12 years old (2.6 percent more than nonmothers) and no rewards for having children 13-18 years old. One of the problems with the Brazilian data set is that it does not have information regarding marital status. The variable representing marital status in our regressions for the other three countries is positive and statistically significant. In addition, the variables that measure motherhood and the variable “married” are highly correlated in the three countries that have information about marital status. Therefore, the variables that represent having children in Brazil might be capturing the fact that there exists a marriage premium for women. A next step is to further investigate the effect of family composition on wages for mothers and nonmothers for our Brazilian data. To see if the problem with this result was the lack of information about actual experience instead of lack of information about marital status, we tested a model with a very restricted age-range (20-22 years old) and very restricted years of education (13 to 15 years of education). This specification also yielded positive coefficients for the variables representing motherhood. We interpret this as a signal that the problem is not entirely due to the fact that we do not have actual experience in our data set, but rather that we do not have information about marital status.¹⁶

Even though our models control for age, a second step to better understand the model could be to divide the samples into three age groups. These three arbitrarily chosen groups are: 14-25, 26-35 and 36-45 years old. Table 5 shows that the youngest group of mothers in Bolivia is pe-

nalized for having children younger than 7 years old. Their wages are 38.6 percent less than the wages of nonmothers. There is also a negative impact of having a higher number of children in this age range. The results for Ecuador show a positive effect for the oldest group of mothers if they have children between 7 and 12 years old (the hourly wage differential is 28.6 percent more than nonmothers). The results for Peru show that the middle-aged group is penalized (18.5 percent smaller wages, which is almost double the penalty found for the pooled sample with all the age groups together). Finally, the results for Brazil show that the significant effects disappear for the oldest group of mothers. However, for the youngest group of women, only those with children who are younger than 7 years old enjoy a premium (7.9 percent). For the middle-aged group, there is a premium of 7 percent for those with children younger than 6 years old and 4.8 percent for those with children between 7 and 12 years of age.

It might be interesting to look at the impact of motherhood on wages when the samples are disaggregated by educational attainment. More educated women might have access to better jobs with benefits that include child care policies, maternity leave, etc. Therefore, we might expect that, given that the decision to enter the job market has been made for our sample of female workers, better conditions at work might mitigate the costs of being a mother for better-educated women.

Dividing the samples by educational levels (less than high school as the first group and high school or more as the second group, shown in table 6), shows there is a premium of 26.4 percent for educated Bolivian mothers who have children between 13 and 18 years old. In Ecuador, there is a penalty of 15.1 percent for less educated mothers who have children younger than 7 years old, as well as a premium of 17.9 percent for having children between the ages of 7 and 12. In Peru, having children younger than 7 years old also had a negative impact on wages (hourly wage differential of 11 percent less for mothers) for mothers with a high school or more, but it does not have a significant effect on mothers who have less than a high school educa-

¹⁶ The results are not reported in this paper.

Table 5. OLS Regressions by Age-groups (Dependent Variable: Natural Logarithm of Hourly Wage)

	BOLIVIA			ECUADOR			PERU			BRAZIL		
	14-25	26-35	36-45	14-25	26-35	36-45	14-25	26-35	36-45	14-25	26-35	36-45
<u>First Specification</u>												
<u>(equation 1)</u>												
Mother of children less than 7 years old	-0.448*	-0.068	0.108	-0.058	0.011	-0.111	-0.023	-0.205*	-0.087	0.076**	0.068**	0.023
	(0.242)	(0.128)	(0.194)	(0.140)	(0.072)	(0.079)	(0.115)	(0.078)	(0.118)	(0.013)	(0.011)	(0.016)
Mother of children between 7 and 12 years old	0.172	-0.180	-0.077	-0.064	-0.073	0.261**	-	-	-	0.031	0.047**	0.018
	(0.239)	(0.145)	(0.131)	(0.341)	(0.075)	(0.079)	-	-	-	(0.034)	(0.012)	(0.013)
Mother of children between 13 and 18 years old	-	0.104	0.178	-	0.073	-0.106	-	-	-	-0.202*	-0.001	0.015
	-	(0.205)	(0.132)	-	(0.111)	(0.079)	-	-	-	(0.106)	(0.017)	(0.012)
R-squared	0.531	0.535	0.616	0.421	0.433	0.547	0.487	0.583	0.582	0.573	0.545	0.583
<u>Second Specification</u>												
<u>(equation 2)</u>												
One child	-0.401	0.025	0.207	-0.098	-0.041	0.301	0.005	-0.188**	-0.057	0.071**	0.088**	0.061**
	(0.292)	(0.172)	(0.216)	(0.153)	(0.098)	(0.133)	(0.122)	(0.076)	(0.133)	(0.014)	(0.013)	(0.017)
Two or more children	-0.282	-0.110	0.071	0.044	-0.051	0.227	-0.234	-0.325	-0.204	0.111**	0.102**	0.055**
	(0.374)	(0.153)	(0.167)	(0.153)	(0.089)	(0.124)	(0.228)	(0.208)	(0.151)	(0.022)	(0.013)	(0.015)
R-squared	0.521	0.530	0.613	0.422	0.432	0.542	0.489	0.584	0.583	0.573	0.545	0.583
<u>Third Specification</u>												
<u>(equation 3)</u>												
Number of children less than 7 years old	-0.278**	-0.075	0.049	-0.007	-0.021	-0.072	-0.053	-0.176**	-0.071	0.054**	0.042**	0.013
	(0.137)	(0.091)	(0.115)	(0.075)	(0.050)	(0.056)	(0.091)	(0.070)	(0.076)	(0.009)	(0.008)	(0.012)
Number of children between 7 and 12 years old	0.341	-0.052	-0.039	-0.074	-0.074	0.136	-	-	-	0.017	0.027**	0.003
	(0.245)	(0.089)	(0.102)	(0.338)	(0.054)	(0.057)	-	-	-	(0.027)	(0.008)	(0.008)
Number of children between 13 and 18 years old	-	0.083	0.101	-	0.044	-0.040	-	-	-	-0.186*	-0.005	0.008
	-	(0.153)	(0.069)	-	(0.080)	(0.052)	-	-	-	(0.107)	(0.012)	(0.008)
R-squared	0.526	0.533	0.616	0.421	0.435	0.542	0.487	0.584	0.583	0.573	0.545	0.583
Sample size	121	141	112	414	442	346	293	293	196	9,754	10,190	8,662

Notes:

1. Rows 1 to 3 show the coefficients of the first specification, rows 4 and 5 show the second specification and rows 6 to 8 show the third one.
2. This table contains the results from Model 3 that controls for age, age squared, years of education, years of education squared, marital status, tenure, tenure squared, head of household status, ethnicity, part-time status, public, occupation and industry indicators.
3. * means that the coefficient is statistically significant at a 10% level. ** at 5%.

Table 6. By Level of Education (Dependent Variable: Female Workers' Natural Log of Hourly Wage)

	BOLIVIA		ECUADOR		PERU		BRAZIL	
	Less than High School	High School or more	Less than High School	High School or more	Less than High School	High School or more	Less than High School	High School or more
First Specification (equation 1)								
Mother of children less than 7 years old	0.107 (0.161)	-0.109 (0.100)	-0.164** (0.076)	-0.003 (0.065)	-0.005 (0.128)	-0.117* (0.062)	0.045** (0.009)	0.072** (0.012)
Mother of children between 7 and 12 years old	-0.251 (0.180)	-0.081 (0.098)	0.165** (0.080)	0.014 (0.066)	-	-	0.009 (0.010)	0.035** (0.013)
Mother of children between 13 and 18 years old	0.143 (0.201)	0.235** (0.108)	0.040 (0.092)	0.013 (0.084)	-	-	0.005 (0.012)	-0.007 (0.017)
R-squared	0.380	0.433	0.227	0.385	0.422	0.436	0.509	0.552
Second Specification (equation 2)								
One child	0.201 (0.213)	-0.007 (0.121)	-0.093 (0.105)	0.056 (0.089)	0.011 (0.137)	-0.113* (0.061)	0.073** (0.011)	0.070** (0.013)
Two or more children	-0.055 (0.236)	-0.035 (0.111)	0.022 (0.100)	0.036 (0.087)	-0.088 (0.212)	-0.137 (0.152)	0.066** (0.011)	0.068** (0.014)
R-squared	0.380	0.418	0.217	0.385	0.423	0.436	0.418	0.552
Third Specification (equation 3)								
Number of children less than 7 years old	-0.020 (0.103)	-0.077 (0.065)	-0.051 (0.050)	0.048 (0.045)	-0.019 (0.095)	-0.085 (0.054)	0.029** (0.006)	0.051** (0.009)
Number of children between 7 and 12 years old	-0.198 (0.115)	-0.014 (0.067)	0.166** (0.046)	0.013 (0.049)	-	-	-0.001 (0.006)	0.025** (0.009)
Number of children between 13 and 18 years old	0.069 (0.088)	0.102 (0.069)	0.042 (0.055)	0.036 (0.049)	-	-	-0.003 (0.007)	0.008 (0.012)
R-squared	0.388	0.428	0.174	0.369	0.422	0.436	0.417	0.552
Sample size	121	253	496	706	141	641	15,754	12,852

Notes:

1. Rows 1 to 3 show the coefficients of the first specification, rows 4 and 5 show the second specification and rows 6 to 8 show the third one.
2. This table contains the results from Model 3 that controls for age, age squared, years of education, years of education squared, marital status, tenure, tenure squared, head of household status, ethnicity, part-time status, public, occupation and industry indicators.
3. * means that the coefficient is statistically significant at a 10% level. ** at 5%.

tion. Table 6 shows that, in Brazil, the wages of less educated women with children younger than 7 years old are 4.6 percent higher than those of nonmothers, and that the premium for having children between the ages of 7 and 12 disappears for the group of less educated mothers. More educated mothers with children younger than 7 years old enjoy a 7.5 percent premium, while more educated mothers of children 7 to 12 years old enjoy a 3.6 percent premium.

In Latin American countries, a higher proportion of the labor force usually works in the public sector. In addition, women are generally more likely to work in the public sector than men. This selection into public sector jobs may rest on the existence of nonpecuniary benefits associated with working in the public sector, which might help women reconcile housework and work outside the home.

Dividing the samples into public and private sectors workers (table 7) shows that there is a premium of 15.4 percent for Bolivian women with children between 13 and 18 years old, whereas there is a penalty of 11.5 percent lower wages for women who have children between 7 and 12 years old and work in the public sector. No significant results were found for women working in the private sector. Again, there are no significant results for Ecuador. In Peru, private sector workers face a negative impact on wages if they have two or more children. Having more children younger than 7 years old also yields a negative effect on wages for private sector workers. In Brazil, the effects for private and public sector workers are similar in the sense that both enjoy a premium for having children younger than 7 years old as well as for having children between 7 and 12 years old. The premiums are greater for private sector workers.

Table 7. By Public or Private Institution (Dependent Variable: Female Workers' Natural Log of Hourly Wage)

	BOLIVIA		ECUADOR		PERU		BRAZIL	
	Public	Private	Public	Private	Public	Private	Public	Private
First Specification								
(equation 1)								
Mother of children less than 7 years old	-0.063 (0.108)	-0.122 (0.117)	-0.053 (0.083)	-0.071 (0.060)	-0.110 (0.074)	-0.115 (0.080)	0.041** (0.015)	0.073** (0.008)
Mother of children between 7 and 12 years old	-0.156 (0.113)	-0.051 (0.115)	0.103 (0.082)	0.051 (0.063)	-	-	0.030** (0.015)	0.021** (0.009)
Mother of children between 13 and 18 years old	0.264 (0.104)	0.219 (0.153)	-0.076 (0.094)	0.074 (0.083)	-	-	-0.028 (0.018)	0.006 (0.011)
R-squared	0.451	0.451	0.317	0.447	0.451	0.488	0.584	0.598
Second Specification								
(equation 2)								
One child	-0.076 (0.161)	0.053 (0.136)	-0.041 (0.132)	0.012 (0.082)	-0.139* (0.079)	-0.073 (0.082)	0.054** (0.019)	0.087** (0.009)
Two or more children	-0.042 (0.144)	-0.046 (0.138)	0.001 (0.114)	0.027 (0.081)	0.070 (0.105)	-0.330* (0.187)	0.039** (0.017)	0.087** (0.010)
R-squared	0.408	0.470	0.311	0.445	0.454	0.488	0.584	0.598
Third Specification								
(equation 3)								
Number of children less than 7 years old	-0.031 (0.071)	-0.110 (0.073)	-0.016 (0.061)	-0.048 (0.040)	-0.043 (0.054)	-0.121* (0.067)	0.025** (0.011)	0.048** (0.006)
Number of children between 7 and 12 years old	-0.122* (0.066)	0.045 (0.090)	0.035 (0.065)	0.007 (0.042)	-	-	0.017** (0.010)	0.006 (0.006)
Number of children between 13 and 18 years old	0.143** (0.061)	0.116 (0.097)	-0.079 (0.064)	0.009 (0.054)	-	-	-0.017 (0.011)	0.001 (0.007)
R-squared	0.447	0.479	0.316	0.446	0.447	0.488	0.584	0.597
Sample size	110	264	241	961	273	509	5,834	22,772

Notes:

1. Rows 1 to 3 show the coefficients of the first specification, rows 4 and 5 show the second specification and rows 6 to 8 show the third one.
2. This table contains the results from Model 3 that controls for age, age squared, years of education, years of education squared, marital status, tenure, tenure squared, head of household status, ethnicity, part-time status, public, occupation and industry indicators.
3. * means that the coefficient is statistically significant at a 10% level. ** at 5%.

Conclusions

Studies of developed countries regularly show that there is a wage penalty for working mothers. This paper explored the effects of motherhood on wages and labor force participation in four Latin American countries.

This study is motivated by several factors. First, it is the first study to analyze the impact of motherhood on wages and labor force participation for a group of Latin American countries. One of the reasons for the importance of this question lies in the larger scenario of gender inequality. Most women become mothers while they are participating in the labor market, and a typical aspect of gender division within the household is the assignment of household responsibilities to women. In this sense, penalties for being a mother may concern most women and add to gender inequality. Therefore, the empirical analysis of labor market differentials between mothers and nonmothers can shed light on the labor market effects of gender-role specialization. Second, the comparison of these results

with the results from industrialized countries can help in the design of labor market policies so that women are able to reconcile their responsibilities at home and at work.

The results of this paper show that mothers of children younger than 7 years old participate in the labor market more than those with no children. In general, female labor force participation increases with age and declines with family responsibilities. Conversely from the evidence found in the United States, the United Kingdom, Australia and Germany, the results for Latin America do not show a clear impact of motherhood on wages. While Peruvian mothers of children younger than 7 face a penalty, mothers in Bolivia and Brazil enjoy a premium. There are no significant effects in Ecuador. These very heterogeneous effects are further investigated looking at samples disaggregated by public and private sector, by educational level and by age groups. We find that wage penalties and premiums are not borne equally among all mothers.

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Appendix I Sample Restrictions

Table I. Sample Restrictions using the Bolivian, Ecuadorian, Peruvian and Brazilian Data Sets

	BOLIVIA	ECUADOR	PERU	BRAZIL
Original sample size	13,023	26,129	19,957	352,229
Only women	6,541	13,112	10,057	180,570
Earning a wage	1163	3,214	2,441	50,640
Only urban areas	961	2,142	1,864	45,472
Not self-employed	484	1,462	947	36,758
Age between 14 and 45	408	1,227	808	30,596
Working more than 1 hour per day but less than 16 hours per day	402	1,213	794	30,388
Final sample (after all restrictions)	374	1,202	782	28,606

Appendix II

Table II. OLS Regression Results. First Specification (Equation 1)
(Dependent Variable: Natural Logarithm of Hourly Wage)

	BOLIVIA	ECUADOR	PERU	BRAZIL
Mother of children 0 to 6 years old	-0.077 (0.086)	-0.075 (0.050)	-0.105* (0.058)	0.066* (0.008)
Mother of children 7 to 12 years old	-0.117 (0.082)	0.068 (0.051)	-	0.026* (0.008)
Mother of children 13 to 18 years old	0.178* (0.100)	0.020 (0.063)	-	0.002 (0.010)
Age	0.057* (0.032)	0.103* (0.022)	0.058* (0.025)	0.057* (0.003)
Age squared	-0.001 (0.001)	-0.002* (0.000)	-0.001* (0.000)	-0.001* (0.000)
Years of education	-0.031 (0.033)	0.040* (0.023)	0.041 (0.046)	-0.034* (0.003)
Years of education squared	0.004* (0.002)	0.001 (0.001)	0.002 (0.002)	0.007* (0.000)
Tenure	0.019 (0.018)	0.002* (0.000)	0.015* (0.008)	0.003* (0.000)
Tenure squared	-0.001 (0.001)	0.000* (0.000)	0.000* (0.000)	0.000* (0.000)
Married	0.162 (0.108)	0.100* (0.053)	0.148* (0.058)	-
Head	0.206* (0.111)	0.199* (0.065)	-0.099 (0.121)	0.077* (0.009)
Ethnicity	-0.179* (0.073)	0.213* (0.071)	0.071 (0.108)	-0.090* (0.007)
Part-time	0.329* (0.101)	0.363* (0.115)	0.296* (0.058)	-
Public	0.244* (0.111)	0.313* (0.075)	0.194* (0.075)	0.091* (0.011)
Regional dummies	Yes	Yes	Yes	Yes
Occupation dummies	Yes	Yes	Yes	Yes
Industry indicators	Yes	Yes	Yes	Yes
Intercept	-0.101 (0.556)	6.543 (0.374)	-0.463 (0.544)	-0.328 (0.082)

Notes: 1. This table contains the results from Model 3 and * means that the coefficient is statistically significant at a 10% level.