

# The Motherhood Penalty in Spain: the Effect of Full and Part-time Parental Leave on Women's Earnings<sup>1</sup>

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## Abstract

The persistence of a wage gap between mothers and non-mothers has been widely analyzed. However, we know little about the impact of family policies on this relative motherhood penalty. This study investigates the extent to which unpaid leaves granted for longer-term care of young children after an initial spell of maternity leave affects the motherhood wage gap, and whether full-time and part-time leaves differ in this respect. We use panel data from the Continuous Sample of Working Lives and rely on a sample consisting of 959,359 women aged twenty-five to forty-seven between 2005 and 2012. We find first a negative association between use and duration of unpaid parental leaves and mothers' wages, and second that a full-time unpaid leave carries higher wage penalties than a part-time unpaid leave of the same duration. This study has major implications for policymaking.

*Keywords:* motherhood penalty, family policy, income inequalities, Spain

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## Introduction

The existence of a gender pay gap in the labor market has been widely documented (OECD 2017). In particular, women experience a drop when they become mothers. The existence of a “motherhood gap” –with respect to men and with respect to childless women- seems to be almost universal (Grimshaw and Rubery 2015). The persistence of this gap reinforces inequalities through its cumulative effect over the life course, in turn affecting outcomes such as retirement benefits. It may also reinforce the stereotype that women should step away from the workforce to care for their family – and bear the consequences. The magnitude and duration of the gap differ across countries, although direct comparisons are often difficult due to the variety of data and methods used.

Several explanations for the motherhood pay gap exist. None of them is exclusive, but all of them indicate that the fact that mothers spend time taking care of their children plays a crucial role in this gap (Budig and England 2001; Budig and Hodges 2010; Davies and Pierre 2005; Gangl and Ziefle 2009; Glauber 2007; Waldfogel 1998). The literature also shows that women spend more time doing domestic and care work than men (Altintas and Sullivan 2016), and that this inequality increases after motherhood (Grunow and Evertsson 2019). Welfare states have developed different policies to protect women in the labor market and countries with more generous family policies have smaller motherhood gaps (Jaumotte 2003). Among them, parental leave policies allow parents to take some time away from the labor market to look after their children, thereby granting job protection that fosters continuity in their attachment to paid work.

This study investigates the extent to which unpaid parental leaves affect the motherhood wage gap. Parental leave policies can have a positive effect on gender equality because they encourage mothers’ employment and fathers’ involvement in childcare, but they

can also have backfire effects on women's wages. For instance, previous research has shown that long-term leaves are detrimental for women's employment and wages (Bugliescu et al. 2009; Frodermann et al. 2020; Hook and Paek 2020).

Leave policy designs vary extensively across countries in terms of benefit structure, income replacement, coverage, mothers and fathers' eligibility, duration, and flexibility in their use (Ray et al. 2010). Most authors have analyzed the consequences of using leaves according to duration and wage compensation, but few studies have considered the rest of features. We contribute to this literature by analyzing an often overlooked component of parental leave: flexibility. We distinguish between the use of unpaid leaves on a full-time or part-time basis, as well as the duration of such leaves. It should be noted that part-time leave (i.e., the right to reduced working hours for parents caring for young children) is different from part-time jobs. Workers on part-time parental leave can apply for a return to full-time employment when they choose to do so, which part-time workers cannot do, and enjoy more labor rights (Féernandez-Kranz 2018). In the Spanish context, mothers can take unpaid parental leaves after the 16 weeks of paid maternity leave.

We provide the most up to date analysis of motherhood penalties in Spain, using prospective information. We conduct the analyses using panel data from the Continuous Sample of Working Lives (a 4 percent non-stratified random sample of the population registered with the Social Security Administration) for a sample of 959,359 women aged 25 to 47, observed between 2005 and 2012. In line with previous studies, we find a negative association between use and duration of both parental leaves and mothers' wages, and also that full-time leave is associated with higher wage penalties than part-time leave. The policy implications of these results are discussed in the conclusion.

## **Background**

## **The Motherhood Penalty and Parental Leave**

The gender pay gap is probably the best-known indicator of gender inequalities in the labor market. Various factors contribute to this gap (Blau and Kahn 2016 provide a review), but motherhood has been shown to play an important role in explaining the gap in different countries (Grimshaw and Rubery 2015). One of the main goals of family policies is to reduce the negative impact of childbearing on mothers' labor market outcomes (Jaumotte 2003), and one of the tools to mitigate the effect of motherhood is parental leave. Parental leave allow parents –mostly mothers- to take some time off their work to take care of their children, and provide them with the right to return to their previous employer afterwards<sup>i</sup>. However, the benefits and rights associated with leave provisions vary extensively across countries (Koslowski et al. 2020; Ferragina 2019) and, likewise, the incentives for women to stay in the labor market, to reduce working hours, or to leave the job (Hook and Paek 2020; Pertold-Gebicka 2020).

In principle, parental leaves should foster continuity in the labor market by protecting women's jobs during their time off, allowing them to build seniority and minimizing the loss of future labor rights that depend on contributions. While it is true that parental leave aims to reduce the impact of childbearing on mothers' labor force outcomes, its effects are not clear regarding wages. Two main theories shed light on the potential negative impact of using a parental leave on mothers' wages: the deterioration of human capital, and the low commitment stigma (Evertsson 2016). Next, we describe both of them and provide some empirical examples.

The deterioration of human capital occurs when workers take a break, interrupt paid work or reduce their working hours (Mincer and Polachek 1974; Mincer and Ofek 1982). In some sectors, employers can perceive motherhood as incompatible with skills deemed

necessary for the job, as shown by Glass and Fodor (2018) in the case of finance. Human capital deterioration might be particularly acute for women taking long leaves as their work experience suffers, while existing knowledge and skills depreciate for the lack of use and adaptability to new technologies (Blau and Kahn 2016; Fernández-Kranz et al. 2013; Fitzenberger et al. 2013; Kleven et al. 2019). If the career break is short, there is much more scope to make up for lost time in terms of training, and job prospects will not suffer to the same extent. Therefore, the motherhood penalty may be sensitive to the duration of the leave and the likelihood of catching up with productivity levels prior to maternity.

A second explanation for the effect of leave taking on wages is the low commitment stigma (Albrecht et al. 1999). According to this perspective, employers interpret taking leave as a signal of low commitment to work. If this stigma exists, it may translate into discrimination. Employers may discriminate against mothers with career interruptions for raises and would not involve them in new projects that might involve or create career opportunities. Employers may also penalize or stigmatize mothers who take breaks because motherhood and care work are devalued and thus, they in turn devalue people who do such work (Ridgeway and Correll 2004). This is related to existing norms in the labor market, in which the ideal worker is an individual with no additional responsibilities and an exclusive focus on the job (Acker 2006). Different studies have found positive evidence of this type of discrimination against mothers (Correll et al. 2007; González et al. 2019; Oesch et al. 2017). Leave-taking would add to this discrimination.

So far, the effects of leave taking on women's wages seem to depend on duration (Hegewisch and Gornick 2011). Previous literature has focused on length of leave as a relevant factor to understand the effects of taking leave on mothers' earnings, showing in general a positive association between long leave duration and wage penalties (Akgunduz and

Plantega 2013; Buligescu et al. 2009; Evertsson and Duvander 2011; Lequien 2012; Low and Sánchez-Marcos 2015; Rhum 1998). However, the ideal duration of the leave depends on the country. Jaumotte (2003) concluded that in OECD countries, the optimal leave duration is approximately 20 weeks. On the contrary, Pettit and Hook (2005) found a negative impact of leave taking on mothers' employment only after the third year of leave in some countries (e.g., Finland, Germany and Hungary), but found no association in France. Other authors have found no clear relationship between leave duration and labor market outcomes in European countries (Keck and Saraceno 2013). Aisenbrey et al. (2009) analyzed three countries (the US, Sweden and Germany) and arrived at an interesting conclusion: that length of leave has different impacts depending on the labor market structure, social policies, and norms of the country.

In addition to the theories outlined above, the literature has also shown that certain individual characteristics may protect or reduce the impact of motherhood on women's wages. A basic characteristic is the number of women's children. Davies and Pierre (2005) found that the gap increases with the number of children (parity). Similar results have been reported in studies for the US (Blau and Kahn 2016) and for Spain (Molina and Montuenga 2009)<sup>ii</sup>.

### **The case of part-time leave**

An important feature of parental leave policies is the flexibility of its use on either a full-time or a part-time basis. The effects of these configurations remain largely unexplored, as most studies conflate both types of leaves and even mix part-time jobs with part-time parental leaves. To the best of our knowledge, only Joseph et al. (2013) analyzed separately the effects of full-time versus part-time leaves on women's wages. Their study focused on short leaves (up to six months) in France, and they found that full-time leaves had no effect

on wages, whereas part-time leaves had a negative effect, which they attributed to women switching to part-time work after the period of part-time leave had been completed.

It is important to note the difference between part-time work and part-time leaves. Part-time work is one of the most common strategies for reconciling work and family life for women in the European context (30 percent of employed women were working part-time in the EU in 2018<sup>iii</sup>). Yet, part-time jobs are often lower paying and of lower status than full-time jobs, and frequently entail less employment rights and occupational stability than part-time parental leave (Fernández-Kranz 2018). Part-time parental leave allows parents to reduce working hours in their existing jobs, which is different from changing to a new part-time job, especially if part-time jobs are more concentrated in specific sectors that offer lower career prospects. Some women may choose to look for more ‘family friendly’ jobs, which often involve trading wages for more flexible working conditions or on-site care services, and this has been pointed as one of the reasons for the motherhood pay gap (Fuller 2018; Budig and England 2001; Glauber 2012), although family-friendly conditions do not explain all the gap (Fuller 2018). The existence of a trade-off has been challenged by some scholars (Pailhé and Solaz 2019). Part-time leave could be interpreted as “good part-time”, in the sense that it allows companies to retain workers during a period of time when some of them might have otherwise opted out (Tilly 1996).

In light of the theories presented above, we would expect periods of part-time leave to be associated to lower penalties than periods of full-time leave, controlling for duration of the leave. Human capital deterioration may also occur when mothers use part-time parental leave, because a reduction in working hours translates into less accumulated experience. The impact of part-time leave will depend on how human capital deterioration happens. With a part-time leave, the job-specific human capital is not likely to deteriorate much, because the worker

keeps doing the same job as before. However, because of the reduced time, workers might need to stop carrying out some tasks, and they will probably be less likely to engage in trainings or education outside of work hours. In this sense, part-time leave might affect human capital accumulation, but to a lesser extent than full-time leave.

If there is a low commitment stigma associated with leave taking, we would expect this stigma to be lower in the case of part-time leave. Mothers who reduce their working hours could be perceived as less committed than full-time workers, but they are keeping an attachment with their jobs instead of leaving full-time, and thus we would expect them to be stigmatized or discriminated to a lower extent. That being said, part-time leaves are typically taken for longer periods of time than full-time leaves, and the stigmatization could have some cumulative effects, if employers expect women to go back to work full-time relatively quickly but and their expectations are not met.

On the basis of the literature reviewed, we propose to test two main hypotheses. First, we expect a negative association between leave duration and women's wages, because leave taking entails a deterioration of human capital or because it is interpreted as a signal of low commitment by employers. As previous research has shown, this negative relationship might be curvilinear (Pettit and Hook 2005). Second, we also expect that the use of part-time parental leave is associated with a smaller penalty than the use of full-time leave of the same duration, because both the deterioration of human capital and the signaling effect are lower. We will test these hypotheses using data from Spain, and in the next section we describe the specific policy context.

### **Parental Leave Policies in Spain**

Parental leave policies must be understood in the context of the labor market in Spain. Women's entry into the labor market lagged behind other European countries, but has



grown considerably in recent years and, as a result, the gender gap in employment has narrowed. In 2020, the employment rate for women aged 20-54 was 60 percent (11 points lower than for men) (INE 2020), slightly below the European average for women in the same age group (EU-27) which was 66.7 percent in 2020 (Eurostat 2020).

It should be noted, however, that employment rates vary significantly according to women's educational level and number of children: in 2020, for women aged 20-54, employment rates were higher for women with tertiary education (75.2 percent) and for childless women (69 percent), and close to the average for women with one child younger than 6 (Eurostat 2020). Furthermore, women are overrepresented among those with fixed-term contracts and in (undesired) part-time work (León 2018). The profile of the part-time worker in Spain is a young woman, with low qualifications, in a low-skilled job; but more than half of part-time workers would prefer to work full-time (Ortiz Garcia 2014). Thus, most part-time jobs in Spain seem to be secondary, bad part-time jobs (Tilly 1996). The percentage of women working part-time does not change around birth in Spain (Lapuerta 2012). As in other countries, the transition into parenthood is a crucial period in Spain. Women adapt their careers more than men do, with most interruptions or adaptations of working hours done by women (González and Jurado-Guerrero 2015). Unpaid work in the home (domestic and care work) is carried out more often by women – an inequality that is more salient in couples with children (Dominguez-Folgueras 2015).

During the period covered by our data (2005-2012), the Spanish legislation provided two different types of paid leave for women: a 16-week maternity leave and a “baby feeding leave”<sup>iv</sup>. The 16-week maternity leave allowed mothers to take 16 weeks off work after giving birth, with the possibility of taking only 6 and transferring the other 10 weeks to the father. The “baby feeding leave” (*permiso de lactancia*) granted one of the two parents two

half-hour breaks during the working day or a half-hour reduction in the normal working day until the child is 9 months old. This leave could also be taken cumulatively (approximately 15 days), provided that this possibility is stipulated in the collective agreements at the company level or agreed with the employer. Fathers were entitled to two days of birth leave prior to 2007, which were extended to fifteen days with the implementation of paternity leave that year.

Outside the period of analysis in this research, paternity leave increased to 4 weeks in 2017. A stepwise and major reform, passed in March 2019 and fully effective from 2021, reconfigured maternity and paternity leaves. Under the new scheme, each parent will be entitled to sixteen weeks, six of which are mandatory after childbirth and must be taken full-time and simultaneously for both parents. The remaining ten optional weeks can be used simultaneously or consecutively and on a full or part-time basis until the child's first birthday, although an agreement with the employer on the flexibility of their use is required (Meil et al. 2020).

This reform did not affect the two types of unpaid and long-term leaves that we analyze in this paper. The first one is called the 'leave of absence to care for a child'<sup>v</sup>, which we refer to as 'full-time parental leave'. Full-time leave enables both parents to interrupt their employment until the child is 3 years old. Their return to the same job is guaranteed during the first year, after which the employer is obliged to offer the worker a position within an equivalent category, but not necessarily the same job. The second type of leave is called 'reduction of working hours', which we refer to as 'part-time parental leave'. Part-time leave allows workers to reduce their working hours (from an eighth to a half) to care for a child under 12, while keeping the same job. Therefore, parents can use part-time leave (i.e., a reduction of working hours) for a longer period of time than full-time leave. The

maximum for a part-time leave is set by the age of the child, who must be under 12. In this sense, part-time parental leave may be seen as a form of retention or good part-time work (Tilly 1996), allowing women to ‘flexibilise’ work while keeping the other characteristics of their jobs, as opposed to working part-time in a different sector with worse conditions. The law protects workers on parental leave – full or part-time – and explicitly forbids companies from firing employees while they are on leave. It also ensures social security contributions for the whole period of full-time parental leave and until two years in the case of part-time parental leave, which affect the recognition of other rights, such as pension benefits, health coverage and new maternity and paternity leaves<sup>vi</sup>. Unemployment benefits are also included in the case of part-time parental leave. Self-employed workers are excluded from both unpaid leave schemes.

Overall, the Spanish leave policy is generous in time, but most of this time is unpaid, with the exception of the first 4.5 to 7 months when the maternity, paternity and breastfeeding leaves are fully paid. In their comparative analysis of parental leave policies, Ray et al. (2010) show that Spain has, after France, the second longest total parental leave policy of the 21 high-income countries they analyze. However, it offers a relatively small number of full-time equivalent paid weeks of leave<sup>vii</sup>, ranking thirteenth, far behind most of the Nordic countries, Germany, Canada, Japan, and Greece, -the highest scoring countries- but much better than Australia, USA, Switzerland, UK or New Zealand, the countries at the tail end of the ranking.

The intermediate position of the Spanish case in this ranking leads the authors to state that the parental leave policy does not counteract the effects of traditional gender roles and gender-wage differentials that push women to be the main leave-takers. In fact, research about the Spanish case confirms this (Escot et al. 2012; Romero-Balsas et al. 2013). Meil et

al. (2017) estimated that 10 percent of mothers have used full-time parental leave and 20 percent have used part-time parental leave, while only 1 percent and 2 percent of fathers take them up respectively. The available information on leave uptake prior to the 2019 reform also suggests that unpaid leaves play a key role during the first year after childbirth. Among mothers, most full-time parental leaves were taken after maternity leave and for a maximum of 1 year (85 percent). Part-time leaves were also mostly used during the first year after childbirth (79 percent), although for longer amounts of time (61 percent for more than 1 year)<sup>viii</sup>. Unpaid leaves are also highly selective, as the main users are mothers with more favourable labor market situations, those with higher education, permanent contracts, full-time employment, higher seniority in the company, and employed in the public sector or in large companies with high levels of protection through collective agreements (Lapuerta et al. 2011; Romero-Balsas et al. 2013).

Although gender equality was the main concern in the 2019 reform, it focused on increasing the length of paternity leave without overhauling the parental leave system as a whole. There was not a public debate on the gender and class effects of the unpaid leave schemes, whose contribution to both increasing the income gap between fathers and mothers and the women's gap between mothers and non-mothers in the labor market remains underexplored. This study contributes to this policy-making process by analyzing its short-term wage impacts among mothers. Besides, it sheds light on the specific effects of part-time parental leave, which is often confused in the literature with part-time work. In countries with highly segmented labor markets, such as the Spanish one, where part-time work is mostly involuntary, low paid, and poorly protected (Ortiz-García 2014), it is essential to differentiate it from a reduced working hours that is especially protected by law and carried out, in most cases, under a permanent and full-time employment contract (Fernández-Kranz 2018).

## **Data and methods**

### ***Data***

We base the analysis on the Continuous Sample of Working Lives ('Muestra Continua de Vidas Laborales', hereafter MCVL), waves 2005–2012. This dataset provides an organised group of anonymised microdata extracted from three different administrative sources: the social security system, the municipal registry of inhabitants, and income tax registers. The target population of this survey is made up of all of those who contributed to or received contributory benefits from the Spanish social security system at some point in the reference years (2005–2012), regardless of whether this was on a temporary or permanent basis. Women can enter the sample at any time within the window of observation, and they can also exit the sample if they leave the labor market or lose their unemployment benefits. We selected women who were between 25 and 40 years of age when they entered the sample, starting in 2005, and followed them until they left the sample –or until 2012. This means that if a woman is first observed in 2005 and stays in the sample for the whole window of observation, we follow her until she is 32 in 2012. If a woman enters the sample in 2007 when she is 39, we follow her until she is 44 in 2012. We have data from 135,622 women, with a total of 9,539,617 observations.

The MCVL is an individual register dataset, but it can be matched to the municipal registers. We use this information to construct our motherhood variable and we define mothers as women who live in a household where a child is registered in a specific month<sup>ix</sup>. Women become mothers in month  $n$  if we observe a child living in the household that was not there in month  $n-1$ . We define non-mothers as women who live in a household where no children are registered. This measure is of course biased, as some women may have children living in another household, or they might move in with a partner who has children.

However, this is a common practice in the literature (Grimshaw and Rubery 2015) given the data limitations, and we expect the bias to affect only a small number of cases<sup>x</sup>.

The MCVL is a reliable source of information for our research question, as it is a large representative sample of the Spanish population with longitudinal information. However, it does have important limitations. Other than the limitation mentioned in our measurement of motherhood, the sample does not include women who did not contribute to or receive benefits from the social security system in the reference years (2005-2012). This means that we do not take into account women who were looking for a job but had no unemployment benefits during the whole period or those who had decided to permanently exit the labor market before – maybe anticipating – motherhood. However, our bias in this sense is less important than in other studies that use such data, which take a given year as a reference and use the retrospective information to analyze women’s careers (Férrandez Kranz et al. 2013). Furthermore, the survey has a limited set of variables to use as controls. We have data on job characteristics (i.e., type of contract, sector and company), but no data on values, attitudes or division of domestic and care work. Such data are necessary to fully understand women’s decisions and constraints. The data set also lacks information on partners’ labor market situations and earnings, which also affects the motherhood gap (Angelov et al. 2106; Nix and Andresen 2019).

### ***Model specification***

The effect of motherhood on wages is a classic example of possible unobserved heterogeneity, because the decision to have children may be related to labor market outcomes and preferences. For instance, if women who are career oriented and very productive are less likely to have children, this leads to a spurious correlation between the number of children and wages. In the literature, it has thus become standard to estimate the motherhood wage

gap using fixed-effects models (Budig and England 2001; Gangl and Ziefle 2009; Kahn et al. 2014). Fixed-effects estimators control for the observed and unobserved characteristics of individuals that do not vary over time, considering the within-variance stemming from changes in individuals' lives. This type of model allows us to control for women's inclinations regarding motherhood and work. In contrast, using this estimator means that we are unable to control for variables that do not change over time (in this case, level of education)<sup>xi</sup>. The model includes only the observations when women were employed, to avoid noise, following Fernández-Kranz et al. (2013). We also exclude from the analysis women who were self-employed throughout the period of observation, since they are not entitled to full and part-time leaves and do not contribute to the Social Security System for their real income<sup>xii</sup>.

We run three regressions for motherhood and child parity (Table 3). We first estimate a basic model (Model 1), controlling for number of children and experience in the labor market. In Model 2, we add other controls for work history and labor market characteristics at the individual and company level. Finally, in Model 3 we add the use of parental leave, considering part-time and full-time separately.

### *Variables*

Our dependent variable is a proxy for monthly wages. It measures the contribution base that the social security system registers for the access to social benefits. This contribution base does not exactly measure wages, because it is capped with an upper ceiling, but is expected to be proportional to real wages and has already been used in the literature on the Spanish case (Fernández-Kranz et al. 2013). The main shortcoming of this variable is that it does not provide a good estimate of the highest wages. However, comparing our data with the data on final wages available from the INE, we estimate that we lose less than 10 percent

of the women in the top decile of the wage distribution. We use the natural logarithm of this proxy as the dependent variable in our regression models.

Our main independent variables of interest are parity and the use of parental leave. For parity, as mentioned, we consider that women become mothers when a child is registered in their home in a given month. For the use of parental leave, our data allow us to identify the months in which women were on parental leave, although not on maternity or paternity leave. For parental leave, we also have information on whether the women were on full-time leave or part-time leave (i.e., just reducing their working hours). We compute a variable that calculates the number of months spent on full-time leave and a second variable that calculates the number of months spent on part-time leave.

The model includes controls for other variables that can explain the differences in wages among women: work experience (in months), the working time coefficient (from 0 to 100, where 100 indicates full-time work), type of contract (permanent, fixed-term or other), sector (public or private) and company size (fewer than 10, 11 to 49, 50 to 499 and over 500 employees). We also include a control for the time spent in unemployment or inactivity, as this may entail a loss of human capital and send a negative signal to employers. For all duration variables, we add a quadratic term. Finally, we include a variable for the time period to control for the effect of the economic crisis, with three different periods: 2005-2007 (pre-crisis), 2008-10 (crisis) and 2010-12 (recovery).

Table 1 presents the distribution of the sample. It shows that women with three or more children constitute a small group in the labor market. Most women work in the private sector (82 percent), have full-time positions (76 percent) and have permanent contracts (66 percent). The distribution does not differ significantly when we compare the women who do and do not have children during the observation period.



[Table 1]

## Results

Figure 1 presents women's employment rates 1 year before and after having their first, second or third child, using data from the MCVL. Mothers who are on parental leave are counted as employed. The figure shows that employment rates differ by parity and that women without children have higher employment rates than mothers 1 year before having a child, but that employment rates decrease for all women, with the decrease starting before pregnancy. It continues to decrease until the baby is approximately 6 months old, when many women go back to work after maternity leave. After that, employment rates stabilize. We interpret this gradual decrease as a consequence of the difficult articulation of work and family life in the Spanish case. The figure also shows that the decrease is more dramatic for the first and second child, but it is less pronounced for the third child. In the Spanish context of a lowest-low fertility (TFR at or below 1.3), women who are employed and have a third child are a selected group of the population. They may have a very stable position or a good support for childcare already in place and thus are less affected by the transition.

[Figure 1]

Table 2 presents the descriptive information on women's wages and their characteristics regarding work experience and time off from the labor market by parity status. The table includes women's average monthly wage, working time coefficient, months of work experience, months of unemployment or inactivity experience, months of unemployment (receiving unemployment benefits) and months of unpaid parental leave (full-time and part-time).

[Table 2]

The data show that childless women earn more than others, especially mothers of one child. The difference in earnings between childless women and mothers with two or more children is smaller. As expected, childless women are younger on average than mothers and consequently have less experience. Women with one or two children have more experience than childless women, which is consistent with their age, except for women who have three or more children. For these women – the smallest group in the sample – the amount of work experience is lower than for women with one child, despite their higher age. Part-time work is another important difference that is associated with motherhood: childless women work more hours than women with children, with slight increases by parity. Time spent out of employment follows a similar pattern. Time spent on full-time parental leave also does not differ much by parity. Women with two children spend more time on part-time parental leave.

Nevertheless, these differences may be explained by other characteristics of women and their jobs. To control for other intervening factors, we run fixed effects regression analyses. Table 3 presents the results of the model with parity as an independent variable. Model 1 only includes parity and experience in the labor market. Model 2 adds controls for job characteristics. Model 3 adds the time spent in part-time leave and in full-time leave. Given that our dependent variable is a proxy for wages, the results must be interpreted in terms of wage increases or decreases. A negative coefficient denotes lower wage growth and is interpreted as a penalty, whereas a positive coefficient indicates an increase in wages over the period.

[Table 3]

Table 3 presents the fixed effects estimates of the wage penalty for women according to the number of children. This type of model compares wages for women during the years in

which they are childless to the years in which they have one or more children. For instance, the estimate for a first child shows the decrease in women's wages that is associated with having one child compared to having no children. As previously discussed, all time invariant variables are eliminated due to the transformation of the data to deviations from their means. Thus, we do not compare one woman to another but each woman to herself, while all latent factors that do not change over time effectively drop out of the model. Accordingly, our results for Model 1 shows important penalties for mothers, which increase with parity, controlling for experience in the labor market. When we introduce controls for job characteristics, the negative coefficient for parity remains significant and increases consistently with the number of children, although its magnitude is significantly reduced. Finally, adding the controls for part-time and full-time leaves in Model 3 reduces a bit the coefficients for parity, and results for the time spent on leave show that both full-time and part-time leaves are negatively associated with wage increases. We find that full-time parental leave has a negative association with women's wages, although the quadratic term shows that its magnitude diminishes over time. Part-time parental leave in particular – despite being considered as a good work arrangement compared to part-time work – is also negatively associated with earnings, although the size of the coefficient is much smaller than for full-time parental leave, and diminishes over time according to the results for the quadratic term.

As far as the other controls are concerned, most are positively associated with earnings. Wage growth is higher for those working in larger companies, in the public sector and with permanent contracts. The experience of unemployment does not prove significant. Taking 2005-2007 as a reference, earnings are lower before and higher after that period, although we observe that the positive coefficients for 2011 and 2012 are smaller than the negative coefficients from 2005 to 2009. We interpret this as a consequence of the economic

crisis. Despite controlling for most of the factors commonly correlated with the motherhood penalty (as discussed in the Background section), our models explain part, but not all, of total motherhood penalties. The residual wage penalty for motherhood may be attributed to other factors, such as employers' discrimination against mothers (González et al. 2019), additional job characteristics and differences in job performance due to the demands of motherhood (Azmat and Ferrer 2017), which are difficult to account for with our dataset.

The results for leaves must be interpreted in terms of duration. Our cumulative variables measure the number of months spent on each type of leave, but full-time leave is shorter (80.5 percent of our observed leaves lasted less than 1 year) than part-time leave (half of our observed leaves lasted more than 2 years). In line with previous studies, the use of parental leave, particularly during long periods, is associated with significant earnings losses for working mothers even if they enjoy other advantages, such as job protection (Fernández-Kranz et al. 2013). Figure 2 presents the predicted values for parity and policy use using data from Model 3, and converting the coefficients into percentages to facilitate interpretation. One child is associated with a 4.3 percent decrease in the women's monthly wages, two children with a 9.6 percent decrease and three or more children with a 13 percent decrease, compared to the years when they did not have children. Taking 1 year of part-time leave per child adds to this penalty, reaching 7.3 percent for women with one child, 14.4 percent for mothers of two children and 18.7 percent for mothers of three children. In the case of full-time leave, the penalty is steeper. Taking 1 year per child is associated with penalties of 14.2 percent, 24 percent and 26.7 percent, respectively. It must be noted that we are measuring a short period (up to 7 years), thus there may be some catch-up effect later on that we do not observe.

[Figure 2]

## Conclusions

We analyze the motherhood penalty in Spain, comparing mothers and non-mothers, using longitudinal data from the MCVL dataset. We contribute to the literature by analyzing the effect of taking unpaid full-time and part-time parental leave on mothers' wages. Unpaid leaves are granted to parents for longer-term care of young children after an initial spell of paid maternity and paternity leave, and provide an important element of flexibility to facilitate the reconciliation of paid work and care in the early years of a career. This aspect of parental leave remains underexplored in the literature.

We find a negative association between parity and wages. Our results show that, in Spain, the motherhood penalty depends on parity: one child is associated with a 4.3 percent decrease in the women's monthly wages, two children with a 9.6 percent decrease and three or more children with a 13 percent decrease relative to the years in which they did not have children between 2005 and 2012, even after controlling for relevant intervening factors and for the use of parental leave. The penalties that we find are lower than those found by Davies and Pierre's (2005) analysis using ECHP data – between 6 percent and 8 percent per child –, and also lower than those found by Fernández-Kranz et al. (2013) and by Molina and Montuenga (2009). Taking parental leave penalizes mothers too. We find that both types of leave have a negative impact on women's wage growth during the period. Our models do not allow us to determine whether these penalties are due to human capital deterioration or to stigmatization; although we control for experience in the labor market, human capital includes other qualitative aspects that we cannot measure.

Parental leave helps women stay in the labor market, but this comes at a cost. As expected, we find that a given period of full-time parental leave entails a higher cost than the same period of part-time leave. However, the specific impact of each type of leave must be

interpreted with caution, because women take part-time leave for much longer periods than full-time leave. For the first year of full-time leave, employers are obliged to give mothers the same job they had before taking leave. After the first year, they are only obliged to give mothers a similar job. For this reason, few women take full-time leave for more than 1 year. However, employers are obliged to grant women part-time leave, which can be prolonged until the youngest child is 12 years old. Part-time leave may thus be longer than full-time leave, which may lead to a catch-up effect that would make the penalties of both types of leave similar in the long run.

The effect of taking leave may also depend on the specific characteristics of the labor market and women's jobs. Part-time parental leave is often considered a good part-time job or a 'retention job' (Tilly 1996), which women perceive as a temporary break. It allows them to go back to invest in their careers later on and provides them a temporary solution to care demands without requiring them to quit the labor market (Webber and Williams 2008). This may indeed be the case and the penalties may cancel out later in their career. However, our data only allow us to investigate a relatively short term. Webber and Williams (2008) also showed that in the US context, where women negotiate reductions in their working hours, mothers may feel grateful and develop strategies to compensate for their absence or feel the need to prove they 'deserve' part-time work (e.g., by working extra hours at home). This would mean that mothers might develop strategies to compensate for their reduction in working hours, which may in turn contribute to a reduction of the penalty in the long term. More research on the actual consequences of part-time parental leave for everyday job practices is required.

Although it protects mothers' employment, we find that taking either full or part-time parental leaves adds to the motherhood penalty in wages. In the Spanish case, we know that

women who take these leaves are highly selected, and in a good position in the labor market (Lapuerta 2012). This privileged position might mean that they are better able to negotiate with employers and also more able to catch-up on wages, but it could be the case that the motherhood penalty is higher for mothers with higher earnings, as suggested by Akgunduz and Plantenga (2013). Nevertheless, it is important to note that women with more insecure positions in the labor market suffer a different penalty, because they do not seem to have the same access to these protective policies and might chose to exit the labor market.

Our findings also have major policy implications. The maternity and paternity leave reform implemented in 2019 in Spain, inspired by the principles of equal, non-transferable, and fully funded rights for both parents, does not modify the long-term unpaid leave scheme. The positive effects that this reform might have on gender equality can be jeopardized by the negative impact of unpaid parental leaves on mother's wages. Furthermore, our results confirm that flexibility in the use of parental leaves, which is present in most high-income countries (Koslowski et al. 2020), has implications for the motherhood wage gap that need to be taken into consideration.

This study has some limitations. The MCVL dataset that we use has the advantages of both a large sample and longitudinal information. However, it does not include detailed variables on paid work, such as those related to specific tasks, trainings, or other flexibility measures at the workplace, which have been shown to play a role in qualitative studies (Glass and Fodor 2017). We also cannot control for partner characteristics (which may influence mothers' decisions concerning childcare and paid work). Further research is needed to determine the importance of these factors.

In this paper, we cannot analyze the mechanisms associated with the penalties, human capital deterioration or signaling low commitment and discrimination. We also cannot follow

women who left the labor market before or after becoming mothers, unless they returned during the observation period. Some of these women may have left the labor market because they did not have access to leave or flexibility in their jobs. This is important because it constitutes a different dimension of the motherhood penalty, especially in a segmented labor market such as that of Spain (Fernández-Kranz et al. 2013).

Finally, for our analysis of the motherhood penalty, we rely on one of its definitions: wage inequalities among women. However, the motherhood penalty can also be understood in terms of differences between mothers and fathers. For instance, we show that part-time parental leave penalizes women less than full-time leave. Comparing mothers and fathers and the impact that full and part-time leaves have on both groups is necessary to gain a comprehensive understanding of the effects of parenthood and policies.



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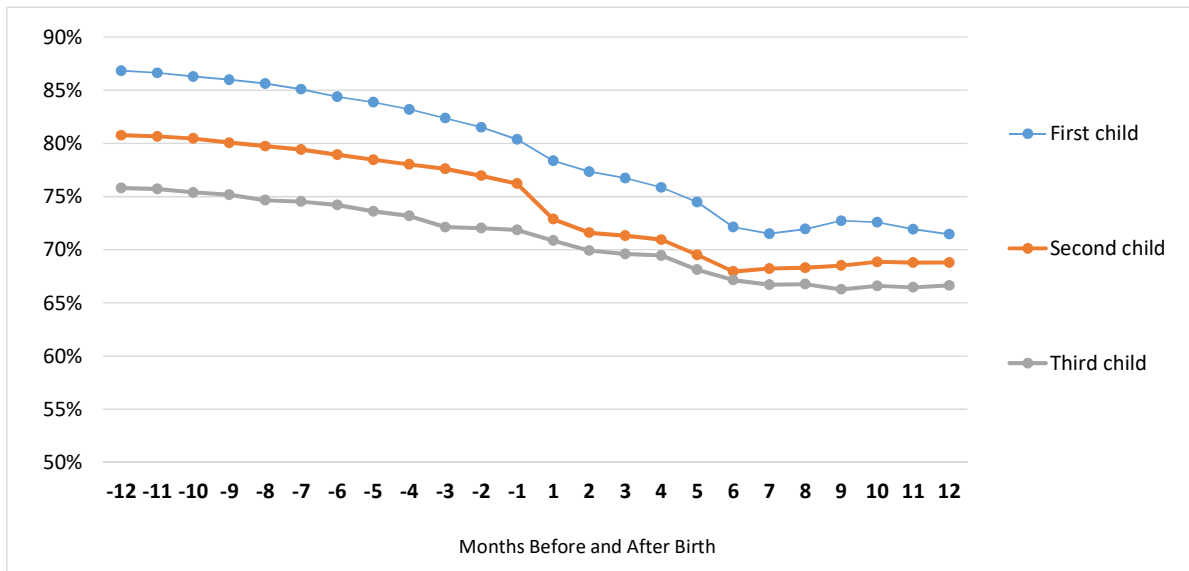
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## Tables and figures

Figure 1. Employment rates for women 12 months before and after birth for their first, second and third child (2005–2012)



Note: 1 indicates birth (i.e., the first month of the child's life).

Source: 2006 wave of the Continuous Sample of Working Histories.



Table 1. Descriptive statistics (percentages): Monthly observations

	<i>All observations</i> <i>n = 16,148,601</i>	<i>Ever- mothers</i> <i>n = 10,668,961</i>
<b>Women-month without children</b>	44.4 %	- -
1 child	28.2 %	50.6 %
2 children	22.4 %	40.17 %
3 children or more	5.1 %	9.22 %
<b>Women-month with children</b>		
1 child under the age of 3	4.8 %	7.3 %
1 child over 3	23.3 %	35.3 %
2 children, 1 under 3	5.0 %	7.6 %
2 children, both over 3	17.3 %	26.2 %
3 or more children, 1 under 3	1.4 %	2.1 %
3 or more children, all over 3	3.7 %	5.6 %
<b>Less than primary education</b>	9.7 %	10.8 %
Lower secondary education	33.4 %	35.4 %
Upper secondary education	34.0 %	32.4 %
Post-secondary education	22.2 %	20.8 %
Missing	0.7 %	0.7 %
<b>Relationship with the labour market</b>		
Inactive or unemployed	17.7 %	17.4 %
Unemployed receiving benefits	9.0 %	9.9 %
Self-employed	8.4 %	9.0 %
Full-time parental leave	0.5 %	0.6 %
Part-time parental leave	1.6 %	2.5 %
Full-time employee	48.6 %	45.6 %
Part-time employee	14.3 %	15.0 %
<b>Firm size</b>		
< 11 employees	19.5 %	19.3 %
11 to 49 employees	16.3 %	16.1 %
50 to 499 employees	24.2 %	24.1 %
> 499 employees	18.4 %	18.5 %
Missing	21.6 %	22.1 %
<b>Job contracts</b>		
Permanent	66.5 %	66.8 %
Fixed term	23.4 %	22.2 %
Other types	10.1 %	11.0 %
<b>Sector</b>		
Private	82.5 %	82.4 %
Public	17.6 %	17.7 %
<b>Working time</b>		
Full-time	75.6 %	73.8 %
Part-time	22.2 %	23.9 %
Other	2.2 %	2.4 %

Note: The shaded lines correspond to populations not included in the regression analyses (5,663,140 women-month observations). Ever-mothers are women who had a child in 2005 or at some point thereafter.

Table 2. Means and standard deviations for continuous variables of employed women by number of children (MCVL, 2005–2012)

	<b><i>Childless</i></b>		<b><i>One child</i></b>		<b><i>Two children</i></b>		<b><i>Three or more children</i></b>	
	<i>n = 4,530,724</i>		<i>n = 2,594,463</i>		<i>n = 2,017,976</i>		<i>n = 396,454</i>	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Wage (monthly contribution base)	1,542€	789.7	1,444€	788.0	1,532€	863.2	1,534€	928.8
Age	33.8	4.8	36.5	4.6	38.4	4.2	38.8	4.1
Working time coefficient % (current job)	92.9	17.9	88.5	20.7	87.4	21.6	87.9	21.8
Months of work experience	105.0	58.9	130.3	63.7	147.1	67.9	126.5	71.5
CNM without paid work (unemployment/inactive)	4.4	9.0	5.6	11.2	6.2	12.8	7.7	14.0
CNM full-time parental leave	0.0	0.8	0.3	1.8	0.5	2.6	0.4	2.7
CNM part-time parental leave	0.0	0.0	1.4	6.5	2.1	9.2	1.6	7.8

Table 3. Results from fixed-effects models predicting the motherhood wage penalty (Ln of monthly contribution base) by number of children (Spain, 2005–2012)

	Model 1		Model 2		Model 3	
<b>Number of children</b>						
Childless	--	--	--	--	--	--
1 child	-0.111***	(0.0016)	-0.052***	(0.0016)	-0.044***	(0.0016)
2 children	-0.210***	(0.0024)	-0.118***	(0.0024)	-0.101***	(0.0024)
3 children or more	-0.270***	(0.0047)	-0.160***	(0.0046)	-0.138***	(0.0047)
CNM experience	0.009***	(0.0000)	0.007***	(0.0000)	0.007***	(0.0000)
CNM experience <sup>2</sup>	-0.0001***	(0.0000)	-0.0001***	(0.0000)	-0.0001***	(0.0000)
<b>Employment characteristics</b>						
% working hours			0.009***	(0.0001)	0.009***	(0.0000)
<b>Period</b>						
2005 to 2007			--	--	--	--
2008 to 2010			0.070***	(0.0013)	0.070***	(0.0013)
2011 to 2012			0.016***	(0.0022)	0.016***	(0.0022)
CNM unemployment			-0.0001	(0.0001)	-0.00005	(0.0001)
CNM unemployment <sup>2</sup>			0.00003***	(0.0000)	0.00003***	(0.0000)
<b>Firm size</b>						
< 10 employees			--	--	--	--
11 to 49 employees			0.052***	(0.0020)	0.052***	(0.0020)
50 to 499 employees			0.088***	(0.0019)	0.089***	(0.0020)
> 500			0.111***	(0.0023)	0.111***	(0.0023)
Missing			0.010***	(0.0017)	0.011***	(0.0018)
<b>Job contracts</b>						
Permanent			--	--	--	--
Fixed term			-0.339***	(0.0014)	-0.339***	(0.0014)
Other types			-0.133***	(0.0025)	-0.131***	(0.0025)
<b>Sector</b>						
Private			--	--	--	--
Public			0.294***	(0.0027)	0.294***	(0.0027)
<b>Leave taking</b>						

CNM part-time leave					-0.003***	(0.0002)
CNM part-time leave <sup>2</sup>					0.00003***	(0.0000)
CNM full-time leave					-0.012***	(0.0027)
CNM full-time leave <sup>2</sup>					0.0002***	(0.0005)
Constant	5.92***	(0.0020)	5.17***	(0.0045)	5.18***	(0.0045)
Observations	9,539,617		9,539,617		9,539,617	
rho	0.765		0.764		0.764	
sigma_u	1.719		1.794		1.694	

Standard errors are in parentheses.

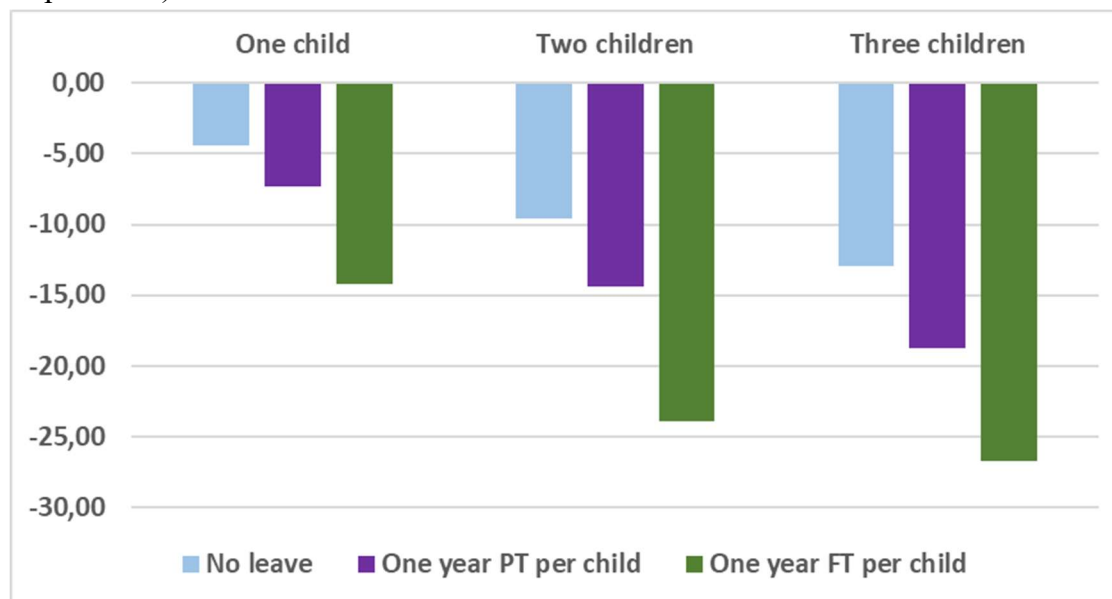
-- Reference category.

“CNM” stands for “cumulated number of months”

Source: MCVL, 2005-2012.

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

Figure 2. Wage penalty by number of children and use of parental leave (1 year per child, full or part-time)



Note: The results above are from the fixed-effects linear regressions on the (log) monthly wages (income contribution base) for women aged twenty-five to forty in the labour force from 2005 to 2012. The effects are calculated using Model 3 in Table 3, with all variables at the mean, and transforming the coefficients into percentages (using the formula:  $(e^{\beta} - 1) * 100$ . ‘FT’ stands for ‘full-time’ and ‘PT’ stands for ‘part-time’.

<sup>i</sup> It is important to note here that parental leave and maternity leave are two different schemes. Maternity leave aims at protecting mothers’ health around the perinatal period. Parental leave aims at facilitating longer-term care of young children, and both parents are eligible for such leave.

<sup>ii</sup> Research has also shown that the motherhood pay gap may also differ by socioeconomic background (Budig and Hodges 2010; Fitzemberg et al. 2013; Killewald and Bearack 2014), on mothers’ race/ethnicity (Glauber 2007), and on type of partnership (Nix and Andersen 2019).

<sup>iii</sup> EUROSTAT statistics, accessed March, 2021, <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/EDN-20200306-1>

<sup>iv</sup> This leave is often referred to as “breastfeeding leave” although it does not only apply to breastfeeding mothers.

<sup>v</sup> Similar leaves of absence exist for other life circumstances, such as caring for a relative or for personal reasons. All of them are unpaid.

<sup>vi</sup> The time credited with social security contributions has changed through the period covered in this research for full-time parental leave (2005-2012). It was increased from 1 to 2 years in 2007 and to 3 in 2011. There has been no modification in the contribution period for part-time parental leave since this benefit was introduced in 1994. However, the child’s maximum age to take up the latter leave have raised from 6 to 8 in 2007 and to 12 in 2012.

<sup>vii</sup> Full time equivalent paid weeks of leave (FTE) is the indicator that Ray et al (2010) use to assess the generosity of parental leave policies. FTE paid leave is calculated as the wage replacement rate multiplied by the duration of leave.

<sup>viii</sup> Authors’ own estimates for the period 2005-2012 based on Muestra Continua de Vidas Laborales (MCVL).

<sup>ix</sup> We exclude households with more than three adults, as we are unable to establish kinship in such cases.

<sup>x</sup> Census data for 2011 show that only 5 percent of Spanish couples were step-families, so we do not expect more than 3 percent of the women we observe to be in this situation. Given the sample size, this should not significantly bias the results.

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<sup>xi</sup> Level of education can of course change throughout the life cycle. However, in our data set, this variable is taken from the municipal registry. Residents in Spain must update the registry when information changes, but most people only make modifications when they move, in which case it is necessary to do so for practical reasons. As a result, this variable underestimates educational levels systematically. For our age group, it hardly changes.

<sup>xii</sup> The Spanish Social Security System includes a special regime for the self-employed with less coverage and protection than for employees. Self-employed can choose their contribution base according to the benefits they wish to obtain. Therefore, our dependent variable does not reflect their real wages.