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Maternity and Labor Markets: Impact of Legislation in Colombia[1]

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Abstract

Our research seeks to determine the impact on female labor outcomes of the amendment on the Colombian labor law in which maternity leave was extended from 12 to 14 weeks (through Law 1468 of July 2011). To identify this impact we compare labor market outcomes of two groups of women with differences in their fertility rates. We find evidence that as a result of the extension of the maternity leave period, women in the high-fertility age group have experienced an increase in inactivity rates, informality, and self-employment. We argue that a redesign of maternity protection policy is due, one through which the economic and social costs of bearing children are shared by both parents and which may generate social change regarding the importance of paternal care.

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

Key words: maternity leave, women's labor market, labor regulation.

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Introduction

The increasing participation of women in economically productive life is one of the greatest social revolutions in the last century. Colombia, in particular, is the Latin American country with the largest increase in the female participation rate in the last three decades (Amador, Bernal & Peña, 2013). Several social factors drove this process. Access to college education for women since 1934, birth control through mass access to contraceptive methods, a growing urbanization, and the increasing need of two-earner households, among other factors, prompted a rise in the participation of women in the economically productive sector.

In part due to this increase, and hoping to spark more female interest in salaried work, starting in the 1930s labor law protections started covering the event of pregnancy for female workers and later protected them from gender discrimination. This same drive was carried into the Colombian Constitutional charter in 1991, through the clauses of equality and non-discrimination, and is central to the international treaties signed by Colombia, most prominently CEDAW.[5]

However, the equality pursued through legal discourse is challenged by a series of biological events (pregnancy, childbirth, and breastfeeding) that directly and primarily have an effect on women.[6] Partly in recognition of this biological disparity and with the aim of promoting the employment of women during the industrialization processes, several countries implemented maternity leave programs since the early twentieth century. Part of this trend is shown in the adoption of the International Labor Organization (ILO)'s Convention No. 3 which is mandatory for Colombia since 1931,[7] as well as subsequent laws that have modified the maternity protection regime. According to the laws in force in 2014, pregnant workers in Colombia have two fundamental guarantees: first, the right to enhanced job security, which implies a prohibition against dismissal due to pregnancy that protects the worker during the 9 months gestation period and maternity leave; and, second, a paid maternity leave of 14 weeks.[8]

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[5] Convention on the Elimination of all forms of Discrimination Against Women, adopted in 1979 by the United Nations General Assembly.

[6] It should be noted that although this biological events are thought to affect only women who are mothers or who want to become mothers, as will be shown in section 1, social ideas and preconceptions about motherhood may affect *all* women, regardless of their parental status or their individual preference regarding motherhood.

[7] ILO has adopted two other Conventions on Maternity that expand the rights included in Convention No. 3. These are conventions 103 (1952) and 183 (2000) which 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.

[8] Colombian law mandates that the worker must take one of the fourteen weeks before the feasible day of birth, and the next 13 afterwards. In the case of premature births, the 14 weeks may be increased by the difference

For the ILO, the provision of these benefits aims, first, to protect the health of women and children during pregnancy and after birth; and second, to ensure that the reproductive role of women does not adversely affect their economic and job security (ILO, 2005, 2010). The latest ILO interest has been to promote that in every country the maternity leave is paid by social security systems instead of corresponding exclusively to employers, in order to prevent discrimination against women workers. Indeed, the ILO has recognized that motherhood and the responsibilities associated with it still have an important influence on the perception towards women in the labor market, and can be used by employers as a discriminatory criterion for recruitment, for which the ILO stated that "the problem is how to ensure that employers do not reject candidates of reproductive age who are already taking 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). ILO's focus has been twofold. First, it has emphasized the importance of the inclusion of 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 conditions that reduce the costs to employers associated with workers who take maternity leave in order to diminish the discriminatory effects that maternity leave may have on women workers.

Indeed, we agree that sex equality in employment requires that women and men are treated as substantially similar subjects with similar capacities, potentialities and desires of personal and professional flourishing, who, in the face of similar training, stand on equal footing to reach top levels of productivity in a given job. Achieving this aim includes eliminating differentiating economic and institutional costs that could create an incentive for employers to hire male instead of female workers. However, our argument goes further. By the same token, we argue, men and women workers regardless of age, sexual orientation and parental or marital status should carry the same burdens regarding the care of children, relatives, and the elderly and should be expected to need some kinds of special benefits to take care of significant others.[9] In particular in the event 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, we argue, employers

between the initial date of birth and the real date in which the woman bears the child. In the case of multiple births, the length of maternity leave is increased in two weeks.

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

could be motivated to try to offset the extra cost of female workers by not hiring them, hiring them less, 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], showed in Table 1, and take into account current labor legislation. They find that the annual extra cost for the firm of providing paid maternity leave is 6.73% of the annual woman's wage.[11]

This extra cost is directly generated by the provision of maternity leave and by 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 the above calculation. These other costs are related to the necessary adjustments in the organization due to the absence of the worker in leave, among them the costs of posting the job, searching for the appropriate replacement, and maybe even productivity losses either during the period of training and adjustment, or during the whole leave period if the replacement is not as productive as the worker on maternity leave. Unfortunately, obtaining a measure of these costs is very difficult due to lack of appropriate data.

The listed factors show the differential impact that maternity and labor legislation designed to protect it may have on women's employability. For these reasons, in our view, examining this type of regulatory intervention is especially important for understanding labor market differences by gender, but the scope of its impact is not fully understood yet. Our research seeks to determine the effect that the last pregnancy legislation reform which extended the maternity leave from 12 to 14 weeks (Law 1468 from 2011), had 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 serve as a benchmark for comparison with labor markets of similar economic and institutional contexts as those of Colombia, as is the case in most countries in the 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 to different fertility rates because of their age. That is, we compare women in ages between 18 and 30 with women in ages between 40 and 55. These two groups have very different fertility rates and

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

[11] The annual cost for a worker with no maternity leave is 100. For a woman with maternity leave, the employer has to cover 73.06% of her salary of that year (remaining wages are covered by the social security system), 30,31 corresponds to salary of replacement worker, and 3.37 corresponds to the value of one paid-hour per day for nursing, for three months after woman returns from maternity leave.

therefore Law 1468 affects women between 18 and 30 years old (the treatment group), but not the group between 40 and 55, when women have passed their peak of fertility (the control group). We use the difference-in-difference (DID) approach. The results show that since 2011, the women in a childbearing age (treated) experience worse labor market outcomes than the group of women associated to low fertility (control). 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 of our results being driven by a period of adjustment, or some cyclicality responses around the time of implementation of the law. For this, we run regressions excluding data for some months before and after implementation of the changes in the maternity leave period. We also check for the possibility that our results are driven by the cohort composition of the groups. Therefore, we run the same regressions only for men, and also using as control group men ages 18 through 30. Finally, we estimate placebo treatment effects using data from pre-treatment 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.

As stated by Autor et al. (2006) in the context of their research, we stress that our paper does not attempt to provide an overall assessment of maternity protection laws. We have not offered any evaluation of the benefits of such laws to workers and the public. The fact that there are some effects on the labor market for high-fertility women underscores that legal protections do not come without cost. We make public policy recommendations to correct the distortions created by the legislation, so women can enjoy the 14 weeks of maternity leave without being punished by the labor market.

This document is divided into seven parts. In the first we describe the related literature. In the second part we briefly recount the Colombian legislation on maternity protection. In the third we present a stylized model that allows us to understand the effects of maternity protection on the labor market. In the fourth part we describe the data we use. In the fifth part we show the empirical methodology we chose. In the sixth part we present the results and in the seventh we propose public policies. Finally, we conclude.

1. Related literature

Most industrialized and developing countries have some form of maternity leave that provides job protection for women around the time of childbirth, but the variation between

countries in terms of the period protected against dismissal, the duration of pregnancy leave, or the funding source of wages during leaves is considerable (ILO, 2010). Taking into account only maternity leave, a wide variation can be found between countries. Depending on the particular 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; if the leave is paid or unpaid, and if so, what percentage of salary is paid; the source of funding which may come from the state, an insurance system, a mixed system, or just the employer; and the possibility (or not) that mothers waive a portion of their license to share it with the father (ILO, 2010). This variation across countries complicates the comparison of results when it comes to measuring the impact of maternity protection in the labor market for women.[12] For this reason, the comparison of the Colombian case with research in other institutional contexts in terms of outcomes for women in the labor market should take into account these differences and their effects.

Among the works that seek to evaluate the impact of maternity leave on the labor market, Lai and Masters (2005) reviews the effect of introducing compulsory maternity leave on women's labor demand in Taiwan. They conclude that, in the short term, this mechanism worsens the economic situation of women because it reduces the probability of being employed and also their salary. Gruber (1994) studies the effects on the labor market of legislative systems in the United States that occurred between 1975 and 1978 that required companies to include the costs of maternity and delivery within health plans for employees. The study found that there was a significant decrease in wages, but not in employment levels. More recently, research on the relationship between female labor supply and family friendly policies found that 28 to 29% of the decrease in US women's 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 relative to those other countries (Blau and Kahn, 2013).

[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 unpaid maternity leave for a period of 12 weeks, but to enjoy it she has to meet the requirement of at least 1,250 hours of work during the previous year with the same employer and the employer is only obliged to grant a license 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 a period of 14 weeks, is not required to serve a minimum period of service to be eligible for benefits, and the employer is obliged to pay for the license if the worker is not affiliated to an insurance system regardless of the number of workers in the firm. This is the Colombian case based on current laws.

Research in the Colombian context has suggested a connection between motherhood costs and, on the one hand, a female wage penalty or, on the other, lower labor force participation of women. Thus, research conducted in the 70s and 90s sought to determine the influence of high labor costs caused by maternity leave in female labor participation. These investigations concluded that, in effect, part of the lower female participation in the employed population could be explained as an effect of specific female labor extra cost related to the absence of workers during maternity leave (Junguito et al., 1970; Forero de Saade et al., 1991). 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. However, since 1975 the direct costs of the maternity leave went from being paid solely by the employer, to be shared by the employer and the employee from the contributions made by both to the social security system. More recently, the work of Molinos (2012) evaluated the effect of a judicial decision (C-470 1997) on female labor participation in Colombia. This ruling of the Constitutional Court establishes the invalidity of the dismissal and demands the reinstatement of all workers who are pregnant within three months after delivery. Using data from the National Household Survey for the second quarter of 1996, 1998 and 2000, Molinos finds that female labor force participation declined, especially for women between 15 and 29 years of age.

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

Looking at the return to work after childbirth, some studies find that it is more likely that women return to work, either with the previous employer or another, if they have maternity leave (Ruhm, 1998; Baum, 2003; Baker and Milligan, 2008; Rossin-Slater et al., 2013), but other studies found only a very modest or nonexistent effect on employment (Baum, 2003; Hashimoto et al., 2004). Finally, in the context of the European Union, researchers have found that public policies that extend the licenses postpartum also to fathers, and state provision of care services in early childhood, contribute to increasing female

labor participation (because they relieve the mother from assuming the entire burden of motherhood) and to reduce the wage gap (Kamerman, 2000).

Other authors have studied the effects of laws that provide employment security to incumbent workers. Autor et al. (2006) studies the effects of employment protection in the United States. They find that wrongful-discharge regulations reduce employment rates between 0.8% and 1.7% and found that the initial impact is bigger for less educated workers and female employees. This paper shows evidence that laws protecting employees have to be accompanied by other laws in order to mitigate distortions in the market. In the context of accommodation mandates, Acemoglu and Angrist (2001) find that the American with Dissabilities Act (ADA) had a negative effect on the employment of disabled men of all working ages and disabled women under age 40; also, 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 the distinct aspects of the ADA in its impact on labor markets. Their findings support a causal relationship between the ADA and declines of 10% in disabled employment 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 focuses on trying to establish whether there is discrimination against workers because of motherhood. These papers 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, on the other hand, there is some penalty wage offered specifically to women 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 when the same candidate was described as a woman without children. Similarly, other studies show that visibly pregnant managers are judged as less committed to their work, less reliable and with less leadership skills, but warmer, more emotional and more irrational than other managers, equally talented, but who are not visibly pregnant (Halpert, Wilson and Hickman, 1993; Corse, 1990).

Correll and Bernard (2007) tested the hypothesis that the "motherhood penalty" on the evaluation of the adequacy and job performance of women and the lower wages offered to them, occurs, at least partly, because of the cultural role of motherhood is seen as incompatible with the cultural beliefs associated to the role of the "ideal worker". This leads to

the evaluators, perhaps unconsciously, to qualify mothers as less competent and less committed to their jobs. In both studies (experiment 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 less competence for the job. Mothers were rated as less competent than non-mothers, less committed to their professional development and evaluators recommended starting salaries for them that were less than suggested for non-mothers. Mothers also were rated as significantly less promotable and less recommended for management positions. In contrast, men were not penalized and instead sometimes benefited from being parents. For example, parents were perceived as more committed to their jobs than non-parents, and were offered an entry salary significantly higher than men who were not fathers.

In the Colombian context, research have established a relationship between motherhood and a female wage penalty (Olarte and Peña, 2010; Badel and Peña, 2010) and, secondly, a higher rate of female unemployment and underemployment (Pena-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 a male, which may explain a greater willingness of employers to hire male workers which results in a higher male employment rate in the formal labor market. While wage costs of the employee on leave are paid by the social security system, social security monthly payments of the replacement worker have to be paid by the employer, which means a small double payment on the part of the employer who will be paying social security monthly installments for both the employee on leave and the replacement worker.[14] Similarly, the increase in "global" non-economic costs associated with the recruitment of women would have at least three different causes. The first refers to "organizational" costs which are related to the settling and replacement of the worker on leave.[15] A second type of cost can be associated to employers prejudice related to the "duties of motherhood and childrearing" which are thought to create a conflict between the commitments to the workplace and familial responsibilities for the female worker but not for the male worker. Third, the maternity provisions, i.e. the ban on dismissal of pregnant women,

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

[14] The monthly payments to the social security system (health insurance) in Colombia are 12.5% of the monthly salary earned by a worker of which the employer covers 8.5% and the worker 4%. In the cases in which the employer is paying for both the employee on leave and the replacement worker, the employer would be paying an extra 8.5% of wages to the replacement worker.

[15] See Supra Introduction.

which covers in average twelve and a half months (nine of pregnancy and three and one half of pregnancy leave) is a provision that limits the ability of the employer to lay off pregnant workers when facing demand shocks for the employers' product or service. Indeed, the dismissal of pregnant workers must be based on a just cause, and be authorized by a labor inspector, all of which increases the administrative costs of the same procedure by comparison with the dismissal of a male worker. The aggregation of these, among other costs, could result in a lower demand for female labor in the formal labor market (Ramirez, 2008).

Other research suggests that as a result of the above, and aggravated by the restricted offer of services for the care of early childhood and the elderly, women, despite having on average more years of education than men, have a higher participation in the informal economy and are more affected by structural unemployment (Pena-Parga and Glassman, 2004).

2. History of legislation in Colombia

Convention No. 3 of the ILO adopted in 1919 was the first impulse towards the globalization of maternity protection in industrial and commercial labor contexts. The agreement established a number of benefits for women workers who remain in employment during pregnancy including the right not to work during six weeks before delivery, and maternity leave of six weeks after birth, as well as the payment of benefits throughout the period of absence through an insurance system or by the public treasury. These benefits were adopted in the Colombian legal system by Law 129 of 1931 which ratified the convention, and was later modified by Law 53 of 1938 which laid the foundations of the protection still in force in the field of employment law. Beginning in 1938, it is possible to identify in the national legislation a concern to protect workers from the adverse treatment that pregnancy may have on the working lives of women.[16] Specifically, the establishment through law of a presumption that the dismissal is motivated by the pregnancy when it occurs during the period of pregnancy or maternity leave and without prior authorization from a labor inspector, is a protection that reduces the power of dismissal of the employer subjecting it to a process that seeks to protect the job security of the workers.

[16] Labor legislation alone is not enough for female egalitarian participation in labor markets. Instead, a diverse array of services and institutional design changes are required to accomplish the proper participation of women in the labor market. This includes, but is not limited to, affordable and accessible child care services, and shared domestic work between partners.

Indeed, the recognition that there is a certain vulnerability of women workers to discriminatory treatment because of pregnancy has generated a particular interest from international organizations to create a regulatory framework that effectively protects them in labor relations. For this reason, various international treaties and conventions ratified by Colombia, including the Universal Declaration of Human Rights, the International Covenant on Economic and Social Rights, the Convention on the Elimination of all Forms of Discrimination against Women and ILO's Convention 111 on discrimination in employment, have the cross interest of protecting the right of women to be mothers while trying to reduce the chances that women are subjected to adverse treatment because of pregnancy. These international commitments acquired by Colombia, which have become part of our domestic law, have been added to the protection included in Article 43 of the Colombian Charter which provides for equal rights and opportunities for men and women, the prohibition of any form of discrimination against women, and the duty of the State to provide special protection and assistance for them "during pregnancy and after childbirth."[17]

Accordingly, legislative and jurisprudential developments on the protection of pregnant workers in Colombia have been considerable. On the legislative front, the general trend has been to extend the duration of maternity leave, while in the field of constitutional law Colombian Constitutional Court has had an interest in strengthening the protection against dismissal during pregnancy and maternity leave effectively guaranteeing the rights of pregnant workers to basic social services and non-discrimination, and finally, an effort to broaden the spectrum of protection to workers who had previously been excluded (Ramirez, 2008).

Currently, Colombian labor law includes, within the general social security system, a package of protection for pregnant workers comprising the following benefits: i) the prohibition of dismissing the worker on account of pregnancy during the period of pregnancy and maternity leave;[18] ii) a paid leave of 14 weeks around the time of birth; and iii) after the end of maternity leave, the reinstatement of the employee in the older post, as well as iv) two

[17] In order to protect women from discrimination due to pregnancy, the Ministry of Labor issued Resolution 3716 of 1994 which banned, as a rule, the practice of pregnancy tests to women applying for a job. Exceptionally these tests may be performed when employers undertake activities classified as high risk, and under Article 1 of Decree 1281 of 1994 (work in mining that involves working in tunnels or underground; work involving high temperatures with values above the permissible limits; work involving exposure to ionizing radiation and exposure to work with substances proven to provoke cancer) and in paragraph 5 of Article 2 of Decree 1835 of 1994 (working as firefighter extinguishing fires). In these cases, the sole purpose of the test is to avoid the potential risks that may affect the mother during pregnancy or harm the fetus.

[18] A pregnant worker may be dismissed if there is fair cause for termination of the employment contract, and if authorization from a Labor Inspector has previously been granted.

breaks of 30 minutes each, for feeding the child during the first six months of the infant's life. Payment of maternity leave is done by the health insurance system to which the worker is affiliated, out of the contributions made by the worker and his employer over the employment contract. In contrast to this protection package, men rely exclusively on a paid leave of eight working days after the birth of the child.[19]

The general rule was that the above measures benefited the formal sector workers tied to an employer by an employment contract for an indefinite term. However, finding that the recruitment of women through short-term contracts was being used by employers to circumvent the protection of workers during pregnancy, since 1997 the Constitutional Court extended similar protections for workers linked through fixed-term contracts.[20] Under this judicial interpretation, if the term agreed arrives, and the worker is pregnant the employer must obtain authorization from a labor inspector to proceed with the termination.[21] Similar protection has been extended to workers hired through at will contracts.[22]

In summary, the jurisprudence of the Colombian Constitutional Court evidences a continuous effort to ensure the constitutional rights of pregnant workers, and to do this effectively, the Court had to harmonize the rights of freedom of contract with the special protections of motherhood under the Constitution and labor law, which leads to recruitment and firing constraints.

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[19] Law 755 of 2002.

[20] The Court has argued, for example, that "the arrival of the date of termination of the contract is not always a just cause for termination of the employment relationship, because if at the contract's date of expiration the causes for hiring remain and the subject still stands, and moreover, the worker has fully complied with his obligations, the employer "must ensure the renewal of the contract". Therefore, to terminate an employment relationship of a pregnant worker who has notified her pregnancy to the employer, and the worker has been complying with all the obligations of her contract, [the Labor Inspector] must investigate whether the causes that originated the contract remain, and if they do, then the employment relationship cannot be terminated". Colombian Constitutional Court, T-326 of 1998. Similar arguments have also been made, among others, in the following decisions: T-426/98; T-375/00; T-764/00; T-664/01; T-206/02; T-113/03; T-895/04; T-1236/04.

[21] These rules are not applicable to employment contracts of very short duration. In another established line of jurisprudence, the Constitutional Court has stated that the right to stability in employment of the pregnant worker is dependent on the existence of a true and grounded prospect to continue on the job on the part of the employee. According to the Court, such certainty cannot be attained in contracts that last a short amount of days, Constitutional Court, T-206/02.

[22] In the US, at will contracts (very prevalent in labor relations) are those in which the worker can quit at any time, or the employer can fire the worker at any time without the need for a just cause for dismissal. A similar figure in the Colombian context are the agreements for the provision of services which do not extend to workers the same protections granted by the labor law regime.

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 ease their participation in a given social or economic setting. The characteristic of these mandates is that a clearly identifiable group is affected by them. Generally, this type of legislation combines with anti-discrimination rules, and its consequences on labor market outcomes depends on its effect on labor demand and supply and the incentives imposed by the anti-discrimination rules. Therefore, when evaluating the efficiency of these policies, we must take into account the effect on wages as well as on employment levels.[23]

In this section, we use a stylized model to explore the consequences of demanding that the employer provides a maternity leave period to its female employees. We follow very closely 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 women's 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 $n_i(.)$ 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 Γ[24]. This assumption allows us to characterize a market with free entry of firms (when $Z\rightarrow 0$) as well as one where the number of firms is fixed ($Z>0$ y $\Gamma\rightarrow\infty$). 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 $G(.)$ exhibits decreasing returns to scale.

In each period t, there is a probability s that productivity of a worker in its current firm falls to zero. These are shocks for the specific combination worker-firm that we denominate compatibility shocks. Therefore, the quantities F_t and M_t in G include only those

[23] 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), where the Summers' framework is adapted to the case of accommodation mandates.

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

workers that do not receive the compatibility shock. A female worker that gets fired could sue the firm with probability q_f for a 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 employers that receive the negative compatibility shock.

Following the current legislation in this economy, firms must provide maternity leave. This license is given only to those female workers that are pregnant and give birth, which occurs with probability δ per female worker. This probability captures information about the percentage of female workers that are in a fertile age, as well as about the fertility rates per age.[25] The firm has to pay a cost C per female worker that enjoys the maternity leave. This assumption intends to capture the costs of searching for and training a person to replace the woman who is on maternity leave, as well as adjustments in organization and production, and other costs that are generated 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 with maternity leave have a higher probability of going back to work after enjoying the maternity leave period, which is beneficial for the firm as long as it can retain a person that already has specific knowledge about the firm. Furthermore, there is a hypothesis that firms that provide maternity leave are able to attract women that are more qualified and with a higher commitment to stay in the labor market.[26] In this model, we capture these benefits by assuming that each female worker (independently of her pregnancy status) increases 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 them voluntarily even in the absence of such legislation. The fact that governmental regulation is required suggests that in general $C > B$.

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

[25] 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.

[26] See among others Desai and Waite (1991), Leibowitz, et al. (1992) and Berger and Waldfogel (2004).

$$max_{[F_t,M_t]}\ \pi \equiv \sum_{t=0}^{\infty} \begin{Bmatrix} \beta^t[G(M_t, eF_t) - w_{m,t}F_t - w_{h,t}M_t \\ -\delta C F_t + BF_t - sf_m F_{t-1} - sf_h M_{t-1}] \end{Bmatrix},$$

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. 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 for the firm of being sued when terminating the contract to a pregnant worker increases, and it has to incur in costs to prove that the worker is not fired due to her pregnancy. And second, because the legislation increases the amount of compensation if the litigation is favorable to her. Furthermore, the costs of hiring women increase in $\delta C - B$. Therefore, in reality, it is more likely that legislation on maternity leave decreases women's employment and wages.

2. The mandate of equality in wages between men and women[27] (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 equality in wages interacts also with firing costs and maternity leave costs by preventing wages from decreasing in order to offset those costs, decreasing even more employment levels of women.

3. If, starting from a situation in which $z > Z$ and $\pi = \Gamma$, legislation results in a decrease of profits for the firm, it could cause the exit of some firms, 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 reduces more the employment of women in firms or industries for which profits are already very close to entry costs. Most likely these are the smallest firms.

The theoretical discussion concludes that the net effect of the legislation on maternity leave depends on which mandates are more important, maternity leave or equal pay. The costs of maternity leave and firing cost most likely reduce employment. If the mandate on equality of wages is not effectively enforced, the equilibrium would be on the supply curve of both men and women, and the decrease in employment will be accompanied by 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 down the supply curve and, 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 Gran Encuesta Integrada de Hogares - GEIH – for the period between January 2009 and September 2013. The survey is conducted by the Departamento Administrativo Nacional de Estadística (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, household and individual characteristics such as gender,

[27] In Colombia, a mandate of this sort (equal pay for equal work) is given by Código Sustantivo del Trabajo, article 143.

education, age, marital status, etc. 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.[28] 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 restricting the sample to only women and, when considering only ages comprising the treatment and control groups, we end up with a total of 411.724 individuals. By selecting only a specific group of individuals, we seek to disentangle the effect that the increase in the maternity leave period had 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 belong to the treatment group (72%). Among the employed, most of those who are informal workers or self-employed belong to the control group (56% and 65%, respectively). Also, the percentage of inactive is higher for the treatment group (55%).

In Table 4, we show some descriptive statistics for those women that are in the labor force and those who are inactive disaggregated also by treatment and control group. Women in the treatment group who are part of the labor force report to have more education than primary 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 to live with a partner at higher rates than women in the labor force. Finally, women aged 18 to 30 who are inactive live in a higher proportion in households with children under 12 years than women of the same age group in the labor force. In summary, it can be inferred that inactivity among women in the treatment group was partially explained by their individual characteristics – which are used as controls in this study – that are less valued in the labor market.

Table 5 shows the general descriptive statistics for the whole sample. The average age is 35, the economic strata is between 2 and 3, there is one child younger than 12 years old on average per household, and on average women have some high school education.

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

5. Empirical Methodology

The legislation on maternity leave should have a more important 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 get 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, we consider as the treatment group women whose ages are between 18 and 30 years, and the control group is constituted by women whose ages are between 40 and 55 years. 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 period of post-legislation with those in the pre-legislation period.[29]

Table 6 shows the differences in fertility rates for women in the treatment group and control group reported by DANE. On average during the period analyzed -2009 to 2013 - fertility rates for the treatment group hover around 11.5 % while those for the control group ranges around 1.18 %. These differences in fertility rates allow us to have two comparable groups where only one of them is affected by changes in the law.[30]

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:

$$y_i = \gamma_0 + \gamma_1 treated_i + \gamma_2 law2011 + \gamma_3 treated * law2011 + \Gamma X_i + \theta_t + \varepsilon_i \qquad (1)$$

where $\boldsymbol{y_i}$ 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 it is a woman 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 is 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

[29] The control group takes women from age 40 to ensure that these women were not part of the treatment group at any time during the period analyzed.

[30] The results of our empirical model are robust to changes in the definition of high fertility group. For example, the results hold when the treated group consists of women aged 25 to 30 years, or 25 to 35 years.

include regressors in the model that allow us to control for observable characteristics and help to solve this problem. In the vector of regressors $\boldsymbol{X_i}$ we include age, age squared, three indicator variables (whether the woman has high-school education or less, whether she lives with a partner or not, and whether she is the household head), number of children in the household, the total number of household members, and the household's economic stratum according to the one in 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 aged 18-65 in the year.

We are interested in the coefficient of the interaction, γ_3, 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 period, which is equivalent to an increase of 17% in the license 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*.[31] The marginal effects reported in the main text are calculated for a woman[32] in the treatment group who lives in Bogotá on June 2012, does not live with a partner, is not head of the household and either (a) the woman has a level of education higher than high school, or (b) 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 Appendixes.

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

[31] 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.

[32] 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 by 4.51 members and 1.07 children, whose economic strata is 2.27, and 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 levels of education. The combination of all these possibilities gives us a total of eight marginal effects.

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.[33] . The results show that the probability of inactivity significantly increases for women in the high-fertility age group after the increment in the maternity-leave period. The marginal effects estimation, in Table 7a,[34] indicates that for a woman with a level of education lower than high school, the probability of inactivity increases in 0.9 percentage points. If the same woman had a level of education higher than secondary school, her probability of inactivity increases in 0.7 percentage points. In general, keeping everything else equal, the increase in the probability of inactivity is bigger for women (a) with low levels of education, (b) living with a partner, (c) who are not head 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 in a high-fertility age after the law entered into force. Because it is harder for women in 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 able and willing 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. All the marginal effects are no significantly different from cero, in Table 7a.

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: 1. To contribute to health insurance system; 2. To contribute to a pension plan. It shows that the increase in the maternity-period resulted in a significant increase in the probability of informality for women in the high-fertility age group relative to women in the low-fertility age group. The marginal effects estimation, in Table 7a, indicates that the probability of informality increases in 0.8 percentage points for a woman with a level of education higher than high school, and in 0.6 percentage points for a woman with low levels of education.

[33] A person is classified as inactive if in the survey she or he gives an affirmative answer for at least one of the following six statements: 1. Handicapped. 2. Doesn't want to get paid work or set up a business. 3. Want 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 any activity to find work or set up a business. 6. He or she was not available for work.

[34] These and the remaining six marginal effects are reported in Appendix A. Also, in Appendix B we report the estimated marginal effects for the 13 metropolitan areas. All the results are quantitatively and qualitatively similar.

Ceteris paribus, the probability of informality is bigger for women (a) with high levels of education, (b) who are not living with a partner.

The results on 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 increment in the maternity-leave period. A woman with low levels of education faces an increase in the probability of self-employment of 0.6 percentage points, and of 0.4 percentage points if she has high levels of education. In general, keeping everything else constant, the increase in the probability of self-employment is bigger for women (a) with low levels of education, (b) living with a partner, (c) who are not head 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 had affected the real wages of high-fertility-age women relative to low-fertility-age women.

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 mainly two purposes: (1) It allows 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; (2) It allow us to check against the possibility that the legislation were adopted at cyclical labor market picks, leading to falsely attribute post-peak changes to the legislation rather than the business cycle. Additionally, as in Autor et al. (2006), it allows us to explore some short-term impacts of the increase in the maternity-leave period.[35] In panels A, B and C two months immediately prior to adoption are removed from the estimations and, in panel A, two months immediately following adoption are removed, in panel B four months following adoption are removed, in panel C six months following adoption are removed.

[35] Autor et al. (2006) is able to remove up to 6 years of adoption given their data availability.

All our results are robust to alternative choices of pre and post periods.[36] There are significant increments 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.

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 are driven by contemporary changes in the economic and institutional environments that affected younger workers relative to older workers. In order to check for this possibility, we replicate our estimation of tables 7 and 7a but using as "treatment group" men ages 18 to 30, and as "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 both in the probit coefficient and in the marginal effects.[37] The exercise of changing the comparison windows, as reported above in our baseline case of women, does not affect the results for men.[38]

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 taking effect from 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 18-30 was relatively bigger than the one for men in the same age group.

Placebo pre and post treatment period

Another robustness check to discard for 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 pre-treatment years.

Specifically, we define the period January 2009 – December 2009 as the placebo pre-treatment period, and January 2010 – December 2010 as the placebo post-treatment period.

[36] 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.

[37] All the marginal effects for the estimation with information for men are reported in Appendix D.

[38] These results are available from the authors upon request.

Results are reported in Table 9 and 9a. None of the effects are significant, except for the coefficient of the interaction when analyzing the effect on inactivity.

Control group are men ages 18-30

We next extend our analysis to use as control group men of ages between 18 and 30. This group can be seen as a similar group as women in 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 group to compare women age 18 to 30 is with 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 wages between 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 in unemployment, relative to men, after the law enters into force. Table 10a shows that the probability of unemployment increases is 0.5 percentage points for young women relative to young men. *Ceteris paribus*, the probability of unemployment is higher for high-fertility women who: (a) do not live with a partner, (b) are not head of the household.[39]

Column 3 of Table 10 and table 10a shows that after the implementation of the increase in the 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 in 1.4 percentage points for women with low education, and in 1.3 percentage points for women with high education. Keeping all other characteristics unchanged, the probability of informality relative to men in the same age bracket is higher for high-fertility women who have low levels of education. 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 workers. Specifically, after the Law 1468 of 2011 came into force, being a woman in the treatment group increases the probability of being self-employed by 0.6 percentage points for women with low education, and by 0.5 percentage points for women with high education. *Ceteris paribus*, the probability of self-employment is higher for high-fertility women who: (a) have low levels of education, (b) are living with a partner, (c) are not heads of household.

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

Summarizing, the results for our empirical exploration are consistent with our hypothesis that the increase in the maternity leave period in Colombia brought about by Law 1468 of 2011 is perceived by employers as an extra-cost of hiring women and, as a consequence of this, women in high-fertility ages, who are perceived as having a very high probability of getting 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 in childbearing age have a higher probability of employing themselves in low-paid, low-quality activities or in the informal sector.

7. Public Policy

We propose to address the costs associated with parenthood which, as we have explained and research shows, are placed mostly on women, especially on those in most fertile ages. In this regard, we propose a set of legislation and policy actions addressing cultural perceptions on parenting and childcare.

Following scholars like Folbre and Weisskopf (1998), Gornick and Meyers (2003) and England and Folbre (1999), we agree that our societies should work on a new social contract, one that promotes a sense of responsibility for caring labor in all members of society. This would require both a social engineering that would mobilize social change in all members of society towards acknowledging the benefits and economic productivity of taking care of children in a shared way and also institutional changes that will facilitate that both parents share equally the responsibilities of care. Moreover, following Folbre and England (1998), we agree that a way to think more illuminatingly about these issues is by questioning who pays for the care provided to children. According to their analysis, because caregivers assume the costs of "production" of children while the whole society benefits (free riding on the care provided mostly by women), the costs of care should be socialized, which can be achieved by expanding public supports for child rearing. One of the mechanisms that we suggest to socialize the cost of care is to remove the extra cost of social security of the replacement worker now assumed by the employer. This can be done by transferring this cost to the state.

However, other associated costs remain, whose socialization appears less transferrable in the way of taxes or state contributions, which relate to the organizational costs that employers face when providing maternity leave. In this second dimension, our proposed policy concentrates on suggesting that differences in coverage of labor legislation

on women and men are suppressed, i.e., by promoting the recognition of paternity leave to the same extent and with the same benefits as the license that working mothers now have, as well as incentives for parents to actually enjoy 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 on fathers to take time off. [40] This is the path some EU countries such as Sweden and Finland and others like Canada have begun successfully. In the case of Sweden, the government's interest was to provide parents with incentives to increase their participation in child care and to promote gender equality and women's participation in the labor market. In the words of the Swedish government: "It is important that parents take paternity leave. Increasing use of parental leave by fathers should contribute to a change in the attitudes of employers, who will understand paternity leave as a natural event to consider and to coordinate and organize work in a company. This change of attitude is necessary for both men and women to enjoy paid paternity and maternity without feeling that they risk their careers or their opportunities for career advancement".

Another reason to increase the use of these licenses for fathers, is that the chances for women of achieving equality in employment opportunities with men will always be limited if women are responsible for the care of home and children. If childcare responsibilities were shared equally by fathers and mothers, this would lead to a more equal distribution of labor disruptions between men and women, and therefore women would achieve better development opportunities and career advancement (Ekberg, Eriksson, Friebel, 2013). To meet this objective, in 1995 the Swedish government implemented a reform of its licensing system, which booked one month paternity leave for the father. Ekberg, Eriksson and Friebel (2013) assessed the impact of this reform in terms of the possible increase in the enjoyment of these licenses by the parents, and if this enjoyment generated a long-term effect on employment outcomes of men and women. These researchers found that short-term incentives work, and that men increased their enjoyment of licenses by 50%, 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 care and upbringing of children are borne by women, people tend to evaluate working mothers as less competent, less committed to the job, and potentially less reliable. Policy recommendations

[40] This kind of policy has to be mindful of the fact that fathers are unlikely to take up the allotted time for leave if left to their individual wishes. This is why countries like Denmark have designed a take it or leave it period of twelve weeks for parental leave reserved for fathers If they don't take it, the family loses them. Similar "use it or lose it" parental leave for fathers have been implemented in Finland, Norway and Sweden. (Gornick and Meyers, 2003)

for this dimension are related to the promotion of cultural changes that highlights the importance that both fathers and mothers take an active part in similar proportions in the care and upbringing of children and domestic chores in general. An interesting initiative, for example, is “Equipares" a program promoted by the Colombian Ministry of Labor in order to "transform the structures of work and human resource management within companies, seeking to eliminate possible gender inequalities that make the company miss its human resource."[41] As part of this program, TV ads have been issued 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 strive twice. 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 talks directly to fathers in order to highlight the importance of their contribution to housework, the ads seem to have had limited broadcast on national television. Similar initiatives but directed to employers, as seems to be the goal of “Equipares” program, are also desirable in order to reduce beliefs that women in general, and mothers in particular, have a lower commitment with the impositions of the workplace compared to men, making them less competent candidates for the same jobs.

Indeed, the equitable distribution of workloads imposed by childrearing on mothers and fathers in terms of absences, licensing, or domestic calamities, should reduce the absences of women in the labor market contributing to human capital accumulation similar to that of men. Because part 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 familial 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 discourage discriminatory reasons for preferring men over women - especially those who are mothers or are in a reproductive age- since all employers would share equally the costs for prospective parents and potential mothers or for those who already have children.

[41] 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 14th, 2014).

Conclusions

Our research explores the impact that Law 1468 from 2011, which extended the maternity leave period from 12 to 14 weeks (a 17% increase), has had on women's labor outcomes. Our results show that the new Law increases the probability of being inactive for the treatment group (women ages 18 to 30 years) relative to the control group (women 40 to 55 years). Also, we show that the probability of informality and self-employment increases for high-fertility women relative to low-fertility women. 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.

As stated by Autor et al. (2006) in the context of their research, we stress that our paper does not attempt to provide an overall assessment of maternity protection laws. We have not offered any evaluation of the benefits of such laws to workers and the public. The fact that there are some effects on the labor market for high-fertility women underscores that legal protections do not come without cost. Therefore, the law must be tied to other regulations that prevent employers from excluding the beneficiary group from the 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 replacement worker in maternity leave now assume by the employer.

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Table 1. Labor Cost associated to 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 woman worker with maternity leave and nursing license (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 old	From 40 to 55 years old
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 - 30	40 - 55
Education				
None	3.95	9.40	0.51	3.95
Primary Education	10.70	36.94	7.21	27.89
Secondary Education	78.85	45.05	69.09	41.80
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				
No 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 – 26
Age	34.96	12.35	18 – 55
Strata	2.32	1.07	1 – 6
Children <12 per household	0.86	1.04	0 – 12
Total People in the Household	4.32	1.98	1 – 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 2 months before and 2 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 2 months before and 4 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 2 months before and 6 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)
R^2	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 γ_3 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

	(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	**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 2 months before and 2 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 2 months before and 4 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 2 months before and 6 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 by 4.51 members and 1.07 children, whose economic strata 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.

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	**-.010** (0.014)	**0.017** (0.013)	**0.025**** (0.010)	**-.004** (0.010)	**0.002** (0.006)
R^2	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_3 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**	**-.002**	**0.004**	**0.004**	**0.007****	**0.009****	**-.001**	**-.001**
	(0.003)	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(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 by 4.48 members and 0.77 children, whose economic strata 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. "Education level" 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 *	**0.023***	**-.026**	**0.006**	**0.006**	**-.002**
Randomlaw	(0.013)	(0.018)	(0.017)	(0.017)	(0.011)
R^2	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 γ_3 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. 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 9a. Marginal effect of labor market outcomes for women

Placebo experiment

	(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 * RandomLaw	**0.007***	**0.006***	**-0.008**	**-0.008**	**0.001**	**0.002**	**0.002**	**0.001**
	(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 by 4.51 members and 1.07 children, whose economic strata 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. 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	**-.008** (0.009)	**0.018*** (0.010)	**0.037***** (0.011)	**0.021**** (0.011)	**-.001** (0.006)
R^2	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_3 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

	(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	**-.001**	**-.001**	**0.004***	**0.004***	**0.014*****	**0.013*****	**0.006***	**0.005***
	(0.001)	(0.001)	(0.002)	(0.002)	(0.004)	(0.003)	(0.003)	(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 by 4.51 members and 1.07 children, whose economic strata 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) Inactive	(2) Unemployment	(3) Informality	(4) Self-Employment
Education Level	**Marital Status**	**Head of Household**				
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 by 4.51 members and 1.07 children, whose economic strata 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 B. Marginal effect of Law 1468 of 2011 on labor market outcomes for women
All metropolitan areas

	(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**
Barranquilla	**0.010*** **	**0.010*** **	**-.004**	**-.004**	**0.003***	**0.007***	**0.006***	**0.005***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.004)	(0.003)	(0.003)
Bogotá	**0.009*** **	**0.008*** **	**-.004**	**-.004**	**0.005***	**0.008***	**0.006***	**0.004***
	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.004)	(0.002)	(0.002)
Cartagena	**0.010*** **	**0.010*** **	**-.004**	**-.004**	**0.004***	**0.008***	**0.007***	**0.006***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.004)	(0.003)	(0.003)
Manizales	**0.010*** **	**0.009*** **	**-.004**	**-.004**	**0.006***	**0.008***	**0.005***	**0.004***
	(0.003)	(0.003)	(0.004)	(0.004)	(0.003)	(0.004)	(0.002)	(0.002)
Montería	**0.010*** **	**0.008*** **	**-.004**	**-.004**	**0.003***	**0.007***	**0.006***	**0.005***
	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)	(0.004)	(0.003)	(0.003)
Villavicencio	**0.010*** **	**0.009*** **	**-.004**	**-.004**	**0.004***	**0.008***	**0.006***	**0.005***
	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)	(0.004)	(0.003)	(0.003)
Pasto	**0.010*** **	**0.009*** **	**-.004**	**-.004**	**0.003***	**0.007***	**0.006***	**0.005***
	(0.003)	(0.002)	(0.003)	(0.003)	(0.001)	(0.004)	(0.003)	(0.003)
Cúcuta	**0.010*** **	**0.009*** **	**-.004**	**-.004**	**0.003***	**0.007***	**0.007***	**0.006***
	(0.003)	(0.002)	(0.004)	(0.003)	(0.001)	(0.004)	(0.003)	(0.003)
Pereira	**0.010*** **	**0.009*** **	**-.005**	**-.005**	**0.005***	**0.008***	**0.006***	**0.005***
	(0.003)	(0.002)	(0.004)	(0.004)	(0.002)	(0.004)	(0.003)	(0.003)
Bucaramanga	**0.009*** **	**0.007*** **	**-.004**	**-.004**	**0.004***	**0.008***	**0.007***	**0.006***
	(0.002)	(0.002)	(0.003)	(0.003)	(0.002)	(0.004)	(0.003)	(0.003)
Ibagué	**0.009*** **	**0.007*** **	**-.005**	**-.004**	**0.004***	**0.008***	**0.006***	**0.005***
	(0.002)	(0.002)	(0.004)	(0.004)	(0.002)	(0.004)	(0.003)	(0.003)
Cali	**0.010*** **	**0.008*** **	**-.004**	**-.004**	**0.005***	**0.008***	**0.006***	**0.005***
	(0.003)	(0.002)	(0.004)	(0.003)	(0.002)	(0.004)	(0.003)	(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 by 4.51 members and 1.07 children, whose economic strata is 2.27, on June 2012, and either the women has (a) a high level of education (12 years or more), or (b) 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 2 months before and 2 months after implementation of the law						
High	0	0	**0.007*** **	**-.004**	**0.008***	**0.005***
			(0.002)	(0.003)	(0.004)	(0.002)
High	0	1	**0.005*** **	**-.003**	**0.008***	**0.005***
			(0.001)	(0.003)	(0.004)	(0.003)
High	1	0	**0.009*** **	**-.004**	**0.008***	**0.006***
			(0.003)	(0.003)	(0.004)	(0.003)
High	1	1	**0.008*** **	**-.003**	**0.008***	**0.006***
			(0.002)	(0.003)	(0.004)	(0.003)
Low	0	0	**0.009*** **	**-.004**	**0.006***	**0.006***
			(0.002)	(0.003)	(0.003)	(0.003)
Low	0	1	**0.007*** **	**-.003**	**0.006***	**0.007***
			(0.002)	(0.003)	(0.003)	(0.003)
Low	1	0	**0.011*** **	**-.004**	**0.005***	**0.007***
			(0.003)	(0.003)	(0.003)	(0.003)
Low	1	1	**0.010*** **	**-.003**	**0.005***	**0.008***
			(0.003)	(0.003)	(0.003)	(0.004)
Panel B. Eliminating 2 months before and 4 months after implementation of the law						
High	0	0	**0.008*** **	**-.005**	**0.007***	**0.004***
			(0.002)	(0.003)	(0.004)	(0.002)
High	0	1	**0.006*** **	**-.005**	**0.007***	**0.005***
			(0.001)	(0.003)	(0.004)	(0.003)
High	1	0	**0.011*** **	**-.005**	**0.007***	**0.005***
			(0.003)	(0.003)	(0.004)	(0.003)
High	1	1	**0.009*** **	**-.004**	**0.007***	**0.006***
			(0.002)	(0.003)	(0.004)	(0.003)
Low	0	0	**0.010*** **	**-.005**	**0.005***	**0.006***
			(0.002)	(0.003)	(0.003)	(0.003)
Low	0	1	**0.008*** **	**-.005**	**0.005***	**0.007***
			(0.002)	(0.003)	(0.003)	(0.003)
Low	1	0	**0.012*** **	**-.005**	**0.005***	**0.007***
			(0.003)	(0.003)	(0.003)	(0.004)
Low	1	1	**0.011*** **	**-.005**	**0.005***	**0.007***
			(0.003)	(0.003)	(0.003)	(0.004)
Panel C. Eliminating 2 months before and 6 months after implementation of the law						
High	0	0	**0.010*** **	**-.005**	**0.008***	**0.005***
			(0.002)	(0.003)	(0.004)	(0.002)
High	0	1	**0.007*** **	**-.004**	**0.008***	**0.005***
			(0.001)	(0.003)	(0.004)	(0.003)
High	1	0	**0.013*** **	**-.005**	**0.008***	**0.006***
			(0.003)	(0.003)	(0.004)	(0.003)
High	1	1	**0.011*** **	**-.004**	**0.008***	**0.006***
			(0.002)	(0.003)	(0.004)	(0.003)
Low	0	0	**0.012*** **	**-.005**	**0.006***	**0.006***
			(0.002)	(0.003)	(0.003)	(0.003)
Low	0	1	**0.010*** **	**-.005**	**0.006***	**0.007***
			(0.002)	(0.003)	(0.003)	(0.004)
Low	1	0	**0.014*** **	**-.005**	**0.005***	**0.007***
			(0.003)	(0.003)	(0.003)	(0.004)
Low	1	1	**0.013*** **	**-.004**	**0.005***	**0.008***
			(0.003)	(0.003)	(0.003)	(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 by 4.51 members and 1.07 children, whose economic strata 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) Inactive	(2) Unemployment	(3) Informality	(4) Self-Employment
Education Level	Marital Status	Head of Household				
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 by 4.48 members and 0.77 children, whose economic strata 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: "Education level" 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; "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 E. Marginal effect on labor market outcomes for women

Placebo experiment

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

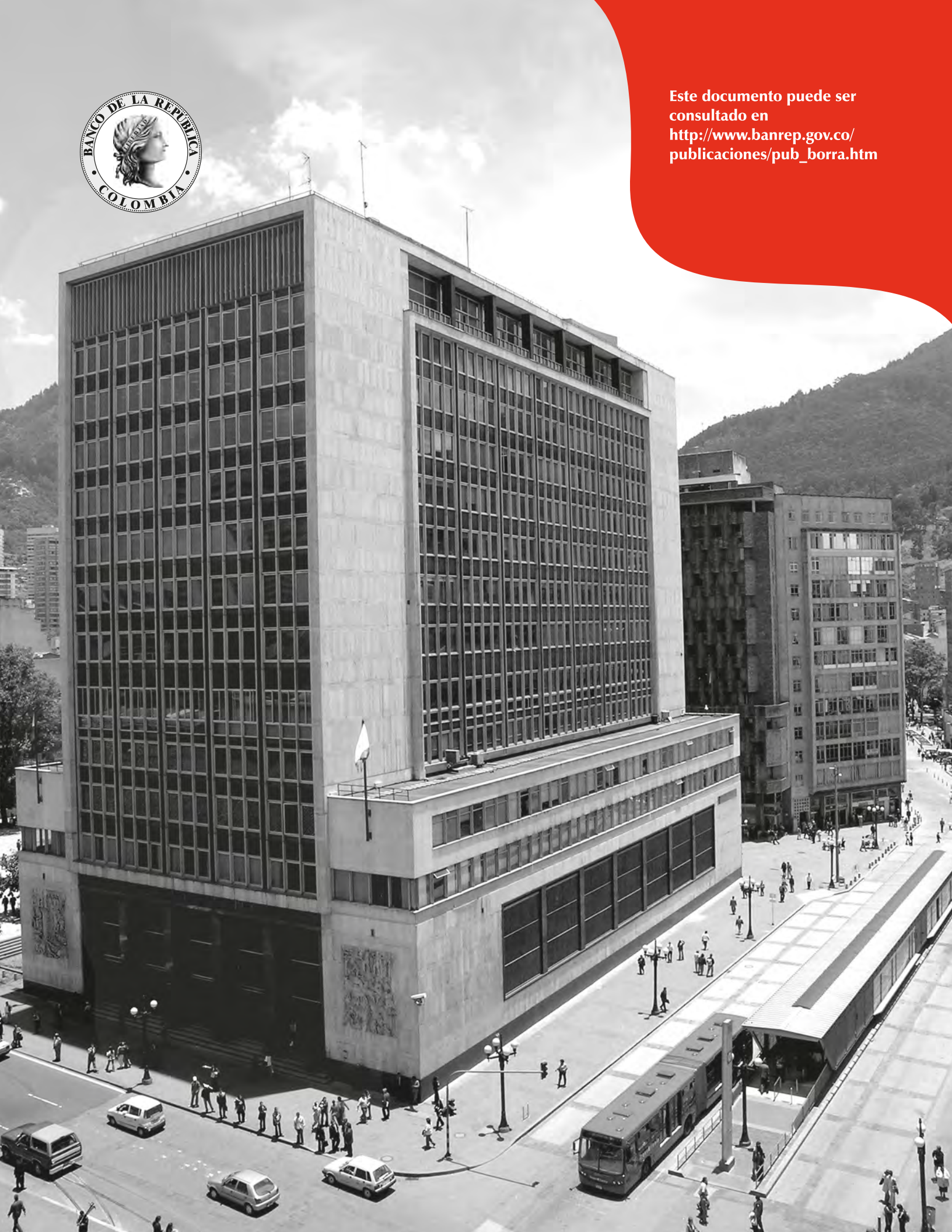
Note: The placebo pre treatment period is January 2009 – December 2009. The placebo post treatment period is January 2010 – December 2010. The marginal effects are estimated for a woman in the treatment group for whom, using sample means, age is 23.87, lives in a household composed by 4.51 members and 1.07 children, whose economic strata 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: "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 F. 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
Education Level	**Marital Status**	**Head of Household**				
High	0	0	**-.001**	**0.004***	**0.013*****	**0.005***
			(0.001)	(0.002)	(0.003)	(0.003)
High	0	1	**-.0008**	**0.002***	**0.012*****	**0.005***
			(0.000)	(0.001)	(0.003)	(0.002)
High	1	0	**-.002**	**0.003***	**0.012*****	**0.006***
			(0.002)	(0.002)	(0.003)	(0.003)
High	1	1	**-.001**	**0.002***	**0.011*****	**0.006***
			(0.001)	(0.001)	(0.003)	(0.003)
Low	0	0	**-.001**	**0.004***	**0.014*****	**0.006***
			(0.001)	(0.002)	(0.004)	(0.003)
Low	0	1	**-.0007**	**0.002***	**0.014*****	**0.006***
			(0.000)	(0.001)	(0.004)	(0.003)
Low	1	0	**-.001**	**0.003***	**0.014*****	**0.006***
			(0.002)	(0.002)	(0.004)	(0.003)
Low	1	1	**-.001**	**0.002***	**0.014*****	**0.006***
			(0.001)	(0.001)	(0.004)	(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 by 4.51 members and 1.07 children, whose economic strata 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.



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