

Maternity and Labor Markets: Impact of Legislation in Colombia¹

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Abstract

This study seeks to determine the impact on female labor outcomes of the amendment to the Colombian labor law that extended maternity leave from 12 to 14 weeks (Law 1468 of July 2011). To identify this impact, labor market outcomes of two groups of women with different fertility rates are compared. The study finds evidence that as a result of the extension of the maternity leave period, women in the high-fertility age group experience an increase in inactivity rates, informality, and self-employment. Our results are robust across demographic groups and time periods, suggesting a causal effect of the increase in the maternity leave period. The study points to the need for a redesign of maternity protection policy that would enable the economic and social costs of bearing children to be shared by both parents and that may generate social change regarding the importance of paternal care. Our main recommendation is to design a "parental leave" policy that can be enjoyed by both parents in equal or very similar proportions, and to socialize the extra cost of social security of the worker who is replacing the woman on maternity leave, which is now assumed by the employer.

JEL classification: J08, J2, J3, J7, K31

Key words: maternity leave, female labor market, labor regulation

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1. Introduction

The increasing participation of women in economic activity is one of the greatest social revolutions of the twentieth century. Colombia is the Latin American country with the largest increase in the rate of female participation in the labor force in the last three decades (Amador, Bernal, and Peña, 2013). Several social factors drove this process. Access by women to college education since 1934, birth control through mass access to contraceptives, growing urbanization, and the increasing need for dual-earner households, among other factors, prompted the increase in women's participation in the economically productive sectors.

Due in part to this increase, and in an attempt to spark more interest in paid work among women, starting in the 1930s labor laws began protecting the event of pregnancy for female workers, and subsequently added protections for women from gender discrimination. This same effort was reflected in the Colombian Constitution in 1991 in the equality and non-discrimination clauses, and is a central element in international treaties signed by Colombia, most prominently the Convention on the Elimination of all Forms of Discrimination against Women (CEDAW).⁵

However, the equality to which women are entitled by law is hampered by a series of biological events, including pregnancy, childbirth, and breastfeeding, that directly and primarily affect women.⁶ In recognition of this biological disparity and in order to promote female employment during the period of industrialization, several countries began implementing maternity leave programs in the early twentieth century. This trend can be seen in the adoption of the International Labour Organisation's (ILO) Convention No. 3, which has been mandatory in Colombia since 1931,⁷ as well as subsequent laws that have modified the maternity protection regime.

According to the laws in effect in 2014, pregnant workers in Colombia have two fundamental guarantees: first, the right to enhanced job security, which implies a prohibition

⁵ The United Nations General Assembly adopted CEDAW in 1979.

⁶ Although these biological events are thought to affect only women who are mothers or who hope to become mothers, as will be shown in Section 2, cultural norms and preconceptions about motherhood affect *all* women, regardless of their parental status or their individual preference regarding motherhood.

⁷ The ILO has adopted two other Conventions on maternity that expand the rights granted in Convention No. 3. These are Conventions 103 (1952) and 183 (2000). They have not been ratified by Colombia (ILO, 2001). A list of ratifications by Convention and ratifying country is available at: <http://www.ilo.org/public/spanish/standards/relm/ilc/ilc90/pdf/rep-iii-2.pdf>. Last accessed January 2014.

against dismissal due to pregnancy that protects the worker during the nine-month gestation period and maternity leave; and second, 14 weeks of paid maternity leave.⁸

For the ILO, these benefits aim, first, to protect the health of women and children during pregnancy and after birth; and second, to ensure that women's reproductive role does not adversely affect their economic and job security (ILO, 2005; 2010). The most recent ILO initiative was to promote payment of maternity leave by social security systems rather than exclusively by employers in order to prevent discrimination against female workers. Indeed, the ILO has recognized that motherhood and the responsibilities associated with it still have an important influence on perceptions about women in the labor market and can be used by employers as a discriminatory criterion when recruiting workers. For this reason, the ILO stated that "the problem is how to ensure that employers do not reject candidates of reproductive age who are already taking on the heavier burden of family responsibilities and whose absence due to maternity leave or even longer periods generates organizational problems for employers, in some cases even assuming the financial burden of paying wages during such absences" (ILO, 1997). The focus of the ILO has been twofold. First, it has emphasized the importance of including women in labor markets with regard for their sexual and reproductive rights, including the right to be a mother without fear of discrimination; and second, it has highlighted the urgency of generating institutional mechanisms to reduce the costs to employers associated with workers who take maternity leave, in order to reduce the discriminatory effects that maternity leave may have on female workers.

Indeed, gender equality in employment requires that women and men be treated as substantially similar subjects with similar capacities, potential, and aspirations for personal and professional growth, who, with similar training, stand on equal footing to reach the highest levels of productivity in a given job. Achieving this aim requires the elimination of differentiating economic and institutional costs that could create an incentive for employers to hire male over female workers. By the same token, male and female workers, regardless of age, sexual orientation, or parental or marital status, should assume the same burdens regarding the care of children, relatives, and the elderly and should be expected to need certain special benefits to take

⁸ Colombian law mandates that the worker must take one of the 14 weeks before the birth of the child and the next 13 weeks after the birth. In the case of premature births, the 14 weeks may be increased by the difference between the initial due date and the date that the child is born. In the case of multiple births, the length of maternity leave is increased by two weeks.

care of significant others.⁹ Specifically in the case of a newborn, both parents should be expected to contribute to the care and welfare of the child, which means that similar portions of paid leave should be legally recognized for both parents. Otherwise, employers could be motivated to try to offset the additional cost of female workers by not hiring them, hiring them less frequently, or firing them more often than male workers.

To quantify the direct costs of maternity leave paid by employers in Colombia, Espino and Salvador (2014) use information from household surveys in 2012,¹⁰ shown in Table 1, and take into account current labor legislation. They find that the annual extra cost to the firm of providing paid maternity leave is 6.73 percent of the average annual female wage.¹¹ This extra cost is directly associated with providing maternity leave and hiring a replacement worker during the leave period. There are, however, other important costs assumed by the employer that are not taken into account in this calculation. These are related to the necessary adjustments in the organization due to the absence of the worker on leave, including the costs of posting the job, searching for an appropriate replacement, and productivity losses either during the training and adjustment period or throughout the leave period if the replacement is not as productive as the worker on maternity leave. Unfortunately, measuring these costs is very difficult due to lack of appropriate data.

These factors show the potential differential impact of maternity and labor legislation designed to protect it on women's employability. For these reasons, examining this type of regulatory intervention is especially important for understanding labor market differences by gender, but the scope of its impact is not yet fully understood. Our research seeks to determine the effect of the most recent reform of pregnancy legislation, which extended maternity leave from 12 to 14 weeks (Law 1468 from 2011), on women's employment status. We believe that research on these variables could help to identify some of the determinants of female employment and unemployment in Colombia, and, in subsequent research, could serve as a benchmark for comparison with labor markets with similar economic and institutional contexts

⁹ In addition to maternity leave policies, several countries recognize the right to parental leave to attend to children's emergencies or continued illnesses without the fear of job loss or lost pay.

¹⁰ Specifically, they use Gran Encuesta Integrada de Hogares (monthly household surveys) and Encuesta Nacional de Calidad de Vida (quality-of-life household surveys), both administered by DANE, the national institution responsible for collecting statistics in Colombia.

¹¹ The annual cost for a worker with no maternity leave is 100. For a woman with maternity leave, the employer must cover 73.06 percent of her annual salary (remaining wages are covered by the social security system). 30.31 percent corresponds to the salary of the replacement worker, and 3.37 percent corresponds to the value of one paid hour per day for nursing for three months after woman returns from maternity leave.

as those of Colombia, which is the case of most countries in the Latin American and Caribbean region.

To understand the change in legislation and its effect on women's labor market outcomes, we exploit the differential effect on women who are associated with different fertility rates because of their age. That is, we compare women of childbearing age (between 18 and 30 years of age) to women between the ages of 40 and 55. These two groups have very different fertility rates. Thus, Law 1468 affects women between 18 and 30 years of age (the treatment group), but not women between 40 and 55 years of age (the control group), who have passed their peak of fertility. We use the difference-in-differences approach. The results show that since 2011, women of childbearing age (treatment group) experience worse labor market outcomes than the group of women with low fertility rates (control group). Women in the treatment group are more likely to enter into inactivity, informality, and self-employment after 2011 relative to women in the control group.

We explore the possibility that our results might be tainted by a period of adjustment, or some cyclical responses, around the time of implementation of the law. For this, we run regressions excluding data from some months before and after implementation of the changes in the maternity leave period. We also check for the possibility that our results might be affected by the cohort composition of the groups. Therefore, we run the same regressions for men only, and also using men ages 18 through 30 as the control group. Finally, we estimate placebo treatment effects using data from pretreatment years. We show that our results are robust across demographic groups and time periods, suggesting a causal effect of the increase in the maternity leave period.

Following Autor, Donohue, and Schwab (2006), we stress that our paper does not attempt to provide an overall assessment of maternity protection laws. We do not evaluate the benefits of such laws to workers or the broader public. The fact that there are some effects on the labor market for high-fertility women underscores the fact that legal protections do not come without cost. We make public policy recommendations which we believe would correct the distortions created by the legislation, so that women can take advantage of the 14 weeks of maternity leave without being punished by the labor market.

This document is divided into eight sections. Section 2 reviews the relevant literature. Section 3 presents a stylized model that allows us to understand the effects of maternity

protection on the labor market. Section 4 describes the data. Section 5 outlines the empirical methodology chosen. Section 6 presents the results, Section 7 proposes public policies. Finally, we conclude.

2. Literature Review

Most industrialized and developing countries have some form of maternity leave that provides job protection for women around the time of childbirth, although they differ greatly with respect to the amount of time protected against dismissal, the duration of pregnancy leave, and the funding source of wages during maternity leave (ILO, 2010). With respect to maternity leave alone, there is considerable variation across countries. Depending on the framework of protection, for example, some of the items subject to change are the requirements that must be met by the worker to be a beneficiary; the duration of leave; whether the leave is paid or unpaid and, if the former, what percentage of the salary is paid; the source of funding, which may be the State, an insurance system, a mixed system, or the employer only; and whether the mother waives a portion of her leave to share it with the father (ILO, 2010). This variation across countries complicates comparison of results when it comes to measuring the impact of maternity protection in the female labor market.¹² For this reason, the comparison of the Colombian case with other institutional contexts in terms of outcomes for women in the labor market must take these differences and their effects into account.

With respect to the impact of maternity leave on the labor market, Lai and Masters (2005) review the effect of introducing compulsory maternity leave on the demand for female labor in Taiwan. They conclude that, in the short term, maternity leave worsens the economic situation of women because it reduces the probability of their being employed as well as their salary. Gruber (1994) studies the effects on the labor market of legislative changes in the United States that occurred between 1975 and 1978 requiring companies to include the costs of maternity and

¹² Indeed, the costs associated with maternity vary substantially when taking into account the various possible combinations of the factors listed. Consider the following two examples. In the first case, the employee is entitled to 12 weeks of unpaid maternity leave, but to take advantage of it she must have worked at least 1,250 hours during the previous year with the same employer, and the employer is only obligated to grant leave if the company has 50 or more employees. This is the case in the United States under the requirements of the Family and Medical Leave Act of 1993. In the second case, the employee is entitled to maternity leave paid by an insurance system for 14 weeks, there is no minimum number of hours worked that confers eligibility for benefits, and the employer is obligated to pay for the leave if the worker is not affiliated with an insurance system regardless of the number of workers in the firm. This is the Colombian case based on current laws.

delivery in employee health insurance plans. The study found that there was a significant decrease in wages but not in employment levels. A more recent study on the relationship between female labor supply and family-friendly policies found that 28 to 29 percent of the decrease in U.S. female labor force participation *vis-à-vis* other OECD countries is related to the absence of family-friendly policies, including parental leave and part-time work entitlements (Blau and Kahn, 2013).

Research on labor and maternity in Colombia suggests a connection between motherhood costs and a female wage penalty or lower labor force participation of women. Research conducted in the 1970s and 1990s sought to determine the influence of high labor costs caused by maternity leave on female labor force participation. These studies concluded that part of the lower female participation in the employed population could be explained as an effect of specific extra costs associated with female labor related to the absence of workers during maternity leave (Forero de Saade, Cañón, and Pineda, 1991; Junguito et al., 1970). It should be noted that some of the time periods analyzed by these researchers coincided with the period in which Colombia did not have a social security system. Since 1975, however, the direct costs of maternity leave went from being paid solely by the employer to being shared by the employer and the employee from contributions made by both to the social security system. More recently, Molinos (2012) evaluated the effect of a judicial decision (C-470 1997) on female labor force participation in Colombia. This Constitutional Court ruling establishes the invalidity of dismissal and requires reinstatement of all pregnant workers within three months after delivery. Using data from the National Household Survey for the second quarters of 1996, 1998, and 2000, Molinos (2012) finds that female labor force participation declined, especially among women between 15 and 29 years of age.

An important strand of the literature on the effects of maternity leave on women in the labor market assesses the probability of women returning to work and their wages following delivery. Based on studies from several countries of Western Europe and North America, the empirical evidence is mixed. Regarding wages after delivery, some studies find that maternity leave reduces women's wages (Ruhm, 1998; Schönberg and Ludsteck, 2007), others find an increase in wages (Rossin-Slater, Ruhm, and Waldfogel, 2013), while still others find no effect (Baker and Milligan, 2008; Baum, 2003; Hashimoto et al., 2004).

Looking at the return to work after childbirth, some studies find that women are more likely to return to work, either with the previous employer or another, if they have maternity leave (Baker and Milligan, 2008; Baum, 2003; Rossin-Slater et al., 2013; Ruhm, 1998), but other studies find only a very modest or no effect on employment (Baum, 2003; Hashimoto et al., 2004). Finally, a study on the European Union finds that public policies that extend leave postpartum also to fathers and provide for state provision of childcare services in early childhood contribute to increasing female labor participation (because they relieve the mother from assuming the entire burden of motherhood) and to reducing the wage gap (Kamerman, 2000).

Other researchers have studied the effects of laws that provide employment security to incumbent workers. Autor et al., (2006) looking at the effects of employment protection in the United States, find that wrongful-discharge regulations reduce employment rates by between 0.8 and 1.7 percent and that the initial impact is larger for less educated workers and female employees. This paper finds that laws protecting employees must be accompanied by other laws designed to mitigate distortions in the market. In the context of accommodation mandates, Acemoglu and Angrist (2001) find that the Americans with Disabilities Act (ADA) had a negative effect on the employment of disabled men of all working ages and disabled women under age 40. Moreover, they find little evidence of an impact on the nondisabled, suggesting that the adverse employment consequences of the ADA have been limited to the protected group. Jolls and Prescott (2004) evaluate various aspects of the impact of the ADA on labor markets. Their findings support a causal relationship between the ADA and declines of 10 percent in employment of the disabled in the years immediately following the law's enactment in states in which the law's reasonable accommodations requirement was an innovation, compared to states in which a similar requirement existed at the state level prior to the ADA's enactment.

Another line of research attempts to establish whether there is discrimination against workers because of motherhood. These studies seek to determine whether, at the time of hiring, employers discriminate against women and are less willing to hire them because of social beliefs associated with motherhood, or whether women face a wage penalty because of motherhood. Cuddy, Fiske, and Glick (2004) show that describing a consultant as a mother leads evaluators to qualify her as less competent than the same candidate when described as a woman without children. Similarly, other studies show that visibly pregnant managers are judged to be less committed to their work, less reliable, and to have fewer leadership skills, but warmer, more

emotional, and more irrational than other managers who are equally talented but not visibly pregnant (Corse, 1990; Halpert, Wilson, and Hickman, 1993).

Correll and Bernard (2007) test the hypothesis that the "motherhood penalty" on the evaluation of the adequacy and job performance of women and the lower wages offered to them occur at least partly because of the cultural role of motherhood, which is seen as incompatible with the culturally defined qualities associated with the "ideal worker." This leads evaluators, perhaps unconsciously, to qualify mothers as less competent and less committed to their jobs. In both studies (experimental and audit), participants evaluated application materials for a pair of candidates of the same gender equally qualified for the position but differing in their parental status.¹³ The researchers found that mothers were penalized because of their alleged lower competence for the job. Mothers were rated as less competent than non-mothers and less committed to their professional development, and evaluators recommended lower starting salaries for them than those recommended for non-mothers. Mothers were also rated as significantly less promotable and were less frequently recommended for management positions. By contrast, men were not penalized and instead sometimes benefited from being parents. For example, male parents were perceived as more committed to their jobs than male non-parents and were offered starting salaries significantly higher than those offered to men who were not fathers.

Studies on Colombia have established a relationship between motherhood and a female wage penalty (Badel and Peña, 2010; Olarte and Peña, 2010) and a higher rate of female unemployment and underemployment (Peña-Parga and Glassman, 2004; Peña et al., 2013). It has been suggested, for example, that the overall costs of hiring women are greater than the costs of hiring men, which may explain a greater willingness of employers to hire male workers, resulting in a higher male employment rate in the formal labor market. Although the social security system pays the wages of the employee on leave, the employer must pay monthly social security payments of the replacement worker, which means that the employer pays a small double payment of monthly social security installments for both the employee on leave and the replacement worker.¹⁴ Similarly, the increase in global non-economic costs associated with the

¹³ The hint used to determine the parental status of a candidate was that he/she belonged to a parent board of an educational institution.

¹⁴ Monthly payments to the social security system (health insurance) in Colombia are 12.5 percent of the monthly salary, 8.5 of which is covered by the employer and 4 percent by the worker. In cases where the employer is paying

recruitment of women has at least three causes. The first is the organizational cost related to the replacement of the worker on leave.¹⁵ A second type of cost is associated with employer prejudice regarding the duties of motherhood and childrearing, which are thought to create a conflict between commitment to the workplace and family responsibilities for the female worker but not for the male worker. Third, the maternity provision, that is, the ban on the dismissal of pregnant women, which covers on average twelve and a half months (nine of pregnancy and three and a half of maternity leave) limits the ability of the employer to lay off pregnant workers when facing demand shocks for the employer's product or service. Indeed, the dismissal of pregnant workers must be justifiable and authorized by a labor inspector, all of which increases the administrative costs of the procedure compared to the costs of dismissing a male worker. The aggregate of these, among other costs, could result in a lower demand for female labor in the formal labor market (Ramírez, 2008).

Other research suggests that as a result of the above, and aggravated by the restricted supply of services for the care of young children and the elderly, women, despite having higher average educational attainment than men, are more likely to work in the informal economy and are more affected by structural unemployment (Peña-Parga and Glassman, 2004).

3. Theoretical Model

The legislation on maternity leave is known as a variety of accommodation mandates, where the beneficiaries are entitled to a set of accommodations to facilitate their participation in a given social or economic setting. The characteristic of these mandates is that they apply to a clearly identifiable group. Generally, this type of legislation combines with anti-discrimination rules, and its consequences on labor market outcomes depend on its effect on labor demand and supply and the incentives imposed by anti-discrimination rules. Therefore, when evaluating the efficiency of these policies, their effect on wages as well as on employment must be considered.¹⁶

for both the employee on leave and the replacement worker, the employer pays an extra 8.5 percent of wages to the replacement worker.

¹⁵ See Introduction.

¹⁶ Summers (1989) is a seminal contribution in the literature relating the effects of mandates directed to workers as a whole on labor outcomes. An important contribution is found in Jolls (2000), which adapts the Summers framework to the case of accommodation mandates.

In this study, we use a stylized model to explore the consequences of requiring the employer to provide maternity leave to female employees. We closely follow the model by Acemoglu and Angrist (2001). This is a standard competitive model with two types of workers: men and women. The objective is to discuss how maternity leave could reduce the level of employment of women by increasing the cost of hiring them. The female labor supply function is given by the function $n_f(w_f)$ and the one for men is given by $n_m(w_m)$, where w_i is the wage received by worker type $i, i = f, m$. The functions $n_i(\cdot)$ are increasing in wages. All workers are infinitely lived, risk neutral, and exhibit a discount factor $\beta < 1$.

There are Z firms in the labor market that never exit, and a sufficiently large number of potential firms that could enter if they pay the cost κ .¹⁷ This assumption allows us to characterize a market with free entry of firms (when $Z = 0$) as well as one where the number of firms is fixed ($Z > 0$ and \hat{Z}). Every firm is risk neutral and discounts the future at the rate β . Each firm has access to the production function $G(M_t, e * F_t)$, where M_t is the number of male workers at time t , F_t is the number of female workers at time t , and $e \leq 1$ is the relative efficiency of female workers as perceived by the firm. This characteristic includes the case in which firms discriminate against women because of preferences (taste), as in Becker (1971). The function $G(\cdot)$ exhibits decreasing returns to scale.

In each period t , there is a probability s that the productivity of a worker in its current firm falls to zero. These are shocks for the specific combination worker-firm that we call compatibility shocks. Therefore, quantities F_t and M_t in G include only those workers that do not receive the compatibility shock. A female worker who gets fired could sue the firm with probability q_f for compensation that implies for the firm a cost ϕ_f . For a male worker, the values are q_m and ϕ_m , respectively. Therefore, the expected value of firing a worker is $f_i = q_i * \phi_i$. We are going to consider the simple case in which the cost f_i is paid by the firm, but it is not received by any other economic agent. We assume that $(1 - \beta)f_i < w_i$ so that it is optimal for the firm to fire the fraction s of its employees that receive the negative compatibility shock.

¹⁷ Z is the minimum number of active firms in the market that would have non-negative benefits in equilibrium, such that the entry cost for a potential firm is higher than the profits if enters.

Following the current legislation in this economy, firms must provide maternity leave. This leave is given only to female workers who are pregnant and give birth, which occurs with probability θ per female worker. This probability captures information about the percentage of female workers who are fertile, as well as about fertility rates per age.¹⁸ The firm has to pay a cost C per female worker who takes maternity leave. This assumption intends to capture the costs of recruiting and training a person to replace the woman on maternity leave, as well as adjustments in organization and production and other costs incurred during the leave period.

However, providing maternity leave also generates benefits for the firm. The literature that studies the effects of providing maternity leave on the labor decisions of women find that those who have taken maternity leave are more likely to return to work after the maternity leave period. Retaining an employee who already has specific knowledge about the firm is beneficial to the firm. Furthermore, there is a hypothesis that firms that provide maternity leave are able to attract women who are more qualified and more committed to remaining in the labor market.¹⁹ In this model, we capture these benefits by assuming that each female worker (regardless of her pregnancy status) increases the firm's revenue in the amount B .

Legislation mandates that employers must provide maternity leave. If it were the case that $C < B$, firms would provide it voluntarily even in the absence of such legislation. The fact that government regulation is required suggests that in general $C > B$.

The maximization problem for a firm at time $t=0$ can be written as

$$\max_{\{F_t, M_t\}} \pi \equiv \sum_{t=0}^{\infty} \beta^t \pi_t,$$

where $F_{-1} = M_{-1} = 0$. The first line of the maximization problem is revenues minus wage costs. The second line introduces the costs of maternity and of terminating contracts.

When $F_t = F_{t-1}$ and $M_t = M_{t-1}$, the number of workers is stable over time, and the firm hires sF_{t-1} women and sM_{t-1} men to replace those that got fired in the previous period.

¹⁸ In our empirical exercise, this probability would be determined by the percentage of women between the ages of 18 and 30, with their respective fertility rates, relative to the population of women between 40 and 55 years old with their fertility rates.

¹⁹ See, among others, Berger and Waldfogel (2004); Desai and Waite (1991); and Leibowitz, Klerman, and Waite (1992).

Given that costs are linear, and that there is no aggregate uncertainty, firms adjust immediately to steady state levels. For each period, $M_t = M, F_t = F, w_{m,t} = w_m$, and $w_{f,t} = w_f$.

Equilibrium levels of employment and wages must satisfy:

$$\frac{\partial G(M, eF)}{\partial F} = w_f + \delta C - B + \beta s f_f$$

$$\frac{\partial G(M, eF)}{\partial M} = w_m + \beta s f_m$$

To determine the equilibrium, we impose the condition that the market for men empties: $n_m^{-1}(zM) = w_m$ where z is the number of firms in equilibrium. This number is determined by the conditions $\pi \leq \Gamma$ and $z \geq Z$, which are satisfied either because profits are equal to entry costs or because there is no entry and the number of firms, z , is equal to the minimum, Z . Wages perceived by women are given by $w_f = \max\{n_m^{-1}(zM), \eta w_m\}$, where η is a parameter equal to one if the mandates about equality of wages between men and women are effectively enforced. When there are no restrictions about women's wages, $\eta = 0$, so that they are on their supply curve. Most likely, in reality $\eta \in (0,1)$.

From the equilibrium conditions, we obtain the following conclusions:

1. Legislation on maternity leave seems to have increased f_f considerably more than f_m , first, because the probability of the firm's being sued when terminating the contract of a pregnant worker increases, and it has to incur costs to prove that the worker was not fired because of her pregnancy; and second, because the legislation increases the amount of compensation if the court rules in her favor. Furthermore, the costs of hiring women increase by $\delta C - B$. Therefore, in reality, it is more likely that legislation on maternity leave decreases women's employment and wages.

2. The mandate of wage equality between men and women²⁰ (i.e., $\eta > 0$, and probably very close to 1) could have resulted in women's wages higher to the one that would equilibrate their market, generating involuntary unemployment of women (they are outside of their supply curve). The mandate of wage equality also interacts with costs of dismissal and of maternity

²⁰ In Colombia, Código Sustantivo del Trabajo, Article 14, is a mandate of this sort (equal pay for equal work).

leave by preventing wages from decreasing in order to offset those costs, which has the effect of further decreasing levels of female employment.

3. If, starting from a situation in which $z > Z$ and $\pi = \Gamma$, legislation results in a decline in profits for the firm, it could cause some firms to exit, thus decreasing employment and wages of both men and women. More generally, the contrast between the cases of free entry and fixed number of firms suggests that legislation further reduces female employment in firms or industries in which profits are already very close to entry costs. These are most likely the smallest firms.

The theoretical discussion concludes that the net effect of maternity leave legislation depends on which mandates are more important: maternity leave or equal pay. The costs of maternity leave and the costs of dismissal most likely reduce employment. If the mandate on wage equality is not effectively enforced, the equilibrium would be on the supply curve of both men and women, and the decrease in employment would be accompanied by a decrease in wages for women. In practice, however, the mandates on maternity leave generate involuntary unemployment of women.

In this model we assumed that the labor supply curves are given by $n_i(w_i)$ for each type of worker, $i = m, f$. In that sense, the initial effect of providing maternity leave is an increase in women's involuntary unemployment. In a general equilibrium analysis, however, it is very likely that the increase in unemployment decreases women's incentives to participate in the labor market, shifting the supply curve downward. Therefore, the final effect of the legislation is to increase women's inactivity rate.

4. Data

In this study we use monthly data from the Integrated Household Survey (Gran Encuesta Integrada de Hogares, or GEIH) for the period between January 2009 and September 2013. The survey is conducted by the National Department of Statistics (Departamento Administrativo Nacional de Estadística, or DANE), and it is the main source of information about the labor market in Colombia. This survey provides data on the size and structure of the labor force as well as household and individual characteristics such as gender, education, age, marital status, and others. The baseline period for our analysis is January 2009 through June 2011 as the pre period, and July 2011 through September 2013 as the post period.

The population we studied consists of respondents in the 13 metropolitan areas covered by the GEIH.²¹ In Table 2, we show that our database has information on 1,775,007 individuals for the entire period of analysis. Total observations are reduced to 947,844 when the sample is restricted to women only, and when considering only ages comprising the treatment and control groups, we end up with a sample comprising a total of 411,724 individuals. By selecting only a specific group of individuals, we seek to disentangle the effect of the increase in the maternity leave period on labor outcomes of women in fertile ages.

In Table 3, we show the distribution of our treatment and control groups for each labor force status. Most of the unemployed (72 percent) belong to the treatment group. Among the employed, most of those who are informal workers or self-employed belong to the control group (56 and 65 percent, respectively). Also, the percentage of inactive is higher for the treatment group (55 percent).

In Table 4, we show some descriptive statistics for those women who are in the labor force and those who are inactive, further disaggregated by treatment and control group. Women in the treatment group who are part of the labor force report having education levels higher than primary school in a higher proportion than inactive women in the same group. It is therefore important to control for this variable, since it is expected that education encourages and facilitates active participation in the labor market. Women in the treatment group who are inactive report living with a partner at higher rates than women in the labor force. Finally, women between 18 and 30 years of age who are inactive are more likely to live in households with children under 12 than women of the same age group who are in the labor force. In summary, it can be inferred that inactivity among women in the treatment group was partially explained by individual characteristics² which are used as controls in this study² that are less valued in the labor market.

Table 5 shows the general descriptive statistics for the entire sample. The average age is 35, the economic stratum is between 2 and 3, there is one child under 12 on average per household, and on average women have some high school education.

5. Empirical Methodology

²¹ The 13 metropolitan areas are: Barranquilla, Bogotá, Bucaramanga, Medellín, Cali, Cartagena, Cúcuta, Ibagué, Manizales, Montería, Pasto, Pereira, and Villavicencio.

The legislation on maternity leave should have a greater effect on women in the high-fertility age group than women in the low-fertility age group. This is due to a generalized social perception that a woman in the high-fertility age group is very likely to become pregnant in the near future. Employers would tend to take that perception into consideration when calculating the expected value of hiring a woman in that group.

Therefore, for our empirical strategy, the treatment group consists of women between 18 and 30 years of age, and the control group comprises women between 40 and 55 years of age. Thus, to estimate the effect of the increase in the maternity leave period on labor market outcomes, we compare outcome differences between treatment and control groups in the post-legislation period with those in the pre-legislation period.²²

Table 6 shows the differences in fertility rates for women in the treatment and the control groups reported by DANE. On average, during the period analyzed (2009 to 2013) fertility rates for the treatment group hover around 11.5 percent, while those for the control group are approximately 1.18 percent. This difference in fertility rates allows us to have two comparable groups, only one of which is affected by the changes in the law.²³

In order to understand the impact of the extension of the maternity leave period on the group of women in the high-fertility age group, we propose the following empirical model:

$$y_i = \gamma_0 + \gamma_1 \text{treated}_i + \gamma_2 \text{law2011} + \gamma_3 \text{treated} \cdot \text{law2011} + \Gamma X_i + \theta_c + \varepsilon_i \quad (1)$$

where y_i are variables such as labor inactivity, unemployment, informality, etc. treated_i is a dummy variable that takes the value of 1 if the person is a woman between 18 and 30 years old, and 0 if she is between 40 and 55. law2011 is a variable that takes the value of 1 for all months starting in July 2011, when the legislation on maternity protection was introduced, and controls for common shocks affecting the labor market outcomes of both high- and low-fertility women after July 2011.

To control for the bias originated by differences in characteristics between the two groups that could explain the differences in participation and employment decisions, we include

²² The control group includes women 40 and over to ensure that they were not part of the treatment group at any time during the period analyzed.

²³ The results of our empirical model are robust to changes in the definition of the high-fertility group. For example, the results hold when the treated group consists of women ages 25 to 30, and 25 to 35.

regressors in the model that allow us to control for observable characteristics and help to solve this problem. In the vector of regressors X_i we include age, age squared, three indicator variables (whether the woman has a high-school education or less, whether she lives with a partner or not, and whether she is the household head), the number of children in the household, the total number of household members, and the household's economic stratum according to the household's energy bill. We also control for fixed effects by area of residence, year, and month. It is possible that seasonal shocks affect younger workers differently than older workers. In order to control for that, we include an interaction between month and the indicator of belonging to the treatment group (*treated*). All estimates are weighted by the share of area residents age 18 to 65 in the year.

We are interested in the coefficient of the interaction β_5 , which indicates whether the legislation considered differentially affected women in the treatment group.

With the above econometric model, we want to explore the effects on the labor market of including two more weeks of maternity leave, which is equivalent to an increase of 17 percent in the leave period. We estimate the equations using probit regression analysis, except for wages, for which we use OLS regression.

6. Results

In this section we report the results from our estimation exercises. We report the probit (or OLS for wages) coefficients and the corresponding marginal effects for the interaction *treated*law2011*.²⁴ The marginal effects reported in the main text are calculated for a woman²⁵ in the treatment group who lives in Bogotá on June 2012, does not live with a partner, is not the head of household, and either (i) has more than a high school education, or (ii) her level of education is high school or lower. These two effects plus the remaining six of all other combinations are reported in tables in the Appendices.

²⁴ The calculation and interpretation of marginal effects for interactions in non-linear models must take into account the cross-derivatives of the predicted probabilities. See Ai and Norton (2003) and Norton, Wang, and Ai (2004) for a discussion of this issue.

²⁵ The marginal effects are estimated for a woman in the treatment group, using sample means, whose age is 23.87, who lives in a household composed of 4.51 members and 1.07 children, whose economic stratum is 2.27, and who lives in Bogotá on June 2012. The woman could be either living with a partner or not, be the household head or not, and have high or low educational attainment. The combination of all these possibilities gives us a total of eight marginal effects.

In our baseline scenario, the treatment group corresponds to women ages 18 to 30, and the control group to women ages 40 to 55. The pretreatment period is January 2009-June 2011, and the post treatment period is July 2011-September 2013.

In column (1) of Table 7, we report the results when analyzing the probability of inactivity. The dependent variable is a dummy that takes the value of 1 if the person indicates that she is not in the labor force, and 0 otherwise.²⁶ The results show that the probability of inactivity significantly increases for women in the high-fertility age group after the increase in the maternity-leave period. The marginal effects estimation, in Table 7a,²⁷ indicates that for a woman with less than a high school education, the probability of inactivity increases by 0.9 percentage points. If the same woman had more than a secondary school education, her probability of inactivity increases by 0.7 percentage points. In general, all other things being equal, the increase in the probability of inactivity is greater for women (i) with low educational attainment, (ii) living with a partner, and (iii) who are not heads of household.

We interpret these results as support to our hypothesis, suggested by the model presented in Section 3, that employers are less willing to hire women of high-fertility age since the law went into effect. Because it is harder for women of childbearing age to find a job, they rationally decide not to participate in the labor market: the probability of being inactive increases, even though they are willing and able to work.

Column (2) of Table 7 reports the results for the probability of unemployment. There is no evidence that the increase in the maternity leave period had affected the probability of unemployment for women in the high-fertility age group relative to women in the low-fertility age group. None of the marginal effects reported in Table 7a is significantly different from zero.

Column (3) of Table 7 reports the results for the probability of informality. Informal workers are defined as those workers who do not satisfy one of two conditions: (i) contributing to health insurance system; or (ii) contributing to a pension plan. It shows that the increase in the maternity-leave period resulted in a significant increase in the probability of informality for

²⁶ A person is classified as inactive if on the survey she or he replies in the affirmative to at least one of the following six statements: 1. Handicapped. 2. Doesn't want to get paid work or set up a business. 3. Wants to work, but has not made steps to search for a job or set up a business because: a. Self-reported as very young / old for work. b. Family responsibilities. c. Health problems. d. Full-time student. e. Other. 4. After his last job he or she hasn't taken any action to find a job or set up a business. 5. During the last 12 months has not done anything to find work or set up a business. 6. He or she was not available for work.

²⁷ These and the remaining six marginal effects are reported in Appendix A. In Appendix B, we report the estimated marginal effects for the 13 metropolitan areas. All of the results are quantitatively and qualitatively similar.

women in the high-fertility age group relative to women in the low-fertility age group. The marginal effects estimation, shown in Table 7a, indicates that the probability of informality increases by 0.8 percentage points for a woman with more than a high school education and by 0.6 percentage points for a woman with low levels of education. *Ceteris paribus*, the probability of informality is greater for women who are more educated and who are not living with a partner.

The results with respect to the effect on the probability of self-employment are reported in column (4) of Table 7 and Table 7a. We conclude that there is a significant increase in the probability of self-employment for women in the high-fertility age group after the increase in the maternity-leave period. A woman with low educational attainment faces a 0.6 percent increase in the probability of self-employment, and a 0.4 percent increase if she has high educational attainment. In general, keeping everything else constant, the increase in the probability of self-employment is larger for women who are (i) less educated, (ii) living with a partner, and (iii) not heads of household. Olarte and Peña (2010) find that the occupations reported as self-employment for Colombian mothers are mainly low quality. Therefore, it is possible that women in the treatment group that are affected by the law are forced into low-paid, low-quality self-employment, where the law does not cover them.

Column (5) of Tables 7 and 7a reports the results on the effect on the real wage. We conclude that there is no evidence that the increase in the maternity-leave period has affected the real wages of high-fertility-age women relative to low-fertility-age women.

6.1 Alternative Timing Assumptions

In tables 7 and 7a panels A, B, and C, we explore the sensitivity of our findings to alternative choices of pre and post periods. These exercises serve two main purposes: (i) they allow us to take into account the possibility that firms and workers had adjusted their behavior in expectation of the change in maternity leave-legislation, or it is possible that it would take some period after implementation for workers and firms to grasp the real impact of the legislation; (ii) they allow us to test the possibility that the legislation was adopted at cyclical labor market peaks, leading us to falsely attribute post-peak changes to the legislation rather than the business cycle. Additionally, as in Autor et al. (2006), they allow us to explore some short-term impacts of the increase in the maternity-leave period.²⁸ In panels A, B, and C, the two months immediately

²⁸ Autor et al. (2006) is able to remove up to six years of adoption given the availability of data.

prior to adoption are removed from the estimations; in panel A, the two months immediately following adoption are removed; in panel B, the four months following adoption are removed; and in panel C, the six months following adoption are removed.

All of our results are robust to alternative choices of pre and post periods.²⁹ There are significant increases in the probability of inactivity, informality, and self-employment, and there are no significant effects on unemployment or wages. The changes in the comparison windows do not substantially affect the magnitude or precision of the main results.

6.2 Comparing Younger Men with Older Men

Because in our strategy of identification we compare younger women with older women, there is a concern that the results may be driven by contemporary changes in the economic and institutional environments that affect younger workers relative to older workers. In order to check for this possibility, we replicate our estimation of Tables 7 and 7a but use as the treatment group men ages 18 to 30, and as the control group men ages 40 to 55. The results are reported in Tables 8 for probit results, and 8a for marginal effects.

In general, the results when using the information for men are not significant and have the opposite sign to those for women. The only exception is the result for the probability of informality (column (3)), where the coefficient of relevance is significant in both the probit coefficient and the marginal effects.³⁰ The exercise of changing the comparison windows, as reported above in our baseline case of women, does not affect the results for men.³¹

The results from comparing younger men with older men give us confidence that the results found for high-fertility age women relative to low-fertility age women are not driven by cohort effects and are instead driven by the increase in the maternity-leave period that took effect in July 2011. With respect to the result on informality, in Table 10 we show that the increase in the probability of informality for women ages 18 to 30 was relatively greater than for men in the same age group.

6.3 Placebo Pre and Post-treatment Period

²⁹ Table 8a reports the marginal effects for the same groups as in Table 7a. These and the remaining six marginal effects, for each alternative timing, are reported in Appendix C.

³⁰ All the marginal effects for the estimation with information for men are reported in Appendix D.

³¹ These results are available from the authors upon request.

As another robustness check to discard the possibility that our baseline results are attributed to differences in age profiles between the treatment and the control group, we estimate placebo treatment effects using data from pretreatment years.

Specifically, we define the period January-December 2009 as the placebo pretreatment period, and January-December 2010 as the placebo post-treatment period. The results are reported in Table 9 and 9a. None of the effects is significant except the coefficient of the interaction when analyzing the effect on inactivity.

6.4 Control Group are Men Ages 18 to 30

We next extend our analysis to use as the control group men between 18 and 30 years of age. This group can be seen as similar to women of childbearing age, if there were no gender discrimination. In general, companies look for a person with certain specific experience, but not a specific gender, to fill a vacancy. In that case, the comparison group for women ages 18 to 30 is men in the same age group. The results are reported in Tables 10 and 10a. The results are consistent with the model. No significant change in wages was found, and a possible explanation is the inability by law for employers to discriminate in wages of women and men for the same job. In this case, the model predicts an increase in unemployment with downward wage rigidity. Column (2) shows that women are more likely to be unemployed relative to men after the law took effect. Table 10a shows that the probability of unemployment increases by 0.5 percentage points for young women relative to young men. *Ceteris paribus*, the probability of unemployment is higher for high-fertility women who (i) do not live with a partner and (ii) are not heads of household.³²

Column (3) of Table 10 and Table 10a shows that after the implementation of the longer maternity leave period, women in the age group associated with high fertility face a significantly higher probability of being informal relative to men in the same age group. It increases by 1.4 percentage points for women with low educational attainment and by 1.3 percentage points for women with high educational attainment. All other characteristics being equal, the probability of women working in the informal sector relative to men in the same age bracket is higher for high-

³² This result holds in the model when workers are substitutes. Instead, when workers are complements, there is no effect on unemployment, as does the result when the control group is low-fertility women.

fertility women with low educational attainment. This probability is not affected by marital status or head-of-household condition.

The results in Table 10a, column (4) show that, after 2011, women in the high-fertility group are more likely to be self-employed. Specifically, after Law 1468 of 2011 went into effect, being a woman in the treatment group increases the probability of being self-employed by 0.6 percentage points for women with low educational attainment, and by 0.5 percentage points for women with high educational attainment. *Ceteris paribus*, the probability of self-employment is higher for high-fertility women who (i) have low educational attainment, (ii) are living with a partner, and (iii) are not heads of household.

In summary, the results of our empirical exploration are consistent with our hypothesis that employers perceive the increase in the maternity leave period in Colombia brought about by Law 1468 of 2011 as an added cost of hiring women. Consequently, women in the high-fertility age group, who are perceived as having a very high probability of becoming pregnant in the near future, are penalized in the labor market. Their probability of being inactive increases compared with women in non-fertile ages, and the probability of being unemployed rises compared with men in the same age bracket. In general, we find that women of childbearing age have a higher probability of being self-employed in low-paid, low-quality activities or in the informal sector.

7. Public Policy Recommendations

We propose to address the costs associated with parenthood which, as we have explained and research shows, affect primarily women, especially those in the most fertile age group. In this regard, we propose a set of legislative and policy actions that would address cultural perceptions on parenting and childcare.

Following scholars such as England and Folbre (1999), Folbre and Weisskopf (1998), and Gornick and Meyers (2003), we agree that our societies should work on a new social contract, one that promotes a sense of shared responsibility for caring for all members of society. This would require both social engineering designed to mobilize all members of society to acknowledge the benefits and the increases in economic productivity that could derive from sharing the responsibility for childrearing, as well as institutional changes that would facilitate such shared responsibilities by both parents. Moreover, following Folbre and England (1998), we agree that a more enlightened way to think about these issues is revisiting the question of who

pays for child care. According to their analysis, because caregivers assume the costs of "production" of children while society as a whole benefits (free riding on the care provided mostly by women), the costs of care should be socialized, which can be achieved by expanding public support for childrearing. One of the mechanisms that we suggest for socializing the cost of childcare is to remove the extra cost of social security, now paid by the employer, on behalf of the replacement worker. This cost should be transferred to the State.

However, other associated costs remain, whose socialization appears less transferrable as taxes or state contributions. These include organizational costs borne by employers when providing maternity leave. Here, our proposed policy centers on suggesting that differences in coverage of labor legislation on women and men be suppressed, by promoting paternity leave to the same extent and with the same benefits as the leave that working mothers now enjoy, as well as incentives for parents to actually make use of them. Alternatively, the design of a parental leave policy that can be enjoyed by both parents in equal or very similar proportions could create incentives for fathers to take time off upon the birth of a child.³³ This is the path that some countries, such as Sweden, Finland, and Canada, have successfully chosen. In the case of Sweden, the government's interest was to provide parents with incentives to increase their participation in childcare and to promote gender equality and women's participation in the labor market. According to the Swedish government: "It is important that fathers take parental leave. An increased use of parental leave by fathers should contribute to a change in attitudes among managers; they will view parental leave as something natural to consider when planning and organizing the work. This change in attitudes is necessary for both men and women to dare to take parental leave without a feeling of jeopardizing their career or development opportunities at work." (Ekberg, Eriksson, and Friebel, 2013, pp. 132)

Another reason to increase the use of this leave for fathers is that the chances for women of achieving equality of employment opportunities with men will always be limited if women are solely responsible for the care of home and children. If childcare responsibilities were shared equally by fathers and mothers, this would lead to a more equitable distribution of labor disruptions between men and women, and women would achieve better opportunities for

³³ Such a policy should be mindful of the fact that fathers are unlikely to take the allotted time as leave if left to their own devices. This is why countries such as Denmark have designed a take-it-or-leave-it period of 12 weeks for parental leave reserved for fathers. If they do not take it, the family loses it. Similar "use it or lose it" parental leave policies for fathers have been implemented in Finland, Norway, and Sweden (Gornick and Meyers, 2003).

professional development and career advancement (Ekberg et al., 2013). To achieve this objective, in 1995 the Swedish government implemented a reform of its leave system, providing one month of paternity leave for fathers. Ekberg et al, (2013) assessed the impact of this reform in terms of the possible increase in the enjoyment of these leaves by the parents, and whether this enjoyment generated a long-term effect on employment outcomes of men and women. They found that short-term incentives work, and that men increased their enjoyment of leaves by 50 percent, although this has not translated into greater male participation in childcare duties.

As a result of the existence of a shared cultural perception that the costs of childcare and childrearing should be borne by women, people tend to evaluate working mothers as less competent, less committed to the job, and potentially less reliable. Policy recommendations for this dimension aim to promote cultural changes that highlight the importance of both fathers and mothers taking an active role in similar proportions in the care and upbringing of children and in domestic chores in general. One interesting initiative is "Equipares," promoted by the Colombian Ministry of Labor in order to "transform the structures of work and human resource management within firms, with the aim of eliminating possible gender inequalities that deprive the company of a human resource."³⁴ As part of this program, television ads are airing that show, for example, a woman pushing a shopping cart at a supermarket while at the same time pulling with ropes a man sitting at a desk. The narrator's voice says, "Without your help, she must make double the effort. When you support your partner, her job opportunities improve. Support employment equity, it's a matter of development." Although the initiative is interesting because it speaks directly to fathers in order to highlight the importance of their contribution to housework, the ads appear to have aired infrequently on national television. Similar initiatives, directed at employers who appear to be the target of the "Equipares" program are also desirable in order to change the belief that women in general, and mothers in particular, are less committed to the impositions of the workplace compared to men, making them less attractive candidates for the same jobs.

Indeed, the equitable distribution of childrearing responsibilities between mothers and fathers in terms of absences, leaves, or domestic calamities should reduce the absence of women in the labor market and contribute to human capital accumulation as much as men. Because part

³⁴ Andrea Castaño, leader of the "Grupo de equidad laboral con enfoque diferencial de género del Ministerio del Trabajo." Available at: <http://www.mintrabajo.gov.co/mayo-2013/1859-sello-de-equidad-laboral-logra-mayor-igualdad-y-competitividad-en-las-empresas.html> (Last accessed, March 14, 2014).

of the wage gap between men and women is explained by the intermittency of women's working lives (due to maternity leave and other short- to medium-term leaves related to care or family responsibilities), the equalization of leave time for fathers and mothers should reduce the differences in income between men and women. This would also contribute to discouraging discriminatory reasons for preferring men over women—especially those who are mothers or who are in reproductive age—since all employers would share equally the costs of maternity or paternity leave for prospective parents and potential mothers or the costs of leave for those who are already parents.

8. Conclusions

Our research explores the impact of Law 1468 of 2011, which extended the maternity leave period from 12 to 14 weeks (a 17 percent increase), on female labor outcomes. Our results show that the Law increases the probability of being inactive for women ages 18 to 30 (the treatment group) relative to women ages 40 to 55 (the control group). We also show that the probability of informality and self-employment increases for high-fertility women relative to low-fertility women. Our results are robust across demographic groups and time periods, suggesting a causal effect of the increase in the maternity leave period.

Following Autor et al. (2006), our paper does not attempt to provide an overall assessment of maternity protection laws. The fact that there are some effects on the labor market for women of childbearing age indicates that legal protections come with a cost. Therefore, the law must be tied to other regulations that prevent employers from excluding the beneficiary group from the labor market. Our main recommendation is to design a "parental leave" policy that can be enjoyed by both parents in equal or very similar proportions, and to socialize the extra cost of social security of the worker who is replacing the woman on maternity leave, which is now assumed by the employer.

References

- Acemoglu, D. and J. D. Angrist. 2001. "Consequences of Employment Protection? The Case of the Americans with Disabilities Act." *Journal of Political Economy* 109(5): 915-657.
- Ai, C. R. and E. C. Norton. 2003. "Interaction Terms in Logit and Probit Models." *Economics Letters* 80(1): 123-629.
- Amador, D., R. Bernal, and X. Peña. 2013. "El aumento en la participación laboral femenina en Colombia: ¿Fertilidad, estado civil o educación?" *Ensayos sobre política económica* 31(71) Bogotá, Colombia.
- Autor, D. H., J. J. Donohue, III, and S. J. Schwab. 2006. "The Costs of Wrongful-Discharge Laws." *Review of Economics and Statistics* 88(2-May): 211-631.
- Badel, A., and X. Peña. 2010. "Decomposing the Gender Wage Gap with Sample Selection Adjustment: Evidence from Colombia." *Economic Analysis Review* 2(25): 169-691.
- Baker, M. and K. Milligan. 2008. "Maternal Employment, Breastfeeding, and Health: Evidence from Maternity Leave Mandates." *Journal of Health Economics* 27(4): 871-687.
- Blau, F. and L. Kahn. 2013. "Female Labor Supply: Why is the US Falling Behind?" *The American Economic Review* 103(3-May): 251-6256.
- Baum, C. 2003. "The Effect of State Maternity Leave legislation and the 1993 Family and Medical Leave Act on Employment and Wages." *Labor Economics* 10: 573-696.
- Becker, G. 1971. *The Economics of Discrimination*. Second Edition. Chicago, IL: University of Chicago Press.
- Berger, L. M. and J. Waldfogel. 2004. "Maternity Leave and the Employment of New Mothers in the United States." *Journal of Population Economics* 17(2): 331-649.
- Correll, S., and S. Bernard. 2007. "Getting a Job: Is There a Motherhood Penalty?" *American Journal of Sociology* 112(5): 1297-61339.
- Corse, S. J. 1990. "Pregnant Managers and their Subordinates: The Effects of Gender Expectations on Hierarchical Relationships." *The Journal of Applied Behavioral Science*. 26(1): 25-647.
- Cuddy, A., S. Fiske, and P. Glick. 2004. "When Professionals become Mothers, Warmth Doesn't Cut the Ice." *Journal of Social Issues* 60: 701-18.

- Desai S., and L. Waite. 1991. "Women's Employment during Pregnancy and After the First-Birth: Occupational Characteristics and Work Commitment." *American Sociological Review* 56(4): 551-666.
- Ekberg, J., R. Eriksson, and G. Friebel. 2013. "Parental Leave: A Policy Evaluation of the Swedish 'Daddy-Month' Reform." *Journal of Public Economics* 97: 131-143.
- England, P. and N. Folbre. 1999. "The Cost of Caring." *The ANNALS of the American Academy of Political and Social Science* 1999 561:39, January.
- Espino, A. and S. Salvador. 2014. "Un análisis de género de los costos laborales en Colombia." Consultancy for the Ministerio del Trabajo de Colombia (Colombian Ministry of Labor). Mimeographed document.
- Folbre, N. and T. Weisskopf. 1998. "Did Father Know Best? Families, Markets, and the Supply of Caring Labor." In Ben-Ner, A. and L. Putterman (Eds.). *Economics, Values, and Organization*. New York, NY: Cambridge University Press.
- Forero de Saade, M., L. Cañón, L., and J. A. Pineda. 1991. "Participación de la mujer en el trabajo." *Mujer Trabajadora. Nuevo Compromiso Social*. Bogotá, Colombia: Estudios Sociales Juan Pablo II.
- Gornick, J. and M. Meyers. 2003. *Families that Work. Policies for Reconciling Parenthood and Employment*. New York, NY: Russell Sage Foundation.
- Gruber, J. 1994. "The Incidence of Mandated Maternity Benefits." *American Economic Review*, 84 (3): 622-641.
- Halpert, J., M. Wilson, and J. Hickman. 1993. "Pregnancy as a Source of Bias in Performance Appraisals." *Journal of Organizational Behavior* 14: 649-663.
- Hashimoto, M., R. Percy, T. Shoellner, and B. Weinberg. 2004. "The Long and Short of It: Maternity Leave Coverage and Women's Labor Market Outcomes." IZA Discussion Paper Series, No. 1207.
- ILO (International Labour Organisation). 1997. "Maternity Protection at Work." Available at: <http://www.ilo.org/public/english/standards/relm/ilc/ilc87/rep-v-1.htm>
<http://www.ilo.org/public/english/standards/relm/ilc/ilc87/rep-v-1.htm>
<http://www.ilo.org/public/english/standards/relm/ilc/ilc87/rep-v-1.htm>
- . 2005. "Maternity at Work: A Review of National Legislation. Findings from the ILO's Conditions of Work and Employment Database."

- . 2010. "Maternity at Work." Available at: http://www.ilo.org/global/publications/books/WCMS_124442/lang-en/index.htm
- Jolls, C. 2000. "Accommodation Mandates." *Stanford Law Review*, 53(2): 223-306.
- Jolls, C. and J. J. Prescott. 2004. "Disaggregating Employment Protection: The Case of Disability Discrimination." NBER Working Paper 10740, September. Cambridge, MA: National Bureau of Economic Research.
- Junguito, R. et al. 1970. "Análisis de la Estructura y Evolución de la fuerza de trabajo colombiana 1938, 1951, 1964." Universidad de los Andes, Bogotá, Colombia. Documentos CEDE.
- Kamerman, S. 2000. "From Maternity to Parental Leave Policies: Women's Health, Employment and Child and Family Well-being." *Journal of the American Medical Women's Association* 55(2): 96-99.
- Lai, Y., and S. Masters. 2005. "The Effects of Mandatory Maternity and Pregnancy Benefits on Women's Wages and Employment in Taiwan, 1984-1996." Ithaca, NY: Industrial and Labor Relations School, Cornell University. *Industrial and Labor Relations Review* 58(2-January): 274-81.
- Leibowitz A., J. A. Klerman, and L. Waite. 1992. "Employment of New Mothers and Child Care Choice: Differences by Children's Age." *Journal of Human Resources* 27(1): 112-133.
- Molinos, C. 2012. "La Ley de protección a la maternidad como incentivo de participación laboral femenina: el caso colombiano." *Coyuntura Económica* XLII(1): 93-116. Bogotá, Colombia: Fedesarrollo.
- Norton, E. C., H. Wang, and C. Ai. 2004. "Computing Interaction Effects and Standard Errors in Logit and Probit Models." *The Stata Journal* 4(2): 154-67.
- Olarte, L. and X. Peña. 2010. "El efecto de la maternidad sobre los salarios femeninos." *Ensayos sobre Política Económica* 28(63): 190-231.
- Peña, X., et al. 2013. "Mujer y Movilidad Social." Documentos CEDE 2013-05.
- Peña-Parga, X., and Glassman, A. 2004. "Demand for Child Care and Female Employment in Colombia." Documentos CEDE 2004-43.

- Ramírez, N. 2008. ¿Poder o desventaja? El derecho de las mujeres a no ser despedidas durante el embarazo.ö Tesis de grado de maestría, Universidad de los Andes, Bogotá, Colombia. On file with the author.
- Rossin-Slater, M., C. Ruhm, and J. Waldfogel. 2013. öThe Effects of California's Paid Family Leave Program on Mothers' Leave Taking and Subsequent Labor Market Outcomes.ö *Journal of Policy Analysis and Management* 32(2): 224-645.
- Ruhm, C. J. 1998. öThe Economic Consequences of Parental Leave Mandates: Lessons from Europe.ö *Quarterly Journal of Economics* 113(1): 295-6317.
- Schönberg, U. and J. Ludsteck. 2007. öMaternity Leave Legislation, Female Labor Supply, and the Family Wage Gap.ö IZA Discussion Papers No. 1699. <http://nbn-resolving.de/urn:nbn:de:101:1-200804110188>
- Summers, L. 1989. öSome Simple Economics of Mandated Benefits.ö *American Economic Review, Papers and Proceedings* 79(2-May): 177-683.

Table 1. Labor Cost Associated with Maternity Leave Take

Labor Cost	Percentage
Nominal wage	73.06
Cost of a replacement worker	30.31
Nursing license	3.37
Total Cost	106.73

Note: Annual labor costs assumed by the employer for each female worker with maternity leave and nursing leave (Values refer to a basic salary of 100). Adapted by authors from Espino and Salvador (2014).

Table 2. Sample Reduction

Sample	Total Observations 2009-2013
Total data	1,775,007
Only women	947,844
By age group:	
18-30	214,237
40-55	197,487

Note: Source: DANE and calculations by the authors.

Table 3. Distribution of Labor Market Variables between the Treatment and Control Groups. Period 2009-2013

	From 18 to 30 years of age	From 40 to 55 years of age
Labor force (%)	50.91	49.09
Employed	46.53	53.47
Informal	44.07	55.93
self-employed	34.34	65.66
Unemployed	72.34	27.66
Inactivity (%)	54.79	45.21
lack of job search activity	31.52	68.48

Note: Source: DANE and calculations by the author. These calculations are weighted by expansion factors.

Table 4. Characteristics of the Treatment and Control Groups in the Labor Force and in Inactivity. Period 2009-2013

	Inactivity (%)		Labor Force (%)	
	18 - 30	40 - 55	18 ó 30	40 - 55
Education				
None	3.95	9.40	0.51	3.95
Primary	10.70	36.94	7.21	27.89
Secondary	78.85	45.05	69.09	41.80
Education				
Higher education	6.51	8.60	23.22	26.36
Economic strata				
1	30.12	21.59	23.52	19.95
2	36.37	38.16	40.02	36.55
3	23.05	29.65	27.10	29.48
4	6.70	6.96	6.26	8.74
5	2.57	2.37	2.10	3.38
6	1.18	1.28	1.00	1.90
Marital status				
Not living with a partner	54.03	29.28	62.43	46.38
Living with a partner	45.97	70.72	37.57	53.62
Number of children				
None	35.69	54.05	37.33	56.44

1 or 2 children	52.99	40.81	53.72	39.61
3 or more children	11.33	5.14	8.95	3.95

Note: These calculations are weighted by expansion factors. Source: DANE and calculations by the authors.

**Table 5. Descriptive Statistics of Control Variables
Period 2009-2013**

Variable	Average	Standard deviation	Interval
Years of education	10.16	4.13	0 ó 26
Age	34.96	12.35	18 ó 55
Stratum	2.32	1.07	1 ó 6
Children <12 per household	0.86	1.04	0 ó 12
Total people in the household	4.32	1.98	1 ó 22

Source: DANE and calculations by the authors.

Table 6. Fertility Rates by Age

Period	Age Groups						Global Rate
	20-24	25-29	30-34	35-39	40-44	45-49	
1985-1990	0.17	0.15	0.12	0.08	0.03	0.00	3.34
1990-1995	0.16	0.14	0.11	0.07	0.03	0.00	3.14
1995-2000	0.15	0.13	0.10	0.06	0.02	0.00	2.86
2000-2005	0.14	0.12	0.09	0.05	0.02	0.00	2.60
2005-2010	0.13	0.11	0.08	0.05	0.02	0.01	2.45
2010-2015	0.12	0.11	0.08	0.05	0.02	0.01	2.35
Average 2005-2015	0.12	0.11	0.08	0.05	0.02	0.01	2.40

Source: DANE and calculations by the authors.

Table 7. Effect of Law 1468 of 2011 on Labor Market Outcomes for Women
Baseline Scenario and Alternative Timings

Dependent variable	(1) Inactive	(2) Unemployment	(3) Informality	(4) Self-employment	(5) Log real wages
treated * Law2011	0.028*** (0.008)	-.014 (0.012)	0.022* (0.011)	0.018* (0.011)	-.005 (0.007)
Panel a. Eliminating two months before and two months after implementation of the law					
treated * Law2011	0.029*** (0.009)	-.014 (0.012)	0.022* (0.011)	0.022* (0.011)	-.005 (0.007)
Panel b. Eliminating two months before and four months after implementation of the law					
treated * Law2011	0.033*** (0.009)	-.019 (0.012)	0.020* (0.012)	0.021* (0.011)	-.004 (0.007)
Panel c. Eliminating two months before and six months after implementation of the law					
treated * Law2011	0.039*** (0.009)	-.018 (0.012)	0.022* (0.012)	0.022* (0.011)	-.004 (0.008)
R²	0.080	0.073	0.170	0.068	0.348
Observations	409.055	290.662	240.285	241.409	127.780
Controls:					
Personal characteristics	Yes	Yes	Yes	Yes	Yes
Household characteristics	Yes	Yes	Yes	Yes	Yes
Time-fixed effects	Yes	Yes	Yes	Yes	Yes

Note: The coefficient on *treated*Law2011* is the estimated parameter β of equation (1) which is the DD estimate of the effect of the reform in each of the outcomes. Columns (1) to (4) are probit estimates, column (5) is OLS estimate. ***Coefficients are significant at the 1% level. **Coefficients are significant at the 5% level. *Coefficients are significant at the 10% level. Standard errors are in parentheses.

Table 7a. Marginal Effect of Law 1468 of 2011 on Labor Market Outcomes for Women
Baseline Scenario and Alternative Timings

Marginal Effect	(1) Inactive		(2) Unemployment		(3) Informality		(4) Self-employment	
	Low Education	High Education	Low Education	High Education	Low Education	High Education	Low Education	High Education
treated * Law2011	0.009*** (0.002)	0.007*** (0.002)	-.004 (0.003)	-.004 (0.003)	0.006* (0.003)	0.008* (0.004)	0.005* (0.003)	0.004* (0.002)
Panel A. Eliminating two months before and two months after implementation of the law								
treated * Law2011	0.009*** (0.002)	0.007*** (0.002)	-.004 (0.003)	-.004 (0.003)	0.006* (0.003)	0.008* (0.004)	0.006* (0.003)	0.005* (0.002)
Panel B. Eliminating two months before and four months after implementation of the law								
treated * Law2011	0.010*** (0.002)	0.008*** (0.002)	-.005 (0.003)	-.005 (0.003)	0.005* (0.003)	0.007* (0.004)	0.006* (0.003)	0.004* (0.002)
Panel C. Eliminating two months before and six months after implementation of the law								
treated * Law2011	0.012*** (0.002)	0.010*** (0.002)	-.005 (0.003)	-.005 (0.003)	0.006* (0.003)	0.008* (0.004)	0.006* (0.003)	0.005* (0.002)

Note: The marginal effects are estimated for a woman in the treatment group for whom, using sample means, age is 23.87, lives in a household composed of 4.51 members and 1.07 children, whose economic stratum is 2.27, does not live with a partner, is not head of household and lives in Bogotá on June 2012. The marginal effects were estimated for two scenarios described by her educational level. δEducation levelδ is high or low according with the years of education: the individual is considered to have a high education level if she has more than 11 years of education. ***Coefficients are significant at the 1% level. **Coefficients are significant at the 5% level. *Coefficients are significant at the 10% level. Standard errors are in parentheses.

Table 8. Effect of Law 1468 of 2011 on Labor Market Outcomes for Men

Dependent variable	(1) Inactive	(2) Unemployment	(3) Informality	(4) Self- Employment	(5) Log Real Wages
treated * Law2011	-0.010 (0.014)	0.017 (0.013)	0.025** (0.010)	-.004 (0.010)	0.002 (0.006)
R²	0.222	0.089	0.114	0.060	0.336
Observations	342.676	303.923	265.023	267.415	136.930
Controls:					
Personal characteristics	Yes	Yes	Yes	Yes	Yes
Household characteristics	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes

Note: The coefficient on *treated*Law2011* is the estimated parameter γ_1 of equation (1) which is the DD estimate of the effect of the reform in each of the outcomes. Columns (1) to (4) are probit estimates, column (5) is OLS estimate. ***Coefficients are significant at the 1% level. **Coefficients are significant at the 5% level. *Coefficients are significant at the 10% level. Standard errors are in parentheses.

Table 8a. Marginal Effect of Law 1468 of 2011 on Labor Market Outcomes for Men

	(1) Inactive		(2) Unemployment		(3) Informality		(4) Self-Employment	
Marginal Effect	Low Education	High Education	Low Education	High Education	Low Education	High Education	Low Education	High Education
treated * Law2011	-.002 (0.003)	-.002 (0.004)	0.004 (0.003)	0.004 (0.003)	0.007** (0.003)	0.009** (0.003)	-.001 (0.003)	-.001 (0.002)

Note: The marginal effects are estimated for a man in the treatment group for whom, using sample means, age is 23.79, lives in a household composed of 4.48 members and 0.77 children, whose economic stratum is 2.24, does not live with a partner, is not head of household and lives in Bogotá on June 2012. The marginal effects were estimated for two scenarios described by his educational level. δEducation levelö is high or low according with the years of education: the individual is considered to have a high education level if he has more than 11 years of education.

***Coefficients are significant at the 1% level. **Coefficients are significant at the 5% level. *Coefficients are significant at the 10% level. Standard errors are in parentheses.

Table 9. Labor Market Outcomes for Women
Placebo Experiment

Dependent variable	(1) Inactive	(2) Unemployment	(3) Informality	(4) Self- Employment	(5) Log Real Wages
treated * Randomlaw	0.023* (0.013)	-.026 (0.018)	0.006 (0.017)	0.006 (0.017)	-.002 (0.011)
R²	0.082	0.076	0.170	0.068	0.347
Observations	171.010	119.735	97.541	98.218	52.416
Controls:					
Personal characteristics	Yes	Yes	Yes	Yes	Yes
Household characteristics	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes

Note: The coefficient on *treated*RandomLaw* is the estimated parameter α of equation (1) which is the DD estimate of the effect of the reform in each of the outcomes. Columns (1) to (4) are probit estimates, column (5) is OLS estimate. Pretreatment period: January-December 2009. Post-treatment period: January-December 2010. ***Coefficients are significant at the 1% level. **Coefficients are significant at the 5% level. *Coefficients are significant at the 10% level. Standard errors are in parentheses.

Table 9a. Marginal Effect of Labor Market Outcomes for Women
Placebo Experiment

Marginal Effect	(1) Inactive		(2) Unemployment		(3) Informality		(4) Self-Employment	
	Low Education	High Education	Low Education	High Education	Low Education	High Education	Low Education	High Education
treated *	0.007*	0.006*	-0.008	-0.008	0.001	0.002	0.002	0.001
RandomLaw	(0.004)	(0.003)	(0.005)	(0.005)	(0.005)	(0.006)	(0.005)	(0.004)

Note: The marginal effects are estimated for a woman in the treatment group for whom, using sample means, age is 23.87, lives in a household composed of 4.51 members and 1.07 children, whose economic stratum is 2.27, does not live with a partner, is not head of household and lives in Bogotá on June 2012. The marginal effects were estimated for two scenarios described by her educational level. δEducation levelö is high or low according with the years of education: the individual is considered to have a high education level if she has more than 11 years of education. Pre treatment period: January 2009-December 2009. Post treatment period: January 2010-December 2010. ***Coefficients are significant at the 1% level. **Coefficients are significant at the 5% level. *Coefficients are significant at the 10% level. Standard errors are in parentheses.

**Table 10. Effect of Law 1468 of 2011 on Labor Market Outcomes for Women
Control Group Are Men Ages 18-30**

Dependent variable	(1) Inactive	(2) Unemployment	(3) Informality	(4) Self- Employment	(5) Log Real Wages
treated * Law2011	-0.008 (0.009)	0.018* (0.010)	0.037*** (0.011)	0.021** (0.011)	-.001 (0.006)
R²	0.137	0.061	0.138	0.034	0.263
Observations	401.423	305.607	243.601	243.741	152.947
Controls:					
Personal characteristics	Yes	Yes	Yes	Yes	Yes
Household characteristics	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes

Note: The coefficient on *treated*Law2011* is the estimated parameter γ_1 of equation (1) which is the DD estimate of the effect of the reform in each of the outcomes. Columns (1) to (4) are probit estimates, column (5) is OLS estimate. ***Coefficients are significant at the 1% level. **Coefficients are significant at the 5% level. *Coefficients are significant at the 10% level. Standard errors are in parentheses.

**Table 10a. Marginal Effect of Law 1468 of 2011 on Labor Market Outcomes for Women
Control Group Are Men Ages 18-30**

Marginal Effect	(1) Inactive		(2) Unemployment		(3) Informality		(4) Self-Employment	
	Low Education	High Education	Low Education	High Education	Low Education	High Education	Low Education	High Education
treated * Law2011	-0.001 (0.001)	-0.001 (0.001)	0.004* (0.002)	0.004* (0.002)	0.014*** (0.004)	0.013*** (0.003)	0.006* (0.003)	0.005* (0.003)

Note: The marginal effects are estimated for a woman in the treatment group for whom, using sample means, age is 23.87, lives in a household composed of 4.51 members and 1.07 children, whose economic stratum is 2.27, does not live with a partner, is not head of household and lives in Bogotá on June 2012. The marginal effects were estimated for two scenarios described by her educational level. Education level is high or low according with the years of education: the individual is considered to have a high education level if she has more than 11 years of education. ***Coefficients are significant at the 1% level. **Coefficients are significant at the 5% level. *Coefficients are significant at the 10% level. Standard errors are in parentheses.

Appendix A. Marginal Effect of Law 1468 of 2011 on Labor Market Outcomes for Women
Baseline Scenario

Marginal Effect			(1)	(2)	(3)	(4)
Education Level	Marital Status	Head of Household	Inactive	Unemployment	Informality	Self-Employment
High	0	0	0.007*** (0.002)	-.004 (0.003)	0.008* (0.004)	0.004* (0.002)
High	0	1	0.005*** (0.001)	-.003 (0.003)	0.008* (0.004)	0.005* (0.002)
High	1	0	0.009*** (0.002)	-.004 (0.003)	0.008* (0.004)	0.005* (0.003)
High	1	1	0.008*** (0.002)	-.003 (0.003)	0.008* (0.004)	0.005* (0.003)
Low	0	0	0.009*** (0.002)	-.004 (0.003)	0.006* (0.003)	0.005* (0.003)
Low	0	1	0.007*** (0.002)	-.003 (0.003)	0.006* (0.003)	0.006* (0.003)
Low	1	0	0.010*** (0.003)	-.004 (0.003)	0.005* (0.002)	0.006* (0.003)
Low	1	1	0.009*** (0.002)	-.003 (0.003)	0.005* (0.002)	0.006* (0.004)

Note: The marginal effects are estimated for a woman in the treatment group for whom, using sample means, age is 23.87, lives in a household composed of 4.51 members and 1.07 children, whose economic stratum is 2.27, and lives in Bogotá on June 2012. The marginal effects were estimated for several scenarios described by the combination of three dummy variables: δ Education level is high or low according with the years of education: the individual is considered to have a high education level if she has more than 11 years of education; δ Marital status takes the value of 1 when the individual lives with a partner and 0 otherwise; finally, the variable δ Head of household takes the value of 1 when the individual is the head of the household and 0 otherwise. ***Coefficients are significant at the 1% level. **Coefficients are significant at the 5% level. *Coefficients are significant at the 10% level. Standard errors are in parentheses.

**Appendix B. Marginal Effect of Law 1468 of 2011 on Labor Market Outcomes for Women
All Metropolitan Areas**

Marginal Effect	(1) Inactive		(2) Unemployment		(3) Informality		(4) Self-Employment	
	Low Education	High Education	Low Education	High Education	Low Education	High Education	Low Education	High Education
Barranquilla	0.010*** (0.003)	0.010*** (0.003)	-.004 (0.003)	-.004 (0.003)	0.003* (0.002)	0.007* (0.004)	0.006* (0.003)	0.005* (0.003)
Bogotá	0.009*** (0.002)	0.008*** (0.002)	-.004 (0.003)	-.004 (0.003)	0.005* (0.003)	0.008* (0.004)	0.006* (0.002)	0.004* (0.002)
Cartagena	0.010*** (0.003)	0.010*** (0.003)	-.004 (0.003)	-.004 (0.003)	0.004* (0.002)	0.008* (0.004)	0.007* (0.003)	0.006* (0.003)
Manizales	0.010*** (0.003)	0.009*** (0.003)	-.004 (0.004)	-.004 (0.004)	0.006* (0.003)	0.008* (0.004)	0.005* (0.002)	0.004* (0.002)
Montería	0.010*** (0.003)	0.008*** (0.002)	-.004 (0.003)	-.004 (0.003)	0.003* (0.002)	0.007* (0.004)	0.006* (0.003)	0.005* (0.003)
Villavicencio	0.010*** (0.003)	0.009*** (0.002)	-.004 (0.003)	-.004 (0.003)	0.004* (0.002)	0.008* (0.004)	0.006* (0.003)	0.005* (0.003)
Pasto	0.010*** (0.003)	0.009*** (0.002)	-.004 (0.003)	-.004 (0.003)	0.003* (0.001)	0.007* (0.004)	0.006* (0.003)	0.005* (0.003)
Cúcuta	0.010*** (0.003)	0.009*** (0.002)	-.004 (0.004)	-.004 (0.003)	0.003* (0.001)	0.007* (0.004)	0.007* (0.003)	0.006* (0.003)
Pereira	0.010*** (0.003)	0.009*** (0.002)	-.005 (0.004)	-.005 (0.004)	0.005* (0.002)	0.008* (0.004)	0.006* (0.003)	0.005* (0.003)
Bucaramanga	0.009*** (0.002)	0.007*** (0.002)	-.004 (0.003)	-.004 (0.003)	0.004* (0.002)	0.008* (0.004)	0.007* (0.003)	0.006* (0.003)
Ibagué	0.009*** (0.002)	0.007*** (0.002)	-.005 (0.004)	-.004 (0.004)	0.004* (0.002)	0.008* (0.004)	0.006* (0.003)	0.005* (0.003)
Cali	0.010*** (0.003)	0.008*** (0.002)	-.004 (0.004)	-.004 (0.003)	0.005* (0.002)	0.008* (0.004)	0.006* (0.003)	0.005* (0.003)

Note: The marginal effects for each metropolitan area are estimated for a woman in the treatment group for whom, using sample means, age is 23.87, lives in a household composed of 4.51 members and 1.07 children, whose economic stratum is 2.27, on June 2012, and either the women has (i) a high level of education (12 years or more), or (ii) a low level of education (11 years of schooling or less). ***Coefficients are significant at the 1% level. **Coefficients are significant at the 5% level. *Coefficients are significant at the 10% level. Standard errors are in parentheses.

**Appendix C. Marginal Effect of Law 1468 of 2011 on Labor Market Outcomes for Women
Alternative Timings**

Marginal Effect			(1)	(2)	(3)	(4)
Education Level	Marital Status	Head of Household	Inactive	Unemployment	Informality	Self-Employment
Panel A. Eliminating two months before and two months after implementation of the law						
High	0	0	0.007*** (0.002)	-.004 (0.003)	0.008* (0.004)	0.005* (0.002)
High	0	1	0.005*** (0.001)	-.003 (0.003)	0.008* (0.004)	0.005* (0.003)
High	1	0	0.009*** (0.003)	-.004 (0.003)	0.008* (0.004)	0.006* (0.003)
High	1	1	0.008*** (0.002)	-.003 (0.003)	0.008* (0.004)	0.006* (0.003)
Low	0	0	0.009*** (0.002)	-.004 (0.003)	0.006* (0.003)	0.006* (0.003)
Low	0	1	0.007*** (0.002)	-.003 (0.003)	0.006* (0.003)	0.007* (0.003)
Low	1	0	0.011*** (0.003)	-.004 (0.003)	0.005* (0.003)	0.007* (0.003)
Low	1	1	0.010*** (0.003)	-.003 (0.003)	0.005* (0.003)	0.008* (0.004)
Panel B. Eliminating two months before and four months after implementation of the law						
High	0	0	0.008*** (0.002)	-.005 (0.003)	0.007* (0.004)	0.004* (0.002)
High	0	1	0.006*** (0.001)	-.005 (0.003)	0.007* (0.004)	0.005* (0.003)
High	1	0	0.011*** (0.003)	-.005 (0.003)	0.007* (0.004)	0.005* (0.003)
High	1	1	0.009*** (0.002)	-.004 (0.003)	0.007* (0.004)	0.006* (0.003)
Low	0	0	0.010*** (0.002)	-.005 (0.003)	0.005* (0.003)	0.006* (0.003)
Low	0	1	0.008*** (0.002)	-.005 (0.003)	0.005* (0.003)	0.007* (0.003)
Low	1	0	0.012*** (0.003)	-.005 (0.003)	0.005* (0.003)	0.007* (0.004)
Low	1	1	0.011*** (0.003)	-.005 (0.003)	0.005* (0.003)	0.007* (0.004)
Panel C. Eliminating two months before and six months after implementation of the law						
High	0	0	0.010*** (0.002)	-.005 (0.003)	0.008* (0.004)	0.005* (0.002)
High	0	1	0.007*** (0.001)	-.004 (0.003)	0.008* (0.004)	0.005* (0.003)
High	1	0	0.013*** (0.003)	-.005 (0.003)	0.008* (0.004)	0.006* (0.003)
High	1	1	0.011*** (0.002)	-.004 (0.003)	0.008* (0.004)	0.006* (0.003)
Low	0	0	0.012*** (0.002)	-.005 (0.003)	0.006* (0.003)	0.006* (0.003)
Low	0	1	0.010*** (0.002)	-.005 (0.003)	0.006* (0.003)	0.007* (0.004)
Low	1	0	0.014*** (0.003)	-.005 (0.003)	0.005* (0.003)	0.007* (0.004)
Low	1	1	0.013*** (0.003)	-.004 (0.003)	0.005* (0.003)	0.008* (0.004)

Note: The marginal effects are estimated for a woman in the treatment group for whom, using sample means, age is 23.87, lives in a household composed of 4.51 members and 1.07 children, whose economic stratum is 2.27, and lives in Bogotá on June 2012. The marginal effects were estimated for several scenarios described by the combination of three dummy variables: 'Education level' is high or low according with the years of education; the individual is considered to have a high education level if she has more than 11 years of education; 'Marital status' takes the value of 1 when the individual lives with a partner and 0 otherwise; finally, the variable 'Head of household' takes the value of 1 when the individual is the head of the household and 0 otherwise. ***Coefficients are significant at the 1% level. **Coefficients are significant at the 5% level. *Coefficients are significant at the 10% level. Standard errors are in parentheses.

**Appendix D. Marginal Effect of Law 1468 of 2011 on Labor Market Outcomes
for Men**

Marginal Effect			(1)	(2)	(3)	(4)
Education Level	Marital Status	Head of Household	Inactive	Unemployment	Informality	Self-Employment
High	0	0	-.002 (0.002)	0.004 (0.003)	0.009** (0.003)	-.001 (0.002)
High	0	1	-.002 (0.001)	0.003 (0.002)	0.009** (0.003)	-.001 (0.002)
High	1	0	-.001 (0.002)	0.003 (0.002)	0.009** (0.003)	-.001 (0.002)
High	1	1	-.001 (0.002)	0.002 (0.001)	0.008** (0.003)	-.001 (0.002)
Low	0	0	-.002 (0.002)	0.004 (0.003)	0.007** (0.003)	-.001 (0.003)
Low	0	1	-.001 (0.002)	0.003 (0.002)	0.008** (0.003)	-.001 (0.003)
Low	1	0	-.001 (0.003)	0.003 (0.002)	0.008** (0.003)	-.001 (0.003)
Low	1	1	-.001 (0.002)	0.002 (0.001)	0.009** (0.003)	-.001 (0.003)

Note: The marginal effects are estimated for a man in the treatment group for whom, using sample means, age is 23.79, lives in a household composed of 4.48 members and 0.77 children, whose economic stratum is 2.24, and lives in Bogotá on June 2012. The marginal effects were estimated for several scenarios described by the combination of three dummy variables: δEducation levelδ is high or low according with the years of education: the individual is considered to have a high education level if he has more than 11 years of education; δMarital statusδ takes the value of 1 when the individual lives with a partner and 0 otherwise; finally, the variable δHead of householdδ takes the value of 1 when the individual is the head of the household and 0 otherwise. ***Coefficients are significant at the 1% level. **Coefficients are significant at the 5% level. *Coefficients are significant at the 10% level. Standard errors are in parentheses.

Appendix E. Marginal Effect on Labor Market Outcomes for Women
Placebo Experiment

Marginal Effect			(1)	(2)	(3)	(4)
Education Level	Marital Status	Head of Household	Inactive	Unemployment	Informality	Self-Employment
High	0	0	0.006* (0.003)	-.008 (0.005)	0.002 (0.006)	0.001 (0.004)
High	0	1	0.005* (0.002)	-.007 (0.005)	0.002 (0.006)	0.001 (0.004)
High	1	0	0.008* (0.004)	-.008 (0.005)	0.002 (0.006)	0.001 (0.004)
High	1	1	0.007* (0.004)	-.007 (0.004)	0.002 (0.006)	0.002 (0.005)
Low	0	0	0.007* (0.004)	-.008 (0.005)	0.001 (0.005)	0.002 (0.005)
Low	0	1	0.006* (0.003)	-.007 (0.005)	0.001 (0.004)	0.002 (0.005)
Low	1	0	0.009* (0.005)	-.008 (0.005)	0.001 (0.004)	0.002 (0.006)
Low	1	1	0.008* (0.004)	-.007 (0.005)	0.001 (0.004)	0.002 (0.006)

Note: The placebo pretreatment period is January-December 2009. The placebo post treatment period is January-December 2010. The marginal effects are estimated for a woman in the treatment group for whom, using sample means, age is 23.87, lives in a household composed of 4.51 members and 1.07 children, whose economic stratum is 2.27, and lives in Bogotá on June 2010. The marginal effects were estimated for several scenarios described by the combination of three dummy variables: δ Education level is high or low according with the years of education: the individual is considered to have a high education level if she has more than 11 years of education; δ Marital status takes the value of 1 when the individual lives with a partner and 0 otherwise; finally, the variable δ Head of household takes the value of 1 when the individual is the head of the household and 0 otherwise. ***Coefficients are significant at the 1% level. **Coefficients are significant at the 5% level. *Coefficients are significant at the 10% level. Standard errors are in parentheses.

Appendix F. Marginal Effect of Law 1468 of 2011 on Labor Market Outcomes for Women

Control Group Are Men Ages 18-30

Marginal Effect			(1)	(2)	(3)	(4)
Education Level	Marital Status	Head of Household	Inactive	Unemployment	Informality	Self-Employment
High	0	0	-.001 (0.001)	0.004* (0.002)	0.013*** (0.003)	0.005* (0.003)
High	0	1	-.0008 (0.000)	0.002* (0.001)	0.012*** (0.003)	0.005* (0.002)
High	1	0	-.002 (0.002)	0.003* (0.002)	0.012*** (0.003)	0.006* (0.003)
High	1	1	-.001 (0.001)	0.002* (0.001)	0.011*** (0.003)	0.006* (0.003)
Low	0	0	-.001 (0.001)	0.004* (0.002)	0.014*** (0.004)	0.006* (0.003)
Low	0	1	-.0007 (0.000)	0.002* (0.001)	0.014*** (0.004)	0.006* (0.003)
Low	1	0	-.001 (0.002)	0.003* (0.002)	0.014*** (0.004)	0.006* (0.003)
Low	1	1	-.001 (0.001)	0.002* (0.001)	0.014*** (0.004)	0.006* (0.004)

Note: The marginal effects are estimated for a woman in the treatment group for whom, using sample means, age is 23.87, lives in a household composed of 4.51 members and 1.07 children, whose economic stratum is 2.27, and lives in Bogotá on June 2012. The marginal effects were estimated for several scenarios described by the combination of three dummy variables: δ Education level δ is high or low according with the years of education: the individual is considered to have a high education level if she has more than 11 years of education; δ Marital status δ takes the value of 1 when the individual lives with a partner and 0 otherwise; finally, the variable δ Head of household δ takes the value of 1 when the individual is the head of the household and 0 otherwise. ***Coefficients are significant at the 1% level. **Coefficients are significant at the 5% level. *Coefficients are significant at the 10% level. Standard errors are in parentheses.