

# At what cost can women have it all?

## Impact of an increase in the cost of outsourcing household work on female labour supply

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August 20, 2022



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*The views stated in this thesis are those of the author and not necessarily those of the supervisor, second assessor, Erasmus School of Economics or Erasmus University Rotterdam.*

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### Abstract:

Female labour supply experienced a significant increase during the first decade of the 2000s, but gender roles remained strong as women spent twice the time spent by men in household work and informal care work. Previous literature has predicted that a decrease in the cost of outsourcing household work will have a positive effect on female labour supply. Mothers of young children and women living with elderly parents will experience an increase in the extensive and intensive margin. However, it is not clear if this effect will be symmetric in case of an increase in the cost. This paper analyses the effect of a policy reform for domestic workers passed by the Spanish government in 2011. This reform included these workers in the minimum wage regime and imposed the obligation of paying the Social Security obligations to the employers. As a result, the cost of outsourcing household work increased. This paper finds that the policy had a positive effect on the labour supply of mothers, both on the extensive and the intensive margin. An heterogeneity analysis reveals that mothers with tertiary education were more affected. It also reveals that the level of female immigration and of unemployment in the region influenced the magnitude of the effect of the policy reform. Moreover, this paper finds that the effect was larger for the mothers that were more attached to the labour market. It appears that an increase in the cost of outsourcing household work in a context of economic crisis had a positive effect on female labour supply, as they worked more to afford the higher cost. Still women substituted other women in household work and informal care work.

**Key words:** *female labour supply, domestic workers, household work, mothers, immigration, economic crisis*

# Contents

<b>1</b>	<b>Introduction</b>	<b>1</b>
<b>2</b>	<b>Household Work and Female Labour Supply</b>	<b>5</b>
<b>3</b>	<b>Context of the Domestic Workers Policy Reform</b>	<b>9</b>
3.1	The domestic workers policy reform . . . . .	11
3.2	Demand for household services . . . . .	12
<b>4</b>	<b>Data and Methodology</b>	<b>16</b>
4.1	Data and Descriptive Statistics . . . . .	16
4.2	Empirical Strategy . . . . .	17
<b>5</b>	<b>Results</b>	<b>21</b>
5.1	Evidence from Cross-Sectional Variation . . . . .	21
5.2	Heterogeneity Analysis . . . . .	24
5.3	Change in sexual division of household work . . . . .	30
<b>6</b>	<b>Robustness Checks</b>	<b>32</b>
<b>7</b>	<b>Concluding remarks</b>	<b>34</b>
	<b>References</b>	<b>36</b>
<b>A</b>	<b>Appendix - Tables and Figures</b>	<b>40</b>
<b>B</b>	<b>Appendix - Data Sources</b>	<b>53</b>

# 1 Introduction

At what cost can women have it all? In the early 2000s, women in Spain significantly increased their labor force participation and employment rate. The labour force participation rate for women increased from 52.9% in 2000 to 64.5% in 2008. Similarly, the employment rate for women also raised significantly, it went from 42% in 2000 to 56.2% in 2008. During the economic crisis, the female labour force participation rate continued to increase and it reached 67.1% in 2010. However, employment rates for women decreased slightly to 53.5% while unemployment increased to 20.3% in 2010 according to data from the OECD. At the same time, strong gender roles were still present since women still dedicated almost double the time to household work than men, according to the Spanish Time Use Survey from 2009. On average, women spent 4h daily on household and informal care work compared to 2h spent by men, conditional on doing these activities. Still, 30% of the Spanish households were hiring domestic services in 2010.

Traditionally, economists have implied a negative relationship between income and economic power and the time spent in household production. Empirical research has used relative earnings in the intra-household bargaining model (Becker, 1991; Hersch and Stratton, 1994; Stancaelli and Stratton, 2014) and the collective model (Browning and Chiappori, 1998; Cherchye, De Rock, and Vermeulen, 2012) to explain how couples decide to allocate time to household work. However, new strands of literature have pointed to the fact that current income is a function of past investments which are related to expectations of future division of household production (Foster and Stratton, 2018). Social norms, gender identity and stereotypes upon abilities are relevant in explaining the results as well. Furthermore, gender relations are the product of race-ethnicity and class, as well as gendered negotiation and conflict (Glenn, 1992).

The presence of private and informal arrangements to outsource household work have been identified as factors that reduce the trade-off faced by women between family responsibilities and market work (Goldin, 2021; Doepke, Hannusch, Kindermann, and Tertilt, 2022). Spain is an interesting case: it is characterized by high-levels of informality in the domestic sector; in 2010, more than 60% of the workers in the sector were working in the shadow economy (Gorfinkiel and López, 2016). In 2010, only 25% of Spanish households hiring domestic workers admitted to have declared the workers and paid their Social Security contributions. Therefore, for people without a residence or work permit it was easy to find a job in this sector. In fact, migrant females represented almost 60% of the domestic workers (De Villota, Herrero, and Cupeiro, 2011). Since

the regulation of this work was limited before 2011, outsourcing household work was relatively cheap and easy for Spanish households. Actually, recent literature has concluded that a decrease in the cost of hiring domestic workers increases demand of household work and female labour supply on the extensive and intensive margin (Barone and Mocetti, 2011; Cortes and Tessada, 2011; Dinkelman and Ranchhod, 2012; Cortes and Pan, 2013; Peri, Romiti, and Rossi, 2015; Cortés and Pan, 2019). However, little has been said of the effect of an increase in the cost of outsourcing household work for women who are already in the labour force. Does labour supply also decrease with an increase in the cost? Is the effect of a change in the cost of outsourcing household work on female labour supply symmetric?

To investigate this, I analyse the impact of a regulation passed in 2011 in Spain that extended the minimum wage regime to domestic workers and established for the employer the obligation to pay Social Security contributions regardless of the hours established in the contract, thus raising the cost of hiring domestic workers. This is a unique case in Europe, since it is a direct increase of the cost of outsourcing household work. After the new regulation was passed, the number of workers registered in the Social Security almost doubled and the number of households paying these contributions increased significantly. Data from the Employment and Social Security Ministry seems to indicate that this regulation was successful in reducing the size of the shadow economy and decreasing the number of undeclared workers. On the other hand, migrants without a residence or work permit were excluded from this new regulation. Therefore, households could still access cheaper domestic services in regions where the number of migrants was high. However, the risk of hiring these workers increased as the fines became higher. At the same time, Spain was going through one of the biggest economic downturns of their recent history. Employment rate for women went from 53.5% in 2010 to 51% in 2013 while unemployment rate for women increased from 20.3% in 2010 to 26.8% in 2013, according to data from the OECD. However, female labour force participation rate continued to increase from 67.1% in 2010 to 69.7% in 2013. Given this context, I wish to evaluate the causal effect of the increase in the cost of outsourcing household work on the female labour supply.

I focus my study on the impact of the regulation on the labour supply mothers of young children and women living with elderly parents. These are the groups that previous literature has identified to be more impacted by changes in the cost of outsourcing household work. Besides, I use data from the Household Budget Survey to identify the characteristics of the households hiring

domestic services and recognize these groups as being more likely to outsource household work. Moreover, from this data I can observe that the policy did impact the budget of households, increasing the costs of hiring domestic services. Thus, I use data from the Spanish Labour Force Survey to analyse the effect on the labour supply. I use a Diff-in-Diff specification to try to isolate the causal effect of the policy on the female labour supply. My main outcomes of interest are the probability of being in the labour force, being employed, the number of hours each individual is employed and the number of hours they effectively worked. I introduce covariates that control for the individual's characteristics, the household's characteristics and the economic crisis. I use region and time fixed effects to control for common shocks to observations in the same region at the same time.

My estimates show that mothers of young children increased their labour supply both on the extensive and the intensive margin after the policy reform. Mothers of teenagers increased their probability of being in the labour force and the number of hours employed but the effect is smaller. Consistent with previous literature, the positive effect was larger for mothers with tertiary education compared to mothers with secondary or basic education. Moreover, previous literature has identified the share of female migrants as a relevant channel through which changes in the cost of outsourcing household work impact the female labour supply. I consider the different levels of share of female migrants over total population across regions and find that mothers living in regions with a larger share were more affected, specially on the intensive margin, than those living in regions with smaller shares. Besides, the characteristics of these migrants are also relevant. The higher the share of female migrants with basic education and the higher the share of Latina migrants, the stronger the positive effect on mothers' labour supply.

My findings generally point to the characteristics of the labour market also determining the effect of the policy reform on the mothers' labour supply. Mothers living in regions with higher levels of female unemployment increased their labour supply on the extensive margin more. Considering a "family insurance model" and the "added worker effect" model, I also consider the different levels of male unemployment across regions. Again, the policy reform had a larger positive effect on the labour supply of mothers of young children than women without children. Lastly, I consider the supposition that once mothers enter the labour force, they get attached and the opportunity cost of exiting increases for them. Thus, I consider the tenure and type of contract of the mothers who were employed during our period of study and analyse the effect of the policy

on the intensive margin. My results show that the policy reform had a positive effect on the intensive margin of mothers' labour supply, especially on those who had an indefinite contract and more years of tenure.

Lastly, I consider if my results can be explained by a change in the sexual division of household work. During the Great Recession, the male unemployment rate increased from 10.1% in 2008 to 25.7% in 2013. In the absence of gender roles, if men become unemployed and women increase their labour supply, most of household work would fall on men in heterosexual couples. Therefore, I use data from two Time Use Surveys (one from 2009 and another from 2013) to describe the adjustment of family dynamics to the new regulation. It seems that both men and women increased their time spent in household work and informal care work after the policy reform. However, the 2013 survey only provides information for one region: the Basque Country. Besides, the two surveys contain different information since the methodology differs. Therefore, the results on time use are difficult to interpret and do not provide robust conclusions on how the policy reform affected parents' household work division dynamics.

In a nutshell, it seems that still high-skilled women hired other women to substitute them in the household work and informal care work, even in an scenario of high male unemployment. The results of my study hint to the care economy being still mainly sustained by women.

This study is divided as it follows: Section 2 introduces the main results of previous literature on the topic, Section 3 presents the context of the policy, Section 4 presents the data and methodology I use, Section 5 displays the results, Section 6 tests the robustness of the results and Section 7 presents the main conclusions of the study. Appendix A contains all tables and figures and Appendix B contains a description of all the datasets used in this study.

## 2 Household Work and Female Labour Supply

Economists have long been interested in how couples allocate time between household work and the labour market (Becker, 1991; Cherchye et al., 2012; Stancanelli and Stratton, 2014). Due to persistent sexual division of household and informal care work, women still dedicate more time to these activities than men. Traditional economic models predict that women face a trade-off between the productivity of the time spent at home and the wage perceived in the labour market. Several papers have pointed out that **welfare regimes and work-family balance policies** will impact the different housework time allocation of couples across countries (Bianchi, Sayer, Milkie, and Robinson, 2012; Ponthieux and Meurs, 2015). In fact, demand for household services increases with the growth of the services economy and thus, the increased accessibility and affordability of these services. Recent literature (Goldin, 2021; Doepke et al., 2022) has pointed at the change in fertility decisions of couples in OECD countries and the relevance of family policies in determining the work-family balance not only for men but also for women. Therefore, when household services, including childcare, become more available and cheaper, women with higher opportunity cost will outsource these services. These women will then be able to increase their labour supply. Thus, in the household production process, **the woman’s own time and the domestic workers’ are substitutes** (Suen, 1994). **Gender power relations and gender role attitudes** are relevant to explain how couples decide to allocate housework time as well. Some evidence shows that women with higher earnings than their male partner will spend more time in household production to compensate for the deviance from traditional gender roles. Economists and sociologists have called this phenomenon “doing gender” (West and Zimmerman, 1987; Brines, 1994; Bittman, England, Sayer, Folbre, and Matheson, 2003; Foster and Stratton, 2018).

In line with these results, in 2004 the Belgian government decided to subsidize domestic services. One of the goals of the policy was to help working families achieve a better work-life balance (Manoudi, Weber, Scott, and Hawley Woodall, 2018). Leduc and Tojerow (2020) use micro-level administrative data and a difference-in-differences estimation to find that, one year after the implementation of the policy, domestic workers were more likely to be formally employed in the short and long-term. This resulted in an increase in employment in the subsidized market once its cost decreased, reducing the number of undeclared jobs. Brück et al. (2006) find similar results in Germany as subsidies for domestic services created a significant number of

jobs in the formal market for household services. Moreover, using an ordered Probit model they find that the demand for household services in the informal market is very income elastic. They suggest that the introduction of wage subsidies for domestic services demand and stronger law enforcement to end with undeclared jobs would significantly increase the labour supply of qualified mothers.

An extensive literature has focused on the impact of immigration on the labour outcomes of natives of the host country. Although most of the initial studies have focused on the impact on workers with the same skills (Card, 2001; Amuedo-Dorantes and De La Rica, 2011; Borjas, 2013; Dustmann, Schönberg, and Stuhler, 2017; Chassamboulli and Peri, 2018), lately economists have focused on the **impact of low-skilled immigration on the labour force participation of female natives** (Suen, 1994; Barone and Mocetti, 2011; Cortes and Tessada, 2011; Farré, González, and Ortega, 2011; Cortes and Pan, 2013; Tan and Gibson, 2013; Peri et al., 2015; Romiti, 2018; Cortés and Pan, 2019).

Cortes and Tessada (2011) give important insights on this phenomenon for the US during the immigration wave of the 1980s and 1990s. Using previous immigrant settlements across US states as a shift-share instrumental variable, they find a large positive and statistically significant effect of low-skilled immigration in the probability of native high-skilled women of working long hours and increasing their working hours. In fact, they find that low-skilled immigration increased the probability of women of outsourcing household production and childcare and reduced the time these women dedicated to household chores. Additionally, they suggest that differences in preferences may not be as relevant as previous literature stated in explaining the reason why high-skilled women are not as involved in the labour market as their male counterparts. However, due to data limitations, they cannot observe directly the change in household services prices, only the change in the amount spent in consuming these services, which increased during the period of study. Cortes and Pan (2013) also exploit a policy change in the late 1970s that facilitated a large importation of foreign domestic workers into Hong Kong and its consequent reduction of childcare prices. Using a triple-difference estimation at the macro level and a Probit model with the households' number of rooms as an instrumental variable at the micro level, they find that a reduction in the relative wage of foreign domestic workers increased female participation in the labour force, specially for mothers with young children and medium and high-level skills. Besides, Cortes and Pan (2019) also use a shift-share instrument and triple difference strategy to



show that an increase in the availability of cheaper household services not only increased female labour supply but also reduced the gender pay gap in the US in the period between the 1980s and 2010.

Barone and Mocetti (2011) find similar results for Italy, where the immigration wave of the early 2000s was characterized by a large share of low-skilled immigrants. Using previous immigrant settlements as a shift-share instrument they also find a positive and significant relationship between higher concentration of immigrants who provide household services and the hours worked by native women. They also find a statistical negative impact on the household services costs, captured by the log of wage of domestic workers in the Labour Force Survey. Not only childcare impacts women's labour force participation decisions, but also informal care work for elderly relatives. Using a double-difference strategy combined with individual fixed effects and a shift-share instrumental variable, Peri et al. (2015) find that high immigrant concentration in a region in Italy in the early 2000s had a positive impact on the women-men differential in planned retirement, increasing the probability of women of working over age 60. They do not, however, calculate the impact of immigration on the costs of outsourcing elderly dependents care.

Farré et al. (2011) look into the impact of immigration waves in the early 2000s in Spain on the labour market decisions of women with young children and/or elderly parents. They also use a shift-share instrument and find similar results as the ones presented before. They report a negative effect of female immigration in a region on wages in the domestic services sector. This led to an increase in the labour supply of high-skilled women. The positive results on the extensive margin are more relevant than on the intensive margin, which are rather small and hardly statistically significant.

However, previous literature on the impact of an **increase in the cost of outsourcing household production** is scarce. East and Velásquez (2022) look at the effect of a more restrictive immigration policy on the labour supply of highly educated native women in the US between 2008 and 2013. Using a difference-in-differences model, they find that a policy that increased the likelihood of being deported and thus decreased the labour supply of undocumented immigrants resulted in a significant reduction in the labour supply of college-educated native mothers of young children. They provide evidence that an increase in the price of outsourcing domestic services had a negative impact on female labour supply. Monras et al. (2019) suggest a similar result for the regularization of immigrants in Spain in 2004. They find that one of the consequences of

the legalization was a reduction in the number of high-skilled women employed. They interpret that the policy increased the costs of outsourcing domestic services as female immigrants gained bargaining power. They argue that due to the unequal distribution of household production between men and women, this increase in costs was expected to push high-skilled women out of the labour market. However, Stancanelli and Stratton (2014) find that an increase in the cost of hiring domestic services had a small impact on labour supply of heterosexual couples in the UK and France in the early 2000s. Using a Probit model and data from time use surveys, they find that hiring a maid was a closer substitute to weekend time and leisure rather than weekday time.

### 3 Context of the Domestic Workers Policy Reform

Until 2011, domestic services labour relationships were regulated by the Civil Code as a services contract. The legal framework for domestic services dated almost back to the dictatorship regime as it was passed in 1985. Domestic workers were not subject to the minimum wage regime and 45% of the salary could be paid in the form of food allowance or accommodation but it was not adhered to a minimum monetary salary. Workers only needed to be enrolled to the Social Security (SS) if they were employed by a household more than 72h per month and the contributions were not proportional to the salary. Even when enrolled to the Social Security, they were not insured in case of early retirement or unemployment and the insurance for job-related sickness was limited. Therefore, neither the employer nor the worker had incentives to register and pay SS contributions.

During the late 1990s and early 2000s, Spain experienced an important demographic change and significant immigration flows. According to the Spanish National Institute of Statistics (*INE* in Spanish), participation in the labour force increased from 58% in 1998 to 73% in 2008 for women between 25 and 54 years old. Besides, the employment rate increased from 45% in 1998 to 66.54% in 2008 for women between 25 and 54 years old. Compared to other EU countries, the labour force participation of older cohorts, especially female cohorts, was quite low. On the other hand, in 1998, immigrants represented 1.6% of the total population; in 2008, before the economic crisis started, they already represented 11.4% of the total population. Even though more women entered the labour force and became employed, gender norms in the division of household work remained quite the same. According to the 2003 Time Use Survey in Spain, more than 92% of women did household and care work compared to 70% of the men. Besides, women dedicated on average of 4:45h a day to these activities compared to 2h dedicated by men.

At the same time, the number of people employed in the domestic services sector was experiencing a growing trend according to the Spanish Labour Force Survey. Between 1998 and 2008, employment in this sector increased by 114% (de Relaciones Laborales, 2009). Until 2008, domestic workers represented 3,7% of total workers and 7,9% of female workers. The large female immigration inflows significantly contributed to the growth of people employed in this sector (De Villota et al., 2011). Due to the sexual division of work and the demographic changes, native women found in migrant females substitutes for the household work and care activities. Migrant women could then find a job in the informal market or even the formal market and

therefore start the process into gaining citizenship (Zlotnik, 1995; de UGT, 2017). In 2003, 37.6% of the domestic workers were female migrants, while the share increased to 57.6% in 2008 according to data from the Employment and Social Security Ministry. However, it is difficult to estimate the exact numbers of households hiring these services and the number of domestic workers due to the high informality of the sector (De Villota et al., 2011). In fact, it is estimated that around 60% of the workers remained in the shadow economy in 2010 (Gorfinkiel and López, 2016).

After 2008, the number of households that hired these services slightly decreased, but the numbers recovered in 2010. In fact, during the first years of the economic crisis, the domestic services sector exhibited an anti-cyclical behavior (De Villota et al., 2011; Castedo and Lara, 2010). The demand for these services increased as austerity measures were implemented, and social services became less available. Moreover, during the first years of the economic crisis, men were disproportionately hit by unemployment. According to a family insurance theory of labour force participation and the added worker effect, women would have had more incentives to stay in the labour market to try to maintain the household's income (Doepke and Tertilt, 2016). In fact, the patterns observed in labour force participation during the Great Recession by gender and age support the "added worker effect" theory (Sanz-de Galdeano and Terskaya, 2020). As the economic crisis hit Spain, females postponed their retirement decisions, thus remaining in the labour market and increasing their opportunity cost of taking care of elderly family members (Sanz-de Galdeano and Terskaya, 2020). The largest increase was in the participation rate of women aged 55 or older according to the Spanish Labour Force Survey. In 2007, a new law (*Ley 39/2006*) was passed that regulated the work of certified professionals working as caretakers of dependent individuals. New jobs were created and more people were enrolled in the Social Security regime according to the Employment and Social Security Ministry. More importantly, as the economic crisis started and the budget for social services was reduced, the number of people enrolled under this regime continued increasing even when total enrollments in the Social Security regime were decreasing. However, data shows that still almost 50% of the care work was provided informally by family members in 2011, according to data published by the Spanish Institute of Elderly Population and Social Services (*IMSEERSO* in Spanish).

### 3.1 The domestic workers policy reform

For years, workers of the domestic services sector, associations of migrants, feminist activists and even international organizations like the ILO pressured the Spanish government to improve the working conditions. As a result, in 2011 the legal framework was reformed to adapt it to the ILO Convention ratified in June 2011. In July, the government passed a new law regulating domestic services, the Real Decreto 1620/2011. It introduced important changes as it compared domestic work to market work. The scope of the new law covered work arrangements between an individual and a member of a household to perform household production and childcare activities for a previously fixed wage and that are not performed by certified professionals. The new regulation compared domestic workers to other workers in most of the rights and obligations. First, domestic workers were included in the minimum wage regime and the salary in kind was limited to 30%, with the minimum monetary payment being the minimum wage. Second, it introduced the obligation of employers to enroll all domestic workers in the Social Security regime and pay the contributions, regardless of the monthly hours of work. In the later reform of 2012, this obligation would be shifted to domestic workers themselves in the scenario where the work relationship with a single employer consisted of less than 60 hours per month. This change was passed to answer claims from individual employers, specially retired adults, who found it difficult to deal with all the paperwork. Third, insurance requirements and social protection were matched to other workers. However, unemployment protection was only matched to the general worker regime in June 2022. The new law was passed in 1st of July of 2011, but was only enforceable from 1st of January of 2012 as the government gave households a 6-months grace period to declare all domestic workers. After this date, households hiring domestic services and not complying with the law would face an administrative fine that could range from 6,251€ to 187,515€ depending on the gravity of the infraction, according to the article 40 in the *Ley de Infracciones y Sanciones en el Orden Social*.

As a result, the number of domestic workers registered at the Social Security regime almost doubled. In 2010, 292,279 individuals were registered as domestic workers at the SS regime. The number of workers increased in almost 4,000 more people in 2011. But in 2012, the number increased significantly reaching 414,453 domestic workers registered according to data from the Employment and Social Security Ministry. This represents almost a 42% increase. 95% of the registered domestic workers were women in 2012. The number of native women working

as domestic workers increased by 67% while the number of migrant women increased by only 29%.

However, these advancements did not benefit all workers. Those migrant workers who were undocumented found themselves in an even more vulnerable position. Due to the lack of a residence or work permit, they could not be formally employed and therefore, households were facing a higher risk of being fined when hiring them (Gorfinkiel and López, 2016). Although data from the Employment and Social Security Ministry shows that the number of declared workers grew faster than the reduction in total employed for migrant workers, the number of declared workers increased less than for native individuals. This hints to a large share of migrant workers remaining in the shadow economy. Thus, in regions where the share of undocumented female migrants was high, women would face a trade-off between outsourcing household work at a lower price (since they do not need to comply with the new regulation) and facing a higher administrative fine (for employing someone who is undocumented and not complying with the new law). Later on, I will analyse how this could influence the impact of the policy reform on female labour supply.

In a nutshell, it seems that women with family responsibilities like taking care of children or dependent adults were more likely to be outsourcing household work and therefore, be affected by the policy change. The increased protection offered to domestic workers could have translated in these workers bargaining with households to be registered at the Social Security regime and matching their salary to the minimum wage. Therefore, women living in regions where the law enforcement was stronger would also be more likely to be impacted by the policy change. Moreover, it seems that the share of female immigrants and the specific characteristics of the labour market of the region are relevant when determining the decision to outsource household work and supply labour.

### **3.2 Demand for household services**

I use the Households Budget Survey (*Encuesta de Presupuestos Familiares* in Spanish) to analyze the impact of the reform on the decision of the households to outsource household production and childcare. This is Spanish cross-sectional data at the micro-level on household expenditure. I observe that, as a result of the new policy, households' expenditures on Social Security contributions for domestic workers increased significantly. Compared to 2011, the average annual expenditure of a household in 2012 increased by 80% and the number of households paying these

contributions increased by 30% (Table A.1). I clearly see an increase in the cost of hiring domestic workers. However, the total average annual expenditure on domestic services decreased, as the number of households using these services decreased by 16% (Table A.2) and their expenditure was reduced by 18%. All in all, the share of domestic services expenditure out of the total household expenditures decreased, representing more than 1% of the budget of the average household in 2012.

I run a Probit specification on the probability of hiring domestic workers to identify the individuals that are more likely to be affected by the policy change. The findings show that the income of the household is relevant, the higher the income the higher the probability of hiring these services. The higher the number of children under the age of 4 and elderly parents, the higher the probability of hiring these services. The higher the number of members of the household employed also increases the probability of outsourcing household work. Households where members have higher education are also more likely to use these services. Therefore, these are relevant factors that increase the probability of using these services. Moreover, I see that, on average, the wages of women from households that hire these services are higher than the wages of the women who do not hire these services. In 2010, on average the monthly wage of the women hiring the services was 1,086.17€ compared to 838.97€. The wage is higher for women with children under the age of 4: those hiring domestic services have on average a wage of 1,217.72€ compared to a wage of 970.92€ for mothers who do not hire the services. This is the opportunity cost that women may face when hiring domestic workers.

Differences in the share of households using domestic services can be seen across regions. Before the policy reform, more than 40% of households in Aragón, Extremadura, Madrid and Murcia used these services (Figure A.1). After the policy became mandatory for everyone, the share of households hiring these services decreased in all regions except for Castilla-la-Mancha, Extremadura and Murcia, but recovered its growing trend in many regions in 2013 (Figure A.3). Before, I identified the household income and the wage of mothers as a relevant factor that determines the use of domestic services. Thus, with the data from this survey, I use a Propensity Score Matching method to create control and treated groups of households using domestic services. Then, I conduct a Diff-in-Diff regression on outsourcing household work after the policy to find that households with young children and higher income increased their use of domestic services after the policy compared to households without young children but higher income. Later on, I

will analyse the different impact of the policy reform on females with different levels of income by using education as a proxy.

On the other hand, the share of households paying Social Security contributions for the domestic workers they employed was quite low before the policy reform (Figure A.2). On average, only 25% of the households employing domestic workers were paying their Social Security contributions. This means that 75% of the households were employing domestic workers in the shadow economy. Navarra and Castilla-y-León were the more compliant regions, around 50% of the households employing domestic workers paid their contributions. When the policy was passed and during the voluntary period of 2011, the share of households paying Social Security increased in some regions but decreased in others (Figure A.4). This could be indicative of households saving the contributions during the voluntary period in fear of future job inspections starting from the 1st of January of 2012, when the policy became enforceable. However, the domestic services sector brings up a new obstacle for enforcement. The place of work is the household’s home, which its inviolability is protected and prevails over workers’ rights according to the Spanish Constitution.

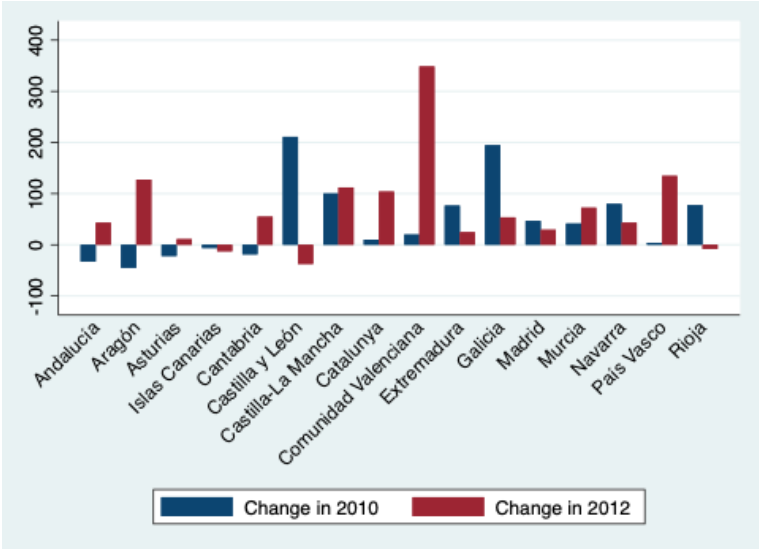


Figure 1: Change in the number of households paying SS contributions without the Balearic Islands. *Source: EPF*

I can grasp from the data that the level of compliance was unequal across regions (Figure A.4). The Balearic Islands is an outlier, since the share of households paying SS contributions in 2012 compared to 2010 increased by more than 1,000%. In other regions I see how the share of households even decreased in 2012, like in Navarra where it increased less than in previous years or Castilla-León, Canary Islands or La Rioja where it even decreased compared to 2010



(Figure 1). According to data from the Employment and Social Security Ministry, there was an increase in the number of inspections for domestic workers from 2011 to 2012. Job inspections increased by 66% during the first year of implementation of the law. In 2013, job inspections increased again, but this time by only 17% compared to 2012 and they followed a decreasing trend after that. In fact, from the data I can observe that the increase did not focus on unveiling SS contributions avoidance but rather on exposing immigrants without a valid working permit. SS contributions inspections increased by 43% in 2012, compared to 66% increase of the total number of inspections. According to the ILO, 63,7% of domestic workers were registered in 2012, compared to 43% of workers in 2010 (Gorfinkiel and López, 2016). The share of domestic workers registered remained quite constant in the following years, hinting again that the main impact of the policy was during the first year of implementation. The actual level of compliance by region is relevant to study the effects of the policy as it will determine the actual increase in the cost of outsourcing household work in every region. If the level of enforcement was low and households could still resort to the shadow economy to outsource household work, the impact of the policy on the labour market decisions of individuals would have been smaller. Later on, I will analyse how these different levels of compliance across regions can help explain the changes in the labour market.

## 4 Data and Methodology

### 4.1 Data and Descriptive Statistics

To study the impact of the policy reform on the female labour supply, I use data obtained from the Spanish Labour Force Survey. This is a quarterly survey that collects information on the labour market status of members of a randomly selected household as well as information about other personal characteristics like sex, age, country of origin, reasons for not working, etc. This survey contains approximately 65,000 households and 160,000 individuals per quarter. One of the advantages of using this survey is that it also contains information about the shadow economy, a very relevant element of the study. I use data that goes from 2009 to 2013, as these are the years that are relevant to the study. This survey includes information about individual characteristics like gender, age, nationality, civil status, education or region they live in. It also includes information about the individual's labour like their participation in the labour force, their employed status, their tenure, type of contract or hours worked.

As I have concluded from running the Probit model on the Household Budget Survey data, mothers of young children and women living with elderly parents are more likely to use domestic services. These are also the groups that previous literature has identified as being more constrained by family responsibilities and therefore, being impacted by changes in the cost of outsourcing household work (Cortes and Tessada, 2011; Farré et al., 2011; Cortes and Pan, 2013; Peri et al., 2015; Cortés and Pan, 2019). The Labour Force Survey allows me to observe family links among members of the same household. Thus, I identify mothers of children under the age of 5, mothers of children under the age of 16 and women living with their parents or parents-in-law.

In the sample, 80% of the women under the age of 50 are in the labour force and more than 78% of them are employed. Around 72% of them have an indefinite contract and, on average, more than 7 years of experience. Around 23% of them work part-time. If I focus on mothers, around 77% of them are in the labour force and 78% of them are employed. 77% of them have an indefinite contract and on average they have almost 8 years of tenure. 29% of mothers of young children work part-time, compared to 21% of the women without children. The difference is larger for teenage mothers as more than 27% of them work part-time compared to 18% of women of the same age group but without children. In the sample for women older than 40, 62% of women are

in the labour force and 82% of them are employed. 83% of them have an indefinite contract and, on average, they have more than 14 years of tenure. Besides, only 21% of them work part-time. However, only 43% of women living with elderly parents are active. 83% of those who are active are employed and 82% of them have an indefinite contract. Moreover, they have on average 14 years of tenure and only 19% of them work part-time. Also, in 2010, 81.22% of the women out of the labour force mentioned family responsibilities as the reason not to supply labour, compared to 65% of the men. 11.29% of the women not working blamed family responsibilities compared to 0.64% of the men. Additionally, 43% of the women mentioned they did not work more hours because they had to take care of dependent relatives. 16.26% of the women working part-time mentioned family responsibilities as the reason for not working full-time, compared to 1.95% of the men working part-time.

## 4.2 Empirical Strategy

I wish to evaluate the causal effect of the increase in the cost of outsourcing household work on the female labour supply. I decide to focus on the main two groups that the literature has previously identified as being affected by these changes: women with young children and/or with elderly parents. These dependent adults are the parents or parents-in-law of our individual observation. This choice is also in tune with the results on the probability of hiring domestic workers previously obtained from applying a Probit model to the Household Budget Survey Data.

I estimate a Difference-in-Differences model like the following:

$$Y_{i,t} = \beta_0 + \beta_1 Treated_{i,t} + \beta_2 Post_{i,t} + \beta_3 Treated_{i,t} \times Post_{i,t} + \beta_4 X_{i,t} + \alpha_i \gamma_t + \varepsilon_{i,t} \quad (1)$$

Where  $Y_{i,t}$  are the outcomes of interested like being in the labour force, being employed, the number of weekly hours employed and the number of weekly hours effectively worked. The variable  $Treated_{i,t}$  takes value 1 if the individual is in the treated group and 0 if they are not. The variable  $Post_{i,t}$  takes value 1 if the individual is observed in 2012 or later and 0 if they are observed before 2011. I skip the year 2011 as the law was not enforceable yet and I cannot observe clean effects of the policy. Later I will check if introducing this year in the analysis alters the results significantly. There are some significant differences between our control and treated groups (Table A.3 and Table A.4). Therefore,  $X_{i,t}$  is a vector of covariates that controls for

individual characteristics like age, education or tenure and household characteristics like number of kids or retired adults and the labour status of the husband, if there's one. The interaction  $\alpha_i\gamma_t$  are time and region fixed effects that proxy for common shocks across regions and time. These fixed effects include the level of female and male unemployment and the share of female migrants in the population for each region at each quarter. These common shocks might affect the labour supply of women but are not due to our policy reform. Standard errors are clustered at the region level since I allow for dependence of observations within the same region.

The coefficient of interest is  $\beta_3$  which captures the causal effect of being in the treated group after the policy change on our outcomes of interest. The treated group are mothers with young children and women living with elderly parents. These are the groups that previous literature has identified as being more likely to be impacted by the increase in the cost of outsourcing household work, since they are more likely to hire these services as their labour supply is more likely to be constrained by family responsibilities.

The law was passed in the middle of the economic crisis, therefore, there could be other confounding factors explaining the changes I observe in the variables of interest<sup>1</sup>. In order to capture the cleanest effect possible of the policy, I restrict the sample to one year and a half before and after the policy change. Besides, this is the period when the implementation of the policy is more intense.

## Identifying assumptions

### Parallel trends

One of the main identifying assumptions in the specification is that the control and treated group followed similar trends before the policy change. Thus, I run an Event Study DiD and check if the parallel trend assumption holds for the three main treated groups: mothers of young children, mothers of teenagers and women living with elderly parents. I check the assumption both for the extensive and the intensive margin.

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<sup>1</sup>Spain was one of the EU countries most affected by the Great Recession. In June 2010, the compensation for unfair dismissal was reduced. However, the economic crisis expanded and the unemployment rate increased to be 22.7% of the population of working age. As a result, a package of labour market reforms was passed by the conservative government in 2012 through Real Decreto Ley 3/2012. The main aim of these reforms was to reduce the cost of firing employees and increase the employer power when bargaining job conditions. Temporary contracts with low firing-costs and open-ended contracts with high firing-costs coexisted in Spain. However, the effects of these reforms were not observed immediately and only materialized in the medium/long-term (OECD, 2014). Since these reforms affected all workers, I am confident that my analysis can capture independently the effect of the domestic workers reform.

### *Extensive margin*

Mothers and women without children did not follow the exact same trends in terms of being employed before the policy (Figure A.6 and Figure A.7). However, they followed similar trends in terms of their participation in the labour force (Figure A.8 and Figure A.9). I will try to control for these differences by introducing covariates that are relevant in the decision of becoming a mother in our econometric specification.

Similarly, women living with elderly parents followed similar trends compared to women not living with elderly parents in terms of employment (Figure A.10). Their participation in the labour force followed less similar trends before the policy (Figure A.11).

### *Intensive margin*

To study the behaviour of weekly hours employed and worked over time I first remove seasonality from our data. The number of hours employed are the number of hours stated in the job contract for each individual. The number of hours worked are the average of number of hours that individuals spent at their job during the period of study, thus this measure is impacted by people on holidays or on paid leave. I can observe that mothers and women without children did not follow very similar trends in terms of hours employed and worked before the policy change (Figure A.12, Figure A.13, Figure A.14 and Figure A.15).

For women living with dependent adults, the trends for the number of hours employed and hours worked seem to be more volatile and less stable than for those not living with dependent adults (Figure A.16 and Figure A.17).

### **Compositional change**

The second main identifying assumption to capture the causal effect of the policy is that the treated and control groups did not change over time. To check for this, I test the differences between the treated groups before and after the policy. I focus on both individual characteristics like age, nationality or education as well as their partner's characteristics like living with an employed or highly educated husband. There are significant differences between mothers of young children and teenagers before and after the policy (Table A.5 and Table A.6). Mothers are older and more educated after 2011 compared to 2010. To account for this issue, I will include in the econometric specification these characteristics as controls since they are relevant factors that explain becoming a mother. Moreover, I will run heterogeneity and robustness checks to

test the consistency of the estimates. On the other hand, there are no significant differences between women living with elderly parents before and after the policy, except for their level of education (Table A.7). Those women living with elderly parents are less educated on average after the policy reform.

## 5 Results

### 5.1 Evidence from Cross-Sectional Variation

#### Women living with children

I start our analysis looking at the impact of the policy on the labour supply of **mothers of young children under 5** compared to females without children. To do this, I use cross-sectional data at the micro-level from the Spanish Labour Force Survey. First, I focus on the **extensive margin** and study the effect on the decision of being in the labour force and being employed. I restrict our sample to women who are in working age, but I exclude those who are retired and those who declare not to be looking for a job because they are studying. First, I use our baseline specification without controls or fixed effects and find a positive correlation between being a mother after the policy change and the decision to be in the labour force or being employed. I then regress our Diff-in-diff specification (Equation 1) and obtain a positive and statistically significant effect of the policy. The estimates show an increase in the probability of being in the labour force of 3.37% and employed of 2.42% for mothers of young children after the policy. However, these results cannot be interpreted causally since the identifying assumptions of the Difference-in-Differences model for mothers are violated.

Table 1: Change in the extensive margin of the labour supply of mothers of kids under 5

	Being employed		Labour force	
	(1)	(2)	(1)	(2)
<i>PostxTreated</i>	0.0217**	0.0189*	0.0247**	0.0253**
	(0.009)	(0.009)	(0.007)	(0.006)
<i>Treated</i>	-0.00546	-0.00986	-0.0726***	0.00266
	(0.007)	(0.010)	(0.005)	(0.012)
Controls and FE	No	Yes	No	Yes
Mean $Y_{1,0}$	0.779	0.779	0.75	0.75
Effect	2.78%	2.42%	3.29%	3.37%
Observations	163,768	163,768	200,226	200,226
Adjusted $R^2$	0.00374	0.0419	0.00472	0.07039

Standard errors in parentheses. Sample of women under 45 years old.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

While the previous literature (Barone and Mocetti, 2011; Cortes and Tessada, 2011; Cortes and Pan, 2013; Peri et al., 2015; Cortés and Pan, 2019) has studied the impact of a reduction in the cost of outsourcing household work in times of economic expansion, this policy happened during one of the biggest economic downturns suffered by Spain in the recent decades. I observe that the share of female unemployment in the region where the individuals live is statistically significant,

it decreases by more than 1,000% the probability of being employed. Besides, the labour market status of the husband is also relevant. On the other hand, living with an unemployed husband increases by almost 5% the probability of being in the labour force, supporting the family insurance model. In Section 5.2 I will later run a triple difference regression to account for the effect of the policy reform on regions with different female and male unemployment rate.

Then, I study the impact of the policy on the **intensive margin**. I focus on the weekly number of hours a worker is employed and the weekly number of hours they are effectively working. I restrict even more our sample by just including the employed individuals. The estimates are positive and statistically significant for both outcomes. The number of hours employed increased by more than 100% and the number of hours worked by 21.41% (Table 2). In fact, I see how the policy had a negative effect on working part-time but positive effect on working full-time for mothers. These results cannot be interpreted causally either due to the violation of the identifying assumptions of the Diff-in-Diff specification.

Table 2: Change in the intensive margin of the labour supply of mothers of kids under 5

	Hours employed		Hours worked	
	(1)	(2)	(3)	(4)
<i>PostxTreated</i>	0.857*** (0.191)	0.863*** (0.189)	0.630** (0.258)	0.788*** (0.273)
<i>Post</i>	-0.323*** (0.090)	0 (.)	-0.0478 (0.152)	0 (.)
<i>Treated</i>	-1.165*** (0.150)	-1.191*** (0.404)	-4.443*** (0.245)	-0.516 (0.483)
Controls and FE	No	Yes	No	Yes
Mean $Y_{1,0}$	-0.817	-0.817	-3.679	-3.679
Effect	104.89%	105.63%	17.12%	21.41%
Observations	106,573	106,573	120,499	120,499
Adjusted $R^2$	0.00122	0.05706	0.01107	0.03815

Standard errors in parentheses. Sample of women under 45 years old.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Again, the specific context seems to be relevant. One of the main factors that helps explain the increase in hours is the share of female immigrants in the region. Female immigrants represented a big share of employees in the informal market for domestic services due to restrictive and discriminatory immigration laws (Gorfinkiel and López, 2016). Later, in Section 5.2, I will run a triple difference regression to account for the potentially different effect of the policy across regions with different share of female immigrants.



From 2007 to December 2010, the government established a universal child benefit that led to a decrease in newborns' mothers labour supply (González, 2013). The estimates that I have obtained previously could be capturing not only the effect of the domestic workers policy but also the end of this universal child benefit. Therefore, I expand our sample to include mothers of **children under the age of 16** and obtain very similar results for the intensive margin and statistically significant results for being in the labour force. However, the magnitude of the effect is smaller. The probability of mothers being in the labour force increased by 2.97% (Table A.8). The number of hours employed increased by 60.33% (Table A.9). It seems that the previous estimates could have been capturing the effect of the end of this universal child benefit, but still the new regulation of domestic workers seems to have had a positive effect on mothers' labour supply.

Now I proceed to analyze the impact of the policy on mothers with only children that are between 10 and 16 years old. If it is true that women with older children have less family responsibilities, the impact of the policy should be smaller for this group. Moreover, this group would not be affected by the end of the universal child benefit in December of 2010. Now the treated group are mothers of older children and the control group are women without children. The estimates are positive and statistically significant for the probability of being employed, being in the labour force and the number of hours employed. The magnitude of the effect is smaller than for mothers of young children and mothers with any children under the age of 16 (Table A.10).

All in all, it seems that once mothers enter the labour force and supply labour it becomes more costly to reduce it if the cost of outsourcing household work increases. Accordingly, women would increase their labour supply in order to afford the new cost of hiring domestic workers. In fact, the minimum wage in 2012 in Spain was 641.4€ which is lower than the average wage of 1,008.59€ of mothers hiring domestic workers I observe in the Household Budget Survey. To test this, I will later check if the level of attachment of employed mothers is relevant in explaining these results.

### **Women living with elderly parents**

Then, I repeat the analysis for women older than 40 years old and living with elderly parents. Again, I use cross-sectional data at the micro-level from the Spanish Labour Force Survey. The data is limited as one cannot observe the age of those older than 65, but can identify those who are retired. Therefore, I identify the women living with adults who are 65 or older and retired

and use them as an approximation for living with dependent adults. Besides, I restrict the variable to include only the elderly members that are the parents or parents-in-law of the women living in the household. I acknowledge that in this group there may be adults who are physically active and who do not require care from other adults. These adults could in fact substitute women in their household work, thus, I will test more directly for it in the next section. Besides, I will consider the effect of the policy on women living with both young children and elderly parents.

I start studying the impact of the policy on the **extensive margin** of the labour supply of women living with retired adults. I evaluate the effect of the policy on the decision to be in the labour force and the probability of being employed using Equation 1. The effect is not statistically significant for neither outcomes of interest (Table A.11). I cannot reject either no effect of the policy on the **intensive margin**. The estimates are negative but still not statistically significant (Table A.12).

## 5.2 Heterogeneity Analysis

Previously, I observed that the different **share of female migrants** across regions is relevant to explain the labour supply of mothers. In 2012, the Balearic Islands had the larger share of female migrants, being almost 10.6% of the population, while female migrants only represented 1.6% in Extremadura. It could be that women in regions with larger share of female migrants have access to a larger pool of undocumented domestic workers, thus to cheaper labour force since these workers tend to have less bargaining power. Then, women living in regions with a larger share of female migrants would be less impacted by the policy. On the other hand, hiring these workers became more risky and therefore costly due to the policy reform and the increased number of job inspections of undocumented workers, which could result in significant fines. Then, women living in regions with a larger share of female migrants would be more impacted since now it is even more costly to access these workers and part of the domestic workers become less attractive to hire.

To try to analyse this mechanism, I decide to interact a continuous measure of the share of female migrants in every region with our coefficient of interest. I run my Equation 1 for the group of mothers of children under the age of 5. The estimates are positive and statistically significant for the probability of being in the labour force, the number of hours employed and the number of hours worked. Mothers living in a region with higher share of female immigrants increased

their probability of being in the labour force by 50.07% compared to women living in the region with the lowest share of female migrants. They also significantly increased their hours employed and worked (Table 3).

Table 3: Change in the labour supply of mothers of children under the age of 5

	Being employed	Labour force	Hours employed	Hours worked
	(1)	(2)	(3)	(4)
<i>PostxTreatedxImmigrants</i>	0.168 (0.190)	0.347** (0.142)	11.88*** (3.552)	10.87** (5.026)
<i>TreatedxImmigrants</i>	-0.336* (0.183)	-0.381** (0.177)	-9.693 (5.891)	-1.753 (8.234)
<i>Treated</i>	0.0119 (0.014)	0.0263 (0.015)	-0.375 (0.530)	0.163 (0.650)
Controls and FE	Yes	Yes	Yes	Yes
Mean $Y_{1,0}$	0.689	0.693	-2.52	-4.914
Effect	-	50.07%	471.42%	221.2%
Observations	163,768	200,226	106,573	120,499
Adjusted $R^2$	0.09515	0.07060	0.02297	0.03074

Standard errors in parentheses. Initial level of female labour supply in the region with the lowest share of female immigrants in 2010

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Previous literature has concluded that specially **female migrants with basic education** are better substitutes for women in household work (Farré et al., 2011). Thus, I repeat the same analysis but now for the share of female migrants with basic education. In 2012, the Balearic Islands hosted the largest share of female migrants with basic education, 6.8% of the population, and Extremadura hosted the least, being this group less than 1% of the population. I run the same analysis as before and the estimates are again positive and statistically significant for being in the labour force, the number of hours employed and worked (Table A.13). The effect is larger than in the previous analysis, therefore, mothers living in regions with larger shares of female migrants with basic education were more impacted by the policy change.

Lastly, I consider the share of **female migrants who speak Spanish**. As previous literature has pointed out (Farré et al., 2011; Amuedo-Dorantes and De La Rica, 2011), one of the uniqueness of the migration phenomenon in Spain is the large share of migrants who speak the native language of the country. If females who migrate speak the same language as native females, it may be easier to outsource household work. Therefore, I run the same analysis as before but now considering a continuous measure of the share of female migrants who originate from Central and South America. Still, in 2012 the Balearic Islands concentrated the largest share of Latina migrants, 3.4% of the population, and Extremadura concentrated the lowest share, 0.4% of the population. I interact this measure with the coefficient of interest. The estimates are positive and statistically significant for the same outcomes of interest as before (Table A.14). The effect is

larger than for the previous analyses. These results confirm that migration is a relevant channel through which changes in the cost of outsourcing household work impact female labour supply. It seems that mothers in these regions could have been increasing their labour supply even more to afford the higher cost and fines of hiring undocumented domestic workers, specially in regions with better substitutes.

However, these estimates could still be biased if the denominator of the share of female immigrants, in this case the population of the region, is impacted by the treatment. In fact, there is no convergence of opinion on how to calculate these changes in the share of immigrants over the total population of regions (Card and Peri, 2016). Although it seems unlikely that the policy reform would have a significant impact on the size of the population through fertility, death or mobility of individuals across regions, I decide to re-calculate the share of female immigrants following the equation proposed by Card and Peri (2016). The authors suggest using as a denominator of the share, the population before the treatment; the population of each region in 2010 in my case. The estimates remain almost unaffected, they continue to be positive and statistically significant (Table A.15). Following the same specification, I also consider interacting the annual change in the share of female immigrants with the coefficient of interest in Equation 1. The estimates are still positive and statistically significant only for the hours employed. The estimated effect was larger for the interaction with the change in the share of female migrants with basic education. The estimates of the interaction with the change in the share of Latinas are not statistically significant, except for the probability of being in the labour force which is positive (Table A.16). It seems that migration trends were less relevant than actual levels in explaining this impact. Still, it could be that the share of female migrants in a region is influenced by the same characteristics of the labour market that impact mothers' labour supply.

In fact, another relevant factor through which changes in the cost of outsourcing household work could impact female labour supply are the characteristics of the labour market at the moment of the policy change. As stated before, the **level of female unemployment** in a region has a negative effect on the probability of women supplying labour. Therefore, I decide to interact the coefficient of interest with a continuous measure of the different levels of female unemployment across the regions. The regions with the highest level of unemployment in 2012 are Ceuta and Extremadura where 48% and 36% of active females were unemployed respectively. Navarra and the Basque Country had the lowest share of females unemployed in 2012, only 15.5% of them. I

run the triple difference regression and obtain positive and statistically significant estimates for being employed, in the labour force and the number of hours employed (Table 4). Therefore, the effect of the policy was larger in regions with higher level of female unemployment.

Table 4: Change in the labour supply of mothers of children under the age of 5

	Being employed	Labour force	Hours employed	Hours worked
	(1)	(2)	(3)	(4)
<i>PostxTreatedxUnemployment</i>	0.0858*	0.102**	2.981***	1.286
	(0.041)	(0.036)	(0.906)	(1.174)
<i>TreatedxUnemployment</i>	-0.0452	-0.0737	1.234	7.866***
	(0.072)	(0.087)	(1.651)	(2.518)
<i>Treated</i>	-0.00103	0.0202	-1.219**	-1.600**
	(0.018)	(0.017)	(0.519)	(0.667)
Controls and FE	Yes	Yes	Yes	Yes
Mean $Y_{1,0}$	0.897	0.799	-1.217	-6.611
Effect	9.5%	12.76%	244.9%	-
Observations	163,768	200,226	106,573	120,499
Adjusted $R^2$	0.09519	0.07063	0.02309	0.03093

Standard errors in parentheses. Initial level of female labour supply in the region with the lowest share of female unemployment in 2010

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

I then repeat the same analysis but now using the **share of unemployed males** in every region and quarter. Andalusia was the region with the highest share of unemployed men, 33%, while Navarra and the Basque Country were the regions with the lowest share of unemployed males, 16.6% and 15.5% respectively. According to a family insurance model (Doepke and Tertilt, 2016), mothers would increase their labour supply if their husbands are unemployed. Again, I obtain positive and even more statistically significant results for the same outcomes of interest (Table A.17). These results confirm that the characteristics of the labour market in a region are a relevant factor to determine the effect of the regulation on the female labour supply, both on the extensive and intensive margin.

Next, I try to check if it is true that once mothers get **attached to the labour force**, they are less likely to reduce their labour supply when the costs of outsourcing household work increase. To measure this, I obtain information on the months of tenure and the type of contract for the individuals who are employed. The Spanish Labour Force Survey does not contain this information for those who are unemployed. Thus, I can only check the change on the weekly number of hours worked and the weekly number of hours employed for the employed individuals. I interact the coefficient of interest with a continuous measure of tenure and, on another regression, with a dummy variable for having an indefinite contract and I run a triple difference regression. The estimates are positive and statistically significant (Table 5). Mothers of young children with an indefinite contract were more likely to be employed and work more hours than women without

children and without indefinite contract.

Table 5: Change in labour supply for mothers of children under 5

	By tenure		By indefinite contract	
	Hours employed	Hours worked	Hours employed	Hours worked
	(1)	(2)	(3)	(4)
<i>PostxTreatedxAttachment</i>	0.0841*** (0.013)	0.0528* (0.027)	0.983*** (0.182)	0.933*** (0.273)
<i>TreatedxAttachment</i>	-0.0480** (0.019)	-0.0719*** (0.026)	-1.418*** (0.279)	-2.806*** (0.418)
<i>Treated</i>	-0.583 (0.344)	0.638 (0.498)	-0.0817 (0.402)	1.552*** (0.500)
<i>Attachment</i>	0.218*** (0.011)	0.0885*** (0.014)	4.098*** (0.185)	2.830*** (0.126)
Controls and FE	Yes	Yes	Yes	Yes
Mean $Y_{1,0}$	-3.426	-3.474	-0.141	-4.298
Effect	2.45%	1.51%	697.16%	21.7%
Observations	106,573	120,499	106,573	107,360
Adjusted $R^2$	0.03931	0.03087	0.05197	0.03879

Standard errors in parentheses. Initial level of female labour supply for individuals with shortest tenure in 2010

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

On another note, previous literature has emphasized that **women with tertiary education** are more likely to use domestic services, since their opportunity cost of staying out of the labour force is higher (Farré et al., 2011). This also becomes apparent in the Household Budget Survey, where having tertiary education and higher income increased the probability of using these services. Therefore, I decide to repeat my initial analysis but only for a sub-sample of women with tertiary education, which I use as a proxy for higher income. Now the treated group are mothers of young children and with tertiary education while the control group are women without children but with tertiary education. The estimates are now positive and statistically significant for the extensive and intensive margin. The estimated effect of the policy on the probability of being employed is 2.86% and being in the labour force is 2.97%. Moreover, the estimates predict an increase of the hours employed of more than 2,700% and an increase of the hours worked of 21.9% (Table 6). Therefore, the increase in the intensive margin was larger for the sub-sample of mothers of young children with tertiary education. On the other hand, I cannot reject the null hypothesis that the policy did not have any effect on mothers of young children with secondary education or only primary education.

Table 6: Change in labour supply for mothers of children under 5 and with tertiary education

	Being employed	Labour force	Hours employed	Hours worked
	(1)	(2)	(3)	(4)
<i>PostxTreatedxTertiaryEduc</i>	0.0256*** (0.008)	0.0251*** (0.006)	0.876*** (0.230)	0.973*** (0.204)
<i>Treated</i>	0.00326 (0.013)	-0.0137 (0.009)	-1.087** (0.378)	-0.401 (0.449)
Controls and FE	Yes	Yes	Yes	Yes
Mean $Y_{1,0}$	0.892	0.845	0.032	-4.429
Effect	2.86%	2.97%	2,737.5%	21.96%
Observations	70,105	77,334	52,264	57,733
Adjusted $R^2$	0.05426	0.01760	0.01720	0.04840

Standard errors in parentheses. Sample of women under the age of 45

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Previously I concluded that the effect of the policy is smaller for mothers with children under the age of 16 compared to those with only younger children. I now repeat the analysis for the sub-sample of these individuals that also have tertiary education. The estimates of the effect of the policy are all positive and statistically significant for the outcomes of interest. They increased their probability of being employed by 2.46% and the probability of being in the labour force by 1.78%. They also increased their number of hours employed by more than 137% and the number of hours worked by more than 20.4% (Table A.18).

I now combine the family responsibilities a woman can have: **caring for young children and caring for retired adults**. I restrict the sample to women between 25 and 50 years old as in this age bracket is where most of the mothers living with elderly parents are. The treated group now are mothers of children under 16 who also live with retired adults, while the control group are mothers who don't live with retired adults. I wish to check the effect of having access to informal care for mothers. However, my interaction is an imprecise measure. Ideally, I would like to also have information about retired grandparents living close to mothers. However, I do not have this kind of information and my results should be interpreted only as women having various family responsibilities at home. The estimates are negative and only statistically significant for being in the labour force (Table A.19). Mothers living with retired adults decreased their probability of being in the labour force by 7%.

Lastly, I previously considered that the **gender of the elderly parents** living in the household could have different effects on the mothers of children under the age of 16. I consider still a sample of women older than 40 years old and younger than 64 years old. If I still consider a traditional sexual division of household work, older men would add more family responsibilities to women, who bear the larger share of care work in a household. However, if the older dependent adult is

a woman, they could substitute our individual in working age in the care work. Therefore, I first create a triple difference where I interact dummies for before and after the policy, living with retired adults and this retired adult being a man or not. None of the estimates are statistically significant, therefore I cannot reject no effect of the policy on these women. I conduct the same analysis for women living with retired women. Again the estimates are not statistically significant.

### **Evidence from Law Compliance Variation**

As I observed before in the descriptive analysis, the level of compliance with the new regulation was not the same across regions (Figure 1). This could be due to different levels of enforcement of the law; however, I cannot observe this due to a lack of data. I decide to exploit the differences in the share of households paying SS contributions across regions reported by individuals in the Households Budget Survey to study the effect of the policy. I interact my coefficient of interest with a continuous measure of the change in the share of households paying SS contributions in 2012 compared to 2010 across regions. I then run a triple difference regression. The estimates are positive and statistically significant for mothers for being in the labour force and the number of hours employed. The estimates are negative and statistically significant for women living with elderly parents. However, all the estimates are very small and the effect is almost insignificant (Table A.21). It seems that the labour supply of mothers living in regions with higher level of compliance was positively impacted by the policy reform while women living with elderly parents were slightly negatively impacted.

### **5.3 Change in sexual division of household work**

These results are slightly different to the effects obtained by previous literature of a decrease in the cost of outsourcing household work. Although many have studied before women's specialization in household work, women's entry and attachment to the labour market may challenge traditional models, as my estimates indicate (Table 5). Therefore I decide to study if the policy also impacted how couples distributed household work among themselves. To do so, I use the Spanish Time Use Survey of 2009 to analyse how long did each partner dedicate to household work before the policy change. The same survey was not conducted after the policy change, but the Basque Country conducted their own in 2013. Thus, I use the Basque Country Survey to get a glimpse on how the sexual division of household work evolved after the law was passed. Although this is not ideal, the Basque Country is still a relevant observation: the number of households hiring domestic workers



decreased in 2012 while the share of households paying SS contributions increased significantly (more than 100%). Besides, couples and families in the Basque Country are very similar to the average results for the whole country in their division of household work, except for the time spent taking care of dependent adults (Table A.22).

First I use the Time Use Survey of 2009 to study how much time men and women dedicated to household work and care activities before the policy change only for individuals living in the Basque Country. I consider the time spent in household work and care work by individuals living with children under the age of 10. As Table 7 shows, women in the Basque Country spent more time than men cooking, cleaning and taking care of children, both on weekdays and weekends. I consider the situation where there are dependent adults living in the household, but not children. In this case women spent more time than men, probably due to traditional marriage dynamics where men are usually older than women.

I now use the Time Use Survey conducted by the Statistics Institute of the Basque Country in 2013 to analyse the possible effects of the policy on the household work division among couples. The data in this survey is limited: I only observe one individual per household and I cannot observe if a dependent adult lives in the household. Moreover, I can only check the age of the surveyed individual, but not the other members of the household. In general, I observe an increase in the time spent in household work both for men and women (Table 7). However, I cannot conclude anything from these results due to the different methodology of the survey in 2013.

Table 7: Household work division between individuals with children in the Basque Country in 2013

	<i>Total</i>		<i>Weekdays</i>		<i>Weekends</i>	
	Men	Women	Men	Women	Men	Women
<i>2009</i>						
Cooking	46.39	62.32	41.79	63.05	54.03	61.38
Cleaning	32.61	40.56	29.70	35.55	36.87	45.08
Childcare	95.54	129.05	79.99	112.76	132.60	160.34
Adult care in the household	20	123.5	133.56	125.89	10	294.62
Leisure	79.82	76.91	49.58	73.73	104.81	79.52
<i>2013</i>						
Cooking	119.9	149.86	111.92	150.07	167.09	148.18
Cleaning	60	67.66	65.48	66.10	49.41	71.45
Childcare	109.32	142.08	98.59	142.41	137.14	129.79
Adult care	82.64	74.99	56.99	72.72	156.27	80.36
Leisure	93.72	89.51	77.43	79.51	125.31	109.63

Average time spent daily and expressed in minutes.

## 6 Robustness Checks

As I have already mentioned, the policy was implemented in the middle of the economic crisis in Spain. One relevant characteristic of the economic downturn is that it first impacted men-dominated sectors of the economy, but soon in 2010 it affected all sectors. Female unemployment increased rapidly while the gender gap in unemployment decreased and got back to the level before 2008. It could be that our estimates are capturing other labour dynamics like the end of the universal child benefit or mothers increasing their labour supply to compensate for the loss of income if men in the household were fired. Although I already tried to control for these circumstances by introducing specific controls and estimating heterogeneous effects, there could still be unobservable characteristics biasing the estimations. Thus, I test the robustness of our results by running a placebo test and pretending that the policy happened one year earlier, in the last quarter of 2009. I restrict the sample to include one year before and after the placebo policy to account still only for the economic crisis period. The results are presented in Table A.23, Table A.24 and Table A.25 in the Appendix. My previous conclusions remain mainly unaffected. None of the coefficients are statistically significant, specially after including controls for the economic crisis and region and time fixed effects. Therefore, the results are robust and identify a positive effect of the policy on the labour supply of mothers. I also run a placebo test for all the triple difference analysis pretending the policy reform happened at the end of 2009. Likewise, none of the estimates are statistically significant.

In the initial analysis, I skipped the year 2011 because the new regulation was still not enforceable and the effects could be difficult to interpret. Now I repeat the same analysis using Equation 1 but changing the time dummy. Now the variable *Post* takes value 0 if the outcome is observed before the 1st of July of 2011 and value 1 if it is observed after the 1st of July of 2011, after the new policy was passed. The estimates are consistent with my previous results: there is a small positive effect on the labour supply of mothers and I cannot reject no effect on the labour supply of women living with elderly parents (Table A.26).

Lastly, to test the robustness of the results I run the same regressions for men. I define the treated group as fathers of children under the age of 16 and control group as men without children. I restrict the sample to the individuals in working age and younger than 50 years old, just like I did with mothers. Then, I regress the Equation 1 for the outcomes of interest. The estimates are inconclusive. This supports the main results: a change in the cost of outsourcing household

work impacts mainly women, who still bear most of household work and informal care work responsibilities due to strong gender roles.

## 7 Concluding remarks

Previous literature has identified a positive effect of a decrease in the cost of outsourcing household work on female labour supply. They have identified mothers of young children and those living with elderly parents as the groups more affected by these changes. These women are more likely to dedicate time to family responsibilities, which prevents them from supplying labour in the same amount as men in similar circumstances. On the other hand, the literature on the effect of an increase in the cost of outsourcing household work is more limited. These studies have identified little to no effect on female labour supply. In this study, I tried to determine if the effect is symmetric when the cost of outsourcing household work increases.

I study the effects of a new regulation implemented in July of 2011 that increased the cost of hiring domestic workers in Spain. Data from surveys indicates that the policy increased the cost of outsourcing household work. I then analyse what was the effect of this increase on female labour supply. Following previous literature, I focus on the effects on labour supply of mothers and women living with elderly parents, as these are the individuals more time-constricted by family responsibilities. My results show that the policy had a positive effect on both the extensive and intensive margin of the labour supply of mothers. Mothers increased their probability of being in the labour force, being employed, the number of hours worked and their number of hours employed. Although this effect could seem to be driven by the end of the universal child benefit that was available in Spain from 2007 to December of 2010, I obtain also positive estimates for mothers of children aged between 10 and 16, although the effect is smaller. Consistently with what previous literature has concluded, the effect is larger for mothers with tertiary education. My findings generally point to the labour supply of women with family responsibilities and high opportunity costs of being in the labour market reacting positively to an increase of the cost of outsourcing household work.

It seems that changes in the cost of outsourcing household work operate through two main channels: the presence of female migrants and the characteristics of the labour market in the region where the individual is observed. As my results show, the policy had a larger positive effect on the labour supply of mothers living in regions with larger shares of female migrants. Besides, the effect is larger for mothers living in regions with a larger share of female migrants with basic education or female migrants coming from Central and South America. I also conclude that the level of female and male unemployment in a region increase the labour supply of women

after the policy change, specially the number of hours employed. Besides, the positive effect of the policy on the labour supply of mothers is larger on those who have an indefinite contract. It seems that once mothers enter the labour force, the opportunity cost of doing household work raises. Thus, when the cost of outsourcing household work is increased by the policy reform, they react by increasing their labour supply to afford it.

Although I also study the effects of the regulation on women living with elderly parents, due to data limitations, I cannot reject that there is no effect of the policy on the labour supply of these women. However, since my data is not detailed enough to capture a causal effect, this question would require further analysis, ideally using detailed administrative data.

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## A Appendix - Tables and Figures

### Impact of the policy on the households' demand of household services

Table A.1: Change in expenditure of household services, their SS contributions and total expenditure of the household on household services. *Source: Encuesta de Presupuestos Familiares (EPF)*

Year	Expenditure on household services	% change	Expenditure on Social Security	% change	Total expenditure	% change
2008	334.50 €		9.50 €		344.00 €	
2009	330.26 €	-1.27%	10.18 €	7.07%	340.44 €	-1.04%
2010	333.43 €	0.96%	11.74 €	15.32%	345.17 €	1.39%
2011	334.62 €	0.36%	9.81 €	-16.38%	344.43 €	-0.21%
2012	273.19 €	-18.36%	17.68 €	80.16%	290.87 €	-15.55%
2013	234.19 €	-14.28%	19.57 €	10.72%	253.76 €	-12.76%
2014	240.35 €	2.63%	20.22 €	3.31%	260.57 €	2.68%
2015	261.29 €	8.71%	19.35 €	-4.32%	280.64 €	7.70%

Table A.2: Change in the number of households hiring household services and its share on the total expenditure of the household. *Source: Encuesta de Presupuestos Familiares (EPF)*

Year	Households using services	% change	Households paying contributions	% change	Total share of expenses
2008	5,422,306		1,352,655.8		1.19%
2009	5,269,417.5	-2.82%	1,090,192.5	-19.40%	1.18%
2010	5,258,775	-0.20%	1,230,842.9	12.90%	1.17%
2011	5,426,262.5	3.18%	1,272,280.1	3.37%	1.21%
2012	4,566,838	-15.84%	1,649,781.9	29.67%	1.04%
2013	4,222,709.5	-7.54%	1,963,783.9	19.03%	0.91%
2014	3,752,152	-11.14%	1,646,124.8	-16.18%	0.99%
2015	3,956,039.8	5.43%	1,588,966.8	-3.47%	1.03%
2015	3,956,039.8	5.43%	1,588,966.8	-3.47%	1.03%

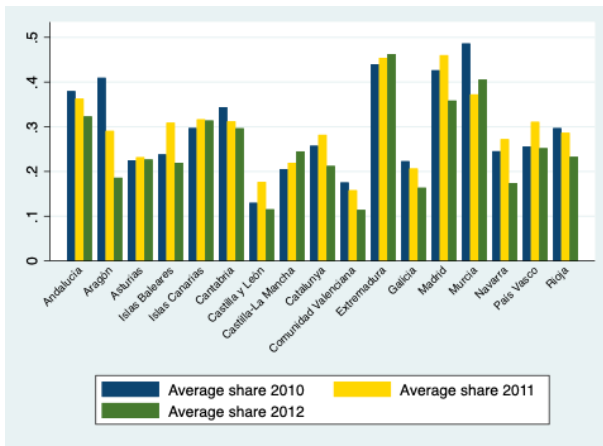


Figure A.1: Share of total households hiring domestic services each year across regions. *Source: Encuesta de Presupuestos Familiares (EPF)*

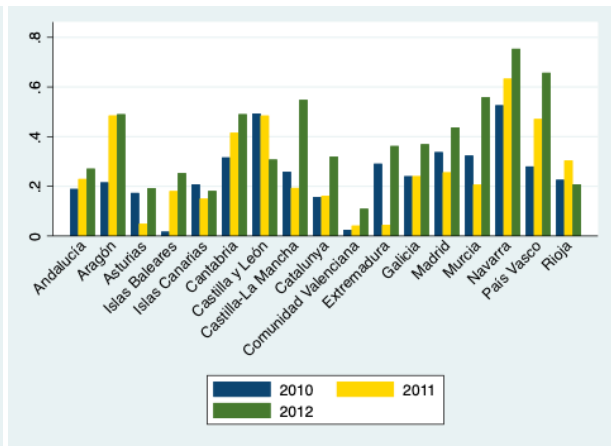


Figure A.2: Share of total households paying Social Security contributions each year across regions, conditional on hiring domestic services. *Source: EPF*

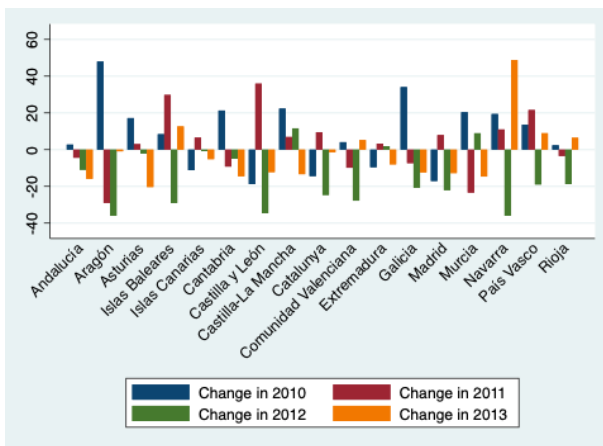


Figure A.3: Change in the share of total households hiring domestic services across regions. *Source: Encuesta de Presupuestos Familiares (EPF)*

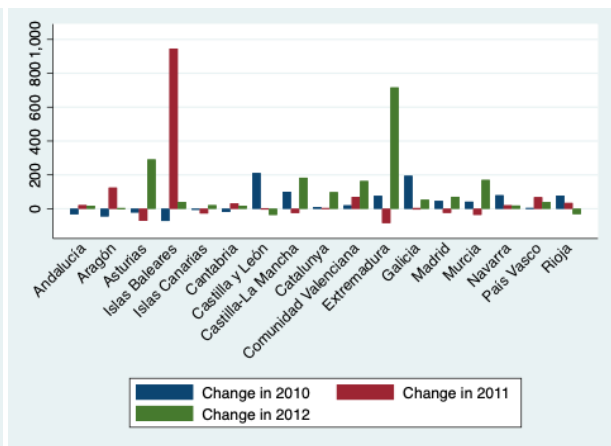


Figure A.4: Change in the share of households paying SS contributions each year across regions, conditional on hiring domestic services. *Source: EPF*

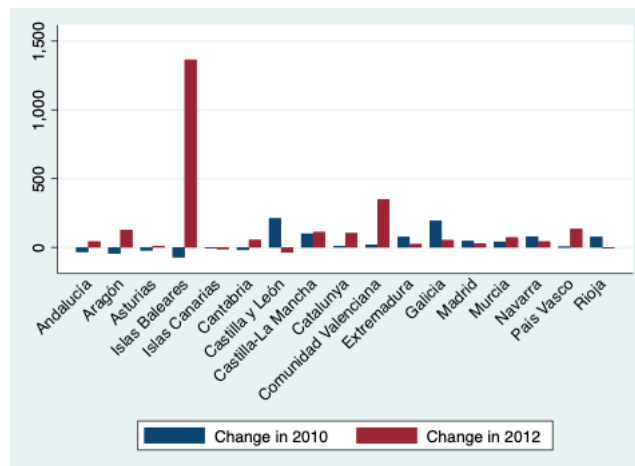


Figure A.5: Change in the number of households paying SS contributions. *Source: Encuesta de Presupuestos Familiares (EPF)*

## Covariates balance tables

Table A.3: Covariates balance for mothers of children under the age of 5

	(1)	(2)	(3)	(4)
	Mothers	Not mothers	All	Difference
<i>Tertiary education</i>	0.43 ( 0.50)	0.28 ( 0.45)	0.29 ( 0.45)	-0.15*** (-49.14)
<i>Secondary education</i>	0.49 ( 0.50)	0.52 (0.50)	0.52 (0.50)	0.03*** ( 9.44)
<i>Basic education</i>	0.06 ( 0.24)	0.16 (0.36)	0.15 (0.35)	0.10*** (58.27)
<i>Husband with tertiary education</i>	0.33 ( 0.47)	0.24 (0.42)	0.25 ( 0.43)	-0.09*** (-31.08)
<i>Active husband</i>	0.90 (0.29)	0.66 (0.48)	0.69 ( 0.46)	-0.25*** (-120.65)
<i>Employed husband</i>	0.78 (0.41)	0.58 (0.49)	0.61 (0.49)	-0.20*** (-73.62)
<i>Migrant</i>	0.13 (0.33)	0.06 (0.23)	0.07 (0.25)	-0.07*** (-33.02)
Observations	27,624	126,779		

Standard errors in parentheses. T-statistic in parentheses for the difference

Table A.4: Covariates balance for women living with elderly parents

	(1)	(2)	(3)	(4)
	Living with parents	Not living with parents	All	Difference
<i>Tertiary education</i>	0.22 ( 0.41)	0.23 (0.42)	0.23 ( 0.42)	0.01** ( 2.65)
<i>Secondary education</i>	0.34 (0.48)	0.42 (0.49)	0.41 ( 0.49)	0.07*** ( 17.99)
<i>Basic education</i>	0.27 ( 0.44)	0.22 ( 0.42)	0.22 (0.42)	-0.05*** ( -12.56)
<i>Husband with tertiary education</i>	0.22 ( 0.42)	0.21 (0.40)	0.21 ( 0.40)	-0.02*** (-5.32)
<i>Active husband</i>	0.43 (0.50)	0.56 (0.50)	0.55 (0.50)	0.12*** (29.09)
<i>Employed husband</i>	0.35 ( 0.48)	0.49 (0.50)	0.48 (0.50)	0.14*** (35.90)
<i>Migrant</i>	0.01 ( 0.12)	0.06 ( 0.23)	0.05 ( 0.23)	0.04*** (38.75)
Observations	9,998	191,863		

Standard errors in parentheses. T-statistic in parentheses for the difference

## Parallel trends

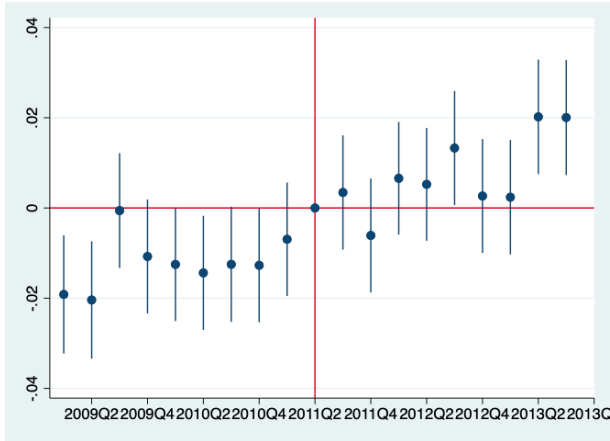


Figure A.6: Event study for being employed for baby mothers *Vertical line is 1st of July of 2011. Source: Encuesta de Población Activa (EPA)*

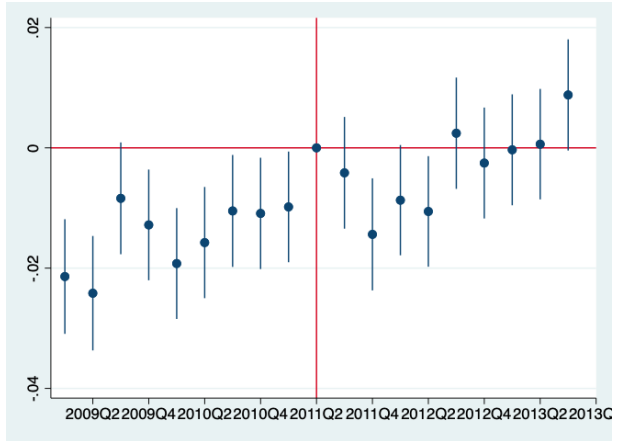


Figure A.7: Event study for being employed for teenagers mothers *Vertical line is 1st of July of 2011. Source: Encuesta de Población Activa (EPA)*

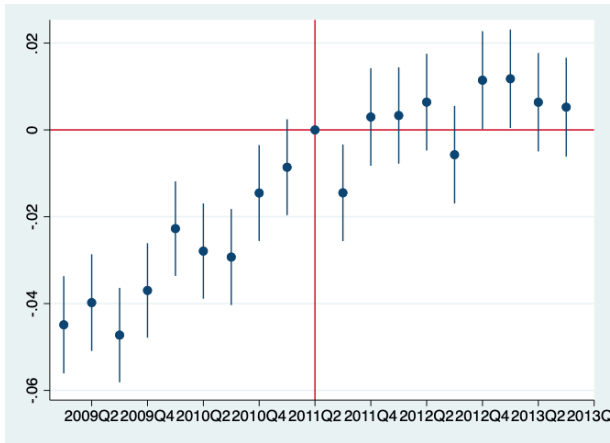


Figure A.8: Event study for being in the labour force for baby mothers *Vertical line is 1st of July of 2011. Source: EPA*

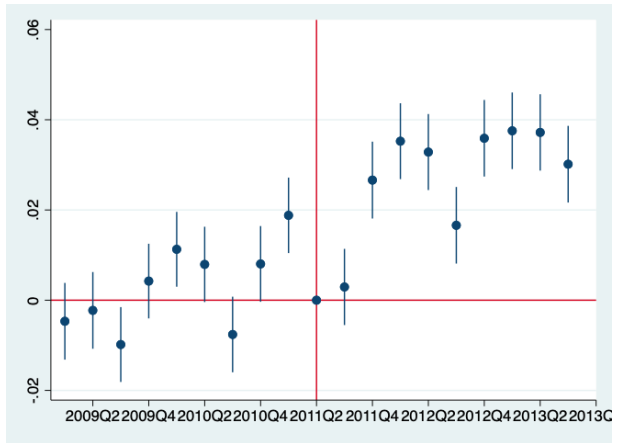


Figure A.9: Event study for being in the labour force for teenagers mothers *Vertical line is 1st of July of 2011. Source: EPA*

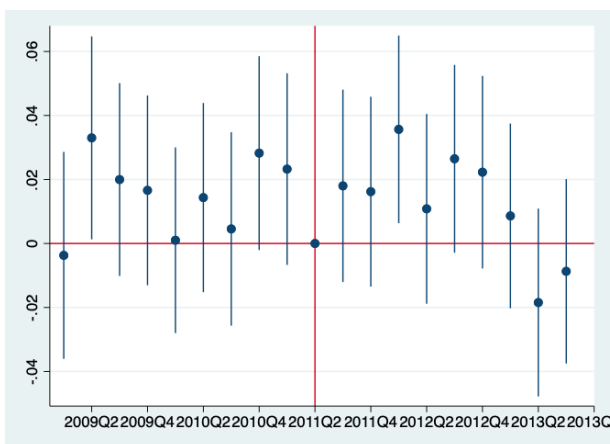


Figure A.10: Event study for being employed for women living with dependent adults *Vertical line is 1st of July of 2011. Source: EPA*

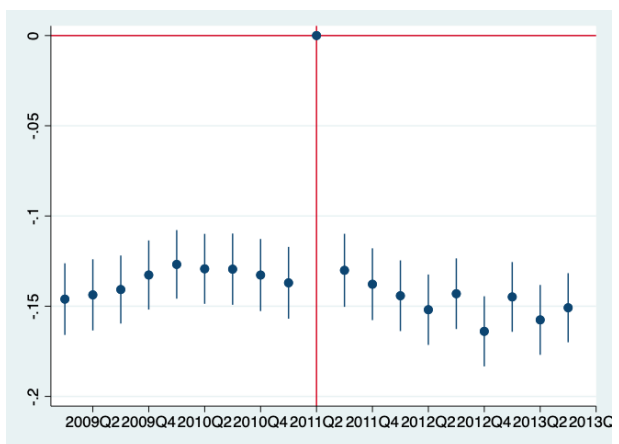


Figure A.11: Event study for being in the labour force for women living with dependent adults *Vertical line is 1st quarter of 2012. Source: EPA*

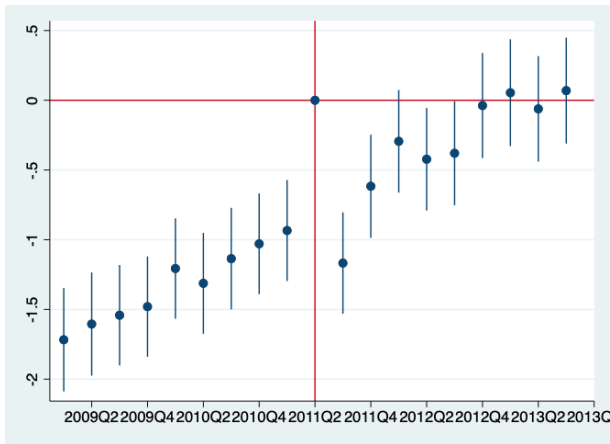


Figure A.12: Event study for number of hours employed by baby mothers *Vertical line is 1st of July of 2011. Source: Encuesta de Población Activa (EPA)*

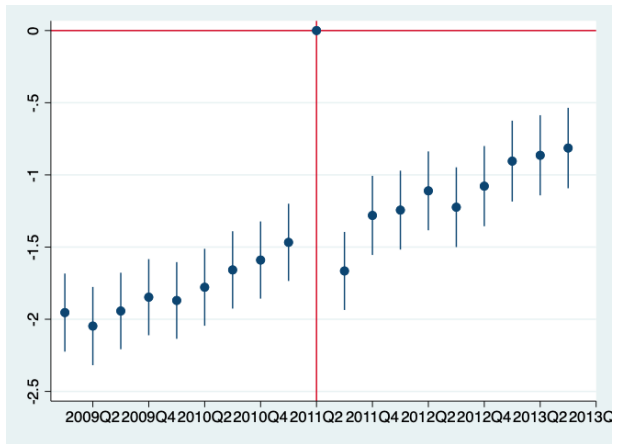


Figure A.13: Event study for number of hours employed by teenagers' mothers *Vertical line is 1st of July of 2011. Source: Encuesta de Población Activa (EPA)*

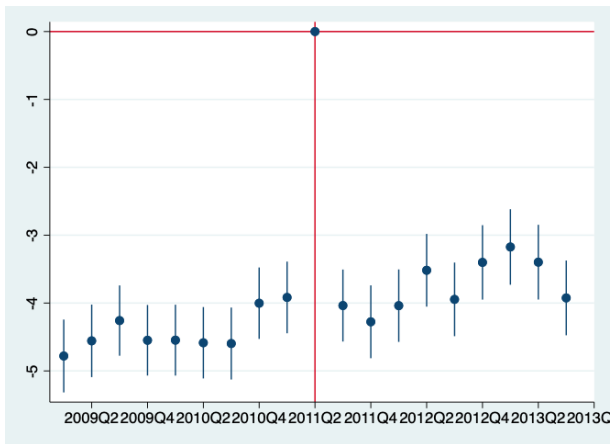


Figure A.14: Event study for number of hours worked by baby mothers *Vertical line is 1st of July of 2011. Source: EPA*

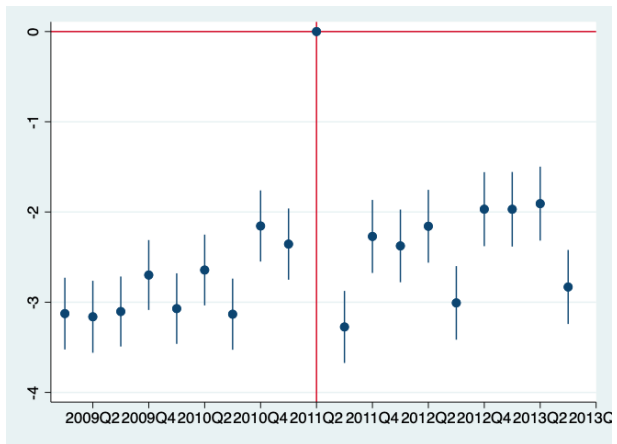


Figure A.15: Event study for number of hours worked by teenagers' mothers *Vertical line is 1st of July of 2011. Source: EPA*

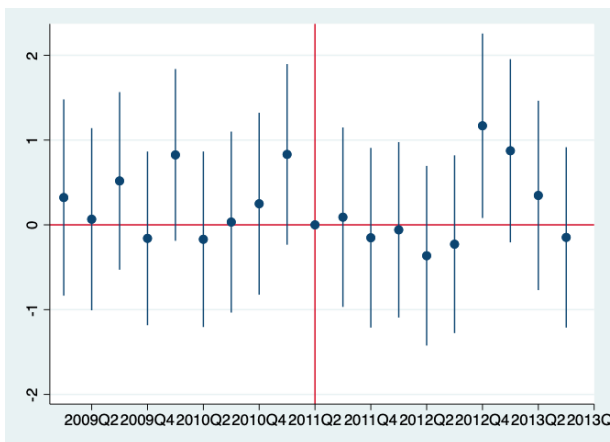


Figure A.16: Event study for hours employed for women living with dependent adults *Vertical line is 1st quarter of 2012. Source: EPA*

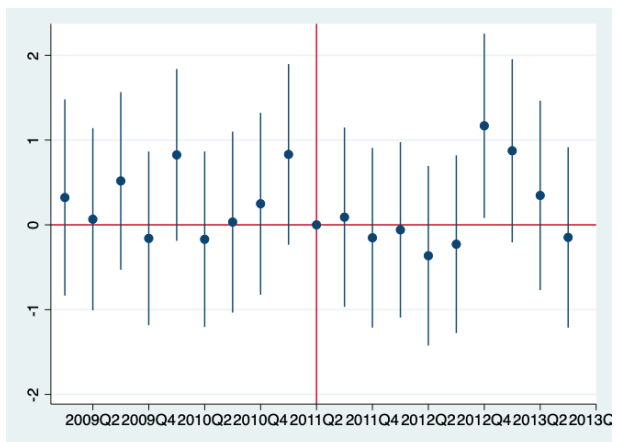


Figure A.17: Event study for hours worked for women living with dependent adults *Vertical line is 1st quarter of 2012. Source: EPA*

## Compositional change

Table A.5: Compositional change for mothers of children under the age of 5

<b>Mothers of young children</b>				
	Before the policy	After the policy	All	Difference
<i>Age</i>	31.95	32.30	32.15	0.34***
<i>Children</i>	1.67	1.68	1.68	0.01**
<i>Migrant</i>	0.13	0.13	0.13	0.00*
<i>Tertiary education</i>	0.44	0.45	0.44	0.02***
<i>Secondary education</i>	0.49	0.47	0.49	-0.01***
<i>Basic education</i>	0.06	0.05	0.05	-0.01***
<i>Husband with tertiary education</i>	0.33	0.34	0.33	0.01**
<i>Active husband</i>	0.90	0.90	0.91	-0.01***
<i>Employed husband</i>	0.78	0.74	0.80	-0.03***
Observations	38,692	40,372		

Table A.6: Compositional change for mothers of children under the age of 16

<b>Mothers of teenagers</b>				
	Before the policy	After the policy	All	Difference
<i>Age</i>	36.17	36.47	36.37	0.30***
<i>Children</i>	1.54	1.55	1.55	0.02***
<i>Migrant</i>	0.10	0.10	0.10	0.00
<i>Tertiary education</i>	0.36	0.38	0.37	0.02***
<i>Secondary education</i>	0.55	0.54	0.55	-0.01***
<i>Basic education</i>	0.07	0.06	0.06	-0.01***
<i>Husband with tertiary education</i>	0.29	0.30	0.29	0.01***
<i>Active husband</i>	0.87	0.86	0.86	-0.01***
<i>Employed husband</i>	0.76	0.72	0.76	-0.04***
Observations	96,917	99,043		

Table A.7: Compositional change for women living with elderly parents

<b>Women living with elderly parents</b>				
	Before the policy	After the policy	All	Difference
<i>Age</i>	58.46	58.51	58.44	0.05
<i>Children</i>	0.18	0.17	0.18	-0.01
<i>Migrant</i>	0.01	0.01	0.01	-0.00
<i>Tertiary education</i>	0.11	0.10	0.11	-0.01*
<i>Secondary education</i>	0.28	0.30	0.30	0.02***
<i>Basic education</i>	0.38	0.38	0.37	-0.00
<i>Husband with tertiary education</i>	0.25	0.25	0.25	0.00
<i>Active husband</i>	0.47	0.47	0.47	-0.00
<i>Employed husband</i>	0.37	0.33	0.37	-0.03***
Observations	14,695	14,808		

## Results

Table A.8: Change in the extensive margin of the labour supply of mothers of kids under 16

	Being employed		Labour force	
	(1)	(2)	(1)	(2)
<i>PostxTreated</i>	0.00440 (0.004)	0.00589 (0.004)	0.0252*** (0.006)	0.0225*** (0.006)
<i>Post</i>	-0.0500*** (0.004)	0 (.)	0.00986** (0.004)	0 (.)
<i>Treated</i>	-0.00872** (0.004)	-0.0256*** (0.004)	-0.0497*** (0.005)	-0.0184*** (0.004)
Controls and FE	No	Yes	No	Yes
Mean $Y_{i,t}$	0.794	0.794	0.756	0.756
Effect	-	-	3.33%	2.97%
Observations	189,820	189,820	238,518	238,518
Adjusted $R^2$	0.00339	0.09077	0.00300	0.08761

Standard errors in parentheses. Sample of women under the age of 50.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table A.9: Change in the intensive margin of the labour supply of mothers of kids under 16

	Hours employed		Hours worked	
	(1)	(2)	(3)	(4)
<i>PostxTreated</i>	0.507*** (0.121)	0.438*** (0.132)	0.159 (0.204)	0.250 (0.193)
<i>Post</i>	-0.377*** (0.085)	0 (.)	0.00162 (0.131)	0 (.)
<i>Treated</i>	-1.670*** (0.095)	-1.700*** (0.097)	-2.674*** (0.152)	-1.322*** (0.114)
Controls and FE	No	Yes	No	Yes
Mean $Y_{i,t}$	-0.726	-0.726	-1.525	-1.525
Effect	69.83%	60.33%	-	-
Observations	124,011	124,011	141,356	141,356
Adjusted $R^2$	0.00540	0.06366	0.00672	0.03951

Standard errors in parentheses. Sample of women under the age of 50.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table A.10: Change in the labour supply of mothers of children between the age of 10 and 16

	Being employed	Labour force	Hours empl.	Hours worked
	(1)	(2)	(3)	(4)
<i>PostxTreated</i>	0.0153*** (0.006)	0.0101*** (0.006)	0.270** (0.100)	0.0214 (0.186)
<i>Treated</i>	-0.0376*** (0.007)	-0.00662 (0.004)	-1.702*** (0.107)	-0.873*** (0.140)
Controls and FE	Yes	Yes	Yes	Yes
Mean $Y_{1,0}$	0.801	0.743	-0.705	-0.13
Effect	1.92%	1.34%	38.58%	-
Observations	162,685	203,760	105,686	120,657
Adjusted $R^2$	0.07053	0.04175	0.01705	0.01922

Standard errors in parentheses. Sample of women under the age of 50

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table A.11: Change in the extensive margin of the labour supply of women living with retired adults

	Being employed		Labour force	
	(1)	(2)	(1)	(2)
<i>PostxTreated</i>	0.00672 (0.016)	0.0115 (0.015)	-0.0144 (0.010)	-0.00815 (0.010)
<i>Post</i>	-0.0429*** (0.004)	0 (.)	0.0250*** (0.003)	0 (.)
<i>Treated</i>	0.0246** (0.012)	0.0235** (0.009)	-0.150*** (0.025)	-0.0230*** (0.007)
Controls and FE	No	Yes	No	Yes
Mean $Y_{i,t}$	0.87	0.87	0.27	0.27
Effect	-	-	-	-
Observations	118,654	118,654	278,302	278,302
Adjusted $R^2$	0.00329	0.08233	0.00534	0.44011

Standard errors in parentheses.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table A.12: Change in the intensive margin of the labour supply of women living with retired adults

	Hours employed		Hours worked	
	(1)	(2)	(3)	(4)
<i>PostxTreated</i>	-0.213 (0.502)	0.0493 (0.441)	-0.780 (0.498)	-0.409 (0.603)
<i>Post</i>	0.0337 (0.106)	0 (.)	0.238 (0.182)	0 (.)
<i>Treated</i>	0.159 (0.527)	0.0206 (0.511)	2.944** (1.246)	0.283 (0.519)
Controls and FE	No	Yes	No	Yes
Mean $Y_{i,t}$	0.258	0.258	2.936	2.936
Effect	-	-	-	-
Observations	77,387	77,387	93,768	93,768
Adjusted $R^2$	0.00001	0.05875	0.00077	0.0337

Standard errors in parentheses.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$



## Heterogeneity analysis

Table A.13: Change in the labour supply of mothers of children under the age of 5 across regions with different shares of female migrant population

	Being employed	Labour force	Hours employed	Hours worked
	(1)	(2)	(3)	(4)
<i>PostxTreatedxLowSkilled</i>	0.312 (0.293)	0.581** (0.219)	19.67*** (5.490)	18.19** (7.874)
<i>TreatedxLowSkilled</i>	-0.418 (0.264)	-0.400 (0.294)	-15.13 (9.877)	-2.321 (13.176)
<i>Treated</i>	0.00776 (0.013)	0.0196 (0.015)	-0.393 (0.550)	0.129 (0.682)
Controls and FE	Yes	Yes	Yes	Yes
Mean $Y_{1,0}$	0.689	0.693	-2.52	-4.914
Effect	-	83.83%	780.55%	370.16%
Observations	163,768	200,226	106,573	120,499
Adjusted $R^2$	0.09514	0.07059	0.02298	0.03074

Standard errors in parentheses. Initial level of female labour supply in the region with the lowest share of female immigrants with basic education in 2010

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table A.14: Change in the labour supply of mothers of children under the age of 5 across regions with different shares of Latina population

	Being employed	Labour force	Hours employed	Hours worked
	(1)	(2)	(3)	(4)
<i>PostxTreatedxLatinaShare</i>	0.377 (0.501)	0.914** (0.428)	27.17** (10.816)	25.26* (13.889)
<i>TreatedxLatinaShare</i>	-0.750** (0.270)	-0.474 (0.397)	-21.50** (9.513)	-16.90 (18.122)
<i>Treated</i>	0.00971 (0.012)	0.0184 (0.015)	-0.380 (0.506)	0.456 (0.600)
Controls and FE	Yes	Yes	Yes	Yes
Mean $Y_{1,0}$	0.689	0.693	-2.52	-4.914
Effect	-	131.89%	1,078.17%	514.04%
Observations	163,502	199,880	106,460	120,366
Adjusted $R^2$	0.09447	0.07050	0.02297	0.03075

Standard errors in parentheses. Initial level of female labour supply in the region with the lowest share of Latina migrants in 2010

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table A.15: Change in the labour supply of mothers of children under the age of 5 across regions with different share of female immigrants following Card and Peri (Card, 2001) methodology

	Being employed (1)	Labour force (2)	Hours employed (3)	Hours worked (4)
Share of female immigrants				
<i>PostxTreatedxImmigrants</i>	0.168 (0.190)	0.347** (0.142)	11.88** (3.552)	10.87** (5.026)
Controls and FE	Yes	Yes	Yes	Yes
Mean $Y_{1,0}$	0.689	0.693	-2.52	-4.914
Effect	-	50.07%	471.42%	221.20%
Observations	163,768	200,226	106,573	120,499
Adjusted $R^2$	0.09515	0.07060	0.02297	0.03074
Share of female immigrants with basic education				
<i>PostxTreatedxBasicEduc</i>	0.312 (0.293)	0.581** (0.219)	19.67*** (5.490)	18.19** (7.875)
Controls and FE	Yes	Yes	Yes	Yes
Mean $Y_{1,0}$	0.689	0.693	-2.52	-4.914
Effect	-	83.83%	780.55%	370.16%
Observations	163,768	200,226	106,573	120,499
Adjusted $R^2$	0.09514	0.07059	0.02298	0.03074
Share of Latinas				
<i>PostxTreatedxLatina</i>	0.377 (0.501)	0.914** (0.428)	27.17** (10.818)	25.26* (13.891)
Controls and FE	Yes	Yes	Yes	Yes
Mean $Y_{1,0}$	0.689	0.693	-2.52	-4.914
Effect	-	131.89%	1,078.17%	514.04%
Observations	163,502	199,880	106,460	120,326
Adjusted $R^2$	0.09447	0.07050	0.02297	0.03075

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table A.16: Change in the labour supply of mothers of children under the age of 5 across regions with different annual changes in the share of female immigrants following Card and Peri (Card, 2001) methodology

	Being employed (1)	Labour force (2)	Hours employed (3)	Hours worked (4)
Share of female immigrants				
<i>PostxTreatedxImmigrants</i>	0.306 (0.276)	0.222 (0.233)	12.86* (6.422)	14.03 (8.231)
Controls and FE	Yes	Yes	Yes	Yes
Mean $Y_{1,0}$	0.689	0.693	-2.52	-4.914
Effect	-	-	510.31%	-
Observations	163,768	200,226	106,573	120,499
Adjusted $R^2$	0.09514	0.07050	0.02288	0.03074
Share of female immigrants with basic education				
<i>PostxTreatedxBasicEduc</i>	0.118 (0.134)	0.139 (0.121)	6.706** (2.576)	12.32** (3.728)
Controls and FE	Yes	Yes	Yes	Yes
Mean $Y_{1,0}$	0.689	0.693	-2.52	-4.914
Effect	-	-	241.11%	250.71%
Observations	163,768	200,226	106,573	120,499
Adjusted $R^2$	0.09513	0.07051	0.02288	0.03081
Share of Latinas				
<i>PostxTreatedxLatina</i>	0.0464 (0.011)	0.0985 * (0.006)	1.681 (0.310)	4.257 (0.506)
Controls and FE	Yes	Yes	Yes	Yes
Mean $Y_{1,0}$	0.689	0.693	-2.52	-4.914
Effect	-	14.21%	-	-
Observations	163,330	199,525	106,342	120,226
Adjusted $R^2$	0.09475	0.06949	0.02284	0.03081

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table A.17: Change in the labour supply of mothers of children under the age of 5 across regions with different levels of male unemployment

	Being employed	Labour force	Hours employed	Hours worked
	(1)	(2)	(3)	(4)
<i>PostxTreatedxUnemployment</i>	0.0950** (0.044)	0.0998** (0.036)	2.803*** (0.916)	0.841 (1.222)
<i>TreatedxUnemployment</i>	-0.0708 (0.075)	-0.0317 (0.076)	2.752 (1.956)	9.409*** (2.538)
<i>Treated</i>	0.00332 (0.017)	0.0108 (0.016)	-1.494** (0.617)	-1.778** (0.663)
Controls and FE	Yes	Yes	Yes	Yes
Mean $Y_{1,0}$	0.897	0.799	-1.217	-6.611
Effect	10.59%	12.40%	230.32%	-
Observations	163,768	200,226	106,573	120,499
Adjusted $R^2$	0.09519	0.07063	0.02313	0.03094

Standard errors in parentheses. Initial level of female labour supply in the region with the lowest share of male unemployment in 2010

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table A.18: Change in labour supply for mothers of children under 16 and with tertiary education

	Being employed	Labour force	Hours employed	Hours worked
	(1)	(2)	(3)	(4)
<i>PostxTreatedxTertiaryEduc</i>	0.0222** (0.009)	0.0153*** (0.005)	0.650*** (0.164)	0.454** (0.205)
<i>Treated</i>	-0.0125* (0.006)	-0.0177*** (0.006)	-1.396*** (0.131)	-1.166*** (0.166)
Controls and FE	Yes	Yes	Yes	Yes
Mean $Y_{1,0}$	0.901	0.859	0.473	-2.224
Effect	2.46%	1.78%	137.42%	20.41%
Observations	76,934	88,848	57,924	64,236
Adjusted $R^2$	0.05318	0.01599	0.01868	0.04963

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table A.19: Change in the labour supply of mothers living with elderly parents

	Being employed	Labour force	Hours empl.	Hours worked
	(1)	(2)	(3)	(4)
<i>PostxTreated</i>	-0.0427 (0.027)	-0.0580** (0.023)	-1.395 (1.107)	-0.501 (1.530)
<i>Treated</i>	0.0126 (0.022)	0.0255* (0.013)	1.890*** (0.639)	2.918*** (0.915)
Controls and FE	Yes	Yes	Yes	Yes
Mean $Y_{1,0}$	0.799	0.817	0.945	2.194
Effect	-	7.09%	-	-
Observations	69,652	89,181	46,272	53,598
Adjusted $R^2$	0.08846	0.05602	0.03081	0.03533

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table A.20: Change in the labour supply of women living with retired men or retired women

	Being employed		Hours worked	
	Retired men	Retired women	Retired men	Retired women
	(1)	(2)	(3)	(4)
<i>PostxTreatedxGender</i>	0.00371 (0.014)	0.0340 (0.023)	-0.872 (0.794)	-1.965 (1.299)
<i>TreatedxGender</i>	-0.00744 (0.013)	-0.0409** (0.018)	-2.344*** (0.850)	3.326*** (0.996)
<i>Post</i>	0.0614 (0.057)	0.0611 (0.057)	-8.522*** (2.513)	-8.532*** (2.512)
<i>Treated</i>	0.0332*** (0.010)	0.0356*** (0.007)	3.993*** (0.650)	1.435*** (0.400)
Controls and FE	Yes	Yes	Yes	Yes
Mean $Y_{1,0}$	0.831	0.873	6.02	1.9
Effect	-	-	-	-
Observations	118,654	118,654	93,768	93,768
Adjusted $R^2$	0.08376	0.08380	0.01032	0.01027

Standard errors in parentheses.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

## Law compliance variation

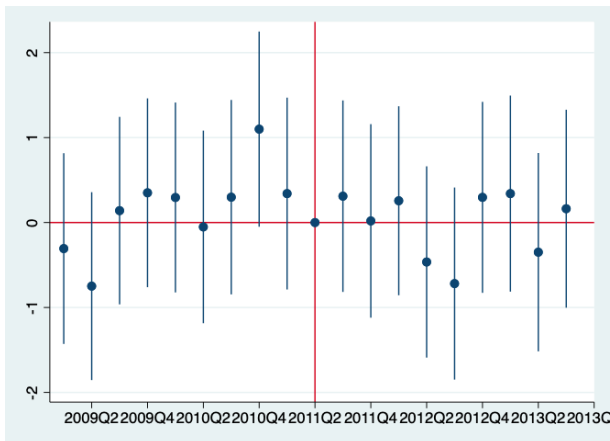


Figure A.18: Event study for number of hours employed of baby mothers across treated and control regions. Vertical line is 1st of July of 2011. Source: EPA

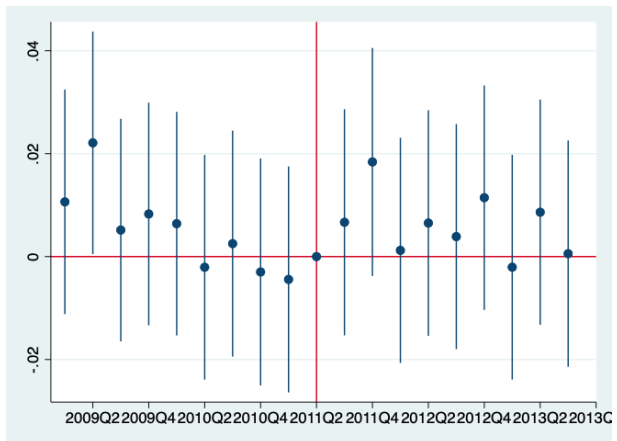


Figure A.19: Event study for being in the labour force for teenagers mothers across treated and control regions. Vertical line is 1st of July of 2011. Source: EPA

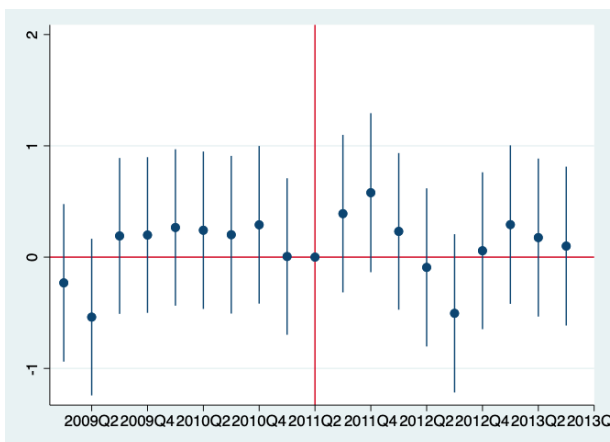


Figure A.20: Event study for number of hours employed of teenagers mothers across treated and control regions. Vertical line is 1st of July of 2011. Source: EPA

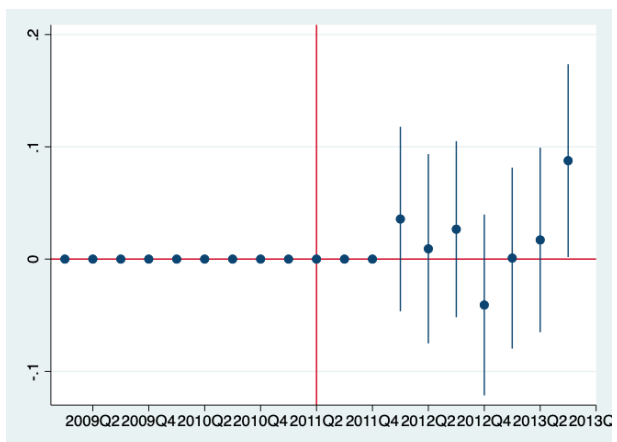


Figure A.21: Event study for being employed for women living with elderly parents across treated and control regions. Vertical line is 1st of July of 2011. Source: EPA

Table A.21: Change in the labour supply of women across high and low compliance regions

	Baby mothers	Teenager mothers		Women living with elderly parents
	Hours employed	Labour force	Hours employed	Being employed
	(1)	(2)	(3)	(4)
<i>PostxTreatedxCompliance</i>	0.00153** (0.001)	0.0000452*** (0.000)	0.00126*** (0.000)	-0.0000686** (0.000)
<i>TreatedxCompliance</i>	-0.00103** (0.000)	-0.0000140 (0.000)	-0.000195 (0.000)	0.0000844*** (0.000)
<i>Treated</i>	-0.551 (0.413)	-0.00654 (0.004)	-1.478*** (0.103)	0.00189 (0.008)
Controls and FE	Yes	Yes	Yes	Yes
Mean $Y_{1,0}$	-1.83	0.74	-1.47	0.76
Effect	0.08%	0%	0.08%	0%
Observations	106,114	230,651	121,044	165,023
Adjusted $R^2$	0.02189	0.08593	0.02616	0.09525

Standard errors in parentheses. Initial level of female labour supply in the region with the smallest change in compliance in 2012

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

## Sexual division of household work

Table A.22: Household work division among couples in Spain and the Basque Country in 2009

	<i>Spain</i>		<i>Basque Country</i>	
	Men	Women	Men	Women
Cooking	42.14	62.84	46.39	61.33
Cleaning	45.15	54.17	32.61	40.56
Gardening	79.96	45.59	79.13	40
Childcare	77.82	102.67	95.54	129.05
Adult care	58.37	159.55	20	123.5
Leisure	74.10	64.09	79.82	76.91

Average time spent daily and expressed in minutes.

## Robustness checks

Table A.23: Change in the labour supply of mothers of children under 5 if the policy happened in 2010

	Being employed	Labour force	Hours empl.	Hours worked
	(1)	(2)	(3)	(4)
<i>PostxTreated</i>	-0.00450 (0.006)	0.00741 (0.005)	0.256 (0.166)	-0.194 (0.255)
<i>Treated</i>	0.00833 (0.014)	0.0191 (0.018)	-1.229*** (0.387)	0.240 (0.398)
Controls and FE	Yes	Yes	Yes	Yes
Mean $Y_{1,0}$	0.807	0.727	-0.906	-4.482
Observations	138,385	172,716	94,387	107,182
Adjusted $R^2$	0.08346	0.08085	0.02225	0.03106

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table A.24: Change in the labour supply of mothers of children under 16 if the policy happened in 2010

	Being employed	Labour force	Hours empl.	Hours worked
	(1)	(2)	(3)	(4)
<i>PostxTreated</i>	-0.00196 (0.007)	-0.00128 (0.004)	0.112 (0.134)	-0.0608 (0.179)
<i>Treated</i>	-0.0200*** (0.005)	-0.00746** (0.004)	-1.689*** (0.188)	-1.302*** (0.169)
Controls and FE	Yes	Yes	Yes	Yes
Mean $Y_{1,0}$	0.816	0.742	-0.774	-2.664
Observations	154,422	198,713	106,087	121,582
Adjusted $R^2$	0.08146	0.09961	0.02699	0.03290

Standard errors in parentheses  
\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table A.25: Change in the labour supply of women living with retired adults if the policy happened in 2010

	Being employed	Labour force	Hours empl.	Hours worked
	(1)	(2)	(3)	(4)
<i>PostxTreated</i>	-0.0105 (0.011)	-0.00270 (0.007)	0.0243 (0.652)	-1.336** (0.609)
<i>Treated</i>	0.0310*** (0.009)	-0.0200*** (0.005)	0.164 (0.512)	3.565*** (1.083)
Controls and FE	Yes	Yes	Yes	Yes
Mean $Y_{1,0}$	0.887	0.255	0.301	2.775
Observations	113,712	278,133	76,441	93,483
Adjusted $R^2$	0.07218	0.43095	0.01993	0.02513

Standard errors in parentheses  
\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table A.26: Change in the labour supply of women including the year of 2011

	Being employed	Labour force	Hours employed	Hours worked
	(1)	(2)	(3)	(4)
Mothers of young children				
<i>PostxTreated</i>	0.0152* (0.008)	0.0189*** (0.004)	0.548*** (0.161)	0.404 (0.298)
Controls and FE	Yes	Yes	Yes	Yes
Mean $Y_{1,0}$	0.779	0.75	-0.857	-3.768
Effect	1.95%	2.52%	63.94%	-
Observations	272,579	332,850	178,303	179,492
Adjusted $R^2$	0.09812	0.06998	0.05751	0.03762
Mothers of teenagers				
<i>PostxTreated</i>	0.00460 (0.004)	0.0157*** (0.005)	0.261* (0.126)	-0.0243 (0.189)
Controls and FE	Yes	Yes	Yes	Yes
Mean $Y_{1,0}$	0.794	0.757	-0.726	-1.536
Effect	-	2.07%	35.95%	-
Observations	307,354	385,831	203,366	204,669
Adjusted $R^2$	0.08893	0.08755	0.06394	0.03899
Women living with elderly parents				
<i>PostxTreated</i>	0.00469 (0.011)	-0.00678 (0.006)	-0.253 (0.310)	-0.127 (0.506)
Controls and FE	Yes	Yes	Yes	Yes
Mean $Y_{1,0}$	0.869	0.275	0.484	3.276
Effect	-	-	-	-
Observations	197,812	461,949	129,619	130,435
Adjusted $R^2$	0.08704	0.43859	0.05677	0.03193

Standard errors in parentheses  
\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

## **B Appendix - Data Sources**

### **Household Budget Survey**

This is Spanish cross-sectional data at the micro-level on household expenditure. This data comes from a survey conducted annually by the Spanish Institute of Statistics and contains information on the expenditure of approximately 24.000 households which are representative of the totality of Spanish households. Over a year, groups of households are randomly surveyed and asked to report their expenses in a diary during a week. This process is repeated several times during the year to ensure representativeness of households and yearly and monthly expenses.

This survey includes information about the individual characteristics of each member of the same household like exact age, gender, nationality, civil status, previous education, current employment status, their income and wages (measured in ranges of 1,500€), region where they live in, etc. It also includes information about the household like the number of children under the age of 4 or under the age of 14, the total income of the household, the number of members living in the same household, if they own the property where they live, etc. Lastly, it includes information about all the expenses of the household listed following the COICOP classification. These expenses are classified according to their regularity into daily, biweekly, monthly and annually expenses. Moreover, the total budget of the household is provided.

One of the limitations of the survey is that the information about the participation in the labour force is very restricted. At the region level, I can only observe if the individual is active or not. I do not have information about their employment status, the hours they work, the type of contract they have or if they are working full- or part-time. I do not have information about their tenure either.

### **Labour Force Survey**

This is Spanish cross-sectional data at the micro-level on individuals' labour force. It is a quarterly survey that collects information on the labour force status of members of randomly selected households as well as information about other personal characteristics like sex, age, country of origin, reasons for not working, etc. This survey contains approximately 65,000 households and 160,000 individuals per quarter. Besides, it also contains weights that allow investigators to approximate the behavior of the Spanish labor market.

This survey includes information about the individual characteristics of each member of the

same household like gender, nationality, civil status, previous education, current employment status, region where they live in, etc. One advantage is that I can observe the country of origin of all observations and thus, use this information for more detailed analysis on migrants. One caveat is that age is observed only in ranges of 5 years (with the exception of 16 year-olds to account for the population in working age). The highest range of age is 65, therefore, I know if observations are 65+ but cannot observe their exact age. This constrains my analysis as in the same group I can have individuals who are 65 and live an active lifestyle, they could even be working, and individuals who are 90 and who might be dependent. To overcome this caveat, I identified individuals who are 65+ and retired to proxy for dependent adults. Besides, the survey includes information on the relationship between the members of the households, thus I can identify the parents in the household, the grandparents and even couples.

This survey is very useful for my analysis as it includes very detailed information on the labour outcomes of the individuals. I can observe if they are active or not, if they are employed or unemployed, the type of contract they have, the number of hours they are employed and they effectively work, the tenure they have, etc. Not only that, but I can also observe the reasons why they work part-time, the reasons why they do not work more hours or the reasons why they are not looking for a job. Nevertheless, not every individual answers these questions so I have many missing values for the variables that explain decisions of the individuals on their labour supply.

However, one of the main limitations of the survey is its cross-sectional nature. I cannot analyse the labour market trajectory of the individuals. Therefore, for example, when I observe a positive effect on being in the labour I cannot say if the individuals are returning to the labor market or entering for the first time. I cannot follow either the trajectory of the couples: I cannot see if women increase their labour supply because their husbands just became unemployed or if they have been unemployed for a long time. Besides, there is no data about salaries and income of the households. Therefore, there are conclusions that I can take from the Household Budget Survey but I cannot apply to the data I have from the Labour Force Survey. Besides, this survey is used by Spanish authorities to estimate the magnitude of the shadow economy. However, I could not do that for my study because detailed data about individuals working in the domestic services sector was only available upon request and after paying a significant amount.



## Time Use Survey

The 2009 Time Use Survey was conducted at the state level between October 2009 and September 2010 following the methodology set for European Time Use Surveys. Contains information about daily activities of 12,000 households across Spain that are representative of all the population. Information is recovered from all members of the household older than 10 years old. The survey collects information of the household, of the individuals, a daily diary of activities with the amount of time spent on each one and a daily diary of work for the employed members. The information is presented for every quarter of the year.

Very similarly to the Household Budget Survey, it includes information about the individual characteristics of each member of the same household like exact age, gender, nationality, civil status, previous education, current employment status, their income (measured in ranges of 1,500€), region where they live in, etc. It also includes information about the household like the number of children under the age of 4 or under the age of 14, the total income of the household, the number of members living in the same household, the number of dependent adults, if they hire a maid, etc. It also includes information on the employment of the members: type of contract, hours worked, if they work part-time, their wage, etc. More important to my analysis, it includes a detailed list of the activities done by each individual every day of the week and the time spent on them. The list of activities follows the guidelines set by Eurostat in 2008 and contains information about activities that are part of household work and informal care work.

The 2013 Time Use Survey is only conducted for the Basque Country population. It collects information during 6 months from 5,000 households that are representative of all the population of the region. Information on time spent on daily activities is recovered from one member of each household older than 10 years old. It also includes information on the exact age, gender, nationality, education and labour force of the individual, although this information is not as disaggregated as in the other survey. Although the list of activities also follows the Eurostat guidelines, the level of detail is lower than in the state-level survey. What really difficulties my analysis is that I can only observe one member of each household, therefore I cannot observe the distribution of household work across couples. I cannot either identify households with young children as the variable for type of family only considers two categories for presence of children: if they are younger than 25 or older than 25.