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The Last Hurdle? Unyielding Motherhood Effects in the Context of Declining Gender Inequality in Latin America*

Mariana Marchionni† Julián Pedrazzi‡

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Abstract

We assess whether motherhood could be the last hurdle to achieving gender equality in developing countries by exploring the link between motherhood and the overall gender gap in the labor market for 14 Latin American countries over the last two decades. Using pseudo-panels built from harmonized household surveys and an event study approach around the birth of the first child, we find that the arrival of the first child leads to a sharp and persistent 35% decline in mothers' earnings. This result is explained by a reduction in employment and a prompting shift towards occupations that favor more flexible work arrangements, including part-time and informal jobs. These effects are pervasive across countries and population groups. Furthermore, using an extended version of the Oaxaca-Blinder decomposition, we identify motherhood as the primary source of income inequality between men and women. Motherhood explains 42% of the remaining gender gap and has progressively gained relative importance over the last two decades while other contributing factors, such as education and its associated returns, have shown a waning impact. Moreover, we find no clear cross-country association between the motherhood-related gap and per capita GDP or gender norms, while the contribution of other factors to the gender gap in earnings diminishes with higher per capita GDP and more gender-egalitarian social norms. This suggests that gender gaps stemming from the motherhood effect exhibit greater rigidity than other drivers of gender inequality.

JEL Classification: D63, J13, J16, J22, J31
Keywords: decomposition, gender inequality, child penalty, developing countries, Latin America

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1 Introduction

Despite significant progress towards gender equality, large gender gaps still characterize labor markets across the globe. In Latin America, women's labor force participation is 27 percentage points lower than men's, and women earn 17% less per hour than men with similar education and experience (Marchionni et al., 2019). Research from developed countries points to motherhood—i.e., the arrival of children and the associated caregiving responsibilities that primarily fall on women—as the main factor explaining most of the remaining gender gaps (Kleven et al., 2019b; Cortés and Pan, 2020). Could also motherhood be the last hurdle to achieving gender equality in developing countries?

In this paper, we explore the link between motherhood and the overall gender gap in the labor market for 14 developing countries in Latin America, based on a pseudo-event study approach around the birth of the first child. Previous research provides evidence regarding the effects of motherhood for certain countries in the region: Berniell et al. (2021) for Chile, Campos-Vazquez et al. (2022) and Aguilar-Gomez et al. (2019) for Mexico, and Querejeta and Bucheli (2021) for Uruguay; also, Berniell et al. (2023) provide a comparative analysis for Chile, Mexico, Peru and Uruguay. However, a comprehensive study like this was hindered by the scarcity of administrative records or longitudinal surveys. Following the approach recently proposed by Kleven (2022), we rely on pseudo-panels at the individual level that we build based on harmonized household survey data—SEDLAC (CEDLAS and The World Bank, 2022) and LABLAC datasets (CEDLAS and The World Bank, 2021). This not only allows us to expand the analysis to the entire region but also to analyze different labor market outcomes beyond employment, as well as performing cross-country comparisons and a more detailed examination across different population groups and sub-periods.

We start by providing evidence about the effect of motherhood on labor market outcomes across 14 Latin American countries over the last two decades. As expected—and already documented for particular countries—, we find pervasive effects of motherhood throughout all countries and on diverse sociodemographic groups within the region. Our results for the pooled sample show a 20% drop in women's probability of working upon motherhood, which coincides with the upper limit of the [-40%, -20%] range identified in the literature for developed countries (Kleven et al., 2019b; Kleven et al., 2019a; Kuziemko et al., 2018; Berniell et al., 2020) and also with the limited prior evidence available for four Latin American countries—Chile, Mexico, Peru and Uruguay—based on actual panel data (Berniell et al., 2023).

Moreover, the negative effects of motherhood extend beyond employment levels to encompass the nature of employment itself. Specifically, the arrival of the first child causes women to gravitate towards more flexible work arrangements—particularly part-time and informal jobs—as documented in other studies (Berniell et al., 2021; Berniell et al., 2023; Kleven et al., 2019b). Consequently, mothers experience a sharp and abrupt decline of about 34% in their earnings, which persists even ten years after the birth of

their first child. In contrast, childbirth is a non-event for men since fatherhood implies no changes or smooth changes in labor market outcomes.

We next turn to quantify the contribution of the motherhood effect to the overall gender gap in earnings. We use an extended version of the Oaxaca-Blinder decomposition (Blinder, 1973; Oaxaca, 1973) to disentangle the motherhood-related gap from other sources of gender inequality (Kleven et al., 2019b). We find that not only does the motherhood effect constitute the foremost origin of the remaining income disparities between men and women in Latin America, but its relative importance has been increasing in the region over the last two decades. During the initial period of analysis (2005-2011), motherhood accounted for 42% of the overall gender gap in earnings. However, this contribution escalated to nearly 44% in the last period of analysis (2017-2021). Meanwhile, other contributing factors, such as education and its associated returns, have shown a waning impact. Furthermore, we find no clear cross-country association between the motherhood-related gap and per capita GDP or gender norms, while the contribution of other factors diminishes with higher per capita GDP and more gender-egalitarian social norms. This suggests that gender gaps stemming from the motherhood effect exhibit greater rigidity when compared to other drivers of gender inequality.

This paper contributes to the gender inequality literature (see Blau and Kahn (2017) and Marchionni et al. (2019) for a review) and, in particular, to the literature on motherhood effects or child penalties, by extensively analyzing the effects of motherhood on women's labor market outcomes in Latin America and assessing its contribution to the overall gender gap in earnings. By extending the analysis of previous studies for specific countries (Berniell et al., 2021; Berniell et al., 2023; Campos-Vazquez et al., 2022; Aguilar-Gomez et al., 2019; Querejeta and Bucheli, 2021) to a comprehensive set of countries, we present compelling evidence regarding the pervasive impact of motherhood within a developing region, spanning various countries, population groups, and time periods. Moreover, by quantifying the contribution of motherhood effects to the observed gender gaps in earnings, we unveil the distinct rigidity of gender gaps linked to motherhood compared to other determinants of gender inequality. Our findings underscore the necessity of recognizing the persisting challenges faced by mothers in the labor market and highlight the need for targeted policies to address and mitigate the enduring gender disparities arising from motherhood effects.

The paper continues as follows. Section 2 describes the pseudo-event study approach and the data. Section 3 presents evidence on the motherhood effects in Latin America, both for the pool of countries and across countries and population groups. Section 4 assess the quantitative relevance of the motherhood effects in explaining the observed gender gaps in earnings. Section 5 concludes.

2 Empirical strategy and data

2.1 Pseudo-event study approach

We adopt the pseudo-event study approach around the birth of the first child recently proposed by Kleven (2022). This approach essentially involves an event study based on pseudo-panel data at the individual level instead of actual panel data, which are usually not available in Latin American countries. We begin by providing a brief explanation of what an event study entails, and later describe how the pseudo-panels are built.

We define the event as the year when the first child is born. Let τ denote the number of years relative to the event, thus $\tau = 0$ represents the year of the first childbirth. Equation 1 represents an event-study around the birth of the first child:

$$y_{itc\tau} = \sum_{k \neq -1} \beta_k I(k = \tau_{itc}) + \sum_j \gamma_j I(j = age_{itc\tau}) + \sum_y \delta_y I(y = t) + \sum_s \lambda_s I(s = c) + \epsilon_{itc\tau}, \tag{1}$$

where $y_{itc\tau}$ is a labor market outcome of interest for individual i at calendar year t in country c at event time τ. The first term on the right-hand side is a set of event time dummies. The second and third terms are a full set of age-in-year dummies and calendar year dummies to control non-parametrically for life cycle trends and time trends. In the sample where we pool all countries together, we also include country dummies.

We estimate Equation 1 for mothers and fathers, separately. The coefficients of interest are the β_τ for $\tau \geq 0$, which measure the effect of the first childbirth on women's and men's labor outcomes, respectively, relative to the year before the first childbirth—i.e., relative to $\tau = -1$. The key identification assumption is that the timing of the first childbirth is not correlated with parents' labor outcomes conditional on the included controls.[1] For the sake of interpretation, we scale $\hat{\beta}_\tau$ from level effects to percentage effects relative to the counterfactual outcome without children. Formally, the percentage effect for each event time τ is given by $P_\tau = \frac{\hat{\beta}_\tau}{E[\tilde{Y}_{itc\tau}|\tau]}$, where $\tilde{Y}_{itc\tau}$ is the predicted outcome at event time τ from (1) when subtracting the event time terms.

The dependent variable $y_{itc\tau}$ represents our four labor market outcomes of interest: (i) whether individual i in country c was working at calendar year t and event time τ, (ii) working hours per week, (iii) whether the individual was an informal worker, and (iv) individuals' monthly earnings.

2.2 Data sources

Our analysis relies on cross-sectional data obtained from national household surveys conducted across 14 Latin American countries, spanning the years 2000 to 2021. The countries included are: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador,

[1] This methodology has been validated several times. For more details see Kleven et al. (2019b) and Kleven et al. (2019a)

Honduras, Mexico, Panama, Paraguay, Peru, El Salvador, and Uruguay. Table A.1 in the Appendix A lists the surveys used for each country.

Since household surveys are not uniform across countries and over time, we process the raw data to make them as comparable as possible by using similar definitions of variables in each country and year. To that end we follow the Socioeconomic Database for Latin America and the Caribbean (SEDLAC) protocol, a joint project between CEDLAS at the Universidad Nacional de La Plata and the World Bank (CEDLAS and The World Bank, 2022). For Chile and Mexico, we use the Labor Database for Latin America and the Caribbean (LABLAC) that complements SEDLAC and follows a similar protocol but based on labor surveys instead of household surveys (CEDLAS and The World Bank, 2021).[2]

While most studies of this kind for developed countries use administrative data, this type of data is often not available in Latin America. However, one advantage of using household- or labor-survey data instead of administrative data is the ability of the surveys to capture informal workers, who represent roughly half of the total workforce in Latin America (Gasparini and Tornarolli, 2009; Tornarolli et al., 2014). Therefore, relying on household surveys allows for a more complete representation of the labor market in the region. Another option would be to use census data, as Kleven et al. (2023) do, but household surveys also have advantages over censuses in this context. Firstly, household surveys in the region are primarily designed to collect information on employment and income, thereby including a comprehensive questionnaire with carefully crafted questions on these aspects. In addition to enabling a more accurate characterization of the labor market, surveys provide information on labor market outcomes beyond employment that are typically not available in censuses, such as hours worked, occupation type, and income.

The SEDLAC and LABLAC datasets comprise annual microdata for all the countries, encompassing a range of socioeconomic, demographic, and labor-related variables. Specifically, we focus on four key labor market outcomes, namely: (i) employment status (coded as 1 if an individual is employed, and 0 otherwise), (ii) weekly working hours, (iii) informality status (coded as 1 if an individual is a non-registered worker, and 0 otherwise), and (iv) monthly labor earnings. Hours worked and informality are defined solely for those who are employed, thereby representing conditional outcomes based on employment status. We use an extended measure of informality, defining an informal worker if she is a worker without access to social security benefits, a low-skilled self-employed worker or an unpaid worker (with zero earnings). The earnings variable includes earnings from all occupations and is expressed in US dollars PPP 2005.

[2]For the cases of Chile and Mexico, the national household surveys included in the harmonized SEDLAC database—CASEN and ENIGH, respectively—are conducted every 2 or 3 years, which poses a limitation for the matching procedure described in the following subsection. For this reason, for these two countries we utilize the harmonized employment surveys included in the LABLAC database, for which we do have annual information.

2.3 Pseudo-panels and estimation sample

Following Kleven (2022), we proceed to build pseudo-panels at the individual level based on cross-sectional microdata from household surveys. To identify individuals who are parents in the sample, we retain the subset of individuals who are heads of households and their corresponding spouses. For those who are already parents, we infer the calendar year of their first childbirth from the age of their oldest child. While we can observe these individuals after the event, it is impossible to identify them in periods prior to the event. To overcome this challenge, Kleven (2022) proposes matching parents with non-parents who possess similar observable characteristics. Specifically, a parent i observed in the calendar year at the exact time of the event—i.e., first childbirth—in year t with age a and characteristics C (gender, education, and region) is matched to a non-parent j in year $t-p$ and age $a-p$, where p ranges from 1 to 5 years before the first childbirth, and who shares the same characteristics C. To match observations, we use age (in years), calendar year, gender (male or female), education (incomplete primary, complete primary, incomplete secondary, complete secondary, incomplete tertiary, and complete tertiary), and geographic region (urban or rural areas).[3] By following this methodology, we build time events before the childbirth for each parent in the sample (see Table A.2 for an example). As multiple matched observations may exist for each parent, we collapse them using sampling weights to leverage the full sample of individuals with similar characteristics. Figures B.1 to B.4 in Appendix B I show that our results are robust to the set of variables we use for the matching procedure. Additionally, using household surveys enable the utilization of the survey year in the matching procedure used for building the pseudo-panels. This is not possible when working with census data, which are typically available only every ten years or so. Figures B.5 and B.6 in Appendix B I show that failing to incorporate the survey year in the matching process results in larger estimates of the negative effect of motherhood on labor market outcomes.

A concern that arises here, as in any matching procedure, is whether observationally similar childless individuals constitute a suitable counterfactual for the pre-childbirth periods of individuals who eventually become parents. In other words, the question is whether the estimated pre-childbirth labor market outcomes in the individual-level pseudo-panels offer a reliable approximation to the actual but unobservable pre-childbirth labor market outcomes of fathers and mothers. To assess this, in Appendix B we compare the outcomes that emerge from the pseudo-panels with the results from the actual panel in the case of Chile.[4] As Figure B.7 shows, the results from the two approaches are remarkably similar, suggesting that the pseudo-panel is a reliable approximation to the

[3] Regarding geographic region, we distinguish between urban and rural areas, but for the largest countries such as Chile, Mexico, and Colombia, we match based on the combination of region and the urban/rural indicator.

[4] We use longitudinal data from the Social Protection Survey of Chile that is carried out by the Ministry of Labor and Social Protection. Since 2004, the survey has followed a sample of around 16,000 individuals aged 18 years and older who are representative of the Chilean population. This database was previously used to estimate the motherhood effect by Berniell et al. (2021).

actual panel.

Our sample includes women and men whose age at the birth of the first child is between 25 and 45 years old. The resulting sample contains 626,487 women and 812.766 men, who had children at some point before the survey takes place. Table A.3 in the Appendix describes the sample for the pool of countries (pooled sample) in the year prior to the birth of the first child—i.e., at $\tau = -1$. Statistics for each country are shown in Tables A.4 and A.5. In our pooled sample, 93% of men and 74% of women are working at that time, and men work more hours per week in the market than women—48 and 42 hours, respectively. These gender gaps in labor supply in part explain why men's earnings are 39% higher than women's. Also, women are more likely than men to have some college education—52% and 35%, respectively—, while men are more likely than women to have an informal job once employed—35% and 27%, respectively. On average, women first become mothers at 30.2 years old (the range varies from 29 in Honduras to 31.2 in Uruguay), while men first become fathers when they are 31.2 years old. Most individuals in our sample gave birth to their first child between 2006 and 2015. At the time they participated in the survey, 67% and 96% of women had at most one child or two children, respectively.

3 Anatomy of the motherhood effects in Latin America

3.1 Average motherhood effects for the entire region

We start by presenting the effects of motherhood on labor market outcomes by estimating Equation 1 using the pooled sample of 14 Latin American countries. Figure 1 exhibits the standardized estimates of the β_τs from five years before the first childbirth up to 10 years after. These coefficients are standardized in relation to the year preceding the first childbirth ($\tau = -1$), as defined in Section 2. Tables A.6 and A.7 in Appendix A report the estimated coefficients without standardizing.

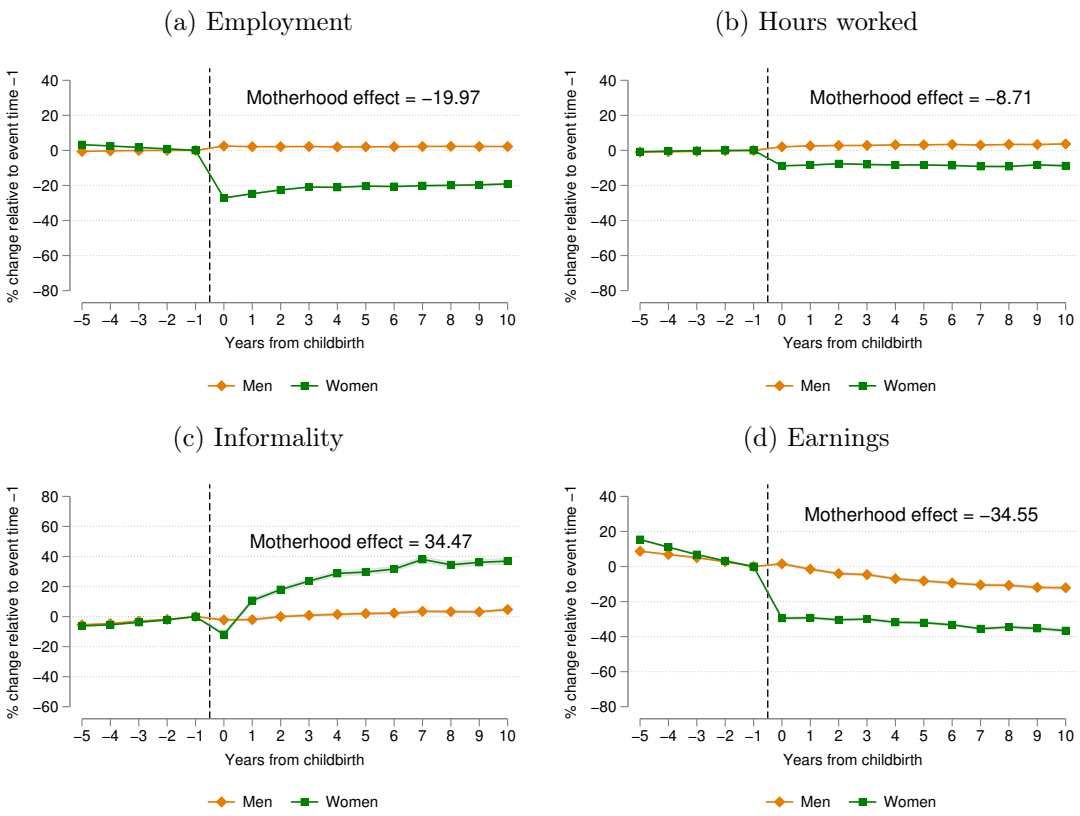
Figure 1a shows the motherhood effects on employment. The long-term—i.e., the average from $\tau = 5$ to $\tau = 10$—motherhood effect on the probability of working is -20%. This estimate is similar to the upper limit of the [-40%, -20%] range identified in the literature for developed countries (Kleven et al., 2019b; Kleven et al., 2019a; Kuziemko et al., 2018; Berniell et al., 2020). This is also consistent with the limited prior evidence available for Latin American countries based on actual panel data, which indicates that the motherhood effect on employment in Chile, Mexico, Uruguay, and Peru is approximately -19%, on average (Berniell et al., 2023). However, these estimates fall significantly below the 35%-50% range reported by Kleven et al. (2023) for the region in their Child Penalty Atlas, where they apply a pseudo-panel approach while primarily relying on census data. Part of these discrepancies can be attributed to our focus on a more recent time period—the Atlas utilizes data from the region including the 1990s—and a slightly older age group—the Atlas includes individuals aged 20 to 45, whereas we concentrate on the 25

to 45 age group. More importantly, a notable difference arises from the sources of information utilized. While the Atlas relies on census data from Latin American countries, we employ harmonized data from national household surveys and labor surveys in the region that, as mentioned in the previous section, allow for a more accurate and comprehensive characterization of labor market outcomes. For this reason, and also due to their higher frequency, surveys constitute a superior source of information for characterizing the labor markets of the region.[5]

Thanks to the rich household survey data, we can explore motherhood effects on other labor outcomes beyond employment. For instance, for those women who remain in the labor market after becoming mothers, Figure 1b reveals an 8.7% drop in working hours, which reflects the migration of women from full-time to part-time employment as a means of seeking flexibility upon motherhood (e.g., Kleven et al., 2019b and Berniell et al., 2021). As Berniell et al. (2021) and Berniell et al. (2023) point out, such a pursuit of flexibility upon motherhood may also explain the substantial increase in labor informality among working women shown in Figure 1c. Naturally, given the lack of job protection in the informal labor market, a significant number of female informal workers lose their jobs immediately after becoming mothers. Figure A.1 in Appendix A shows that motherhood results in an immediate decline of approximately 20% in formal employment and 40% in informal employment, which imply the short-term drop in women's labor informality rate at $\tau = 0$ shown in Figure 1c. Although formal employment never recovers, informal employment begins to increase after $\tau = 0$, leading to a 34.5% long-term rise in women's labor informality rate. As Berniell et al. (2021) and Berniell et al. (2023) find, motherhood explains a substantial part of the gender gap in labor informality in Latin American countries, where almost half of working women are non-registered workers (Gasparini and Tornarolli, 2009; Tornarolli et al., 2014).

[5]Chile is the only country in Latin America for which Kleven et al. (2023) use survey data: the *Encuesta de Caracterización Socioeconómica Nacional* (CASEN). To compare our findings with those of the Atlas, we estimated motherhood effects starting with a specification similar to that of Kleven et al. (2023) and the CASEN data. We gradually made adjustments until we arrived at our own specification using data from the National Employment Survey. The main differences for Chile stem from three key factors: (1) the analysis period—the motherhood effect is seven percentage points lower in 2000-2021 compared to 1990-2017; (2) the age group—motherhood effect diminishes by seven percentage points when focusing on individuals aged 25-45 instead of 20-45; and (3) the data source—using the National Employment Survey instead of the CASEN results in a further nine percentage points reduction in the motherhood effect. It is important to note that the CASEN survey is conducted every 2 or 3 years, unlike most household surveys in the region that are conducted on an annual basis. This poses challenges when constructing the pseudo panels. For instance, if an individual has a child in the year 2009, to construct the years preceding the childbirth, the earliest available match would be from 3 years before, based on the 2006 CASEN survey. This represents a sole pre-childbirth period available for analysis, as the year 2003 is 6 years prior to the event. This kind of limitation is exacerbated when using census data, which is typically conducted only once every ten years. In contrast, our approach for Chile involves the utilization of the National Employment Survey, which has the advantage of collecting quarterly information every year.

Figure 1: Effects of the first childbirth on employment and earnings



Note: These figures report the standardized estimates of the β_τs from Equation 1 for fathers and mothers, separately. Since the omitted category is $\tau = -1$, the standardized coefficients measure the impact of children as a percentage of the counterfactual outcome absent children relative to the year before the first childbirth. Controls include year, age-in-years, and country fixed effects. The effects on hours worked and informality are estimated conditional on being employed. The motherhood effect reported is the average motherhood effect from $\tau = 5$ through $\tau = 10$. Data cover the 14 Latin American countries from 2000–2021, except when estimating the effects on labor informality, where Panama is excluded from the sample. The sample is restricted to mothers and fathers whose age at first childbirth is between 25 and 45 years old. The figure also displays the 95% confidence intervals based on robust standard errors, although they are typically so narrow that are usually not perceptible.
Source: Calculations based on SEDLAC (CEDLAS and The World Bank, 2022) and LABLAC (CEDLAS and The World Bank, 2021) datasets.

Taken together, these motherhood effects on employment, working hours, and labor informality help explain the significant decline in women's earnings upon motherhood shown in Figure 1d. After the first childbirth, women's earnings suddenly drop and the effect persists and even intensifies over time, reaching 34.5% in the long term. In contrast, men's outcomes show virtually zero immediate effects of fatherhood on employment, working hours or informality rates, with a slightly negative trend in earnings that follow the pre-birth pattern. In other words, childbirth is a non-event for men since fatherhood implies no changes or smooth changes, while changes for women upon motherhood are large, abrupt and persistent.

3.2 Motherhood effects across population groups

Motherhood effects can display heterogeneity within the region as, for instance, the options for coping with the responsibilities associated with motherhood may vary across different population groups. To explore this, we estimate Equation 1 separately for various groups defined based on education, geographic area, and total number of children using the pooled sample of 14 Latin American countries. Table A.8 in Appendix A reports summary statistics in the year prior to the birth of the first child for each population group.

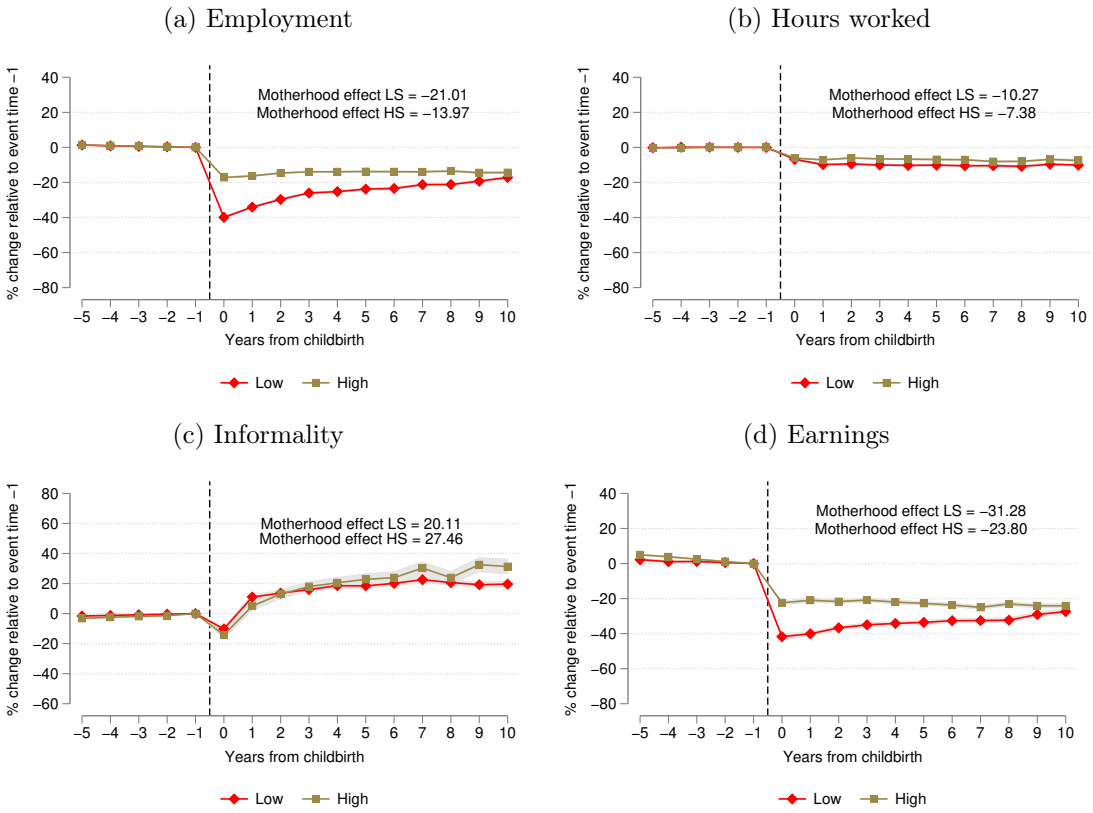
Educational level

To investigate how the impact of motherhood varies across different educational groups, we estimate Equation 1 separately for low-educated women (high school degree or less) and high-educated women (at least some college education). Figure 2 shows the results, revealing that the negative effects of motherhood are usually more pronounced for women with lower levels of education, specially in the short term. For instance, in the year of the first childbirth—i.e., at $\tau = 0$—employment and earnings drop 40% for low-educated women and 20% for high-educated women. Even though the differences between the two groups diminish over time, women with lower levels of education are the ones who experience a greater long-term impact.

The effects on hours worked and labor informality are of similar magnitude for both educational groups, especially in the short and medium term. Yet, in the long term, the percentage effect on labor informality is more pronounced for highly educated women compared to their less-educated counterparts.[6] This divergence can be attributed to the relatively lower pre-motherhood levels of labor informality among highly educated women as opposed to those with lower education. Prior to becoming mothers—i.e., at $\tau = -1$—, labor informality rate is 42% for low-educated women, but only 18% for high-educated women (see Table A.8). The regression coefficients in unstandardized levels in Table A.9 show a long-term average effect of 0.088 for women with low education and 0.036 for women with high education. Therefore, the differential long-term effect of motherhood on informality implies informality rates of 51% and 22%, respectively.

[6] In a few countries in the region, we observe the opposite, namely, the motherhood effect on labor informality is higher among low-educated women compared to high-educated women. This is the case in Chile, as documented by Berniell et al. (2021). According to our estimations, Paraguay and Panama exhibit the same pattern as Chile. Results available upon request.

Figure 2: Motherhood effects in Latin America by educational level



Note: These figures report the standardized estimates of the β_τs from Equation 1 for low-skilled (LS) and high-skilled (HS) women, separately. We define low-skilled women if they have completed secondary education or less, and high-skilled women if they have completed some tertiary education or more. Since the omitted category is $\tau = -1$, the standardized coefficients measure the impact of children as a percentage of the counterfactual outcome absent children relative to the year before the first childbirth. Controls include year, age-in-years, and country fixed effects. The effects on hours worked and informality are estimated conditional on being employed. The motherhood effect reported is the average motherhood effect from $\tau = 5$ through $\tau = 10$. Data cover the 14 Latin American countries from 2000–2021, except when estimating the effects on labor informality, where Panama is excluded from the sample. The sample is restricted to mothers and fathers whose age at first childbirth is between 25 and 45 years old. The figure also displays the 95% confidence intervals based on robust standard errors, although they are typically so narrow that are usually not perceptible.
Source: Calculations based on SEDLAC (CEDLAS and The World Bank, 2022) and LABLAC (CEDLAS and The World Bank, 2021) datasets..

Rural versus urban areas

We also explore potential heterogeneous effects across regions by estimating Equation 1 separately for women from rural and urban areas. For instance, greater access to care services in urban areas could mitigate the motherhood effect for urban women compared to their rural counterparts. On the other hand, it is possible that jobs in rural areas are more family-friendly compared to urban areas. For instance, agriculture may offer greater flexibility in balancing family and work responsibilities compared to full-time jobs in cities. This is precisely what Figure 3a suggests. For urban women, employment drops by 20% immediately after the birth of their first child and remains at that level throughout the following decade. In contrast, although rural women experience a slightly

larger short-term decline in employment, it gradually recovers over time, resulting in a long-term effect of only 13%. This pattern is consistent with the previous hypothesis that rural jobs allow for greater flexibility in balancing family and work.

Figures 3b and 3d show slightly larger motherhood effects on working hours and earnings in rural areas than in the cities. Regarding labor informality, Figure 3c shows that motherhood increases women's informality rate specially in urban areas. Once again, this can be explained by the higher pre-motherhood levels of labor informality among rural women in comparison to urban women—at $\tau = -1$, female labor informality rate is 60% in rural areas and 26% in urban areas.

Figure 3: Motherhood effects in rural versus urban areas in Latin America

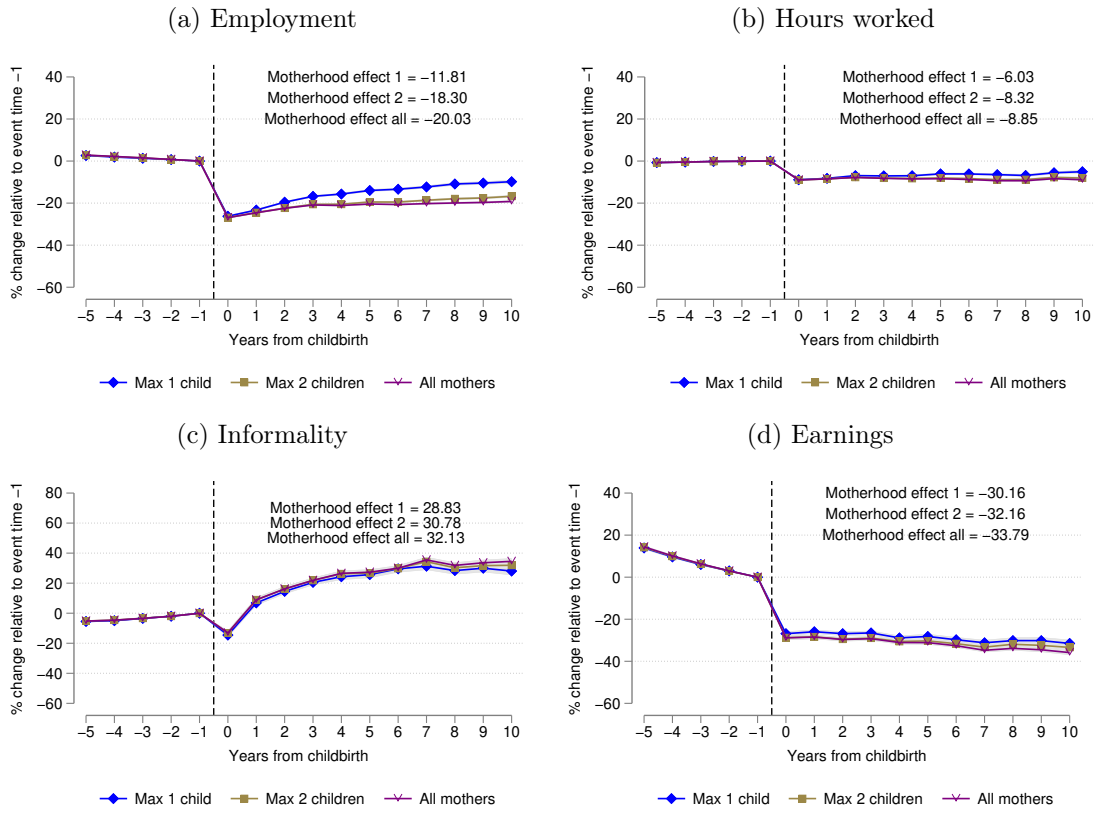
Note: These figures report the standardized estimates of the β_τs from Equation 1 for mothers from rural and urban areas, separately. Since the omitted category is $\tau = -1$, the standardized coefficients measure the impact of children as a percentage of the counterfactual outcome absent children relative to the year before the first childbirth. Controls include year, age-in-years, and country fixed effects. The effects on hours worked and informality are estimated conditional on being employed. The motherhood effect reported is the average motherhood effect from $\tau = 5$ through $\tau = 10$. Data cover the 14 Latin American countries from 2000–2021, except when estimating the effects on labor informality, where Panama is excluded from the sample. The sample is restricted to mothers and fathers whose age at first childbirth is between 25 and 45 years old. The figure also displays the 95% confidence intervals based on robust standard errors, although they are typically so narrow that are usually not perceptible. Source: Calculations based on SEDLAC (CEDLAS and The World Bank, 2022) and LABLAC (CEDLAS and The World Bank, 2021) datasets.

Number of children

The event-study approach identifies the short-term effect of the first child but long-term

effects also capture the impact of subsequent children. To explore whether the long-term motherhood effects vary with the number of children, we estimate Equation 1 separately for women with at most one child, women with at most two children, and women with any number of children—i.e., all mothers in our pooled sample. Figure 4 presents the event studies for these three groups for our four outcomes of interest.

Figure 4: Motherhood effects in Latin America by number of children



Note: These figures report the standardized estimates of the β_τs from Equation 1 for mothers with at most 1 child, mothers with at most 2 children, and mothers with any number of children, separately. Since the omitted category is $\tau = -1$, the standardized coefficients measure the impact of children as a percentage of the counterfactual outcome absent children relative to the year before the first childbirth. Controls include year, age-in-years, and country fixed effects. The effects on hours worked and informality are estimated conditional on being employed. The motherhood effect reported is the average motherhood effect from $\tau = 5$ through $\tau = 10$. Data cover the 14 Latin American countries from 2000–2021, except when estimating the effects on labor informality, where Panama is excluded from the sample. The sample is restricted to mothers and fathers whose age at first childbirth is between 25 and 45 years old. The figure also displays the 95% confidence intervals based on robust standard errors, although they are typically so narrow that are usually not perceptible.
Source: Calculations based on SEDLAC (CEDLAS and The World Bank, 2022) and LABLAC (CEDLAS and The World Bank, 2021) datasets..

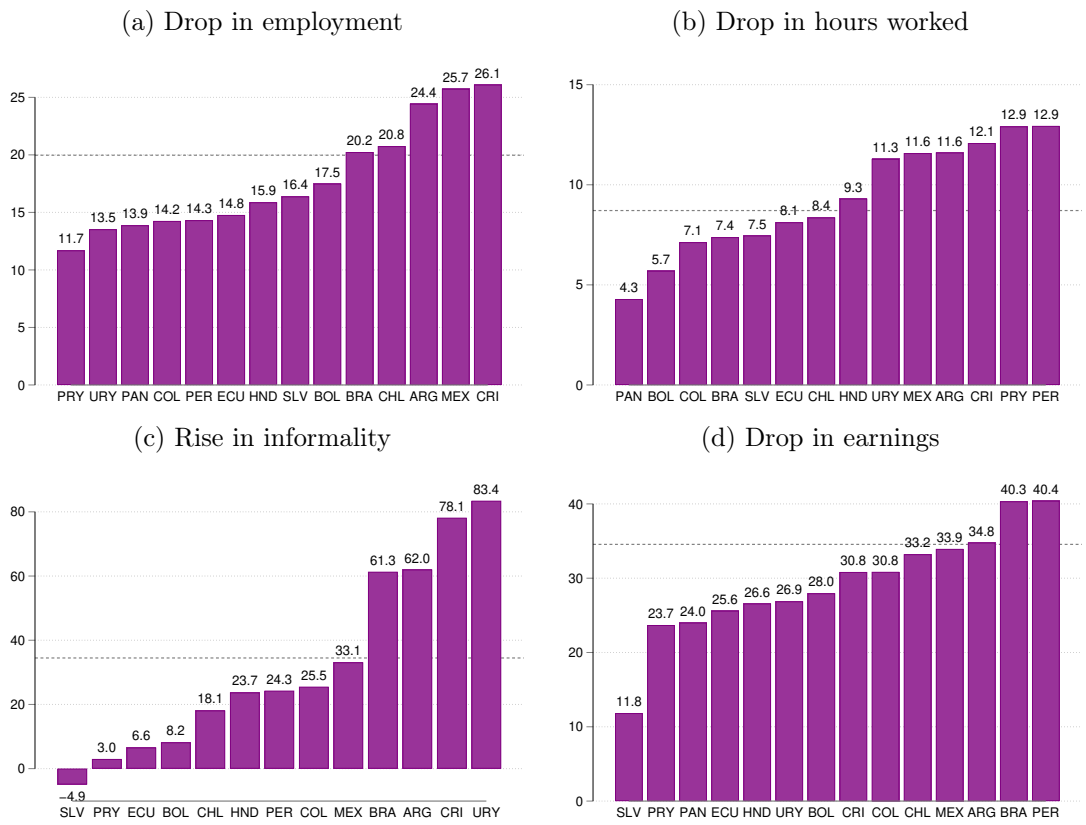
Our analysis suggests that the differences in motherhood effects across the number of children are generally small, although they tend to increase over time, likely due to the effects of additional children. The largest difference across groups is observed in the motherhood effects on employment. For women with at most one child, there is a significant recovery of employment: the short-term motherhood effect is around -23%—the

same as for women who eventually will have more children—but it decreases to less than half (-12%) in the long term. For the other outcomes, such as working hours, informality and earnings, the motherhood effects in the long term are very similar regardless of the number of children.

3.3 Motherhood effects across countries

To explore the cross-country variation in motherhood effects we estimate Equation 1 separately for each of the 14 countries. Figure 5 summarizes the results from the event studies for all countries in our four outcomes of interest. Figures A.2-A.5 in the Appendix A show the corresponding event studies for each country and outcome.

Figure 5: Long-term motherhood effects across Latin American countries.



Note: These figures report the standardized estimates of the β_τs from Equation 1 for women for each country. The value shown in each bar is the average motherhood effect from $\tau = 5$ through $\tau = 10$. The effects on hours worked and informality are estimated conditional on being employed. The dashed line shows the unweighted average motherhood effect across the 14 Latin American countries. Data cover the 14 Latin American countries from 2000–2021. Due to the lack of information on labor informality, Panama is not included in Figure 5c.
Source: Calculations based on SEDLAC (CEDLAS and The World Bank, 2022) and LABLAC (CEDLAS and The World Bank, 2021) datasets.

The effect of the first childbirth on female labor market outcomes is abrupt and persistent in all countries, but varies greatly in magnitude. For instance, Figure 5a shows that the long-term effect of motherhood on employment ranges from 12% in Paraguay

to 26% in Costa Rica. The following panels show also heterogeneity in the magnitude of the motherhood effect on the other outcomes of interest. Moreover, Figure A.6 in Appendix A reveals a cross-country positive correlation between motherhood effects on the different outcomes, which suggests that leaving the labor market or taking part-time or informal jobs are complementary strategies when navigating the work-family balance demands posed by motherhood. Furthermore, all these adjustments seem to lead to a reduction of earnings, as suggested by the positive correlation between the motherhood effect on earnings and each of the other outcomes shown in Figure A.6.[7]

It is important to notice that these cross-country rankings do not depend on the baseline or counterfactual levels used to transform the absolute effects to percentage effects. This is illustrated in Figure A.7 in Appendix A : on the one hand, there is a strong positive correlation between the absolute effect—i.e., the β_τs from Equation 1—and the percentage effect relative to the counterfactual level of the outcome; on the other hand, there is no statistically significant relationship between the baseline level and the percentage effect in most outcomes, except informality.

4 Quantifying the role of children in the gender earnings gap: a decomposition analysis

This section aims to shed light on the quantitative relevance of motherhood effects estimated in Section 3 in explaining the observed gender gaps. We apply an Oaxaca-Blinder decomposition (Blinder, 1973; Oaxaca, 1973), but instead of using the typical Mincer equation we apply the decomposition to our event study in Equation 1. This approach, initially employed by Kleven et al. (2019b) in the case of Denmark, enables us to decompose the observed gender gaps into components associated with motherhood, other distinguishing characteristics between men and women—e.g., age, education—and their corresponding returns.

In the previous section, we have examined various labor market outcomes. However, in this section, our focus shifts to earnings, as the impact of the first child's arrival on employment, working hours, and labor informality all contribute to explaining the motherhood effect on earnings.

We define the overall gender gap in earnings (GGE) as the difference in earnings between men and women, expressed as a proportion of men's earnings. Formally, $GGE = \{E[y^m_{itc\tau}] - E[y^w_{itc\tau}]\}/E[y^m_{itc\tau}]$. To obtain the decomposition of the GGE, we first rewrite 1 with slight changes in notation.

$$y^g_{itc\tau} = \sum_{k \neq -1} \beta^g_k I(k = \tau^g_{itc}) + \sum_l \psi^g_l X^m_{l,itc\tau} + \epsilon^g_{itc\tau}, \tag{2}$$

where superscript g stands for gender, and the term $\sum_l \psi^g_l X^m_{l,itc\tau}$ collapses the three terms

[7] The country-specific event studies showing heterogeneities by education level, region and number of children are available upon request.

of Equation 1 that include the control variables age, calendar year and country. Based on 2 and rearranging terms, the estimated GGE is given by:

$$\frac{\bar{\hat{y}}^m - \bar{\hat{y}}^w}{\bar{\hat{y}}^m} = \frac{\sum_\tau (\hat{\beta}_\tau^m - \hat{\beta}_\tau^w)\rho_\tau^m}{\bar{\hat{y}}^m} + \frac{\sum_\tau (\rho_\tau^m - \rho_\tau^w)\hat{\beta}_\tau^w}{\bar{\hat{y}}^m} + \frac{\sum_l (\hat{\psi_l}^m - \hat{\psi_l}^w)\bar{X}_l^m}{\bar{\hat{y}}^m} + \frac{\sum_l (\bar{X}_l^m - \bar{X}_l^w)\hat{\psi_l}^w}{\bar{\hat{y}}^m}, \tag{3}$$

where ρ_τ^g represents the share of individuals of gender g that we observe τ years after becoming parents. Equation 3 decomposes the GGE into the motherhood-related gender gap—the first two terms on the right hand side—and other sources of gender inequality—the residual gap. The first term captures the effect of differential returns to children across genders—i.e., motherhood and fatherhood effects—and the second term captures the effect of differences in the distribution of mothers and fathers over the event-time variable. The remaining terms—i.e., the residual gender gap—capture the effect of returns on other characteristics (age, year and country) and the effect of differences on these characteristics between men and women.

The GGE in our pooled sample amounts to 47.6%, meaning that mothers' monthly earnings roughly represent half of fathers' earnings in Latin America. The decomposition reveals that 42% of this gap can be attributed to children. Moreover, this motherhood-related gender gap is mostly driven by the disparity between the motherhood and fatherhood effects—i.e., the first term in Equation 3—since the second term, which accounts for differences in the distribution of mothers and fathers over the event-time variable is virtually null.

To assess the evolution of the GGE and its components over time we perform the decomposition analysis for three sub-periods: 2005-2011, 2012-2016, and 2017-2021.[8] Figure 6a shows that while the GGE diminishes seven percentage points throughout the entire period under analysis—from 51.9% to 44.6%—, the gap associated with children remains virtually unchanged, with the motherhood-related gap as a share of the total gender gap increasing over time from 37% to 41%.

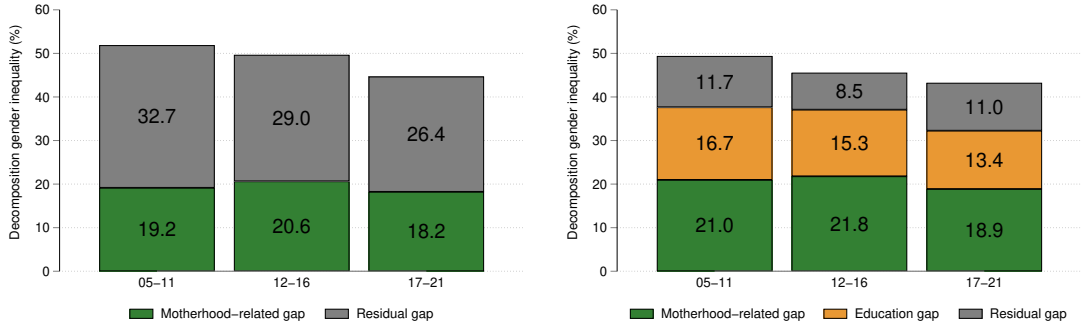
This suggests that despite there having been advances towards greater gender equality, the inequality stemming from the motherhood effect exhibits greater downward rigidity compared to other sources of gender inequality. For instance, Figure 6b shows the decomposition of GGE into the motherhood-related gap, the education-related gap, and other sources. These results are obtained from estimating an augmented version of Equation 2, which includes education dummy variables, and then applying the decomposition of Equation 3. Naturally, the values differ slightly from those in the previous figure where we do not control for education. However, the overall pattern remains consistent: the motherhood-related gap continues to represent the largest portion of the gender gap in earnings, accounting for more than 42%. Moreover, its relative importance has increased

[8] Notice that data from years 2000 to 2004 are used to obtain information on childless individuals for the matching procedure explained in subsection 2.3. Consequently, we do not have estimates for the motherhood or fatherhood effects before 2005.

over the period under analysis. In contrast, the significance of the education-related gap has declined over time, comprising approximately 34% of the GGE during the initial two sub-periods, and later reducing to 31% in the 2017-2021 period.

Figure 6: Decomposition of the gender gap in earnings (GGE) over time, pooled sample

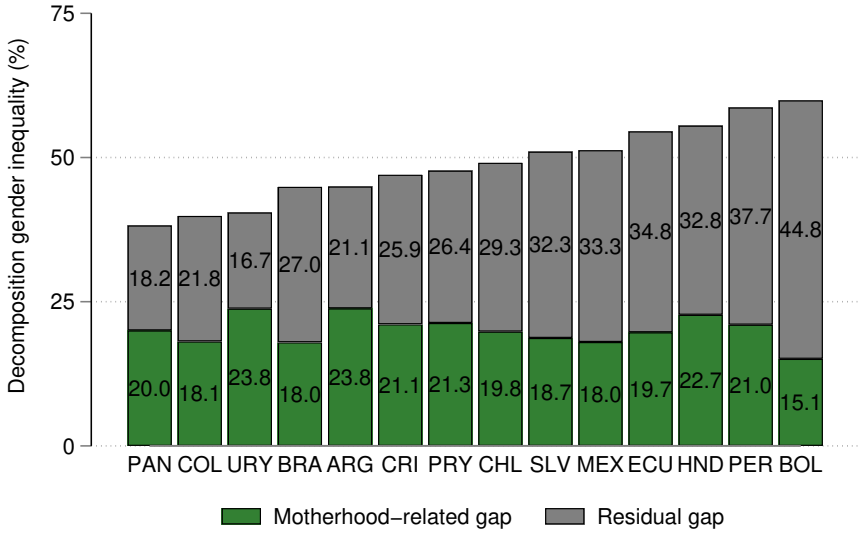
(a) Residual and motherhood-related gaps (b) Education- and motherhood-related gaps



Note: These figures report an extended Oaxaca-Blinder decomposition based on Equation 3. The motherhood-related gap is the explained and unexplained effect of the time to the event dummies (the first two terms of Equation 3), the residual gap is the explained and unexplained effect of age, year and country dummies and in Figure 6b we incorporate the explained and unexplained effect of education dummies (remaining terms in Equation 3). Data cover the 14 Latin American countries from 2000–2021. We identify three different periods: 2005-2011, 2012-2016, and 2017-2021. The years 2000-2004 are reserved for the pre-periods, the moments before the birth of the first child. Data cover the 14 Latin American countries from 2000–2021.
Source: Calculations based on SEDLAC (CEDLAS and The World Bank, 2022) and LABLAC (CEDLAS and The World Bank, 2021) datasets.

The downward rigidity of the motherhood-related gap is also evident in a cross-country analysis. Figure 7 presents the country-specific decomposition results. The motherhood-related gap exhibits less variation across countries than the residual term that represents the other sources of disparity between fathers and mothers—the coefficients of variation are 0.12 and 0.27, respectively. In other words, irrespective of the unique characteristics and circumstances of individual countries, the motherhood-related gap remains relatively constant.

Figure 7: Decomposition of the gender gap in earnings (GGE) by country



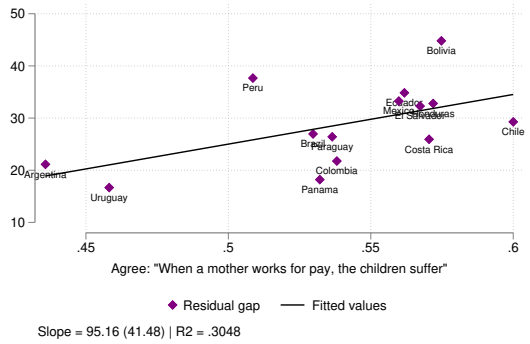
Note: These figures report an extended Oaxaca-Blinder decomposition based on Equation 3 for each country under analysis. The motherhood-related gap is the explained and unexplained effect of the time to the event dummies (the first two terms of Equation 3), and the residual gap is the explained and unexplained effect of age and year. Data cover the 14 Latin American countries from 2000–2021. The years 2000-2004 are reserved for the pre-periods, the moments before the birth of the first child. Data cover the 14 Latin American countries from 2000–2021.
Source: Calculations based on SEDLAC (CEDLAS and The World Bank, 2022) and LABLAC (CEDLAS and The World Bank, 2021) datasets.

For instance, Figures 8a and 8b illustrate how the different components of the GGE are associated with perceptions of gender roles. To capture these perceptions, particularly regarding the role of mothers, we rely on the share of individuals who either agree or strongly agree with the statement "When a mother works for pay, the children suffer," obtained from the 2019 AmericasBarometer, the main survey research project from the Latin American Public Opinion Project (LAPOP). Figure 8a shows a strong positive association between the residual gap and adherence to more traditional gender norms across countries. On the other hand, Figure 8b shows that regardless of gender norms, the motherhood-related gap remains relatively constant.[9] Similarly, Figures 8c and 8d show a consistent pattern in relation to the country's development level as proxied by per capita GDP: per capita GDP exhibits a strong negative cross-country correlation with the residual gap, but it is not correlated with the motherhood-related gap.

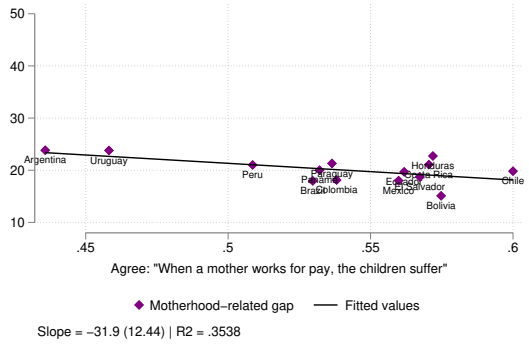
[9]We use other questions from LAPOP as well as other surveys like the World Values Survey and Latinobarómetro, and the results remain consistent.

Figure 8: Residual and motherhood-related gap across countries with different gender norms and GDP per capita

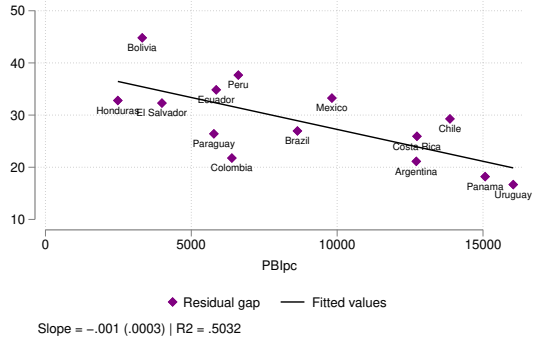
(a) Residual gap and adherence to traditional gender norms



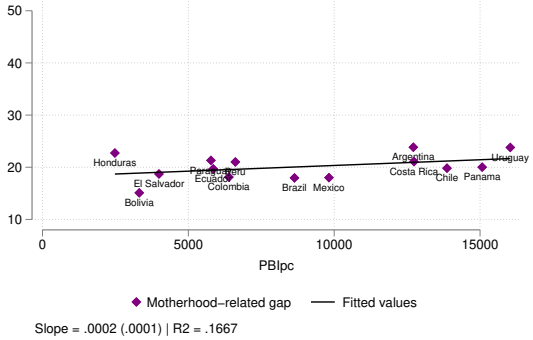
(b) motherhood-related gap and adherence to traditional gender norms



(c) Residual gap and per capita GDP



(d) motherhood-related gap and per capita GDP



Note: Figures 8a and 8b report the correlation between the motherhood-related gap and the residual gap calculated from an extended Oaxaca-Blinder decomposition based on Equation 3 for each country under analysis against a gender norm variable from LAPOP. We define the gender norm variable as the share of individuals who either agree or strongly agree with the statement "When a mother works for pay, the children suffer". Figures 8c and 8d report the correlation between the motherhood-related gap and the residual gap against the GDP per capita from the World Development Indicators. The motherhood-related gap is the explained and unexplained effect of the time to the event dummies (the first two terms of Equation 3), and the residual gap is the explained and unexplained effect of age and year dummies (the remaining terms of Equation 3). Data cover the 14 Latin American countries from 2000–2021.
Source: Calculations based on SEDLAC (CEDLAS and The World Bank, 2022), LABLAC (CEDLAS and The World Bank, 2021), The AmericasBarometer by the LAPOP Lab and the World Bank Indicators (WDI).

5 Conclusions

This paper sheds light on the enduring and pervasive impact of motherhood on women's labor market outcomes in Latin America. The evidence presented shows that the arrival of the first child leads to a sharp and sustained decline in labor supply and earnings for mothers, influencing their occupational choices towards more flexible work arrangements. These effects are found to be widespread across all countries in the region and affect diverse sociodemographic groups. Notably, the contribution of motherhood effects to gender gaps in earnings has become increasingly significant over the last two decades, surpassing other contributing factors, such as education-related gaps.

Our findings carry crucial policy implications for promoting gender equality in the labor market. The persisting rigidity of gender gaps related to motherhood highlights the pressing need for targeted policies that address and mitigate the challenges faced by mothers in the region. Implementing family-friendly workplace policies and promoting household co-responsibility can help support women's labor force participation and minimize the negative impact of motherhood on their career trajectories and earnings.

Furthermore, future research should delve deeper into understanding the underlying mechanisms that contribute to the rigidity of gender gaps caused by motherhood effects. Exploring the interplay between cultural norms, social support structures, and workplace policies could offer valuable insights into devising effective strategies for breaking down the barriers that hinder women's labor market participation and advancement. Ultimately, addressing the effects of motherhood in the labor market is vital for achieving true gender equality and promoting inclusive economic growth in Latin America.

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A Appendix: Tables and figures

Table A.1: National household surveys used in the analysis

Country	Survey	Years
Argentina	Encuesta Permanente de Hogares	2000-2002
	Encuesta Permanente de Hogares Hogares-Continua	2003-2021
Bolivia	Encuesta Continua de Hogares - MECOVI	2000
	Encuesta de Hogares - MECOVI	2001-2002, 2005-2009 & 2010 – 2021
Brazil	Pesquisa Nacional por Amostra de Domicilios	1999, 2001-2009 & 2011
	Pesquisa Nacional por Amostra de Domicilios - Contínua	2012-2021
Chile	Encuesta de Caracterización Socioeconómica Nacional	2000 & 2003
	Encuesta Nacional de Empleo	2005-2009
	Nueva Encuesta Nacional de Empleo	2009-2021
Colombia	Encuesta Continua de Hogares	2001-2005
	Gran Encuesta Integrada de Hogares	2008-2021
Costa Rica	Encuesta de Hogares de Propósitos Múltiples	2000-2009
	Encuesta Nacional de Hogares	2010-2021
Ecuador	Encuesta de Condiciones de Vida	1999
	Encuesta de Empleo, Desempleo y Subempleo	2003-2021
El Salvador	Encuesta de Hogares de Propósitos Múltiples	2000-2021
Honduras	Encuesta Permanente de Hogares de Propósitos Múltiples	2001-2019
Mexico	Encuesta Nacional de Ingresos y Gastos de los Hogares	2000, 2002, 2004, 2005 & 2006
	Encuesta Nacional de Ocupación y Empleo	2007-2021
Panama	Encuesta de Hogares	2000-2021
Paraguay	Encuesta Integrada de Hogares	2001
	Encuesta Permanente de Hogares	2002-2021
Peru	Encuesta Nacional de Hogares	2000-2021
Uruguay	Encuesta Continua de Hogares	2000-2021

Notes: Own elaboration based on household surveys used in the SEDLAC (CEDLAS and The World Bank, 2022) and LABLAC (CEDLAS and The World Bank, 2021) project.

Table A.2: Pseudo panel example

		Observable characteristics						Outcomes
Individual identifier	**Time relative to the event**	**Gender**	**Country**	**Region**	**Educational level**	**Age**	**Year**	**Employed**
1059	-5	women	Argentina	CABA	incomplete secondary	20	2008	0
1059	-4	women	Argentina	CABA	incomplete secondary	21	2009	0
1059	-3	women	Argentina	CABA	incomplete secondary	22	2010	1
1059	-2	women	Argentina	CABA	incomplete secondary	23	2011	1
1059	-1	women	Argentina	CABA	incomplete secondary	24	2012	1
1059	0	women	Argentina	CABA	incomplete secondary	25	2013	0
1059	1	women	Argentina	CABA	incomplete secondary	26	2014	.
1059	2	women	Argentina	CABA	incomplete secondary	27	2015	.
1059	3	women	Argentina	CABA	incomplete secondary	28	2016	.
1059	4	women	Argentina	CABA	incomplete secondary	29	2017	.
1059	5	women	Argentina	CABA	incomplete secondary	30	2018	.
1059	6	women	Argentina	CABA	incomplete secondary	31	2019	.

Notes: Values in red are build by collapsing the sample of non-parent which have the same observable characteristics as the parent under analysis. Values in **black** belong to an individual who is already a parent in the sample.

Table A.3: Summary statistics at $\tau = -1$, pooled sample

	Mothers	Fathers
Complete sample		
Year of first child's birth	2010	2010
	(4.50)	(4.52)
Age at first child	30.19	31.22
	(4.39)	(4.95)
With some college education	0.52	0.35
	(0.50)	(0.48)
Maximum one child	0.67	0.62
	(0.47)	(0.49)
Maximum two children	0.96	0.94
	(0.20)	(0.24)
In the labor force	0.80	0.97
	(0.28)	(0.12)
Employed	0.74	0.93
	(0.30)	(0.16)
Monthly labor earnings (PPP 2005)	483	670
	(491)	(620)
No. of individuals	626,487	812,766
Sample of workers		
Working hours per week	42.35	48.45
	(10.61)	(11.18)
No. of individuals	281,833	558,477
Informal worker	0.27	0.35
	(0.33)	(0.36)
No. of individuals	330,889	682,709

Notes: The table shows the mean and the standard deviation (in parentheses) of sociodemographic and labor market variables for both mothers and fathers one year before the first childbirth. Monthly labor earnings take the value 0 when the individual is not working in a given month. Hours worked and informality are conditional on being employed. Data cover the 14 Latin American countries from 2000–2021, except for labor informality, where Panama is excluded from the sample. The sample is restricted to mothers and fathers whose age at first childbirth is between 25 and 45 years old.
Source: Calculations based on SEDLAC (CEDLAS and The World Bank, 2022) and LABLAC (CEDLAS and The World Bank, 2021),

Table A.4: Summary statistics at $\tau = -1$ by country

	Argentina		Bolivia		Brazil		Chile		Colombia		Costa Rica	
	Mothers	Fathers	Mothers	Fathers	Mothers	Fathers	Mothers	Fathers	Mothers	Fathers	Mothers	Fathers
Complete sample												
Year of first child's birth	2009	2009	2012	2011	2009	2009	2010	2010	2011	2011	2008	2008
	(4.61)	(4.58)	(4.61)	(4.70)	(5.24)	(5.24)	(4.34)	(4.42)	(4.27)	(4.31)	(4.82)	(4.73)
Age at first child	30.39	31.37	29.71	30.42	30.37	31.39	30.97	32.07	29.95	31.25	29.77	31.26
	(4.02)	(4.55)	(4.40)	(4.78)	(4.44)	(5.00)	(4.67)	(5.06)	(4.36)	(5.05)	(4.33)	(5.01)
With some college education	0.72	0.45	0.57	0.48	0.35	0.20	0.59	0.47	0.60	0.40	0.42	0.24
	(0.45)	(0.50)	(0.50)	(0.50)	(0.48)	(0.40)	(0.49)	(0.50)	(0.49)	(0.49)	(0.49)	(0.42)
Maximum one child	0.61	0.58	0.60	0.53	0.76	0.71	0.66	0.62	0.74	0.68	0.72	0.65
	(0.49)	(0.49)	(0.49)	(0.50)	(0.43)	(0.46)	(0.48)	(0.49)	(0.44)	(0.47)	(0.45)	(0.48)
Maximum two children	0.94	0.93	0.92	0.88	0.98	0.96	0.96	0.94	0.98	0.96	0.97	0.95
	(0.23)	(0.26)	(0.27)	(0.32)	(0.15)	(0.20)	(0.21)	(0.23)	(0.15)	(0.19)	(0.16)	(0.21)
In the labor force	0.85	0.96	0.79	0.94	0.83	0.96	0.79	0.95	0.84	0.97	0.73	0.99
	(0.29)	(0.16)	(0.29)	(0.15)	(0.25)	(0.12)	(0.30)	(0.15)	(0.24)	(0.10)	(0.36)	(0.08)
Employed	0.80	0.92	0.74	0.92	0.76	0.93	0.74	0.91	0.73	0.92	0.69	0.97
	(0.33)	(0.22)	(0.31)	(0.18)	(0.28)	(0.17)	(0.31)	(0.19)	(0.28)	(0.16)	(0.38)	(0.13)
Monthly labor earnings (PPP 2005)	587	817	390	657	508	696	561	756	510	678	622	856
	(462)	(644)	(437)	(535)	(566)	(738)	(546)	(724)	(466)	(545)	(662)	(784)
No. of individuals	42,358	45,894	5,544	8,133	102,731	137,274	71,109	78,342	119,782	150,740	7,317	10,866
Sample of workers												
Working hours per week	36.04	45.28	43.36	49.39	40.81	45.51	42.31	46.05	46.21	53.58	43.47	50.87
	(12.90)	(14.14)	(14.43)	(13.39)	(8.36)	(7.98)	(8.10)	(9.78)	(9.75)	(10.39)	(10.91)	(10.65)
No. of individuals	27,427	42,613	3,113	7,821	61,324	125,172	42,935	72,170	74,104	138,777	3,206	10,065
Informal worker	0.25	0.32	0.66	0.73	0.26	0.38	0.21	0.21	0.40	0.52	0.19	0.26
	(0.35)	(0.39)	(0.37)	(0.32)	(0.31)	(0.35)	(0.28)	(0.28)	(0.33)	(0.32)	(0.33)	(0.31)
No. of individuals	27,443	42,672	2,777	6,703	61,324	125,171	22,929	34,938	62,643	114,636	1,536	3,810

Notes: The table shows the mean and the standard deviation (in parentheses) of sociodemographic and labor market variables for both mothers and fathers one year before the first childbirth. Monthly labor earnings take the value 0 when the individual is not working in a given month. Hours worked and informality are conditional on being employed. Data cover the 14 Latin American countries from 2000–2021, except for labor informality, where Panama is excluded from the sample. The sample is restricted to mothers and fathers whose age at first childbirth is between 25 and 45 years old.
Source: Calculations based on SEDLAC (CEDLAS and The World Bank, 2022) and LABLAC (CEDLAS and The World Bank, 2021),

Table A.5: Summary statistics at $\tau = -1$ by country

	Ecuador		El Salvador		Honduras		Mexico		Panama		Paraguay		Peru		Uruguay	
	Mothers	Fathers	Mothers	Fathers	Mothers	Fathers	Mothers	Fathers	Mothers	Fathers	Mothers	Fathers	Mothers	Fathers	Mothers	Fathers
Complete sample																
Year of first child's birth	2010	2010	2009	2009	2007	2007	2011	2011	2008	2008	2010	2009	2010	2009	2008	2008
	(4.11)	(4.20)	(4.84)	(4.82)	(3.80)	(3.79)	(3.68)	(3.67)	(4.27)	(4.15)	(4.70)	(4.65)	(4.56)	(4.54)	(4.49)	(4.46)
Age at first child	30.35	31.15	29.49	30.50	29.03	30.07	29.85	30.82	30.64	31.58	29.25	30.37	30.50	31.19	31.21	32.40
	(4.69)	(5.20)	(4.29)	(4.95)	(4.24)	(4.81)	(4.24)	(4.82)	(4.61)	(5.18)	(4.14)	(4.58)	(4.76)	(5.15)	(4.37)	(4.94)
With some college education	0.40	0.28	0.19	0.13	0.17	0.10	0.52	0.39	0.55	0.26	0.51	0.26	0.60	0.42	0.49	0.26
	(0.49)	(0.45)	(0.40)	(0.33)	(0.37)	(0.30)	(0.50)	(0.49)	(0.50)	(0.44)	(0.50)	(0.44)	(0.49)	(0.49)	(0.50)	(0.44)
Maximum one child	0.65	0.57	0.67	0.61	0.68	0.61	0.61	0.56	0.68	0.58	0.66	0.61	0.61	0.52	0.68	0.64
	(0.48)	(0.50)	(0.47)	(0.49)	(0.47)	(0.49)	(0.49)	(0.50)	(0.47)	(0.49)	(0.47)	(0.49)	(0.49)	(0.50)	(0.47)	(0.48)
Maximum two children	0.94	0.91	0.95	0.93	0.94	0.91	0.95	0.92	0.96	0.90	0.94	0.92	0.94	0.90	0.96	0.95
	(0.24)	(0.29)	(0.21)	(0.26)	(0.23)	(0.29)	(0.23)	(0.27)	(0.19)	(0.30)	(0.23)	(0.28)	(0.24)	(0.30)	(0.19)	(0.22)
In the labor force	0.76	0.98	0.62	0.95	0.65	0.96	0.76	0.97	0.76	0.99	0.77	0.97	0.83	0.97	0.93	0.98
	(0.31)	(0.07)	(0.34)	(0.12)	(0.37)	(0.13)	(0.30)	(0.12)	(0.32)	(0.06)	(0.34)	(0.13)	(0.31)	(0.12)	(0.18)	(0.08)
Employed	0.71	0.96	0.59	0.91	0.62	0.93	0.73	0.93	0.71	0.95	0.73	0.95	0.81	0.95	0.86	0.95
	(0.33)	(0.12)	(0.34)	(0.16)	(0.37)	(0.17)	(0.31)	(0.15)	(0.33)	(0.12)	(0.36)	(0.16)	(0.33)	(0.16)	(0.23)	(0.13)
Monthly labor earnings (PPP 2005)	377	598	289	448	307	469	421	624	572	706	445	678	358	549	587	770
	(389)	(449)	(518)	(462)	(398)	(489)	(423)	(578)	(958)	(546)	(601)	(838)	(424)	(537)	(386)	(531)
No. of individuals	11,004	15,634	13,467	22,385	4,048	7,597	197,748	264,664	6,877	10,752	3,727	6,541	12,170	22,102	28,605	31,842
Sample of workers																
Working hours per week	41.87	46.28	45.37	46.69	43.46	49.00	42.12	49.10	42.19	45.93	45.49	52.93	42.83	48.58	40.24	47.09
	(10.77)	(9.43)	(11.18)	(7.74)	(13.39)	(11.89)	(11.69)	(12.43)	(9.97)	(8.57)	(16.01)	(22.68)	(17.90)	(15.91)	(8.34)	(8.45)
No. of individuals	6,152	15,189	6,056	20,905	1,715	7,198	19,432	50,279	4,116	10,450	2,238	6,282	7,678	20,964	22,337	30,592
Informal worker	0.51	0.61	0.53	0.66	0.43	0.68	0.17	0.21	0.21	0.40	0.59	0.74	0.68	0.70	0.16	0.26
	(0.40)	(0.33)	(0.41)	(0.33)	(0.40)	(0.34)	(0.28)	(0.29)	(0.31)	(0.32)	(0.40)	(0.36)	(0.40)	(0.37)	(0.24)	(0.29)
No. of individuals	6,152	15,189	6,053	20,896	967	4,209	104,222	249,409	4,123	10,457	2,238	6,283	7,248	19,366	21,234	28,970

Notes: The table shows the mean and the standard deviation (in parentheses) of sociodemographic and labor market variables for both mothers and fathers one year before the first childbirth. Monthly labor earnings take the value 0 when the individual is not working in a given month. Hours worked and informality are conditional on being employed. Data cover the 14 Latin American countries from 2000–2021, except for labor informality, where Panama is excluded from the sample. The sample is restricted to mothers and fathers whose age at first childbirth is between 25 and 45 years old.
Source: Calculations based on SEDLAC (CEDLAS and The World Bank, 2022) and LABLAC (CEDLAS and The World Bank, 2021),

Table A.6: Regression coefficients, sample of mothers

	Employed	Hours worked	Informality	Earnings
Relative time = -5	0.021***	-0.327***	-0.023***	47.748***
	(0.001)	(0.034)	(0.001)	(1.004)
Relative time = -4	0.017***	-0.167***	-0.019***	39.367***
	(0.001)	(0.032)	(0.001)	(0.942)
Relative time = -3	0.012***	-0.062**	-0.012***	27.439***
	(0.001)	(0.030)	(0.001)	(0.893)
Relative time = -2	0.006***	-0.014	-0.007***	14.377***
	(0.001)	(0.028)	(0.001)	(0.867)
Relative time = 0	-0.206***	-3.726***	-0.031***	-152.875***
	(0.002)	(0.087)	(0.002)	(2.584)
Relative time = 1	-0.191***	-3.547***	0.027***	-159.418***
	(0.002)	(0.085)	(0.002)	(2.577)
Relative time = 2	-0.176***	-3.220***	0.044***	-172.520***
	(0.002)	(0.089)	(0.002)	(2.525)
Relative time = 3	-0.164***	-3.403***	0.056***	-175.231***
	(0.002)	(0.080)	(0.002)	(2.640)
Relative time = 4	-0.166***	-3.529***	0.068***	-189.941***
	(0.002)	(0.093)	(0.002)	(2.640)
Relative time = 5	-0.161***	-3.515***	0.070***	-192.838***
	(0.002)	(0.100)	(0.002)	(2.735)
Relative time = 6	-0.162***	-3.630***	0.076***	-200.430***
	(0.002)	(0.096)	(0.002)	(2.842)
Relative time = 7	-0.158***	-3.871***	0.094***	-213.208***
	(0.002)	(0.092)	(0.003)	(2.846)
Relative time = 8	-0.156***	-3.871***	0.089***	-206.099***
	(0.002)	(0.104)	(0.003)	(3.085)
Relative time = 9	-0.153***	-3.482***	0.097***	-208.686***
	(0.002)	(0.105)	(0.003)	(3.200)
Relative time = 10	-0.148***	-3.694***	0.104***	-213.775***
	(0.002)	(0.117)	(0.003)	(3.412)
Constant	0.462***	34.842***	0.497***	135.637***
	(0.003)	(0.163)	(0.005)	(3.674)
No. of individuals	3,379,590	1,530,339	1,695,783	3,236,809
R-squared	0.070	0.072	0.147	0.078

Notes: This table shows the β_τs coefficient (not scaled) from Equation 1 for the sample of mothers, The omitted category is $\tau = -1$ (the year before the first childbirth). Controls include year, age-in-years, and country fixed effects. The effects on hours worked and informality are estimated conditional on being employed. Data cover the 14 Latin American countries from 2000–2021, except when estimating the effects on labor informality, where Panama is excluded from the sample. The sample is restricted to mothers and fathers whose age at first childbirth is between 25 and 45 years old. Robust standard errors are reported in parentheses.
Source: Calculations based on SEDLAC (CEDLAS and The World Bank, 2022) and LABLAC (CEDLAS and The World Bank, 2021) datasets. $p < 0.01, p < 0.05, p < 0.10$.

Table A.7: Regression coefficients, sample of fathers

	Employed	Hours worked	Informality	Earnings
Relative time = -5	-0.005***	-0.474***	-0.024***	45.741***
	(0.000)	(0.025)	(0.001)	(1.401)
Relative time = -4	-0.002***	-0.394***	-0.019***	38.756***
	(0.000)	(0.023)	(0.001)	(1.440)
Relative time = -3	-0.000	-0.257***	-0.012***	30.664***
	(0.000)	(0.022)	(0.001)	(1.297)
Relative time = -2	-0.000	-0.123***	-0.007***	17.317***
	(0.000)	(0.021)	(0.001)	(1.229)
Relative time = 0	0.023***	0.987***	-0.008***	10.878***
	(0.001)	(0.058)	(0.002)	(3.166)
Relative time = 1	0.020***	1.236***	-0.007***	-11.213***
	(0.001)	(0.060)	(0.002)	(3.024)
Relative time = 2	0.020***	1.346***	0.000	-30.353***
	(0.001)	(0.061)	(0.002)	(3.043)
Relative time = 3	0.021***	1.354***	0.003*	-35.399***
	(0.001)	(0.060)	(0.002)	(3.084)
Relative time = 4	0.018***	1.507***	0.005***	-54.504***
	(0.001)	(0.063)	(0.002)	(3.197)
Relative time = 5	0.019***	1.503***	0.007***	-64.693***
	(0.001)	(0.063)	(0.002)	(3.223)
Relative time = 6	0.020***	1.618***	0.008***	-74.450***
	(0.001)	(0.070)	(0.002)	(3.325)
Relative time = 7	0.021***	1.431***	0.012***	-83.448***
	(0.001)	(0.067)	(0.002)	(3.363)
Relative time = 8	0.021***	1.621***	0.012***	-85.192***
	(0.001)	(0.079)	(0.002)	(3.654)
Relative time = 9	0.021***	1.593***	0.012***	-94.410***
	(0.001)	(0.074)	(0.002)	(3.772)
Relative time = 10	0.020***	1.763***	0.018***	-96.027***
	(0.001)	(0.085)	(0.002)	(4.158)
Constant	0.809***	45.923***	0.509***	387.207***
	(0.002)	(0.106)	(0.003)	(4.160)
No. of individuals	4,319,408	3,011,057	3,487,372	4,167,979
R-squared	0.031	0.069	0.182	0.032

Notes: This table shows the β_τs coefficient (not scaled) from Equation 1 for the sample of fathers, The omitted category is $\tau = -1$ (the year before the first childbirth). Controls include year, age-in-years, and country fixed effects. The effects on hours worked and informality are estimated conditional on being employed. Data cover the 14 Latin American countries from 2000–2021, except when estimating the effects on labor informality, where Panama is excluded from the sample. The sample is restricted to mothers and fathers whose age at first childbirth is between 25 and 45 years old. Robust standard errors are reported in parentheses.
Source: Calculations based on SEDLAC (CEDLAS and The World Bank, 2022) and LABLAC (CEDLAS and The World Bank, 2021) datasets. $p < 0.01, p < 0.05, p < 0.10$.

Table A.8: Summary statistics at $\tau = -1$ by population group, sample of mothers

	Low educated	High educated	Rural areas	Urban areas	Max. 1 child	Max. 2 children	All mothers
Employed	0.66	0.82	0.53	0.76	0.74	0.74	0.74
	(0.34)	(0.23)	(0.44)	(0.28)	(0.30)	(0.30)	(0.30)
No. of individuals	302,799	323,688	41,190	537,395	422,155	600,801	626,487
Earnings	246.48	704.17	197.85	496.84	483.19	485.53	483.16
	(281.49)	(539.42)	(631.42)	(474.36)	(500.80)	(493.11)	(490.96)
No. of individuals	294,230	315,102	38,642	522,788	410,109	584,190	609,332
Working hours per week	43.65	41.58	39.31	43.20	42.50	42.37	42.35
	(12.22)	(9.44)	(15.56)	(9.65)	(10.46)	(10.55)	(10.61)
No. of individuals	104,434	177,399	11,521	239,772	200,280	273,280	281,833
Informal worker	0.42	0.18	0.60	0.26	0.28	0.27	0.27
	(0.39)	(0.26)	(0.46)	(0.32)	(0.33)	(0.33)	(0.33)
No. of individuals	120,608	210,281	11,354	289,315	232,917	320,460	330,889

Notes: The table shows the mean and the standard deviation (in parentheses) of sociodemographic and labor market variables for mothers one year before the first childbirth. We define low-skilled individuals if they have completed secondary education or less, and high-skilled individuals if they have completed some tertiary education or more. Monthly labor earnings take the value 0 when the individual is not working in a given month. Hours worked and informality are conditional on being employed. Data cover the 14 Latin American countries from 2000–2021, except for labor informality, where Panama is excluded from the sample. The sample is restricted to mothers and fathers whose age at first childbirth is between 25 and 45 years old.
Source: Calculations based on SEDLAC (CEDLAS and The World Bank, 2022) and LABLAC (CEDLAS and The World Bank, 2021),

Table A.9: Regression coefficients by education group, sample of mothers

	Employed		Hours worked		Informality		Earnings	
	Low	High	Low	High	Low	High	Low	High
Relative time = -5	0.008***	0.012***	-0.061	-0.021	-0.006***	-0.009***	3.110***	27.898***
	(0.001)	(0.001)	(0.064)	(0.039)	(0.002)	(0.001)	(0.815)	(1.471)
Relative time = -4	0.006***	0.010***	0.089	0.014	-0.005***	-0.007***	1.805**	24.685***
	(0.001)	(0.001)	(0.060)	(0.035)	(0.002)	(0.001)	(0.748)	(1.392)
Relative time = -3	0.004***	0.007***	0.058	0.067**	-0.003*	-0.004***	2.040***	16.911***
	(0.001)	(0.001)	(0.056)	(0.033)	(0.002)	(0.001)	(0.735)	(1.306)
Relative time = -2	0.002**	0.003***	0.021	0.049	-0.001	-0.003***	0.969	8.999***
	(0.001)	(0.001)	(0.054)	(0.031)	(0.001)	(0.001)	(0.692)	(1.277)
Relative time = 0	-0.266***	-0.144***	-3.491***	-3.942***	-0.046***	-0.025***	-103.888***	-169.017***
	(0.003)	(0.002)	(0.156)	(0.105)	(0.004)	(0.002)	(2.323)	(4.093)
Relative time = 1	-0.230***	-0.139***	-4.252***	-3.325***	0.044***	0.005**	-102.179***	-169.063***
	(0.003)	(0.002)	(0.152)	(0.101)	(0.004)	(0.002)	(1.611)	(4.396)
Relative time = 2	-0.203***	-0.127***	-4.017***	-2.960***	0.054***	0.017***	-96.217***	-183.212***
	(0.003)	(0.002)	(0.149)	(0.110)	(0.004)	(0.002)	(1.652)	(4.343)
Relative time = 3	-0.180***	-0.123***	-4.293***	-3.074***	0.065***	0.022***	-92.826***	-182.326***
	(0.003)	(0.002)	(0.146)	(0.093)	(0.004)	(0.002)	(1.686)	(4.605)
Relative time = 4	-0.174***	-0.125***	-4.374***	-3.201***	0.077***	0.026***	-91.862***	-200.411***
	(0.003)	(0.002)	(0.146)	(0.120)	(0.004)	(0.002)	(1.648)	(4.704)
Relative time = 5	-0.164***	-0.123***	-4.263***	-3.233***	0.077***	0.029***	-90.291***	-208.223***
	(0.003)	(0.002)	(0.150)	(0.135)	(0.004)	(0.002)	(1.748)	(4.886)
Relative time = 6	-0.162***	-0.126***	-4.376***	-3.288***	0.084***	0.029***	-87.190***	-222.025***
	(0.003)	(0.002)	(0.169)	(0.112)	(0.004)	(0.003)	(1.825)	(5.182)
Relative time = 7	-0.148***	-0.127***	-4.394***	-3.668***	0.097***	0.040***	-86.168***	-243.733***
	(0.003)	(0.003)	(0.158)	(0.110)	(0.004)	(0.003)	(1.863)	(5.283)
Relative time = 8	-0.146***	-0.125***	-4.540***	-3.530***	0.092***	0.033***	-84.997***	-234.294***
	(0.003)	(0.003)	(0.183)	(0.114)	(0.004)	(0.003)	(1.919)	(5.831)
Relative time = 9	-0.133***	-0.130***	-3.987***	-3.198***	0.088***	0.042***	-75.717***	-247.783***
	(0.003)	(0.003)	(0.169)	(0.132)	(0.004)	(0.003)	(1.977)	(6.205)
Relative time = 10	-0.118***	-0.132***	-4.214***	-3.348***	0.092***	0.041***	-70.668***	-256.945***
	(0.003)	(0.003)	(0.175)	(0.160)	(0.005)	(0.003)	(2.158)	(6.883)
Constant	0.498***	0.375***	38.095***	29.533***	0.462***	0.545***	242.957***	177.957***
	(0.004)	(0.005)	(0.210)	(0.310)	(0.006)	(0.008)	(2.365)	(10.070)
No. of individuals	1,665,861	1,713,729	591,175	939,164	641,244	1,054,539	1,599,487	1,637,322
R-squared	0.059	0.110	0.069	0.091	0.199	0.159	0.044	0.143

Notes: This table shows the β_τs coefficient (not scaled) from Equation 1 for the sample of mothers, The omitted category is $\tau = -1$ (the year before the first childbirth). Controls include year, age-in-years, and country fixed effects. We define low-skilled individuals if they have completed secondary education or less, The effects on hours worked and informality are estimated conditional on being employed. Data cover the 14 Latin American countries from 2000–2021, except when estimating the effects on labor informality, where Panama is excluded from the sample. The sample is restricted to mothers and fathers whose age at first childbirth is between 25 and 45 years old. Robust standard errors are reported in parentheses.
Source: Calculations based on SEDLAC (CEDLAS and The World Bank, 2022) and LABLAC (CEDLAS and The World Bank, 2021) datasets. $p < 0.01, p < 0.05, p < 0.10$.

Table A.10: Regression coefficients by region, sample of mothers

	Employed		Hours worked		Informality		Earnings	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Relative time = -5	0.019***	0.011***	-0.421***	0.279	-0.024***	-0.020***	50.324***	7.020*
	(0.001)	(0.004)	(0.034)	(0.257)	(0.001)	(0.007)	(1.080)	(3.925)
Relative time = -4	0.014***	0.011***	-0.296***	0.201	-0.019***	-0.014**	40.262***	5.360
	(0.001)	(0.003)	(0.032)	(0.239)	(0.001)	(0.007)	(1.002)	(4.161)
Relative time = -3	0.011***	0.001	-0.118***	0.066	-0.012***	-0.011*	28.673***	4.966
	(0.001)	(0.003)	(0.030)	(0.222)	(0.001)	(0.006)	(0.950)	(3.934)
Relative time = -2	0.005***	0.003	-0.050*	-0.148	-0.007***	0.005	14.669***	-4.489
	(0.001)	(0.003)	(0.028)	(0.209)	(0.001)	(0.006)	(0.914)	(4.048)
Relative time = 0	-0.203***	-0.192***	-2.626***	-3.448***	-0.032***	-0.051***	-154.556***	-69.312***
	(0.002)	(0.006)	(0.089)	(0.440)	(0.002)	(0.012)	(2.969)	(6.509)
Relative time = 1	-0.187***	-0.163***	-3.281***	-4.800***	0.026***	0.040***	-159.241***	-77.946***
	(0.002)	(0.006)	(0.090)	(0.426)	(0.002)	(0.011)	(2.918)	(7.572)
Relative time = 2	-0.173***	-0.127***	-2.933***	-4.598***	0.043***	0.059***	-172.136***	-78.968***
	(0.002)	(0.006)	(0.096)	(0.418)	(0.002)	(0.011)	(2.888)	(6.033)
Relative time = 3	-0.162***	-0.106***	-3.157***	-5.288***	0.056***	0.064***	-175.677***	-75.315***
	(0.002)	(0.006)	(0.085)	(0.411)	(0.002)	(0.011)	(3.014)	(6.609)
Relative time = 4	-0.162***	-0.114***	-3.285***	-4.935***	0.067***	0.063***	-190.155***	-78.534***
	(0.002)	(0.006)	(0.100)	(0.429)	(0.002)	(0.011)	(2.996)	(7.242)
Relative time = 5	-0.157***	-0.104***	-3.297***	-5.269***	0.070***	0.067***	-195.271***	-83.392***
	(0.002)	(0.006)	(0.111)	(0.430)	(0.003)	(0.011)	(3.115)	(6.288)
Relative time = 6	-0.162***	-0.080***	-3.369***	-6.049***	0.076***	0.082***	-203.128***	-79.926***
	(0.002)	(0.007)	(0.104)	(0.432)	(0.003)	(0.011)	(3.212)	(6.857)
Relative time = 7	-0.157***	-0.083***	-3.722***	-5.363***	0.092***	0.096***	-215.981***	-86.587***
	(0.002)	(0.007)	(0.098)	(0.453)	(0.003)	(0.011)	(3.217)	(7.115)
Relative time = 8	-0.156***	-0.074***	-3.786***	-5.159***	0.086***	0.074***	-208.912***	-67.372***
	(0.002)	(0.007)	(0.112)	(0.457)	(0.003)	(0.011)	(3.512)	(7.848)
Relative time = 9	-0.156***	-0.067***	-3.321***	-4.866***	0.096***	0.094***	-214.868***	-72.501***
	(0.002)	(0.007)	(0.113)	(0.467)	(0.003)	(0.011)	(3.660)	(6.892)
Relative time = 10	-0.152***	-0.052***	-3.549***	-5.246***	0.102***	0.100***	-220.297***	-66.315***
	(0.002)	(0.007)	(0.128)	(0.474)	(0.003)	(0.011)	(3.925)	(7.573)
Constant	0.451***	0.546***	41.207***	27.750***	0.484***	0.808***	99.208***	-19.925***
	(0.003)	(0.011)	(0.159)	(0.794)	(0.005)	(0.020)	(3.676)	(5.431)
No. of individuals	2,870,292	242,179	1,293,162	69,948	1,466,356	64,663	2,744,862	224,828
R-squared	0.068	0.094	0.050	0.052	0.135	0.196	0.078	0.046

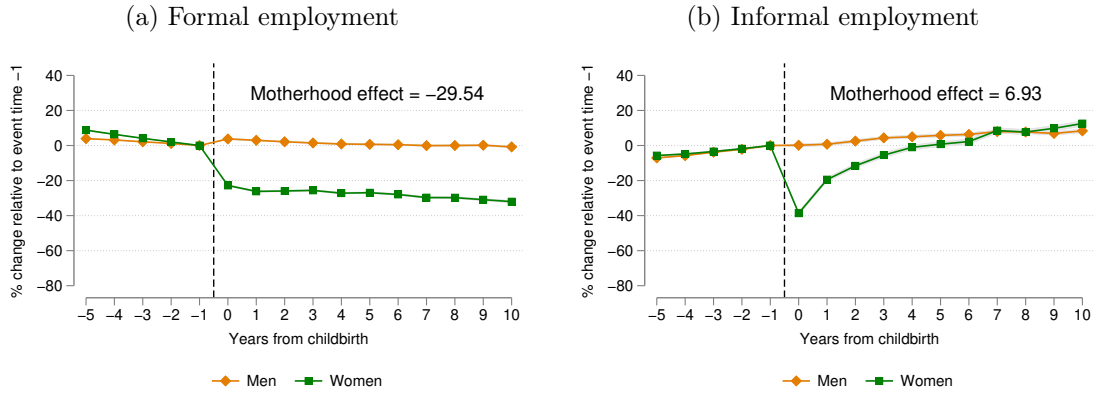
Notes: This table shows the β_τs coefficient (not scaled) from Equation 1 for the sample of mothers, The omitted category is $\tau = -1$ (the year before the first childbirth). Controls include year, age-in-years, and country fixed effects. The effects on hours worked and informality are estimated conditional on being employed. Data cover the 14 Latin American countries from 2000–2021, except when estimating the effects on labor informality, where Panama is excluded from the sample. The sample is restricted to mothers and fathers whose age at first childbirth is between 25 and 45 years old. Robust standard errors are reported in parentheses.
Source: Calculations based on SEDLAC (CEDLAS and The World Bank, 2022) and LABLAC (CEDLAS and The World Bank, 2021) datasets. $p < 0.01, p < 0.05, p < 0.10$.

Table A.11: Regression coefficients by number of children, sample of mothers

	Employed			Hours worked			Informality			Earnings		
	Max. 1 child	Max. 2 children	All mothers	Max. 1 child	Max. 2 children	All mothers	Max. 1 child	Max. 2 children	All mothers	Max. 1 child	Max. 2 children	All mothers
Relative time = -5	0.019***	0.020***	0.021***	-0.326***	-0.333***	-0.327***	-0.023***	-0.022***	-0.023***	48.648***	47.639***	47.748***
	(0.001)	(0.001)	(0.001)	(0.039)	(0.034)	(0.034)	(0.001)	(0.001)	(0.001)	(1.214)	(1.025)	(1.004)
Relative time = -4	0.015***	0.016***	0.017***	-0.175***	-0.177***	-0.167***	-0.020***	-0.018***	-0.019***	38.492***	39.104***	39.367***
	(0.001)	(0.001)	(0.001)	(0.037)	(0.032)	(0.032)	(0.001)	(0.001)	(0.001)	(1.150)	(0.963)	(0.942)
Relative time = -3	0.011***	0.012***	0.012***	-0.066*	-0.072**	-0.062**	-0.012***	-0.012***	-0.012***	26.191***	27.083***	27.439***
	(0.001)	(0.001)	(0.001)	(0.034)	(0.030)	(0.030)	(0.001)	(0.001)	(0.001)	(1.097)	(0.914)	(0.893)
Relative time = -2	0.006***	0.006***	0.006***	-0.006	-0.022	-0.014	-0.007***	-0.006***	-0.007***	14.332***	14.148***	14.377***
	(0.001)	(0.001)	(0.001)	(0.033)	(0.028)	(0.028)	(0.001)	(0.001)	(0.001)	(1.072)	(0.887)	(0.867)
Relative time = 0	-0.201***	-0.206***	-0.206***	-3.724***	-3.725***	-3.726***	-0.036***	-0.031***	-0.031***	-141.915***	-153.161***	-152.875***
	(0.002)	(0.002)	(0.002)	(0.089)	(0.087)	(0.087)	(0.002)	(0.002)	(0.002)	(2.637)	(2.588)	(2.584)
Relative time = 1	-0.180***	-0.190***	-0.191***	-3.464***	-3.540***	-3.547***	0.022***	0.027***	0.027***	-144.475***	-159.481***	-159.418***
	(0.002)	(0.002)	(0.002)	(0.087)	(0.085)	(0.085)	(0.002)	(0.002)	(0.002)	(2.688)	(2.580)	(2.577)
Relative time = 2	-0.152***	-0.175***	-0.176***	-2.909***	-3.203***	-3.220***	0.040***	0.044***	0.044***	-154.554***	-172.125***	-172.520***
	(0.002)	(0.002)	(0.002)	(0.095)	(0.089)	(0.089)	(0.002)	(0.002)	(0.002)	(2.741)	(2.535)	(2.525)
Relative time = 3	-0.131***	-0.162***	-0.164***	-2.945***	-3.359***	-3.403***	0.054***	0.056***	0.056***	-155.639***	-174.005***	-175.231***
	(0.002)	(0.002)	(0.002)	(0.090)	(0.081)	(0.080)	(0.003)	(0.002)	(0.002)	(3.008)	(2.660)	(2.640)
Relative time = 4	-0.121***	-0.161***	-0.166***	-2.942***	-3.456***	-3.529***	0.064***	0.067***	0.068***	-171.932***	-187.292***	-189.941***
	(0.002)	(0.002)	(0.002)	(0.109)	(0.094)	(0.093)	(0.003)	(0.002)	(0.002)	(3.040)	(2.670)	(2.640)
Relative time = 5	-0.108***	-0.153***	-0.161***	-2.580***	-3.371***	-3.515***	0.068***	0.068***	0.070***	-168.091***	-187.889***	-192.838***
	(0.002)	(0.002)	(0.002)	(0.129)	(0.102)	(0.100)	(0.003)	(0.002)	(0.002)	(3.474)	(2.793)	(2.735)
Relative time = 6	-0.102***	-0.153***	-0.162***	-2.555***	-3.473***	-3.630***	0.078***	0.076***	0.076***	-176.063***	-194.590***	-200.430***
	(0.002)	(0.002)	(0.002)	(0.119)	(0.099)	(0.096)	(0.003)	(0.003)	(0.002)	(3.635)	(2.942)	(2.842)
Relative time = 7	-0.093***	-0.145***	-0.158***	-2.700***	-3.678***	-3.871***	0.088***	0.091***	0.094***	-182.253***	-203.743***	-213.208***
	(0.003)	(0.002)	(0.002)	(0.121)	(0.095)	(0.092)	(0.004)	(0.003)	(0.003)	(3.856)	(2.984)	(2.846)
Relative time = 8	-0.082***	-0.140***	-0.156***	-2.855***	-3.659***	-3.871***	0.084***	0.085***	0.089***	-174.190***	-193.748***	-206.099***
	(0.003)	(0.002)	(0.002)	(0.139)	(0.107)	(0.104)	(0.004)	(0.003)	(0.003)	(4.293)	(3.253)	(3.085)
Relative time = 9	-0.077***	-0.136***	-0.153***	-2.309***	-3.254***	-3.482***	0.092***	0.092***	0.097***	-170.253***	-195.124***	-208.686***
	(0.003)	(0.002)	(0.002)	(0.139)	(0.109)	(0.105)	(0.004)	(0.003)	(0.003)	(4.578)	(3.416)	(3.200)
Relative time = 10	-0.071***	-0.128***	-0.148***	-2.155***	-3.373***	-3.694***	0.090***	0.097***	0.104***	-174.451***	-197.812***	-213.775***
	(0.003)	(0.002)	(0.002)	(0.177)	(0.123)	(0.117)	(0.005)	(0.003)	(0.003)	(4.801)	(3.661)	(3.412)
Constant	0.459***	0.462***	0.462***	34.897***	34.932***	34.842***	0.497***	0.497***	0.497***	144.811***	137.967***	135.637***
	(0.003)	(0.003)	(0.003)	(0.188)	(0.165)	(0.163)	(0.005)	(0.005)	(0.005)	(4.421)	(3.778)	(3.674)
No. of individuals	2,318,261	3,251,215	3,379,590	1,103,451	1,487,202	1,530,339	1,212,930	1,645,949	1,695,783	2,221,662	3,113,846	3,236,809
R-squared	0.068	0.070	0.070	0.070	0.071	0.072	0.142	0.145	0.147	0.076	0.078	0.078

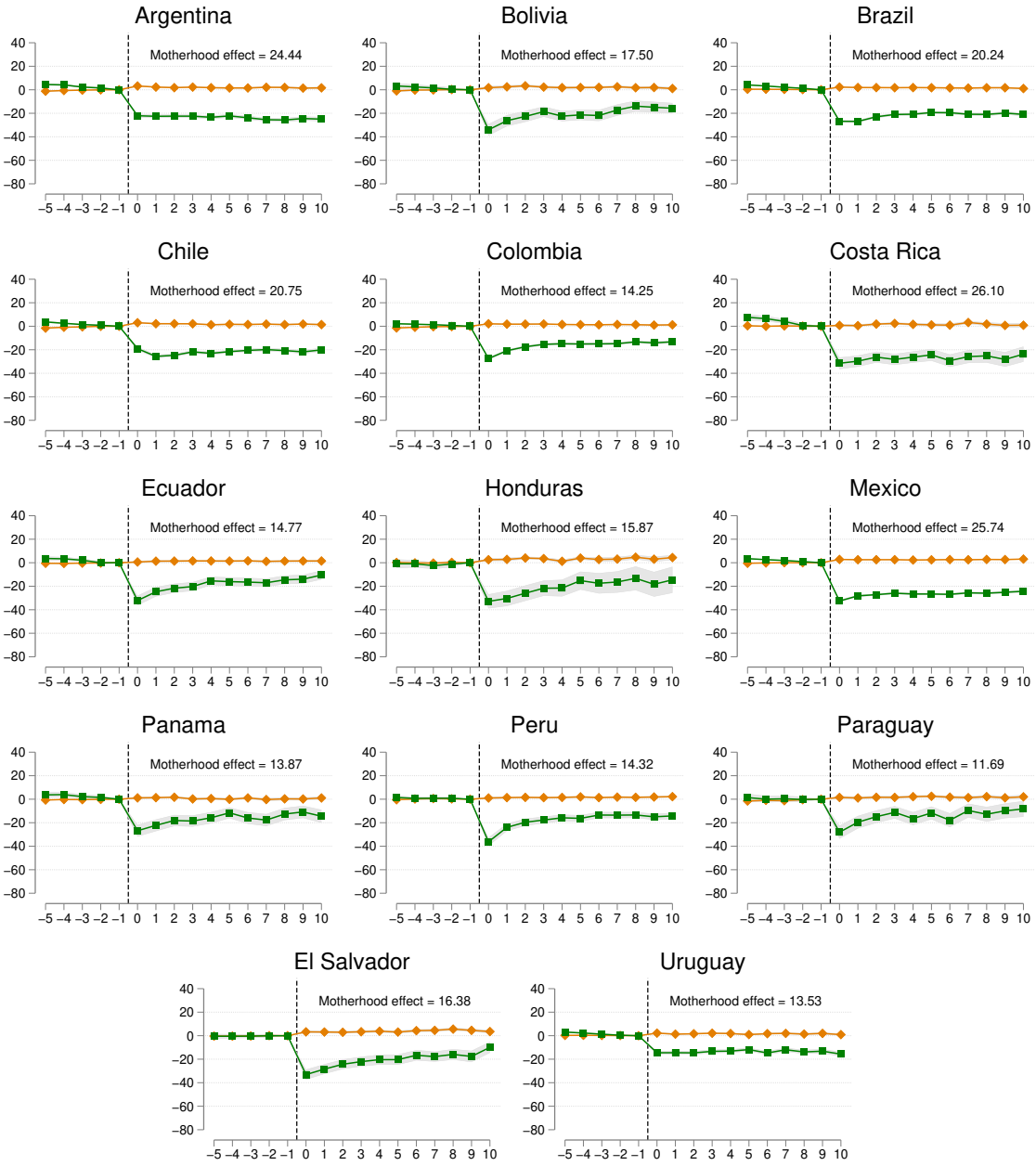
Notes: This table shows the β_τs coefficient (not scaled) from Equation 1 for the sample of mothers, The omitted category is $\tau = -1$ (the year before the first childbirth). Controls include year, age-in-years, and country fixed effects. The effects on hours worked and informality are estimated conditional on being employed. Data cover the 14 Latin American countries from 2000–2021, except when estimating the effects on labor informality, where Panama is excluded from the sample. The sample is restricted to mothers and fathers whose age at first childbirth is between 25 and 45 years old. Robust standard errors are reported in parentheses.
Source: Calculations based on SEDLAC (CEDLAS and The World Bank, 2022) and LABLAC (CEDLAS and The World Bank, 2021) datasets. $p < 0.01, p < 0.05, p < 0.10$.

Figure A.1: Effects of the first childbirth on formal and informal employment



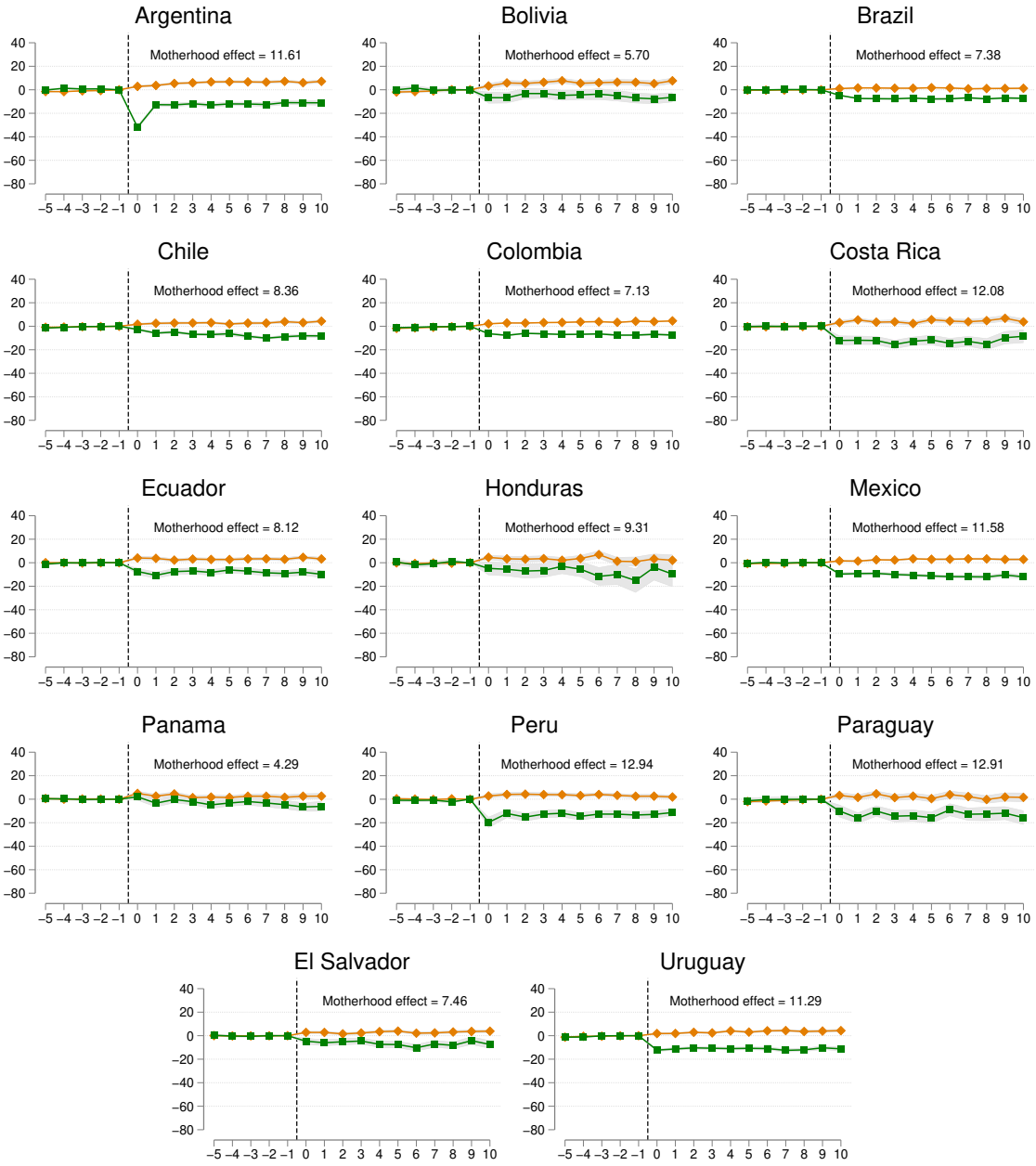
Note: These figures report the standardized estimates of the β_τs from Equation 1 for fathers and mothers, separately. Since the omitted category is $\tau = -1$, the standardized coefficients measure the impact of children as a percentage of the counterfactual outcome absent children relative to the year before the first childbirth. Controls include year, age-in-years, and country fixed effects. The effects on formal and informal employment aren't conditional on being employed. Formal and informal employment take the value 0 when the individual is not working in a given month. The motherhood effect reported is the average motherhood effect from $\tau = 5$ through $\tau = 10$. Data cover the 14 Latin American countries from 2000–2021, except when estimating the effects on labor informality, where Panama is excluded from the sample. The sample is restricted to mothers and fathers whose age at first childbirth is between 25 and 45 years old. The figure also displays the 95% confidence intervals based on robust standard errors, although they are typically so narrow that are usually not perceptible.
Source: Calculations based on SEDLAC (CEDLAS and The World Bank, 2022) and LABLAC (CEDLAS and The World Bank, 2021) datasets

Figure A.2: Effects of the first childbirth on employment by country



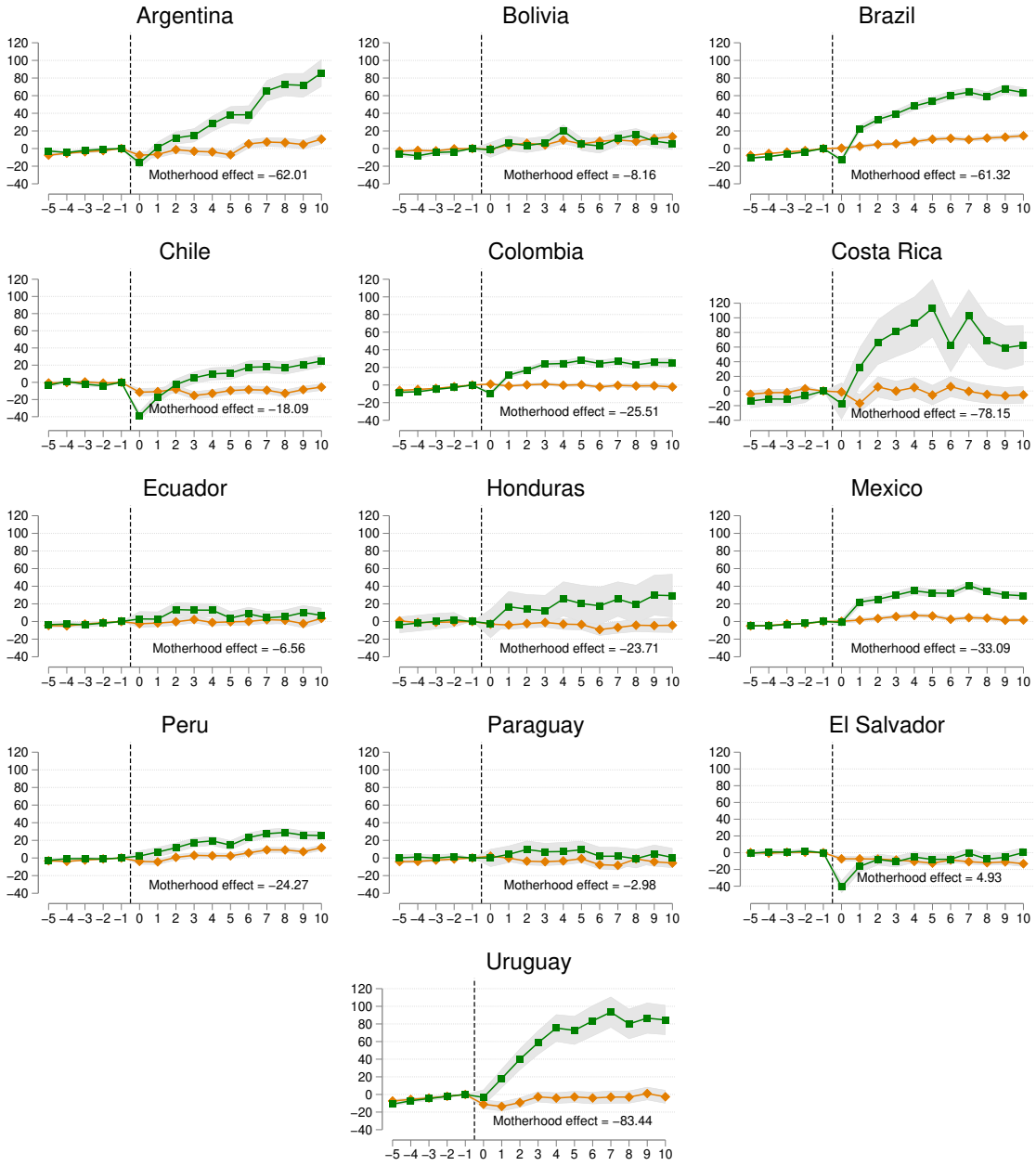
Note: These figures report the standardized estimates of the β_τs from Equation 1 for fathers and mothers, separately. Since the omitted category is $\tau = -1$, the standardized coefficients measure the impact of children as a percentage of the counterfactual outcome absent children relative to the year before the first childbirth. Controls include year, and age-in-years fixed effects. The effects on hours worked and informality are estimated conditional on being employed. The motherhood effect reported is the average motherhood effect from $\tau = 5$ through $\tau = 10$. Data cover the 14 Latin American countries from 2000–2021, except when estimating the effects on labor informality, where Panama is excluded from the sample. The sample is restricted to mothers and fathers whose age at first childbirth is between 25 and 45 years old. The figure also displays the 95% confidence intervals based on robust standard errors, although they are typically so narrow that are usually not perceptible.
Source: Calculations based on SEDLAC (CEDLAS and The World Bank, 2022) and LABLAC (CEDLAS and The World Bank, 2021) datasets.

Figure A.3: Effects of the first childbirth on weekly working hours by country



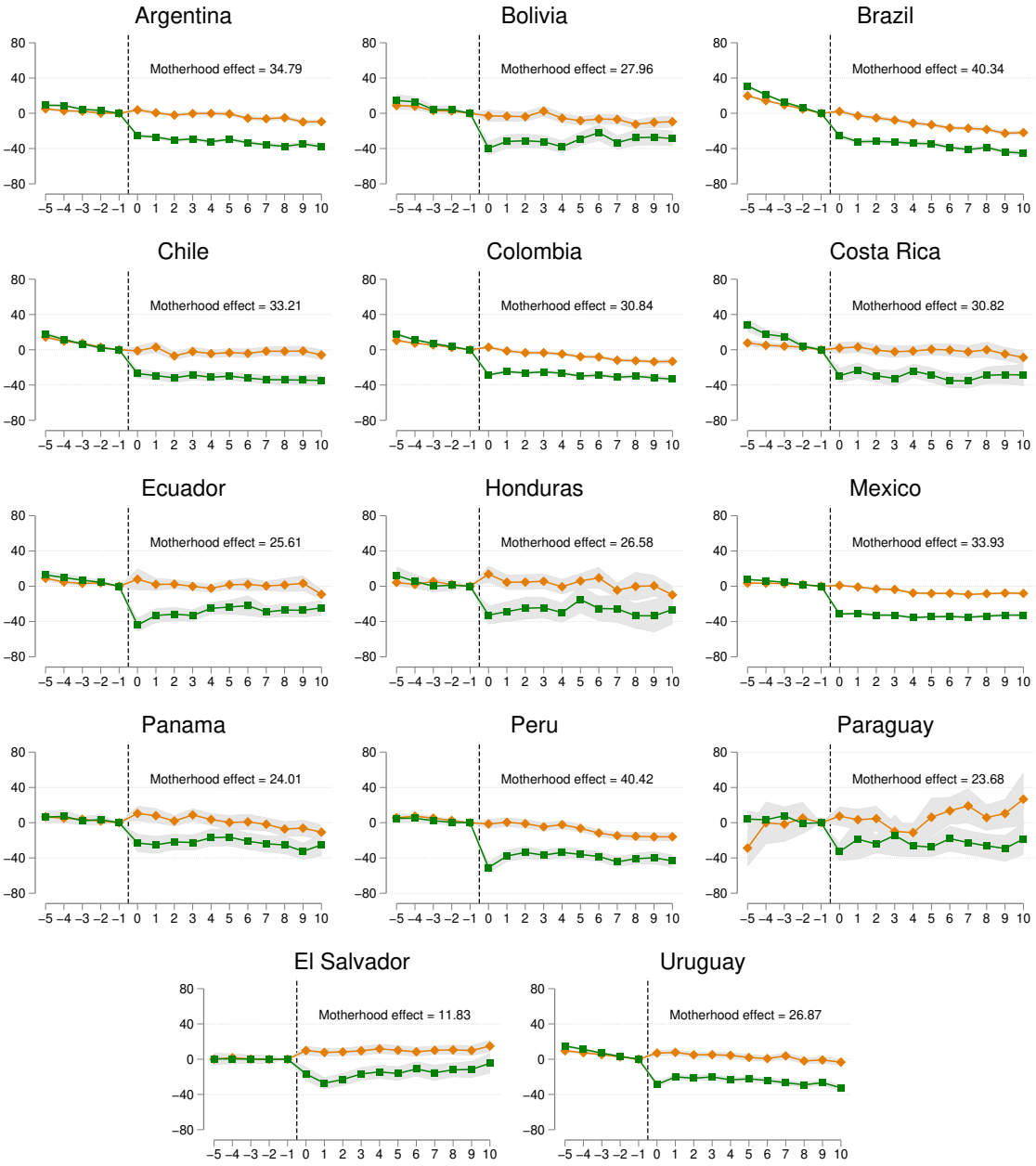
Note: These figures report the standardized estimates of the β_τs from Equation 1 for fathers and mothers, separately. Since the omitted category is $\tau = -1$, the standardized coefficients measure the impact of children as a percentage of the counterfactual outcome absent children relative to the year before the first childbirth. Controls include year, and age-in-years fixed effects. The effects on hours worked and informality are estimated conditional on being employed. The motherhood effect reported is the average motherhood effect from $\tau = 5$ through $\tau = 10$. Data cover the 14 Latin American countries from 2000–2021, except when estimating the effects on labor informality, where Panama is excluded from the sample. The sample is restricted to mothers and fathers whose age at first childbirth is between 25 and 45 years old. The figure also displays the 95% confidence intervals based on robust standard errors, although they are typically so narrow that are usually not perceptible.
Source: Calculations based on SEDLAC (CEDLAS and The World Bank, 2022) and LABLAC (CEDLAS and The World Bank, 2021) datasets.

Figure A.4: Effects of the first childbirth on labor informality by country



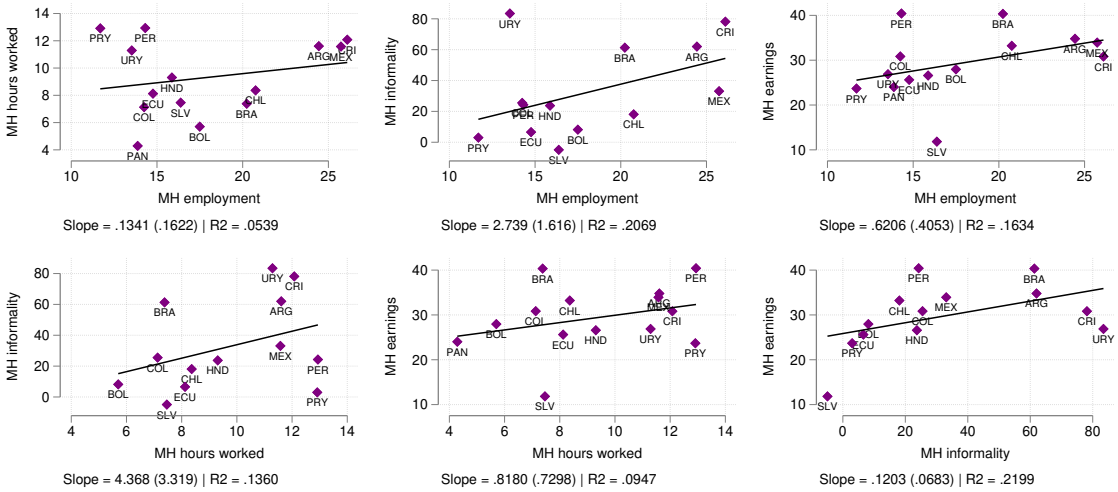
Note: These figures report the standardized estimates of the β_τs from Equation 1 for fathers and mothers, separately. Since the omitted category is $\tau = -1$, the standardized coefficients measure the impact of children as a percentage of the counterfactual outcome absent children relative to the year before the first childbirth. Controls include year, and age-in-years fixed effects. The effects on hours worked and informality are estimated conditional on being employed. The motherhood effect reported is the average motherhood effect from $\tau = 5$ through $\tau = 10$. Data cover the 14 Latin American countries from 2000–2021, except when estimating the effects on labor informality, where Panama is excluded from the sample. The sample is restricted to mothers and fathers whose age at first childbirth is between 25 and 45 years old. The figure also displays the 95% confidence intervals based on robust standard errors, although they are typically so narrow that are usually not perceptible.
Source: Calculations based on SEDLAC (CEDLAS and The World Bank, 2022) and LABLAC (CEDLAS and The World Bank, 2021) datasets.

Figure A.5: Effects of the first childbirth on earnings by country



Note: These figures report the standardized estimates of the β_τs from Equation 1 for fathers and mothers, separately. Since the omitted category is $\tau = -1$, the standardized coefficients measure the impact of children as a percentage of the counterfactual outcome absent children relative to the year before the first childbirth. Controls include year, and age-in-years fixed effects. The effects on hours worked and informality are estimated conditional on being employed. The motherhood effect reported is the average motherhood effect from $\tau = 5$ through $\tau = 10$. Data cover the 14 Latin American countries from 2000–2021, except when estimating the effects on labor informality, where Panama is excluded from the sample. The sample is restricted to mothers and fathers whose age at first childbirth is between 25 and 45 years old. The figure also displays the 95% confidence intervals based on robust standard errors, although they are typically so narrow that are usually not perceptible.
Source: Calculations based on SEDLAC (CEDLAS and The World Bank, 2022) and LABLAC (CEDLAS and The World Bank, 2021) datasets.

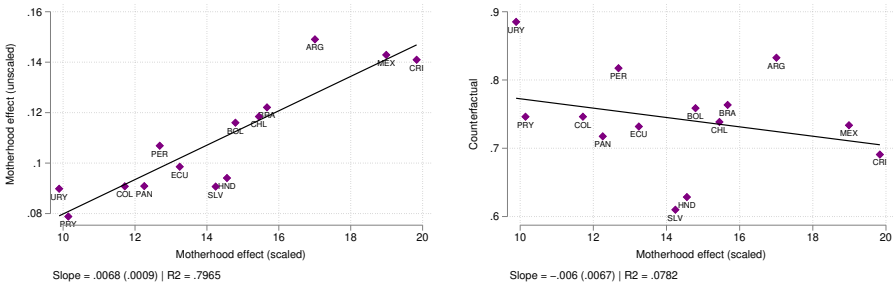
Figure A.6: Correlations of motherhood effects on various outcomes across countries



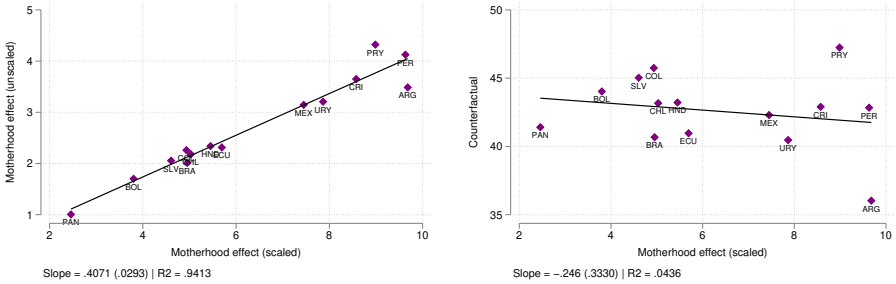
Note: These figures report the correlation between the standardized estimates of the β_τs from Equation 1 for women for each country across the different outcomes under analysis. The value shown at each point is the average motherhood effect from $\tau = 5$ through $\tau = 10$. The effects on hours worked and informality are estimated conditional on being employed. Data cover the 14 Latin American countries from 2000–2021. Due to the lack of information on labor informality, Panama is not included in Figure 5c.
Source: Calculations based on SEDLAC (CEDLAS and The World Bank, 2022) and LABLAC (CEDLAS and The World Bank, 2021) datasets.

Figure A.7: Correlation between unscaled motherhood effects/counterfactual outcomes with scaled motherhood effects across countries

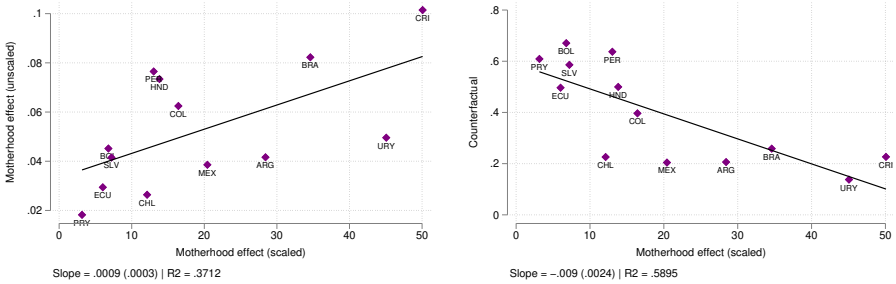
(a) Employment



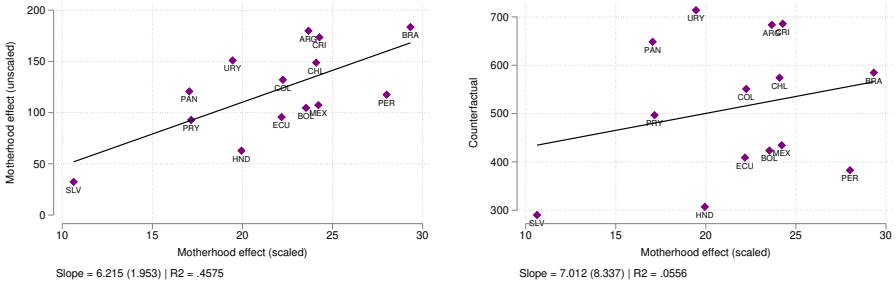
(b) Hours worked



(c) Informality



(d) Earnings



Note: The first-panel figures report the correlation between the scaled estimates and the unscaled estimates. The scaled estimates are the average from $\tau = 5$ through $\tau = 10$ of the standardized estimates of β_τs from Equation 1 for women for each country. The unscaled is not standardized. The second-panel figures report the correlation between the scaled estimates and the counterfactual estimates. For more details, see section 2. The effects on hours worked and informality are estimated conditional on being employed. Data cover the 14 Latin American countries from 2000–2021. Due to the lack of information on labor informality, Panama is not included.
Source: Calculations based on SEDLAC (CEDLAS and The World Bank, 2022) and LABLAC (CEDLAS and The World Bank, 2021) datasets.

B Appendix: Robustness

This appendix reports the results of various robustness exercises that provide more confidence in the pseudo-panel event study approach.

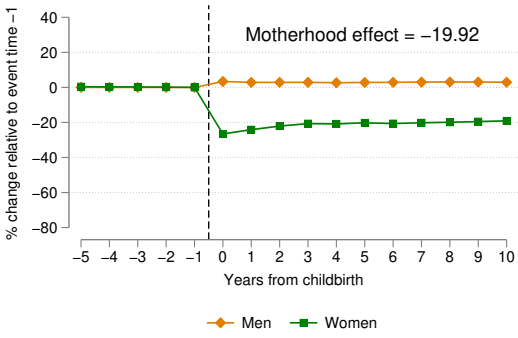
B I Robustness to matching variables

Having built the pseudo-panel, we can estimate Equation 1 for different outcomes and assess how the coefficients change when we gradually incorporate characteristics to the matching procedure (see Figures B.1, B.2, B.3 and B.4). The figures show an upward jump in the trajectory of fathers at the moment of the first childbirth, which is specially evident in earnings (Figure B.4). This pattern suggests the presence of some small positive selection into fatherhood that diminishes upon the inclusion of all the observable characteristics.

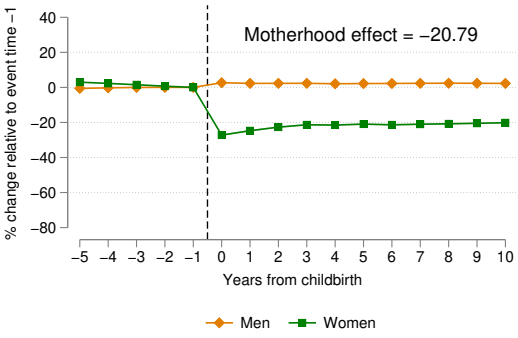
Furthermore, we compare our results with the methodology employed by Kleven et al. (2023). The distinction lies in the fact that they abstain from utilizing the calendar year variable to match observations, as their approach involves leveraging data sourced from specific-year censuses. In contrast, our analysis capitalizes on the chronological variability of calendar years due to our utilization of household survey data. In Figures and , we present the estimates of Equation 1 using both methodologies, i.e., incorporating year matching and forgoing year matching. Observable differences between these methodologies come to light, predominantly concerning earnings.

Figure B.1: Motherhood effect LAC: selection (Employment)

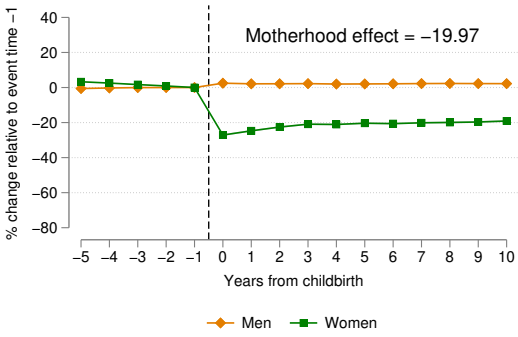
(a) Age, year and Gender



(b) +Education

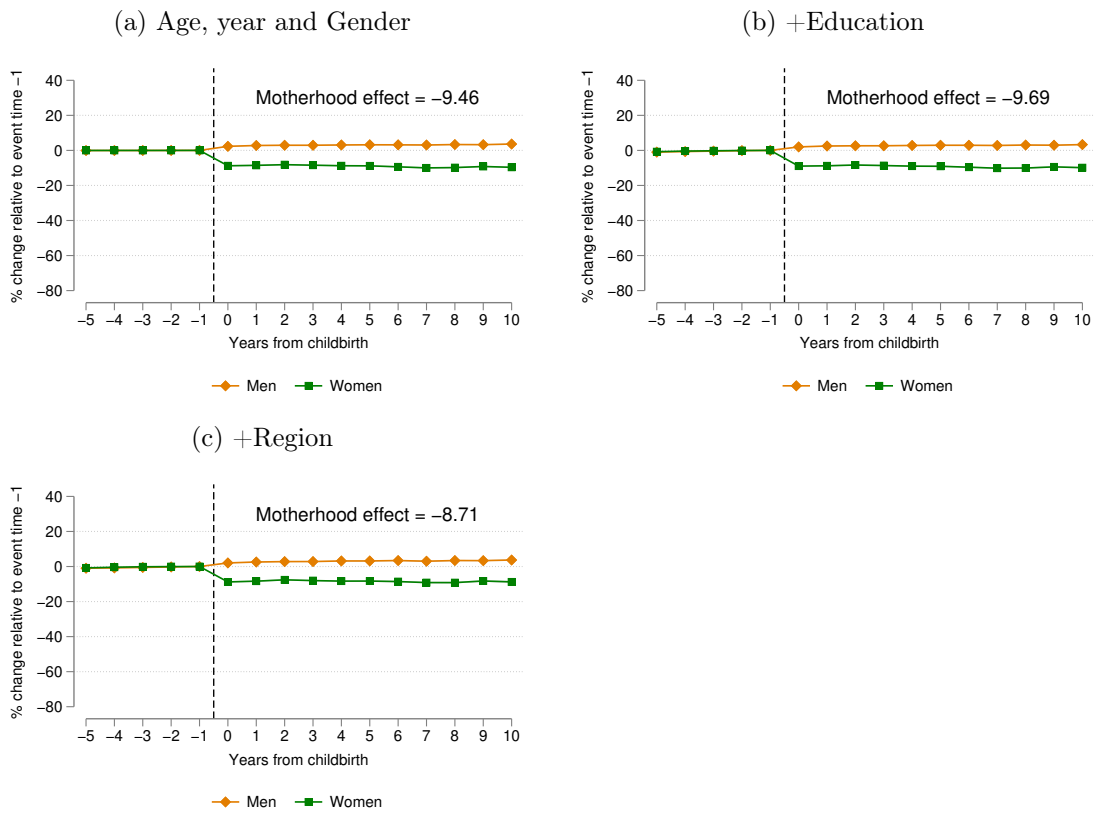


(c) +Region



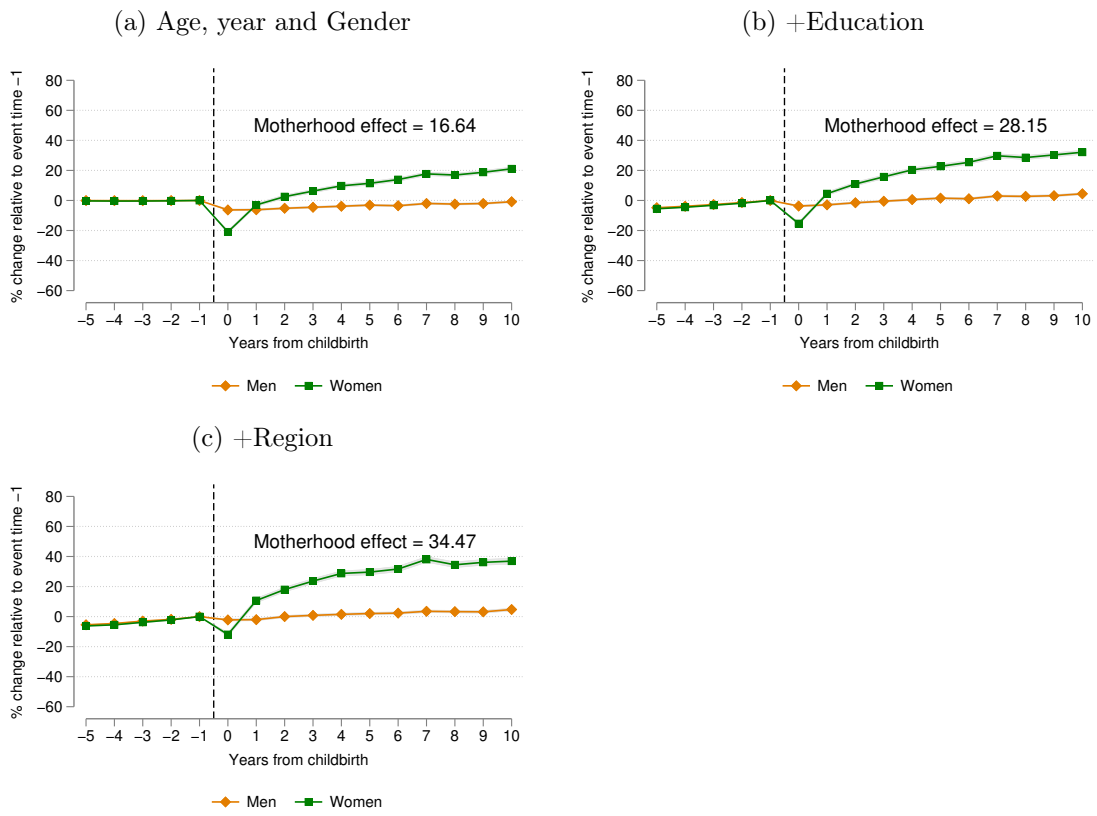
Note: These figures report the standardized estimates of the β_τs from Equation 1 for fathers and mothers, separately. Since the omitted category is $\tau = -1$, the standardized coefficients measure the impact of children as a percentage of the counterfactual outcome absent children relative to the year before the first childbirth. Controls include year, age-in-years, and country fixed effects. The effects on hours worked and informality are estimated conditional on being employed. The motherhood effect reported is the average motherhood effect from $\tau = 5$ through $\tau = 10$. Data cover the 14 Latin American countries from 2000–2021, except when estimating the effects on labor informality, where Panama is excluded from the sample. Figure B.4a use pseudo panels built matching on Age, year and gender, Figure B.4b adds education and, Figure B.4c adds region. For more details see the methodology describe in Section 2.3. The sample is restricted to mothers and fathers whose age at first childbirth is between 25 and 45 years old. The figure also displays the 95% confidence intervals based on robust standard errors, although they are typically so narrow that are usually not perceptible.
Source: Calculations based on SEDLAC (CEDLAS and The World Bank, 2022) and LABLAC (CEDLAS and The World Bank, 2021) datasets.

Figure B.2: Motherhood effect LAC: selection (Hours worked)



Note: These figures report the standardized estimates of the β_τs from Equation 1 for fathers and mothers, separately. Since the omitted category is $\tau = -1$, the standardized coefficients measure the impact of children as a percentage of the counterfactual outcome absent children relative to the year before the first childbirth. Controls include year, age-in-years, and country fixed effects. The effects on hours worked and informality are estimated conditional on being employed. The motherhood effect reported is the average motherhood effect from $\tau = 5$ through $\tau = 10$. Data cover the 14 Latin American countries from 2000–2021, except when estimating the effects on labor informality, where Panama is excluded from the sample. Figure B.4a use pseudo panels built matching on Age, year and gender, Figure B.4b adds education and, Figure B.4c adds region. For more details see the methodology describe in Section 2.3. The sample is restricted to mothers and fathers whose age at first childbirth is between 25 and 45 years old. The figure also displays the 95% confidence intervals based on robust standard errors, although they are typically so narrow that are usually not perceptible.
Source: Calculations based on SEDLAC (CEDLAS and The World Bank, 2022) and LABLAC (CEDLAS and The World Bank, 2021) datasets.

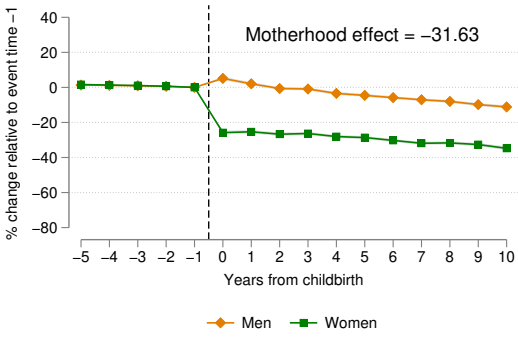
Figure B.3: Motherhood effect LAC: selection (Informality)



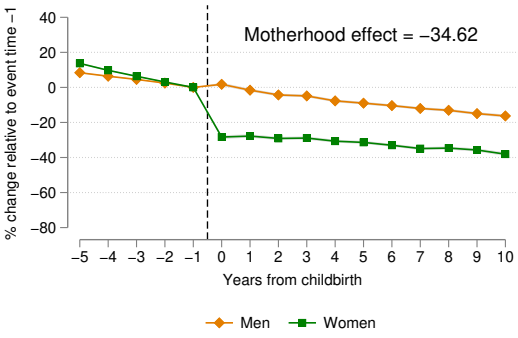
Note: These figures report the standardized estimates of the β_τs from Equation 1 for fathers and mothers, separately. Since the omitted category is $\tau = -1$, the standardized coefficients measure the impact of children as a percentage of the counterfactual outcome absent children relative to the year before the first childbirth. Controls include year, age-in-years, and country fixed effects. The effects on hours worked and informality are estimated conditional on being employed. The motherhood effect reported is the average motherhood effect from $\tau = 5$ through $\tau = 10$. Data cover the 14 Latin American countries from 2000–2021, except when estimating the effects on labor informality, where Panama is excluded from the sample. Figure B.4a use pseudo panels built matching on Age, year and gender, Figure B.4b adds education and, Figure B.4c adds region. For more details see the methodology describe in Section 2.3. The sample is restricted to mothers and fathers whose age at first childbirth is between 25 and 45 years old. The figure also displays the 95% confidence intervals based on robust standard errors, although they are typically so narrow that are usually not perceptible.
Source: Calculations based on SEDLAC (CEDLAS and The World Bank, 2022) and LABLAC (CEDLAS and The World Bank, 2021) datasets.

Figure B.4: Motherhood effect LAC: selection (Earnings)

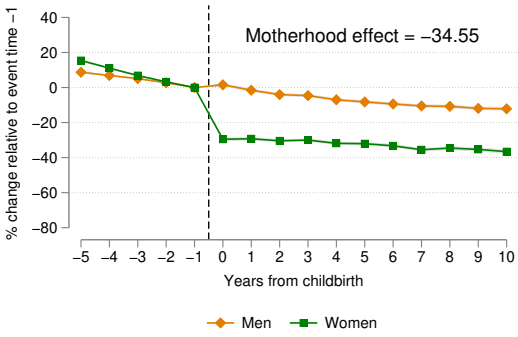
(a) Age, year and Gender



(b) +Education

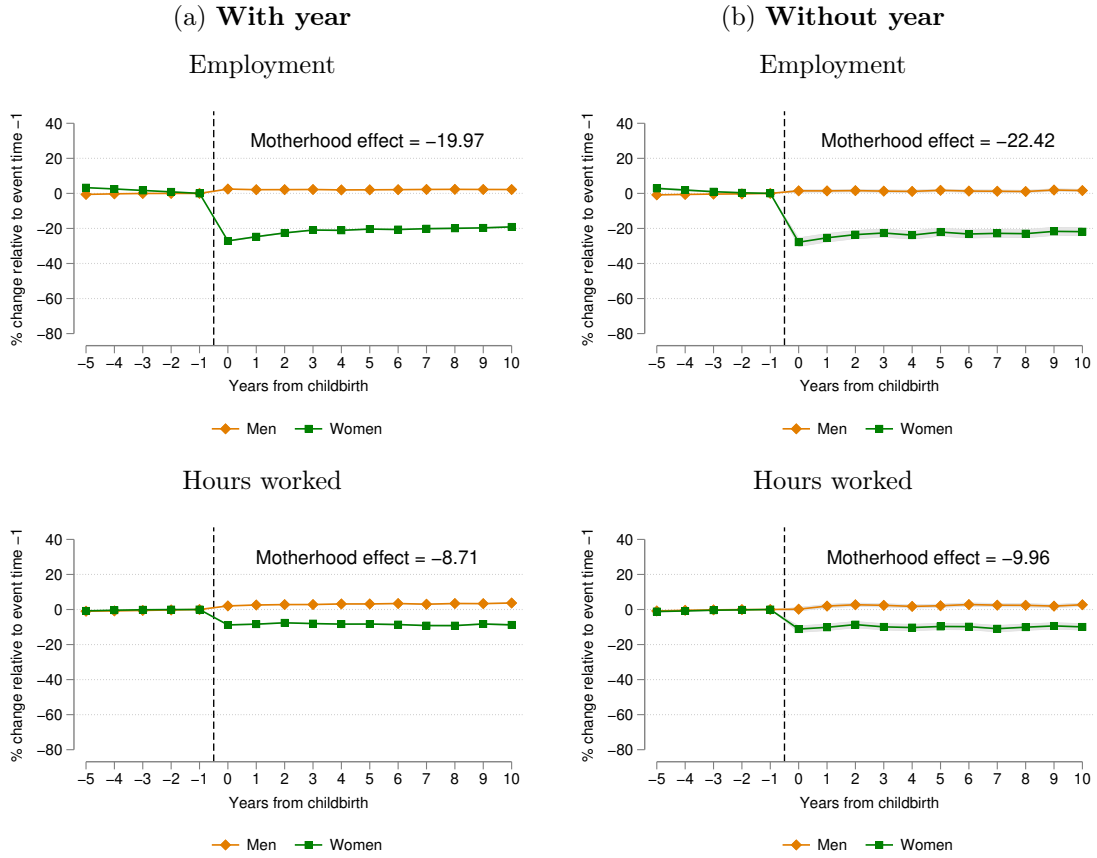


(c) +Region



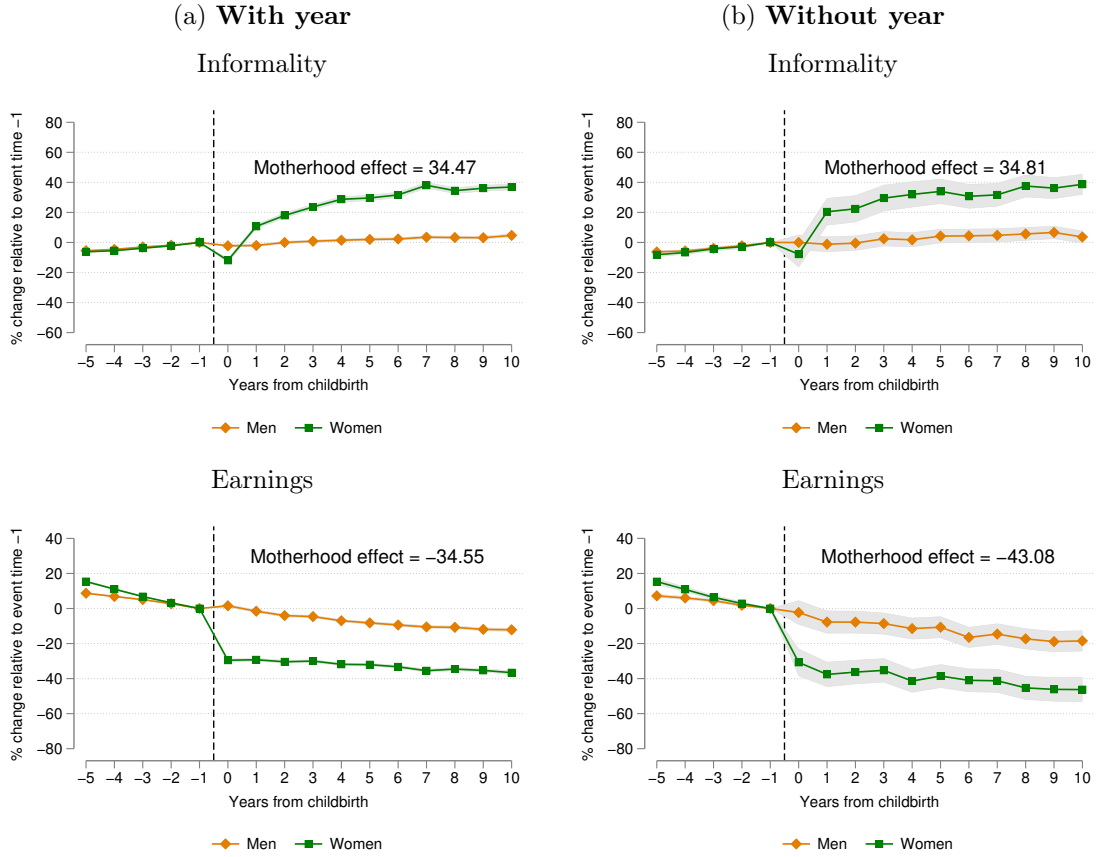
Note: These figures report the standardized estimates of the β_τs from Equation 1 for fathers and mothers, separately. Since the omitted category is $\tau = -1$, the standardized coefficients measure the impact of children as a percentage of the counterfactual outcome absent children relative to the year before the first childbirth. Controls include year, age-in-years, and country fixed effects. The effects on hours worked and informality are estimated conditional on being employed. The motherhood effect reported is the average motherhood effect from $\tau = 5$ through $\tau = 10$. Data cover the 14 Latin American countries from 2000–2021, except when estimating the effects on labor informality, where Panama is excluded from the sample. Figure B.4a use pseudo panels built matching on Age, year and gender, Figure B.4b adds education and, Figure B.4c adds region. For more details see the methodology describe in Section 2.3. The sample is restricted to mothers and fathers whose age at first childbirth is between 25 and 45 years old. The figure also displays the 95% confidence intervals based on robust standard errors, although they are typically so narrow that are usually not perceptible.
Source: Calculations based on SEDLAC (CEDLAS and The World Bank, 2022) and LABLAC (CEDLAS and The World Bank, 2021) datasets.

Figure B.5: Comparison of results depending on whether the survey year is used for matching or not



Note: These figures compare the results based on our pseudo-panels depending on whether or not the survey year is used in the matching procedure. The latter is comparable to the methodology in Kleven (2022). The figures report the standardized estimates of the β_τs from Equation 1 for fathers and mothers, separately. Since the omitted category is $\tau = -1$, the standardized coefficients measure the impact of children as a percentage of the counterfactual outcome absent children relative to the year before the first childbirth. Controls include year, age-in-years, and country fixed effects. The effects on hours worked and informality are estimated conditional on being employed. The motherhood effect reported is the average motherhood effect from $\tau = 5$ through $\tau = 10$. Data cover the 14 Latin American countries from 2000–2021, except when estimating the effects on labor informality, where Panama is excluded from the sample. The sample is restricted to mothers and fathers whose age at first childbirth is between 25 and 45 years old. The figure also displays the 95% confidence intervals based on robust standard errors, although they are typically so narrow that are usually not perceptible.
Source: Calculations based on SEDLAC (CEDLAS and The World Bank, 2022) and LABLAC (CEDLAS and The World Bank, 2021) datasets.

Figure B.6: Comparison of results depending on whether the survey year is used for matching or not



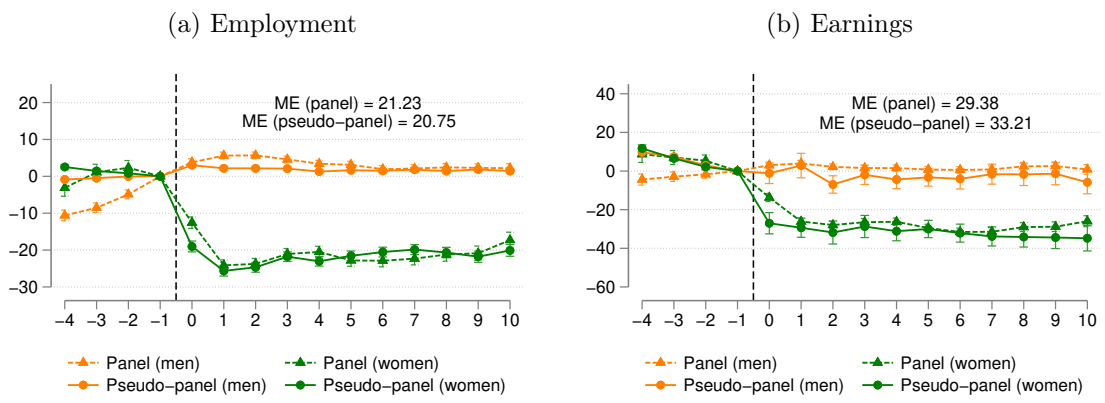
Note: These figures compare the results based on our pseudo-panels depending on whether or not the survey year is used in the matching procedure. The latter is comparable to the methodology in Kleven (2022). The figures report the standardized estimates of the β_τs from Equation 1 for fathers and mothers, separately. Since the omitted category is $\tau = -1$, the standardized coefficients measure the impact of children as a percentage of the counterfactual outcome absent children relative to the year before the first childbirth. Controls include year, age-in-years, and country fixed effects. The effects on hours worked and informality are estimated conditional on being employed. The motherhood effect reported is the average motherhood effect from $\tau = 5$ through $\tau = 10$. Data cover the 14 Latin American countries from 2000–2021, except when estimating the effects on labor informality, where Panama is excluded from the sample. The sample is restricted to mothers and fathers whose age at first childbirth is between 25 and 45 years old. The figure also displays the 95% confidence intervals based on robust standard errors, although they are typically so narrow that are usually not perceptible.
Source: Calculations based on SEDLAC (CEDLAS and The World Bank, 2022) and LABLAC (CEDLAS and The World Bank, 2021) datasets.

B II Results based on panel data versus pseudo-panel data: the case of Chile

In Figure B.7 we show a comparison between an estimation of Equation 1 using the pseudo panel built for Chile and the estimation of the same equation using the longitudinal data from the Social Protection Survey of Chile, previously used by Berniell et al. (2021). Although some differences are found in the first year after the birth of the first child, the coefficients do not differ considerably for women, providing evidence in favor of the use of pseudo panels. The difference in event time zero relates to how event time is measured in

the actual panel and in the pseudo-panel. In the actual panel, event time zero corresponds to the year ending with the birth month of the first child. Therefore, event time zero in the actual panel includes conception and pregnancy, while the child is only present in the household starting from event time 1. In contrast, in the pseudo-panel, event time zero is defined as the calendar year in which the first child was born, allowing the child to be present in the household for anywhere from 1 to 12 months. This way of measuring event time arises from the limitation in most household surveys, which do not provide the exact month of children's birth. Naturally, this difference explains why pseudo-panels tend to yield larger motherhood effects than current panels at event time zero.

Figure B.7: Comparison with panel microdata



Notes: These figures report the standardized estimates of the β_τs from Equation 1 for fathers and mothers, separately. The dashed line reports the standardized estimates from the actual panel and the solid lines report the standardized estimates from the pseudo panel. Since the omitted category is $\tau = -1$, the standardized coefficients measure the impact of children as a percentage of the counterfactual outcome absent children relative to the year before the first childbirth. Controls include year, and age-in-years fixed effects.
Source: Calculations based on the Social Protection Survey, SEDLAC (CEDLAS and The World Bank, 2022) and LABLAC (CEDLAS and The World Bank, 2021) datasets.