CAN PARENTAL LEAVE BE SHARED?

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ABSTRACT

We examine the consequences of recent policies promoting parental leave sharing using a 2015 French reform. The reform reduced the duration of mothers' paid leave to give 12 months of nontransferable leave to fathers. Leave can be taken while working part-time for up to 80% of standard working hours, which can be a more attractive option for fathers. We find that the take-up rates for fathers remained low, as less than 3% of fathers took any form of leave after the reform. Surprisingly, we also find low take-up rates for fathers working part-time after the reform and for whom taking paid part-time leave would have increased their median income by 15% without requiring them to change in their labour supply. For fathers working part-time, non-take-up rates of part-time leave benefits are as high as 81% compared with less than 25% for mothers. The reform dramatically increased the annual earnings of mothers, but it had no effect on the earnings of fathers.

KEYWORDS

Parental leave, Labor Supply, Gender inequality.

JEL

J16, D13, J18.

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Abstract

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Introduction

In most OECD countries, parents can take paid parental leave if they stop working to take care of a young child.[1] As parental leave is most often taken by mothers, these policies increase the gender gap in earnings associated with the birth of a child (Kleven et al., 2019, 2020). To attenuate the negative effects of these policies on the labour market outcomes of mothers and to increase the involvement of fathers in childcare, several countries have reformed their parental leave policies to promote parental leave sharing. In 2018, one-third of countries in the European Union explicitly reserved a share of parental leave for fathers (Janta and Stewart, 2018).

In practice, policies promoting parental leave sharing have been quite diverse, and empirical evidence on the effects of these policies remains limited. To date, the literature has mostly concentrated on early reforms in Scandinavia and Germany from the 1990s and early 2000s that offered fathers a well-compensated 'daddy month', with replacement rates as high as 70% of previous earnings over one or at most two months. The daddy-months have attracted many fathers; 30% of fathers in Germany and up to 60% in Norway and Sweden took one or two months of parental leave after the reforms.[2]

Despite this success, few countries have chosen to offer similar short and well-compensated 'daddy months'. Instead, most recent reforms allow fathers to take longer periods of leave to share between parents but provide much lower levels of benefits (Koslowski et al., 2020). An important question is thus whether such an alternative design of parental leave can attract fathers. For example, in the UK, the shared parental leave scheme introduced in 2015 offers 8 months to share between parents for 600 euros monthly. In Italy, since 2015, parents share 11 months for 30% of previous pay, while in France, parents could share up to 36 months for 400 euros of monthly benefits.[3]

Another important characteristic of many parental leave schemes, introduced in part to attract fathers, is the possibility of taking part-time leave. While part-time parental

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[1] Most OECD countries except the US offer paid parental leave (Adema et al., 2016).

[2] Norway and Sweden introduced a four-week quota for fathers in the 1990s (Rege and Solli, 2013), which was extended to two months in 2008 in Sweden (Duvander and Johansson, 2012). In 2007, Germany introduced two-month quotas for fathers (Kluve and Tamm, 2013).

[3] See Atkinson (2017) for a presentation of the 2015 UK reform and Addati et al. (2014) for recent European reforms.

leave is offered in France, Belgium, the Netherlands, and South Korea among more than 14 other countries (Koslowski et al., 2020), the consequences of the availability of part-time leave on the take-up rate of fathers have not been extensively evaluated. In France, since the 1990s, part-time leave allows employees to remain employed for up to 80% of standard working hours for a level of paid benefits that are twice as high on an hourly basis relative to full-time leave (Boyer, 2017).[4] However, before the 2015 reform of shared parental leave examined here, no share of paid leave was explicitly reserved for the father, and any month taken by the father reduced the months available to the mother.

In this paper, we examine the consequences of recent reforms of parental leave sharing using the recent 2015 reform in France, which is representative of reforms recently implemented in Europe and elsewhere (Koslowski et al., 2020). This reform had the ambitious objective of multiplying by twelve the share of fathers taking leave from less than 2% to 25% (Collombet, 2016) while increasing the labour force participation rate of mothers. We investigate whether these objectives were achieved by first examining whether fathers took more leave in response and second by examining how the reform affected the labour market earnings of parents and the income of the household.

The reform has affected the parents of children born after the 1st of January 2015, while the parents of children born before this date remained in the old system. The effects of the reform differed between first-time parents, and the parents of two or more children, referred to as 'second-time parents' for brevity.[5]

For first-time parents, the reform increased the total length of paid leave from 6 to 12 months, but only if parents share the months of leave. Whereas before the reform, only six months of leave in total could be shared between parents, after the reform, six nontransferable and separate months of leave are provided *to each parent.*

For second-time parents, the total leave has remained at 36 months, as before the reform, after which children have access to free public preschool, but only if parents share parental leave. If the leave is not shared, the maximum leave is reduced by 12 months down to 24 months after the reform. The 12-month reduction in the length of leave had

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[4]Paid benefits for part-time leave while employed up to 80% of standard working hours are 150 euros per month. This corresponds to 5.3 euros per hour not worked compared with 2.8 euros per hour not worked on full-time leave.

[5]In France, to increase incentives to have a second child, the parental leave system depends on the number of children.

a dramatic impact on mothers of young children, as approximately 39% of mothers took the maximum 36 months of leave just before the reform (see Table 4 below).[6] The paid benefits for each month of leave remained unchanged for both first- and second-time parents, at approximately 400 euros for full-time leave and 150 euros for part-time leave.

Importantly, being entitled to part-time leave does not require a reduced labour supply relative to the time before the birth or before taking leave. Part-time workers who work part-time before the birth can remain part-time and receive leave benefits without having to change their labour supply. In addition, after the reform, they could take parental leave without affecting the other parent's entitlement benefits. This implies that, in the absence of participation costs, such as stigmas or informational barriers, parental leave benefits should be taken after the reform by any eligible father observed as working part-time, as he can receive at least 150 euros of monthly parental leave benefits without changing his labour supply or diminishing the months of leave of the mother. This includes approximately 6% of fathers in the population that were observed as working part-time before the reform.

Following Lalive and Zweimüller (2009) and Schönberg and Ludsteck (2014), among others, we investigate the consequences of the reform by using a regression discontinuity design. Using exhaustive administrative data from the family social security records that contain rich information on household participation in welfare programs and earnings, we use the fact that the new rules of parental leave only applied to households that had a child after the 1st of January 2015 and that households with a child born before this date remained in the old system. To estimate a causal effect of the reform, we compare households over a two-month window around the implementation of the reform on the 1st of January 2015; specifically, we compare the behaviour of parents whose children were born in December 2014, just before the reform, with that of parents whose children were born in January 2015 and thus are affected by the reform. In our baseline specification, we include households that had children born in December and January in the year before the reform as a control group to account for the potential influence of calendar effects on outcomes.

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[6]For both first-time and second-time parents, the length of maternity leave is included in the length of the leave they are entitled to if they are eligible for such leave.

Our results indicate that, in stark contrast with its ambition and despite the availability of part-time leave, the reform had very limited effects on the take-up rates of part- or full-time parental leave by fathers. For first- and second-time parents, we only find a 0.3 p.p. and 1 p.p. increase in the share of fathers taking at least a month of full or part-time paid parental leave. While in relative terms, these effects correspond to 30% and 60% increases relative to the baseline rates, the final take-up rates remain dramatically low, with 1.4% and 2.6% of fathers taking leave after the reform, with two-thirds of those taking part-time leave.

In practice, these take-up rates are much lower than the share of eligible fathers working part-time. We estimate that after the reform, 81% of first-time fathers and between 65% and 74% of second-time fathers working part-time do not take paid parental leave, although, after the reform, they could receive paid benefits without changing their labour supply and diminishing the paid leave of the mother. These non-take-up rates are dramatically larger than the maximum 25% non-take-up rates that we estimate for mothers working part-time, and they are among the largest ever estimated for a welfare program for which eligibility does not depend on household income.[7]

We find little evidence that this lack of response from fathers can be explained by a lack of knowledge or a slow diffusion of the information about the reform after its implementation, as we observe little increase in the participation of fathers across cohorts up to three years after the reform. In addition, for second-time parents, the reform affected a large share of parents, as we estimate that the reform directly reduced the total leave of mothers for 28% of households in which the mother would have taken a third year of leave in the absence of reform.

To gain some insights into why fathers did not take more parental leave, we study differences in response to the reform across households. The available evidence is consistent with an important role of gender norms in explaining differences in take-up rates across groups of fathers. Consistent with the hypothesis that employer resistance or peer effects in the workplace might discourage the fathers from using this program, we find a much larger effect of the reform on fathers who are independent workers as these workers do not have to ask their employer to take leave and just have to declare they have reduced

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[7]See, for example, Moffitt (1983) and Bargain et al. (2012).

their working time. We also find dramatic differences in the response of fathers across regions: in practice, all of the increase in participation is driven by regions where *fathers* were more likely to take leave before the reform, thus suggesting an important role of local dissemination of the information and peers effects in driving the response to the reform. Finally, despite their higher opportunity costs, fathers with higher levels of pre-birth earnings were more likely to take leave after the reform, consistent with the evidence that fathers with higher levels of earnings and education tend to have more egalitarian views of gender roles.

In the third part of the paper, we examine the impact of the reform on the labour earnings of parents. This allows us to assess whether fathers did not take more leave because, as the reform reduced the paid leave benefits given to the mother, they increased their labour supply instead of taking parental leave to compensate for the decrease in household income. In contrast with public concerns that the reform would increase poverty (UNAF, 2014), we find that total household earnings increased after the reform. However, the increase is entirely explained by an increase in the annual labour earnings of mothers in response to the decline in benefits. At the same time, the reform had no significant effect on the earnings of fathers.

We also find no effects of the reform on several important outcomes, such as fertility, geographical mobility, or the probability of separation of the couple until five years after birth. Surprisingly, as early as the fourth year after birth, we do not observe any difference in average earnings between mothers who were eligible for 36 months of leave relative to mothers who were only eligible for 24 months. The fact that even long periods of parental leave do not seem to affect the future earnings of mothers is consistent with recent evidence from Kleven et al. (2020). It also implies that the negative effect of parental leave on the gender wage gap is concentrated in the first years after birth.

With respect to the literature on the sharing of parental leave reviewed below, the paper makes several important contributions. First, our results are important for policy-makers considering alternative designs of parental leave-sharing policies. The dramatically low take-up rate of fathers reported here contrasts with the large participation rates reported in countries that adopted a much shorter but highly compensated 'Daddy month'.

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An important lesson from this reform is that offering specific months of leave to fathers, even if they can be taken part-time, does not greatly increase their participation when the compensation level is low.

Second, the failure of part-time leave to attract even fathers who are already working part-time highlights that their lack of participation cannot be completely explained by an insufficient level of compensation. The available evidence is consistent with a role of the stigma associated with parental leave for fathers, consistent with traditional models of gender identity (Bertrand et al., 2015).

Third, our results contribute to understanding the effects of welfare policies on household labour supply. Despite the fact that the decline in paid benefits diminished the income of affected households by 8% on average, only the labour supply of mothers increased significantly in reaction. Such inelasticity of the labour supply of fathers in reaction to the policy change suggests that the paid leave benefits received by the mother might not be shared with the father. This hypothesis is consistent with previous findings of Lundberg et al. (1997) or Duflo (2003), who reported that the identity of the recipient of the benefits in the household determines how the benefits are spent.

Related literature on the sharing of parental leave

The literature on the labour market consequences of parental leave for mothers is large, including for France.[8] However, there have been fewer evaluations of recent reforms of parental leave sharing, although these reforms have been widespread recently (Addati et al., 2014). The early literature has focused on reforms that introduced a 'daddy month' in Germany, Norway, and Sweden, which have been analysed by Kluve and Tamm (2013), Rege and Solli (2013) and Ekberg et al. (2013), respectively. These reforms offer fathers short one- or two-month paid leave that is nontransferable to the mother. Unlike the reform examined here, these daddy-months offer high replacement rates, i.e., from 67% of previous earnings in Germany to 80% in Sweden and even 100% in Norway, but for a

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[8]Paid parental leave was first introduced in 1986 in France, but it was initially limited to parents of at least a third child. In 1994, a reform extended parental leave to parents of a second child while allowing the leave to be taken part-time. Piketty (1998, 2005) find that this extension strongly decreases the labour force participation rate of mothers. In 2004, parental leave was extended to the parents of a first child for a maximum of six months of leave. Joseph et al. (2013) report that the introduction of such short periods of leave had very limited effects on labour force participation.

considerably shorter period of time. The take-up rates of the daddy-month were large, from 20 to 30% in Germany (Bünning, 2015) to 60% in Norway and up to 70% in Sweden (Rege and Solli, 2013). However, despite these large take-up rates, taking a daddy-month has not been associated with an increase in the time devoted to childcare or housework by the father (Kluve and Tamm, 2013).[9] Relative to these countries, the much longer period of nontransferable paid leave to share (from 6 to 24 months, depending on the birth order) in addition to the possibility of taking leave only part-time, might theoretically allow fathers to devote more time to childcare over a longer period. However, other differences in characteristics might affect the take-up rate of fathers: in particular, the levels of benefits in France are fixed and do not depend on earnings, which is similar to most countries (Addati et al., 2014). The benefits are also lower for most parents, in particular fathers, as they correspond from one- to two-thirds of full-time minimum wage pay for full- and part-time leave, respectively.

1 Description of Parental Leave and the Reform

Eligibility After up to eighteen weeks of maternity leave for the mother and up to two weeks of paternity leave for the father, each parent can ask for paid parental leave.[10] Paid parental leave can be taken without actually being employed, but eligibility requires a minimum attachment to the labour market before taking leave.[11] These eligibility conditions are not very restrictive for second-time mothers because previous parental leave counts as being equivalent to periods of work. As a result, in 2019, 63% and 95%

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[9]Recently, Farré and González (2019) reported a decrease in fertility in response to compulsory two-week paid leave reserved to fathers in Spain. They interpret this result as suggesting that the reform raised the opportunity cost of an additional child and increased awareness of the costs of childrearing for fathers.

[10]For the first and second child, paid maternity is mandatory and the leave starts from six weeks before birth and finishes at ten weeks after birth, at most. Starting with the third child, maternity leave starts eight weeks before birth and finishes at eighteen weeks after birth, at most. It is mandatory to take at least six weeks after birth. The length of maternity leave can also be extended for medical reasons. For both mothers and fathers, the benefits correspond to 100% of the previous earning, up to a certain ceiling.

[11]For a first (and, respectively, the second and third) child, the parents must have contributed to the pension system for at least 8 quarters within the two (and, respectively, the four and five) years preceding the birth or adoption. To contribute to the pension system, the total earnings of the quarter must correspond to at least six weeks of a full-time minimum wage. Periods of paid leave also contribute to the pension system. These conditions are evaluated by the families' benefits administration when applying for leave.

of mothers of a first and second child, respectively, were eligible (HCFEA, 2019, p.113).

The reform of the 1st of January 2015   Table 1 summarizes the characteristics of the French parental leave system and the changes introduced by the reform dated from the 1st of January 2015 designed to promote the sharing of parental leave. The reform only affected the maximum number of months that each parent can take by giving nontransferable months of leave to the other parent. This implies that, by design, the reform allows us to isolate the specific effects of the introduction of the sharing of parental leave.

For first-time parents, before the reform, only a maximum of six months of leave could be taken by either parent. The reform gives six additional months of nontransferable paid leave for parents to be taken before the first birthday of the child. Another minor difference is that the mother can take off any months before the child's first birthday, while before the reform, the six months of leave had to be taken consecutively after birth.

For second-time parents, the reform simply reduces the maximum length of paid leave per parent from 36 months to 24 months, to be taken before the child's third birthday. Thus, after the reform, parents must share the leave to cover 36 months.[12]

Other characteristics of parental leave   All other characteristics have remained unaffected. The monthly benefits are tax-free, do not depend on the number of children, and do not affect eligibility for other welfare programs except unemployment benefits, which are suspended during the leave.[13] Paid parental leave benefits are approximately 400 euros per month for full-time leave, 250 euros for those working less than 50% of a full-time job, and 150 euros for those working more than 50% but less than 80% of a full-time job. Given that the full-time net minimum wage was 1150 euros in 2015, these benefits are relatively low. However, the benefits are up to twice as large on an hourly basis when the leave is taken part-time.[14] Importantly, the receipt of benefits does not require a reduced

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[12]In practice, the law-authorized the family benefits administration to give exceptional extensions for one or two months to low-income households after the 24-month threshold when the parent who took the maximum months of leave can prove that he or she did not find a job and that childcare is not immediately available. The data indicate that these exceptions have been very rare in practice, and the 24-month threshold is binding for most households.

[13]Taking paid leave also does not diminish one's right to retirement benefits (Bonnet and Rapoport, 2020).

[14]Hourly paid benefits for part-time leave while employed up to 80% of standard working hours corresponds to 5.3 euros per hour not-worked against 2.8 euros per hour for full-time leave.

labour supply before a birth or before taking leave.[15] The only requirement for the parent is to ask her employer to sign a specific form certifying that the employee is working part-time or has stopped working. Employers cannot fire or forbid an employee to take leave (either full-time or part-time).[16] For those in permanent contracts, the return to work is guaranteed with the same employer and at a similar position for equivalent pay.

Alternative to parental leave The formal alternative to parental leave is subsidized child care. Alternative forms of childcare tend to be relatively neutral in terms of costs; approximately 22% of children aged less than three years old are in a public or private day-care centre and 30% are in a certified childminder (Villaume and Legendre, 2014).[17] The childcare subsidies are proportional to household earnings such that households have to pay on average 12% of their net earnings for childcare (Givord and Marbot, 2015).[18] Despite the reform and the associated reduction in parental leave, childcare subsidies have not been affected by the reform. As the subsidies tend to be generous relative to international standards, the share of children less than 3 years of age in formal childcare in France is one of the highest in Europe, just below the levels in Scandinavia (Janta, 2014).

1.1 Implementation of the reform

The reform is quite unlikely to have influenced the fertility decision of mothers who gave birth in December 2014 and January 2015, which are compared to estimate the effects of the reform. First, the legislative process was long and uncertain.[19] While the law was first discussed in Parliament in July 2013, it was not voted on until July 2014. The government also had to specify later, by decreeing the new distribution of leave between parents. The decree was published just two days before the reform, on the 30th of December 2014,

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[15]The family benefit administration (CNAF) website stipulates that one requirement for eligibility is simply that 'You have stopped working or you are working part-time' ('Vous avez cessé de travailler ou vous travaillez à temps partiel').

[16]Paid parental leave is associated with job protection only for those with at least one year of tenure before birth.

[17]A certified childcare worker can take up to four children at her own home during a full day

[18]Low-income households tend to pay less.

[19]The reform was part of a very heterogeneous law named 'the law for real equality between women and men' (in French, *loi pour l'égalité réelle entre les femmes et les hommes*), which was designed to reduce gender inequalities. The law also includes quite controversial dispositions that strengthen the obligation of a minimum share of women on corporate boards and the new regulation of prostitution.

thereby making it impossible for parents to precisely anticipate the consequences of the reform.

Salience of the reform   The reform of parental leave was widely publicized in the press when the law took effect in January 2015. The family benefit administration elaborated a communication plan and sent flyers explaining the reform to the affected parents. The name of the program also changed from '*benefits of free choice of activity*' to '*shared benefits of child rearing*' to emphasize that the new parental leave should be shared.[20] We also report below that the reform directly affected approximately 28% of second-time mothers who would have taken more than 24 months of leave without the reform. This large group of households is directly affected by the reform and thus should be informed of the new parental leave system.

2   Conceptual framework

To guide the empirical analysis, we discuss here, theoretically, how eligibility for part-time leave affects the labour supply and discuss the conditions under which the reform might increase the sharing of parental leave between parents.[21]

Consequences of part-time leave   Following Moffitt (2002), Figure 1 illustrates, with a simple static individual labour supply framework, how French parental leave affects the monthly labour supply, using a minimum wage worker as an example.[22]   As parental leave is not means-tested and does not affect the eligibility for other programs except unemployment benefits, which are suspended, it does not affect the returns on hours of work except at three notches, which correspond to full-time leave and a labour supply of 50% and 80% of standard working hours. These notches impose very large marginal tax rates at these points (Blinder and Rosen, 1985).

It is straightforward to see that such a parental leave scheme tends to diminish the labour supply towards the discontinuity points, as illustrated in Panels B and C. Panel B shows an individual shifting from full- to part-time work when paid parental leave affects

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[20]In French, '*Complément de libre choix d'activité*' and '*Prestation partagée de l'éducation de l'enfant*'.

[21]The models discussed here neglect the potential penalty of taking part-time work on wages (Manning and Petrongolo, 2008) or the rest of the career (Aisenbrey et al., 2009).

[22]We assume that a month is composed of 150 hours to be allocated between work and nonwork, which combines household production and leisure. See Appendix for details.

the budget constraint. Panel C illustrates that if there is no other cost, paid-parental leave should *always* be taken when the optimal labour supply choice is to work part-time when parental leave is not available.

Effects of the reform on parental leave sharing   To analyse how the reform affects the take-up rate of each parent, consider now a simple model where each parent has to choose, over T months of eligibility, between l month of work and p months of leave such that $T = l_i + p_i$ for $i \in \{f, m\}$, where f and m denote the father and mother, respectively.[23] To make things simple, we neglect part-time leave to concentrate on the interactions between parents. We consider that the household maximizes a well-behaved utility function $U(c, p_f, p_m)$ that depends on pooled consumption c and on the parental leave taken by each parent, that we assume enter the utility function symmetrically, and are imperfect substitutes. The budget constraint is given by $c = w_m(T - p_m) + w_f(T - p_f) + (p_m + p_f)b$, where w_i is the monthly wage of parent i and b is the monthly leave paid benefit. We assume that the wages of fathers are such that $w_f > w_m$ and $w_f > b$, so the opportunity cost of leave is higher for fathers, and mothers should always take more leave. However, we allow b to be superior or inferior to the wages of mothers w_m.

Such a simple framework allows us to predict how the reform affects the optimal choice of parents (see Appendix for formal proofs). For first-time parents, the reform releases the parental leave constraints from $(PL0) : p_m + p_f \leq 6$ before the reform to $(PL1) : p_m \leq 6 \, and \, p_f \leq 6$ after the reform. By definition, the reform only affects the optimal choice of parents for whom the $(PL0)$ constraint would have been binding, that is, parents that would have taken all 6 months of leave without the reform. In practice, the data indicate that in households that took 6 months of leave before the reform, the leave was always taken by the mother. This implies that the expected effects of the reform are not ambiguous for this group: if anything, we expect more leave to be taken by fathers after the relaxation of the constraint.

For second-time parents, the parental leave constraints are given by $(PL0) : p_m + p_f \leq 36$ before the reform. The reform adds two additional constraints $(PL1) : p_m \leq 24$ and $p_f \leq 24$, which implies that the reform only affects households where the mother would

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[23]See Ekberg et al. (2013) and Gobbi et al. (2018) for a more in-depth theoretical analysis of parental leave sharing.

have taken $p_m^* > 24$ before the reform. Among these households, whether fathers might take more leave in response depends in part on whether the leave benefits b are superior or inferior to the wages of mothers w_m. When $w_m > b$, the wages of mothers are higher than the parental leave benefits, and the reduction in the maximum length of leave increases household income. Thus, fathers might take *more* parental leave in response to the reform.

On the other hand, when $w_m < b$, the reform decreases the income of these households unless the father compensates by working more. In that case, fathers might take *less* leave to compensate for the decrease in income associated with the reform. In sum, whether the reform actually provides incentives to fathers to take more or less leave in this simple model depends on whether the earnings of mothers in the labour market are higher than the parental leave benefits.

Nevertheless, as emphasized earlier, the predicted effects of the reform are not ambiguous for fathers observed working part-time after the reform; these fathers should take up to 12 months of paid parental leave as, after the reform, taking paid leave no longer decreases the length of the leave of the mother. As documented below, approximately 5 to 7% of eligible fathers are working part-time.

A limitation of this model is that it ignores the role of gender identity norms that might encourage women to take leave and discourage fathers from taking parental leave (Bertrand, 2011; Cortes and Pan, 2020).

3   The Data and Sample

The empirical analysis relies on administrative data from the French family benefits administration, complemented with data from the French labour force survey.

3.1   Social security data

We examine the consequences of the reform using data from the French family benefits administration, the Caisse Nationale des Allocation Familiales (CNAF).[24] Registration of

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[24]The sample does not include agricultural workers, who accounted for less than 1.7% of births in the year of the reform. While the benefits are similar, agricultural workers have a separate family benefit

new parents is automatic, as pregnancies are reported to the social security system to provide complete coverage of health costs during pregnancy and access to child benefits after birth.[25] As a result, our sample covers most households affected by the reform.[26]

We exploit the monthly administrative files that contain detailed information on family composition and the monthly levels of benefits received, including family allowances and parental leave benefits. As the reform differs for single parents, we restrict our sample to families with two parents, whether they are married, in a civil union/partnership, or cohabiting. To identify households affected by the reform, we use the year and month of birth of the child, as the day of birth is not reported for confidentiality.

We select households where a birth occurred in December 2014 or January 2015, i.e., either one month before or after the reform. As discussed below, to control for potential seasonal effects unrelated to the reform, we also include households that had a child in December 2013 or January 2014 in our sample.

While information on social security benefits is reported on a monthly basis, information on earnings and unemployment benefits is obtained from the annual tax returns of each partner. Tax returns are reported in the data with a two-year lag, as family allowances distributed in year t depend on the taxable income of the household in antepenultimate year $t - 2$. Therefore, while we have monthly information on family benefits until March 2020, information from annual tax returns is available until fiscal year 2018, that is, the fourth year after birth for the first cohort affected by the reform.

A limitation of our data is that the identification code of a household changes when the household moves to another county (*département*) or if the couple decides to separate.[27] However, we document below in section 9 that our ability to match households over time is not affected by the reform.

Another limitation is that we have no information on the number of hours or days worked that corresponds to the annual earnings received. To measure any non-take-up

administration.

[25]Registration is also needed to calculate eligibility for birth benefits (prime de naissance), to obtain childcare subsidies, and to determine eligibility for public childcare. In addition, all second-time parents are eligible for family benefits.

[26]By comparing the size of our sample six months after birth with vital records, we estimate that less than 1% of children born in December 2014 and January 2015 are missing from the sample.

[27]For marital separations, the corresponding member of the household keeps the same identification code, while another code is attributed to the other partner. The corresponding member is a woman for approximately 70% of households.

instances from fathers or mothers working part-time, we rely on the French labour force survey to estimate their share of the population.

3.2 Labor Force Survey Data

We estimate the share of eligible parents who are working part-time and who should thus take part-time paid leave after the reform using labour force survey data (*Enquête Emploi en continu*).[28] This survey contains self-reported data on usual working times that are not available from the administrative data. The survey also contains information on earnings for each individual and the age and number of children in the household, which allows us to assess whether a household is eligible for paid benefits. As the sample size is much lower than that for the administrative data, we aggregate the households by quarter of birth to reduce sampling variations.[29]

4 Empirical Approach

To evaluate the consequences of the reform, we follow Lalive and Zweimüller (2009) and many others by comparing the outcomes of parents who had a child just before and immediately after the implementation of the reform on the 1st of January 2015. Such an empirical strategy relies on a local randomization hypothesis (Cattaneo et al., 2020), which is valid herein if the timing of the birth is random within the chosen window around the eligibility cut-off for the reform.

Given that our data only contain the month of birth, we adopt the smallest possible window by comparing parents who had a child either one month before or one month after the implementation of the reform, i.e., either in December 2014 or January 2015.[30] Despite such restrictions and because our data contain close to the entire eligible population, our sample is large, as it includes approximately 126 000 households.

One important issue is that the discontinuity at the first of January 2015 also affects the

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[28]This survey is elaborated by the French National Institute for Statistics (INSEE).

[29]The sample only includes 150 observations for parents of a child born in either December 2014 or January 2015.

[30]Using windows smaller than a quarter seems preferable as suggested by evidence (Buckles and Hungerman, 2013) for the US that the characteristics of households having a child vary across quarters of birth in the same year.

year of entry to public preschool (*école maternelle*). As most children enroll in preschool in September of the year when they turn three, a child born in December 2014 was guaranteed to be admitted to preschool in September 2017. [31] In contrast, a child born just several days later in January 2015 had to wait until September 2018 to be admitted to preschool. To account for systematic calendar effects unrelated to the reform, we follow the approach of Schönberg and Ludsteck (2014) and Lalive et al. (2013) by using a difference-in-differences approach, using the group of households that had a birth one year before the reform during the same months (i.e., December or January) as a control group. We consider the standard difference-in-differences model estimated with OLS as follows:

$$Y_{it} = \beta_0 + \beta_1 G_i + \beta_2 T_i + \beta_3 \left(G_i \times T_i \right) + u_{it}, \tag{1}$$

where Y_{it} is an outcome of household i observed in period t, such as annual earnings of participation in parental leave, G_i is a dummy equal to one if the birth occurred in January relative to December, and T_i equals one if the birth occurred in the year of the reform, either in December 2014 or January 2015. The key parameter of interest, β_3, is associated with the interaction term between the year of the reform and the group affected by the reform $(G_i \times T_i)$. As there is selection into the parental leave treatment, this parameter captures intention-to-treat (ITT) estimates on Y_{it} based on the assignment to the group affected by the reform.[32]

For second-time parents, for whom we find a strong negative effect of the reform on the probability of taking paid leave in the third year after birth, we also estimate the local average treatment effect (LATE) of the effects of parental leave on earnings using the reform as an instrument. As the reform reduces the possibility of taking leave in the third year, we code the treatment variable for individual i by $NoLeave_i$, which is equal to one if no parental leave of any type is taken in the third year and equal to zero otherwise. The Wald-DiD LATE estimates are obtained using a fuzzy difference-in-differences model

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[31]Preschool at age three was not compulsory in that period; however, in 2017, the approximate share of children attending preschool in September of the year of their third birthday was 98%. In contrast, only 12% attended preschool in the year of their second birthday (de l'évaluation, 2018).

[32]In our main estimates, we do not add any additional variable controlling for predetermined observable characteristics of households. In practice, adding such variables has no effects on the results, consistent with the evidence reported below that there are no statistically significant differences between the two groups.

(De Chaisemartin and D'Haultfœuille, 2017):

$$Y_{it} = \gamma_0 + \gamma_1 G_i + \gamma_2 T_i + \gamma_3 NoLeave_i + u_{it} \qquad (2)$$

where γ_3 captures the LATE of not taking any parental leave on the outcome Y_{it}. We estimate this previous model with 2SLS using $(G_i \times T_i)$ as an instrument for $NoLeave_i$. In our context, the LATE estimates capture both the treatment effects of taking part- or full-time parental leave on outcomes, but we are not able to separate their effects. The LATE is identified by mothers who would have taken leave in the third year after giving birth without the reform.[33].

In addition to the monotonicity and common trend assumptions, the estimation of the LATE with the Wald-DiD in a fuzzy difference-in-differences design requires the treatment effect to be stable over time (De Chaisemartin and D'Haultfœuille, 2017). This condition might be problematic, as changes in business cycle conditions over one year are likely to affect the treatment effect of parental leave on labour market outcomes. However, as we report below, calendar effects are statistically insignificant for most outcomes. As we show below, difference-in-differences and simple differences estimates provide similar results.[34]

4.1 Validity of the Empirical Approach

This section provides evidence on the validity of our empirical approach, first by investigating whether there are discontinuities in the distribution of births around the threshold of the reform and second, by assessing whether households that had a child in December 2014 and January 2015 are similar.

Smoothness of the daily birth distribution Our empirical strategy is not valid if households manipulate the timing of the birth because of the reform.[35] To detect ma-

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[33]The ITT and LATE estimates are directly related, as the LATE corresponds to the ratio of the ITT effects on earnings to the ITT effect on the probability of taking parental leave (Imbens and Rubin, 2015, p. 529)

[34]We also estimated the time-corrected Wald estimates proposed by De Chaisemartin and D'Haultfœuille (2017) and the changes-in-changes estimates proposed by Athey and Imbens (2006). For all outcomes reported in the paper, we could not reject the hypothesis of equality between these alternative estimates of the LATE relative to simple differences.

[35]Theoretically, the direction of such manipulations might differ between first- and second-time parents. First-time parents should prefer to have a child *after* the reform, as they receive six additional months of paid leave for the other parent. On the other hand, second-time parents should prefer to have a child before the reform to avoid sharing 36 months of leave. In any case, if there is manipulation, we should

nipulations related to the day of birth by households, we test for the smoothness of the density of daily births around the threshold of the reform. As the exact day of the birth is not reported in the social security data for confidentiality reasons, we report in Figure 2 a histogram of the daily number of births from vital record data.[36] We compare the daily distribution of daily births in panel A for December 2014 and January 2015, which is the reform year, with the distribution for December 2013 and January 2014 in panel B, which was one year before the reform.

Clearly, the distribution of daily births is not uniform, as births are less frequent on the week end and on days off, such as the 1st of January. To isolate any discontinuities from predictable calendar effects, panels C and D report histograms that have been adjusted using calendar day fixed effects estimated using data from daily births in November and in February in the same years. Overall, from both the observed and adjusted series, there is no exceptional spike in daily births before or after the 1st of January 2015. Using the test of Cattaneo et al. (2018), we cannot reject the null hypothesis of a no-density jump around the threshold in January 2015 either on the observed or adjusted daily birth series (p-value = 0.14 and 0.82, respectively).

Balance tests   The validity of the local randomization hypothesis can be assessed by comparing the average predetermined characteristics of households with a child born in December 2014 and January 2015 the year of the reform. If this hypothesis is valid, we should not find any systematic difference between households that had a child born just before and just after the reform.

We compare these characteristics separately for first- and second-time parents in panels A and B of Table 2, respectively.[37] For both first- and second-time parents, the share of single parents is very similar in December or January. As single parents are not affected by the reform, we focus on households with two parents in other rows of the table. For these households, we find no significant differences in the average age of the mother or the father, in the average earnings or the number of children in the household.[38] Finally, as

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observe unusual spikes in the number of births just before or after the threshold in the reform year.

[36]Unfortunately, vital records data do not distinguish between first and second children.

[37]We use earnings measured two years before birth, as they are not affected by slight differences in the timing of pregnancy between these two groups because mothers who gave birth in December 2014 were pregnant earlier than mothers who gave birth in January 2015.

[38]To test for joint significance, we also estimated a linear probability model in which the dependent variable was the probability of having a birth in January 2015 relative to December 2014 using the

we will use prebirth earnings to study heterogeneity in response to the reform, we test for differences between the quartiles of their distribution for second-time mothers, conditional on having strictly positive earnings.[39] Overall, we cannot reject the hypothesis that the quartiles are similar in the two groups.

4.2 Share of part-time workers among eligible parents

To put in perspective the effects of the reform on the take-up rate of part-time leave by parents, we document in Table 3 the share and characteristics of part-time workers among parents who had a child in January 2015, just after the reform. As discussed earlier, if there are no participation costs or stigma, any parent observed working part-time should take paid leave after the reform.[40] The figures in Panel A indicate that approximately 5 to 7% of fathers are working part-time after the reform and should take part-time parental leave compared with 14% of first-time mothers and 28% of second-time mothers.[41] For fathers working part time, panel C documents that, relative to the median monthly wage of this group (approximately 1 000 euros), taking the lowest level of parental leave benefit (150 euros) increases their monthly earnings by 15%. Labour market attachment is strong, as 70% of them report that they have more than one year of experience with their current employer, which implies that most of these fathers are in a long-term employment relationship and thus should satisfy the eligibility conditions to take paid leave. Part-time work tends to be a durable situation, as more than 60% of these fathers were already working part-time one year before the survey.

covariates reported in Table 2 as predictors. We obtained an F-stat of 0.66 (p=0.61) for first-time parents and 1.20 (p=0.30) for second-time parents. Overall, we could not reject the hypothesis that these variables do not predict treatment status.

[39] The quartiles are compared using bootstrapping with the estimator proposed by Harrell and Davis (1982).

[40] Because of the small sample size in the Labour Force Survey, we use the quarter of birth instead of the month of birth. Consistent with the eligibility conditions for paid parental leave, we define part-time work as reporting to be working less than 80% of a full-time job.

[41] Figures from INSEE (2018) indicate that the share of parents working part-time is similar if the sample is extended to births in other quarters.

5 Effects of the reform on parental leave take-up

In addition to regression estimates reported in Table 4, we graphically describe how the reform affected the take-up rate of parental leave for each parent in Figure 3 and 4. To identify a causal effect of the reform, we compare parents whose child was born in December 2014, and are thus not affected by the reform, to those whose child was born in January 2015, just when the reform was implemented. To visually assess the presence of calendar effects unrelated to the reform, we systematically report graphs for births one year earlier, in December 2013 and January 2014.

5.1 First-time parents

We start in this section by investigating the effects of the reform on first-time parents. For this group, the reform extended the length of the leave from six months to share between parents to six nontransferable months for each parent.

Figure 3 reports the evolution of the share of mothers and fathers taking full- or part-time paid leave after birth, while Table 4 reports the probability of taking at least one month of each type of leave. The figures indicate that the availability of six additional months of leave had very little effect on the participation of mothers or fathers. For fathers, Table 4 indicates that the probability of taking at least one month of leave has increased by as little as 0.2 p.p., as 0.9% of fathers take part-time leave after the reform compared with 0.7% before the reform. Such rates are dramatically low when compared with the share of approximately 4.7% of fathers working part-time reported in Table 3 who take paid leave. Taken literally, these figures suggest that approximately 80.8% of eligible fathers working part-time do not take the benefits of paid parental leave they are eligible for given their observed labour supply.

For mothers, Table 4 indicates that the probability of taking paid leave and the average number of months taken remained very similar after the reform. The only effect of the reform that is visible in Figure 3 is that mothers exploited the additional flexibility to allocate the six available months before the child's first birthday, which allowed approximately 2.5% of mothers to take paid parental leave the 10th month, which was not

possible before, as the six months of leave had to be taken just after maternity leave.[42]

Panel A of Table 5 reports regression estimates using the probability of taking at least one month of full- or part-time leave before the first birthday of the child as the dependent variable. Both simple differences and difference-in-differences confirm the previous visual evidence. For fathers, even if the effects are small, they are precisely estimated, and they indicate that the reform increased the probability taking full or part-time leave by 0.2 p.p. The results are similar in simple-differences and difference-in-differences specifications, which suggest that calendar effects unrelated to the reform do not affect our estimates.

5.2   Second-time parents

In Figure 4, we examine the effects of the reform on second-time parents for whom the reform reduced the maximum length of leave from 36 to 24 months.[43] After the reform, the participation of mothers in parental leave after the 24-month threshold decreased widely, as expected. This decline is nevertheless progressive, as mothers are not obliged to take the maximum of 24 months in a row after birth, even if a large majority do. The decrease is also large: before the reform, more than 34% of mothers took part or full-time paid leave after the 24th month. After the reform, less than 4% are observed in paid parental leave status in the 26th month after birth, thus allowing most fathers to take paid leave until the 36th month without affecting the length of leave of the mother.[44]

Despite this spectacular decline in the take-up rate of paid leave by mothers in the third year, Table 4 indicates that the share of fathers taking leave did not increase by much. First, the share of fathers taking at least one month of full-time leave remained very small and only increased by 0.2 p.p. after the reform. Second, for part-time leave, the

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[42]Notice that, as parental leave can only be taken after the end of eight weeks of mandatory maternity leave, the first possible month of leave depends on whether the child is born at the beginning or the end of the month. For example, the first month of paid leave will be February 2015 for a child born on the 1st of December 2014, while it will be March 2015 for a child born the 31st of December. Maternal leave will also be extended in the case of a premature birth, which explains why we observe very small rates of parental leave in the 9th month before the reform.

[43]As highlighted earlier, the group of second-time parents includes parents of a third, fourth, or other additional child. As the length of compulsory maternity leave increases with the number of children, the first month of paid leave for the mother varies from the 3rd to the 6th months, which explains the inverse U-shape. The exact month also depends on the day of birth within the month as for first-time parents.

[44]After the reform, mothers observed on leave after the 24th month had another child and became eligible again which explains why they have been able to take leave.

share of fathers taking paid leave only increased by approximately 0.8 p.p., i.e., from 1.0% to 1.8%. Given that 6.8% of fathers are working part-time in the population according to Table 3, these figures imply that 73.5% of the eligible fathers working part-time are not taking the paid leave to which they are entitled. Finally, for first-time parents, the regression evidence reported in 5 suggests that there are few calendar effects, as estimates in simple differences and difference-in-differences are similar, consistent with the visual evidence in Figure 4.

6 Did the take-up of fathers increase later?

A possible explanation for the low take-up rates of fathers is that they reflect a lack of information about the reform. Despite the communication plans from the administration and the presentation of the reform in the press, many fathers might not have been initially aware of the characteristics of the reform immediately after its implementation. Assuming households are likely to become more familiar with the new system over time[45], we examine in Figure 5 and Table 6 the share of fathers taking parental leave for births occurring one and two years after the reform in January 2016 and 2017. If the slow diffusion of information explains the lack of participation of fathers, then the share of fathers taking paid leave should increase dramatically as knowledge of the reform spreads in the population. In practice, the figures are not consistent with this hypothesis, as we observe little difference in take-up rates over time, particularly for second-time fathers. If anything, we only find a 0.3 p.p. increase in participation limited to first-time fathers between 2015 and 2016.

As a consequence of these small increases in participation, the non-take-up rates by eligible fathers working part time remained extremely large. By combining the share of parents working part-time from labour force surveys with the share taking leave in the administrative data, we estimate in Table 6 that the non-take-up rates remain greater than 68% for first-time fathers and 65% for second-time fathers working part-time.[46]

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[45]See Chetty et al. (2013) for evidence that the knowledge of welfare reforms in the population spread over time.

[46]To increase the sample size and the precision in the measurement of part-time leave in the population, we also include births for other months of the year in the sample.

Such non-take-up rates are dramatically larger than those that have been estimated for other welfare programs in the literature (Bargain et al., 2012). They are also very large compared with the non-take-up rates of mothers, which range between 4% and 25% over the same period, consistent with earlier studies (Reinstadler, 2000).

7 What explains the low take-up rates of fathers?

To gain more insights into the determinants of fathers' participation in parental leave, we examine differences in the effect of the reform across subgroups of parents for whom the influence of gender norms might vary.

Effects of the reform on independent workers To receive paid parental leave, employees need to ask their employer to fill out a one-page form for the family social security that certifies that they work part-time or have stopped working entirely. Qualitative studies suggest that fathers asking for parental leave might be stigmatized by their employer (Coltrane et al., 2013; Kaufman, 2018), and real or supposed employer resistance might be an important barrier to fathers taking leave. Alternatively, peer effects in the workplace might discourage fathers from taking leave, as suggested by evidence from Dahl et al. (2014) for Norway. If employer stigma or peer effects are important factors in the decision, we should observe a higher response to the reform from independent workers who do not have an employer and just have to declare to the social security office that they have reduced their working hours to take paid parental leave. To investigate this hypothesis, we report separate estimates on independent workers in column 2 of Table 7. Consistent with the hypothesis, the estimates show that fathers who are independent workers are twice as likely to take leave after the reform, as the estimated coefficient is twice as large relative to the baseline rate in the population. However, even if the coefficient is twice as large, the estimated effects remain small with an increase of 0.9 p.p. for first-time parents and 2 p.p. for second-time parents.

Differences by pre-reform local participation Gender attitudes vary widely across regions in Europe, even within countries (Lalive and Stutzer, 2010; Powers et al., 2003), and these local differences have important consequences on the relative labour market outcome for women (Janssen et al., 2016). If local attitudes influence the take-up rate of

parental leave, fathers should be more likely to respond to the reform in locations where the share of fathers taking leave was already large before the reform. To investigate this hypothesis, Columns 3 and 4 in Table 7 report separate estimates of the effects of the reform on fathers depending on the share of fathers taking leave in the department of residency one year before the reform. Assuming that a higher local share of fathers taking leave is correlated with a more favourable local attitude towards fathers taking leave, we estimate a separate model between departments where this share was above or below the median in their department.[47] Consistent with our hypothesis, the response of fathers to the reform varies widely with the pre-reform local participation rates of fathers. In practice, we find that all of the effects are driven by departments with an above-median share of fathers taking leave before the reform. In these departments, the estimated effects of the reform are twice as large relative to the baseline estimate. In contrast, in departments with below median leave, the reform had no effect on the take-up rate of fathers.

Differences by fathers' earnings   The simple models of labour supply discussed before predict that, ceteris paribus, fathers with lower earnings are more likely to respond to the reform and take more leave as the opportunity cost of paid leave is lower for them. On the other hand, if gender attitudes are an important factor in the decision, the relationship between the earnings of fathers and leave usage is less straightforward. According to the literature on gender stereotypes in France (Papuchon, 2017) and consistent with international evidence, men with higher economic status and levels of education tend to have less conservative attitudes towards gender roles. To investigate differences in response to the reform relative to the prebirth earnings of fathers, we report in columns 5 to 8 in Table 7 separate estimations by quartile of the annual labour earnings of fathers two years before the birth. The results confirm that there are large differences in response to income and that fathers with lower levels of prebirth earnings are much less likely to take paid leave in response to the reform. Quantitatively, we estimate that fathers in the third quartile of earnings were twice as likely to take paid leave in response to the reform relative to fathers in the first quartile. Overall, the fact that fathers with higher levels of earnings

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[47]A French department is a local division similar to a US county. There are 95 departments in metropolitan France. In practice, we use the level of the local branch (*caisse*) of the family social security CAF instead of the department. As a small number of large departments are densely populated and have two branches instead of one, we have 103 local branches instead of 95 departments.

are more likely to take leave despite it being more costly for them is consistent with an important role for gender values in the decision.

8 Effects of the reform on earnings and income

To interpret the previous results and understand why fathers did not take more leave, it is important to understand how the reform affected household income, in particular, how the earnings of each parent were affected. As discussed in the theoretical section, the 12-month reduction in leave duration might have diminished the income of households if mothers' earnings from the labour market are inferior to leave benefits. In this case, fathers might have increased their labour supply in compensation instead of taking more leave.

To investigate this issue, we visually examine the effects of the reform on the labour earnings of second-time parents in Figure 6.[48] As the data on income come from fiscal data, its frequency is annual, but because it is reported with a two-year lag, it has the advantage of starting two years before the birth and thus one year before the mother's pregnancy. Consistent with Kleven et al. (2019), the birth of a child increases the gender gap in labour earnings. For cohorts unaffected by the reform, mothers earn 800 euros less on average two years after the year of birth relative to two years before, while fathers earn approximately 1 500 euros more.

Turning now to the effects of the reform, the figure clearly shows that the reform substantially increased the earnings of mothers in the third year after birth but had little effect on fathers. Consistent with the visual evidence, ITT estimates reported in Panel A in Table 8 indicate that the reform increased the average labour earnings of mothers in the population two years after the year of birth by approximately 1 000 euros, which corresponds to an 8% increase relative to their average annual labour earnings. However, the figure also shows that the receipt of unemployment benefits increased by 237 euros, which corresponds to a 40% increase relative to the pre-reform level, thus suggesting that for many mothers, the decline in paid leave was also compensated through an increase in

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[48]Consistent with the previous results that the reform has had little effect on first-time parents, we find no difference in labour earnings or unemployment benefits for first-time parents. These results are available upon request.

the receipt of unemployment benefits. For fathers, columns 5 and 6 show that while the coefficients are positive, they are relatively small and statistically insignificant. Overall, there is little evidence that the reform affected the earnings of fathers.

For each part of household income, Panel B of Table 8 reports the corresponding LATE estimates of not taking parental leave on these outcomes, obtained using the reform as an instrument. Relative to the ITT results, these estimates adjust for the fact that the reform decreased the length of leave for 28% of households, as indicated in columns 1 and 2, and not of the entire population.[49] The estimated LATE of parental leave on the earnings of mothers is rather large, as they indicate that not taking parental leave for approximately 12 months is associated with a 3 500 euro increase in the annual labour earnings of mothers in response to a decline in paid benefits estimated to be 2 900 euros.

How persistent are the effects of parental leave on earnings? How persistent are the effects of parental leave on earnings? Figure 6 also reports differences in earnings three years after the year of birth, which is just after the eligibility period, as the age of the child is greater than 36 months. Surprisingly, we find no differences in earnings between mothers who were eligible for 24 or 36 months of leave, which suggests that the effects of parental leave on the earnings of mothers do not persist over time. While our evidence is limited, as only one year is observed after the eligibility period, this result is consistent with recent evidence from Kleven et al. (2020) from Austrian data that also find little effect of parental leave on the future earnings of mothers in the medium-run.

8.1 Difference by prebirth earnings of mothers

While on average the reform for second-time mothers was neither associated with a decline in household income nor an increase in the labour supply of the fathers, the effects might differ across households depending on the potential earnings of the mother in the labour market. In particular, fathers might have increased their labour supply to compensate for the loss of benefits in the households where the mother had the lowest potential earnings. To investigate this hypothesis, we use the quartiles of the distribution of the prebirth

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[49]The sample size is 10% smaller than in Panel A, as we had to match information on parental leave in the third year after birth with retrospective information on earnings observed in the fifth year after birth. As a result, we lost some households that received a different identifier because they relocated to a different region. However, ITT estimates on this sample are similar to those reported in Panel A.

earnings of mothers to approximate the labour market opportunities of the mother. We separately consider the mothers who had no earnings two years before birth, i.e., approximately 27% of mothers (see Table 2), and the mothers with strictly positive earnings that we divide into four groups based on the quartiles of their prebirth earning distribution.[50] We report for each of these groups in panel A of Table 9 how the reform affects the take-up of paid leave in the third year after birth.[51] The results indicate that mothers most likely to take a third year of leave had relatively high pre-birth earnings as the estimated effect of the reform is much larger in the middle of the distribution. For mothers in the second and third quartiles, we find that more than 43% of them would have taken more than 24 months of leave without the reform. In contrast, only 13% of mothers with zero prebirth earnings were affected by the reform. The fact that mothers most affected by the reform have relatively better labour market opportunities might explain why the reform did not decrease household income on average, as mothers in these households were more likely to be able to compensate for the losses of leave benefits by increasing their labour supply.

To formally test this hypothesis, we examine the effect of the reform on each component of household income in other panels. To adjust for the large differences in the effect of the reform across groups, we report the LATE estimates of not taking paid leave, as it corresponds to the ratio between the ITT on the outcome over the ITT on leave usage for each group. We find that estimates of the LATE of parental leave on earnings are much larger for mothers in the middle of the prebirth earnings distribution, particularly in the second quartile, than for other mothers. For this group, not taking parental leave is associated with an increase in their labour earnings by 4 700 euros in compensation of a 2 700 euro decrease in paid benefits. Despite these differences across groups, Panel B3 shows that there is no significant effect of the reform on the earnings of fathers in any of these groups, even in households in which the mother had low prebirth earnings. While the coefficients are positive, they are also imprecise, and we find no statistically significant effects of the reform on the earnings of fathers in any group.

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[50]Notice the sample size is slightly smaller than that in previous specifications and that the estimates for the complete sample are thus slightly different, as we had to match households over five years to get information on both earnings two years before births and those in the third year after birth. As a consequence, unlike in the previous regression, the sample here is restricted to households that did not change their identification code, which implies that they did not move to another county.

[51]To save space, we report results obtained using simple-differences only, but results using difference-in-differences specification are virtually identical

Panel B5 summarizes how the reform has affected the total income across households. The estimates suggest that the reform did not decrease, on average, the income of households in any of these groups. However, for groups in the first quartile, approximately half of the decrease in leave benefits was compensated by an increase in the receipt of unemployment benefits and not by an increase in labour earnings.

In sum, the evidence in this section suggests that long parental leave is more likely to be taken by mothers with a significant labour market attachment and not mothers with the lowest opportunities. As these mothers have better labour market opportunities and have often been able to return to their employer, the effect of parental leave on earnings is large on average in the population, but as a consequence, a reduction in the length of leave does not appear to decrease household income on average. In addition, even in groups where mothers have the lowest prebirth earnings, we find no significant effect of the reform on the earnings of fathers or on household income. Overall, there is little evidence that the reform affected the earnings of fathers.

9 Effects on other outcomes

The reform might also have influenced other outcomes of the households, in particular outcomes that expand the eligibility for taking parental leave, such as the probability of separation, having another child, or moving to another region, which might bias our results. We examine these issues in this section.

Effects on the probability of separation As single parents are eligible for longer parental leave, we report in column 1 of Table 10 estimates assessing whether the reform influenced the probability of separation or divorce.[52] Overall, the coefficient is very small, and we find that the reform has little effect on the probability of separation.

Effects on fertility The reform might also have affected fertility during the first three years of the child's life, as having another child renews the eligibility for 24 months of leave. We examine whether the reform is associated with the probability of pregnancy in column 2 and the number of children in the household in column 3. Once again, the

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[52]In the case of divorce, the corresponding parent keeps the same identification code, while another code is given to the other parent.

effects are very small and statistically insignificant.

Effects on mobility   Finally, as the reform increased the labour force participation of mothers, a possibility is that it might have influenced the geographical mobility of households. If mobility is associated with a change in the county (*département*) of residence, this might affect our ability to track households over time, which is necessary to estimate the LATE, as mobility is associated with a change in the family identifier in the administrative data.[53] In practice, the results in column 4 suggest that there is no important difference in the probability of being observed with the same social security code associated with the reform. While the coefficient is positive and statistically significant, the point estimates are inferior to 0.7% in the third year, which suggests very little difference in mobility associated with the reform.

9.1   Further evidence on calendar effects

Up to this point, we have restricted our comparisons to parents whose children were born in December 2014 or January 2015, i.e., the reform year, relative to those parents whose children were born in either December 2013 or January 2014, i.e., the year just before the reform. The fact that the estimates from simple differences and difference-in-differences are similar suggests that there are few calendar effects associated with births in December or January in the years without the reform. To assess the robustness of this finding in relation to other years, we show in Figure 7 that the lack of a calendar effect is also visually clear when other years are considered before or after the reform. For various sets of outcomes observed for households that had a birth in December and January around the 1st of January in 2012, 2013, or 2016, few differences in outcomes were observed in these years.[54]

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[53]As emphasized earlier, while we do not need to track households to estimate ITT effects, we need to combine information on participation in paid parental leave with information on earnings that are reported two years later to estimate the LATE of not taking parental leave.

[54]Note that the third-year income for births in 2016 was not yet available.

10 Conclusion

To understand the consequences of recent policies designed to promote parental leave sharing that have been recently implemented in Europe and elsewhere, this paper examined the consequences of the 2015 reform of French parental leave. The reform provided incentives for parents to share the leave by giving each parent 6 to 12 nontransferable months of leave with a fixed level of paid benefits while offering the possibility of taking better compensated part-time leave. In contrast with countries that offer a short and well-compensated daddy-month, we find very little effect of the reform on the probability of taking paid parental leave by fathers.

Evidence from differences in the impact of the reform across households is consistent with a role of a stigma associated with taking parental leave for fathers. We find that even fathers who are working part-time after the reform do not take the paid benefits they are eligible to take, even though taking leave does not require them to change their behaviour. These non-take-up rates did not decline in the years after the reform, thus suggesting that the slow diffusion of information about the new parental leave system is unlikely to fully explain this behaviour.

The fact that stigma might have an important role in explaining the low take-up rates of fathers after the reform is also consistent with observed differences in response to the reform across households. Independent workers who did not suffer from stigma from their employer, and fathers living in a region where fathers were more likely to take leave before the reform, were twice as likely to take more leave after the reform. Households where fathers had higher incomes were also more likely to share more leave time, consistent with the evidence that they are less influenced by traditional gender norms.

Finally, we find no statistically significant effects of the reform on the earnings of fathers, which suggests that the lack of fathers taking parental leave cannot be explained by an increase in labour supply to compensate for the reduction in leave duration. In contrast, the reduction in the length of parental leave is associated with an increase in the earnings of mothers, mostly driven by mothers that were initially in the middle of the earnings distribution that tended to have relatively high earnings before birth.

An important lesson from this paper is that such long paid leave with low benefits

does not seem to attract fathers, and transferring specific months of leave to them only marginally increases the percentage of fathers taking leave. On the other hand, reducing long parental leave appears effective in increasing the labour market attachment of mothers and decreases the gender gap after the birth of the child. However, such policies might not have longer-run effects on the gender gap, as parental leave does not appear to have persistent effects on the earnings of mothers.

Appendices

Data Appendix

Data come from the administrative files constructed and exploited by the CNAF. We use the monthly BASESTAT database until April 2016 and monthly ALLSTAT files thereafter. When available, we use the FR6 files that are updated until 6 months after their initial production. To ensure confidentiality and the respect of the statistical secret, these files have been accessed and the analysis performed on the CNAF premises in Paris. Tax returns report separately earnings received by each parent. Data on unemployment benefits is also reported at the household level and separately for each parent after 2017.

Theoretical Appendix

Static labor supply with part-time leave

We document here the construction of Figure 1. We assume that individual labor supply depends on the maximization of a well-behaved utility function $U(c, l)$ where c denotes consumption and l are hours of non-work including leisure and hours devoted to household production. Hours of non-work are assumed to be a normal good. The time constraint is given by $T = l + h$ with h the number of hours worked and T the total number of hours. In the static model, consumption depends on unearned income y plus income from work given by the product of the hourly wage rate w with hours worked h. We abstract from income tax for simplicity as parental leave benefits are non-taxable. Following most of the literature, we assume the wage rate does not vary with the number of hours worked. The

budget constraint under parental leave is thus given by $c = w \times (T - l) + \text{PL}(T - l) + y$ where $PL()$ is the parental leave function that associate parental leave benefits to hours of work $T - l$ and $\mathbb{1}$ is an indicator equals to one if hours of work are strictly positive. In the absence of any transfer, the budget constraint is given by $c = wh + y$. When parental leave is available, the budget constraint depends on the number of hours worked, an in particular, whether monthly work is inferior to 76 hours (which correspond to 50% part time) such that:

$$
C = \begin{cases}
397 + y & \text{if } h = 0 \\
wh + 256 + y & \text{if } 0 < h \leq 76 \\
wh + 148 + y & \text{if } 76 < h \leq 121 \\
wh + y & \text{if } h \geq 121
\end{cases}
$$

Optimal length of parental leave under parental leave sharing

The problem of the household is to choose the optimal length of parental leave p_f^* and p_m^* in order to maximize the utility function $U(c, p_f, p_m)$ under the budget constraint $c = w_m(T - p_m) + w_f(T - p_f) + (p_m + p_f)b$ and the parental leave constraints which varies with the number of children and depends on whether the reform has been implemented or not. We assume p_f and p_m enter symmetrically in the utility function and each element are imperfect substitutes. We denote c^*, p_f^* and p_m^* the consumption and optimal choice of parental leave before the reform and $\tilde{c}^*$, $\tilde{p}_f^*$ and $\tilde{p}_m^*$ after the reform. We assume the wages of fathers are such that $w_f > w_m$ and $w_f > b$.

Interior solution When no parental leave constraints is binding and $w_m > b$, an interior solution is given by $U_c(c^*, p_f^*, p_m^*) = \frac{U_{p_f}(c^*, p_f^*, p_m^*)}{(w_f - b)} = \frac{U_{p_m}(c^*, p_f^*, p_m^*)}{(w_m - b)}$.

First-time parents The reform changes the parental leave constraints from $(PL0)$: $p_m + p_f \leq 6$ before the reform to $(PL1)$: $p_m \leq 6$ and $p_f \leq 6$ after the reform. Parents affected by the reform are parents in which the mother took all the leave before the reform and $p_m^* = 6$ or parents that took all six months of leave $p_m^* + p_f^* = 6$. In this case, as the constraint is biding, we have $\frac{U_{p_f}(c^*, p_f^*, 6 - p_f^*)}{w_f - b} > U_c(c^*, p_f^*, 6 - p_f^*)$ before the reform. After the reform, fathers will increase p_f^* to $\tilde{p}_f^*$ until $\frac{U_{p_f}(\tilde{c}^*, \tilde{p}_f^*, 6)}{w_f - b} = U_c(\tilde{c}^*, \tilde{p}_f^*, 6)$ for an interior solution or both parents will take six months if $\frac{U_{p_f}(\tilde{c}^*, 6, 6)}{w_f - b} > U_c(\tilde{c}^*, 6, 6)$

Second-time parents The parental leave constraints are given by $(PL0): p_m + p_f \leq 36$ before the reform. The reform adds the following two constraints $(PL1): p_m \leq 24$ and $p_f \leq 24$. which implies the reform affects households that would have chosen $p_m^* > 24$ before the reform. To simplify, assume parents take the maximum of leave and that the constraint is binding before the reform such that $p_f^* + p_m^* = 36$. In that case, a standard lagrangian analysis indicates that the optimal choice p_f^* solves $\frac{U_{p_f}(c^*, p_f^*, 36-p_f^*)}{U_c(c^*, p_f^*, 36-p_f^*)} - (w_f - b) = \frac{U_{p_m}(c^*, p_f^*, 36-p_f^*)}{U_c(c^*, p_f^*, 36-p_f^*)} - (w_m - b)$. This implies that $\frac{U_{p_f}(c^*, p_f^*, 36-p_f^*)}{(w_f - b)} > U_c(c^*, p_f^*, 36 - p_f^*)$

After the reform, the mother will take the max $\tilde{p}_m^* = 24 < p_m^*$. When $w_m > b$, the consumption of the household increase after the reform and marginal utility U_c should decrease. As a result, fathers will increase their parental leave up to $\tilde{p}_f^*$ to equalize $\frac{U_{p_f}(\tilde{c}^*, \tilde{p}_f^*, 24)}{(w_f - b)} = U_c(\tilde{c}^*, \tilde{p}_f^*, 24)$. On the other hand, when $w_m < b$, then the reform decrease consumption if fathers do not work more. When the decline in p_m does not increase sufficiently the marginal utility of consumption, we might have $\tilde{p}_f^* < p_f^*$ as fathers decrease parental leave until the marginal utility of parental leave of the father and the marginal utility of consumption are equalized.

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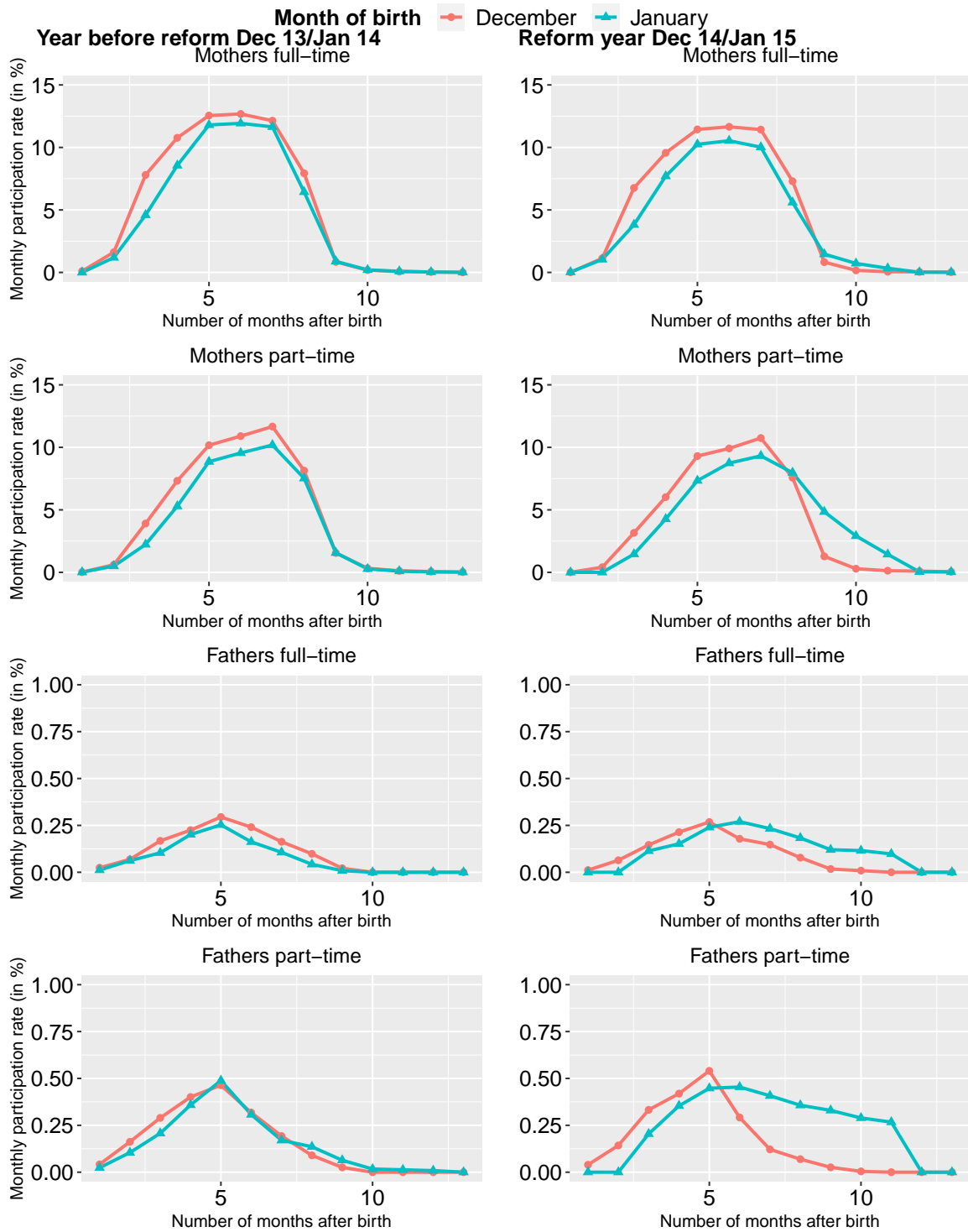Figure 1: Effect of Parental Leave on Labor Supply
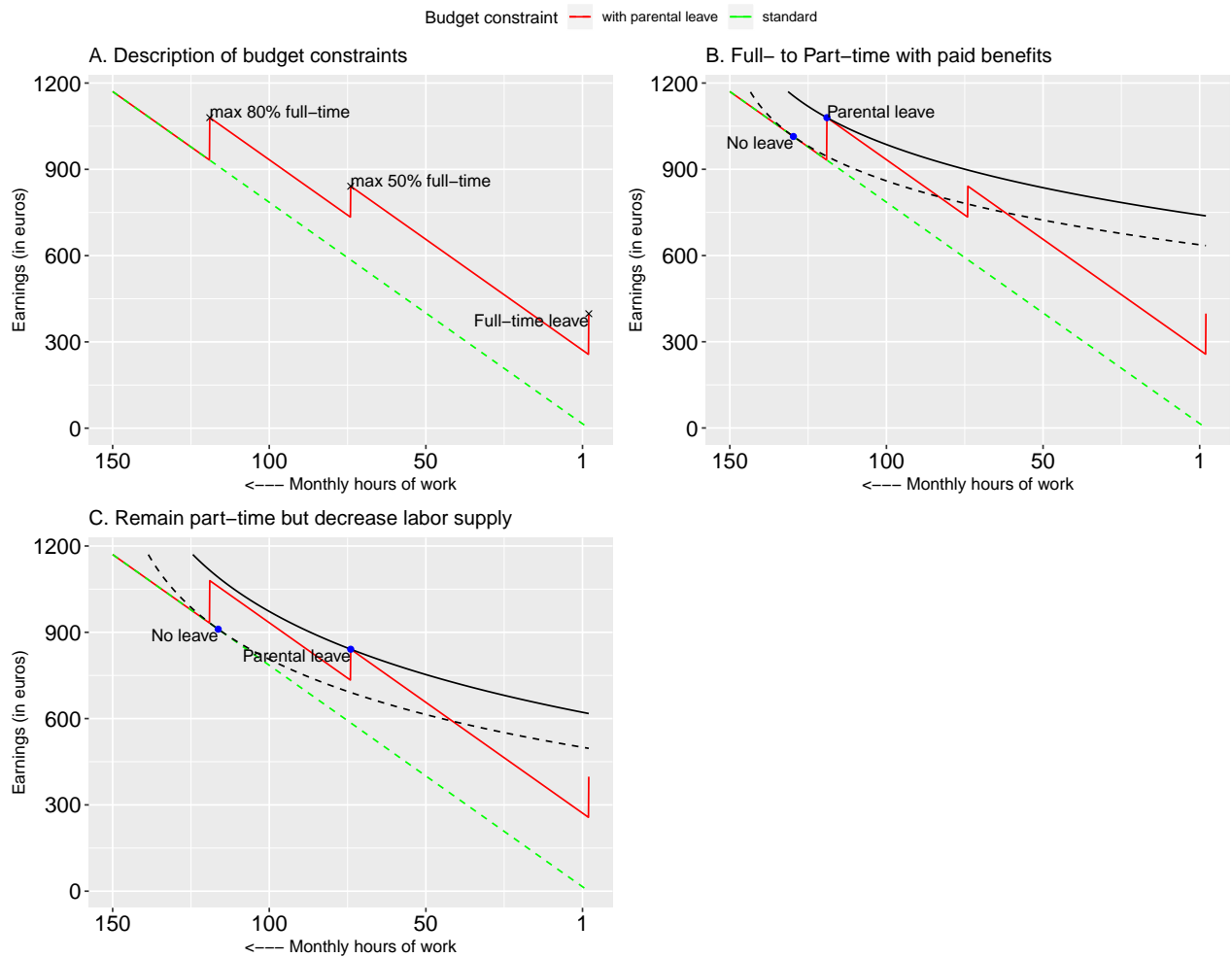
Note: Each graph represents an individual budget constraint for a minimum wage worker between hours of work and earnings depending on whether parental leave (in red) affects the budget constraint. Panel B and C adds indifference curves to illustrate how the optimal choice is affected by the parental leave.

Figure 2: Number of daily births around the 1st January 2014 and 2015

Number of days with respect to the 1st January
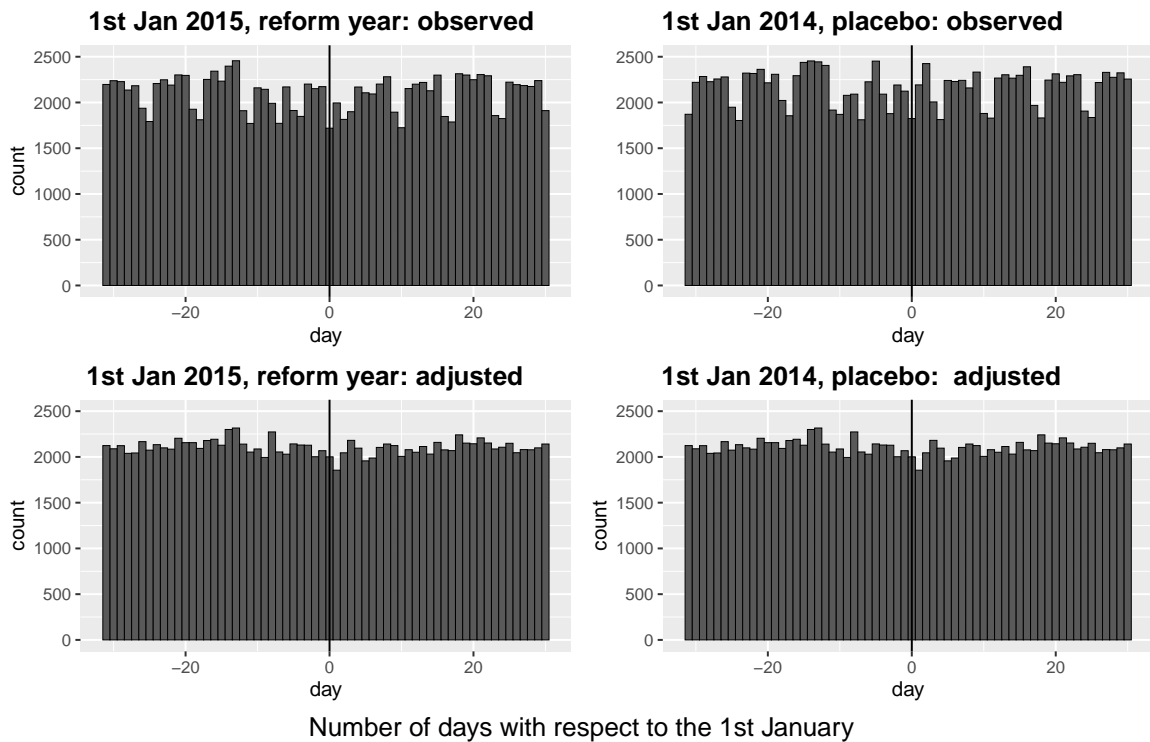
Source: Daily distribution of live birth of metropolitan France from French Statistical Institute (*T79JNAIS*). *Note*: Each graph shows the observed or adjusted number of daily live birth in France for days relative to the 1st of January 2015 (left column) or 1st of January 2014 (right column). In the second row, the daily births are adjusted for weekend days and days off effects using a regression of daily births on days of the week and days off fixed effects using data from the closest months of November and February.

Figure 3: Monthly parental leave participation rates, first-time parents

**Month of birth** ● December ▲ January

Year before reform Dec 13/Jan 14 | **Reform year Dec 14/Jan 15**

Mothers full–time

Mothers part–time

Fathers full–time

Fathers part–time

Source: Monthly families benefits files (*Allstat* and *Basestat* from CNAF). *Note*: The graphs represent the monthly share of first-time fathers or mothers in the population taking a part- of full-time paid parental leave benefits relative to the month of birth. Graphs in the column of the right shows these share for December 2014 and January 2015 just before and after the reform. Graphs in the column of the left show these shares for December 2013 and January 2014 a year with no reform. The first and second rows reports respectively the shares of full- and part-time leave for mothers. The third and fourth rows show the shares for full- and part-time leave for fathers.

Figure 4: Monthly parental leave participation rates, second-time parents
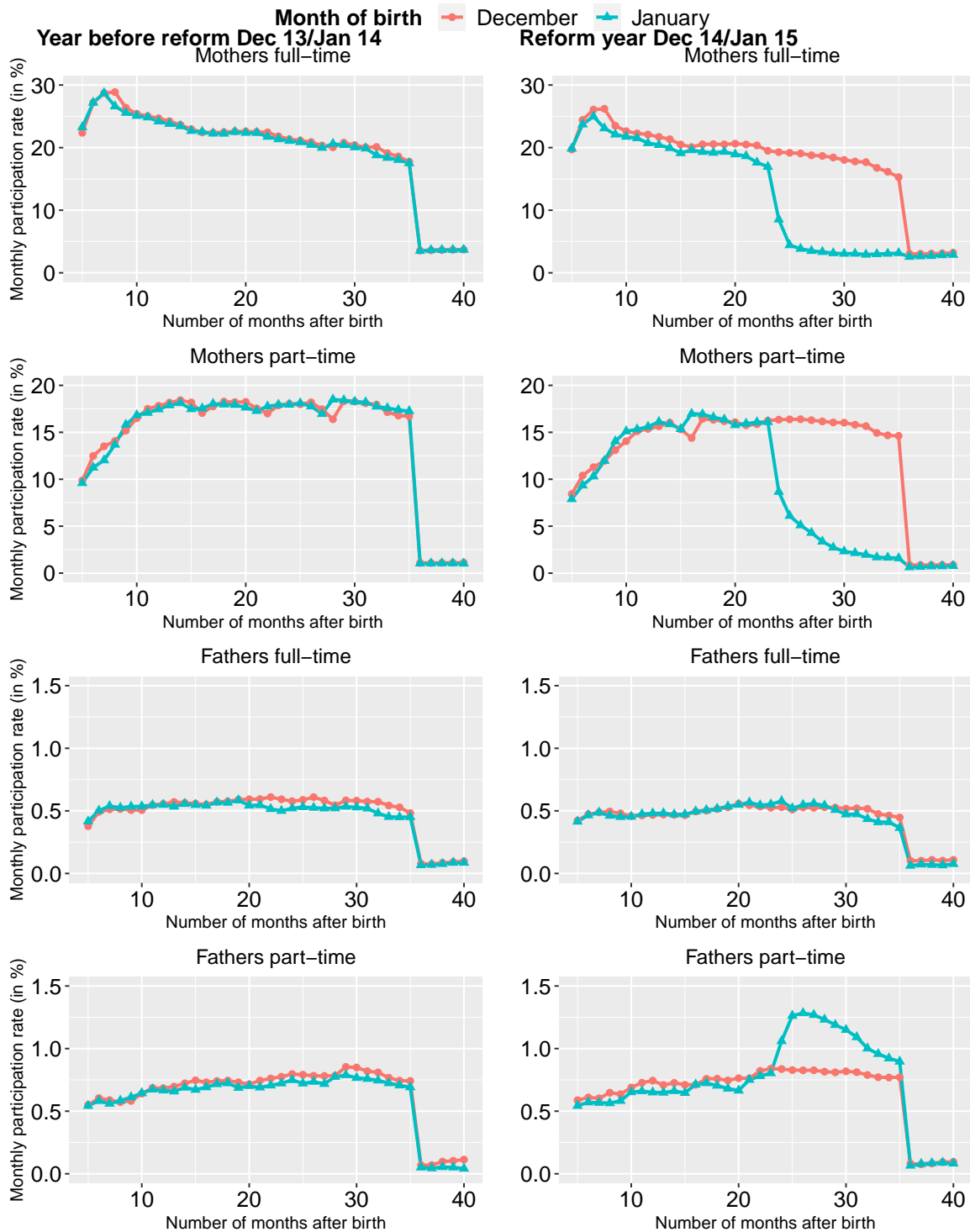
Source: Monthly families benefits files (*Allstat* and *Basestat* from CNAF). *Note*: The graphs represent the monthly share of second-time fathers or mothers in the population taking a part- of full-time paid parental leave benefits relative to the month of birth. Graphs in the column of the right shows these share for December 2014 and January 2015 just before and after the reform. Graphs in the column of the left show these shares for December 2013 and January 2014 a year with no reform. The first and second rows report respectively the shares of full- and part-time leave for mothers. The third and fourth rows show the shares for full- and part-time leave for fathers.

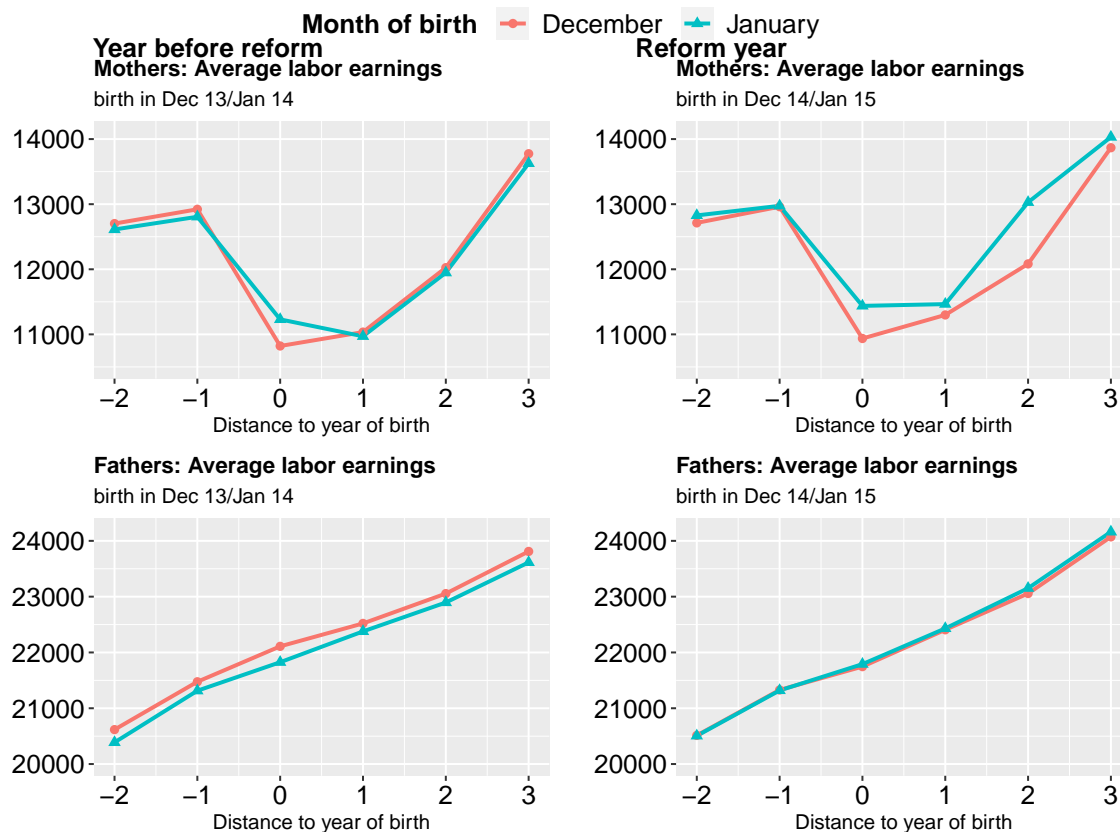Figure 5: Monthly parental leave participation rates for fathers for births in January in years after the reform
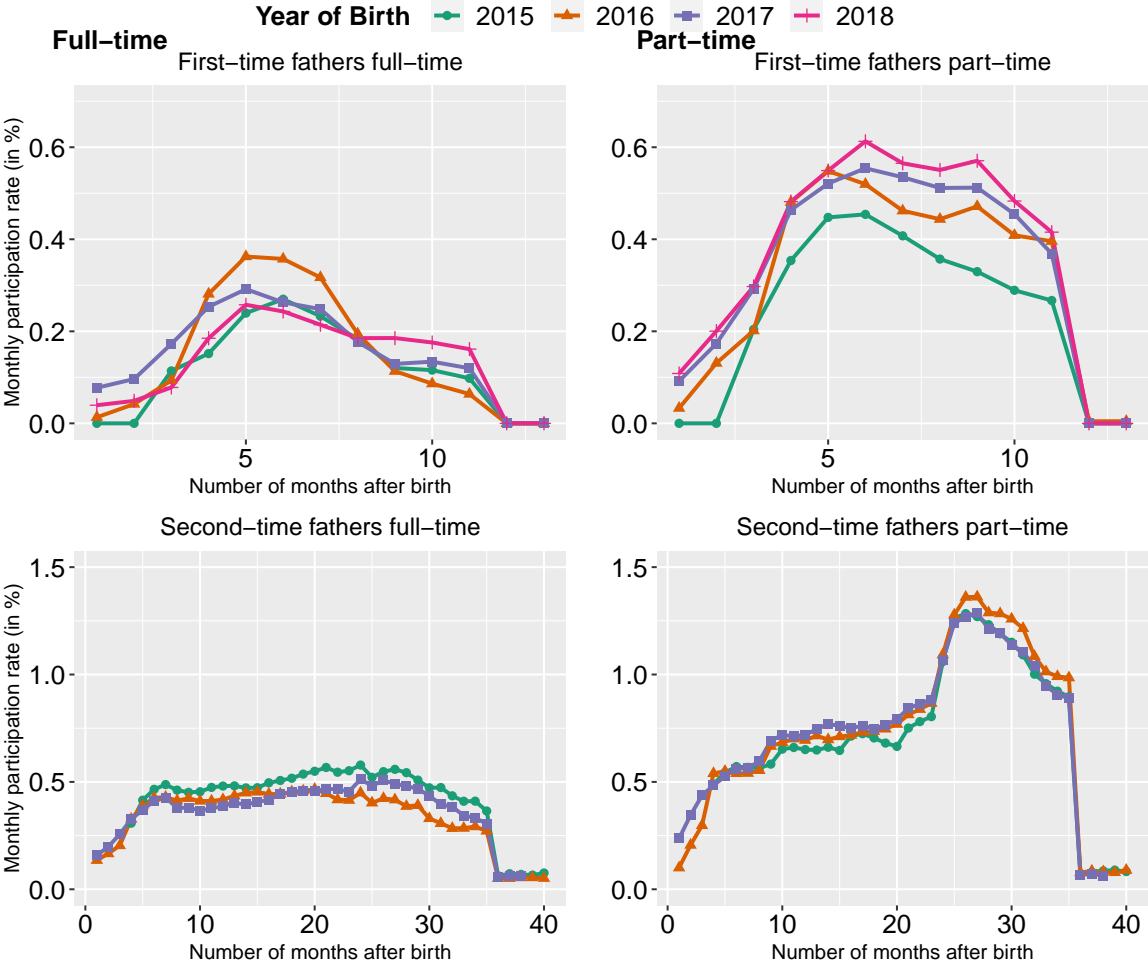
Figure 6: Annual labor earnings and unemployment benefits for second time-parents

Figure 7: Cross-cohort comparisons for second-time parents
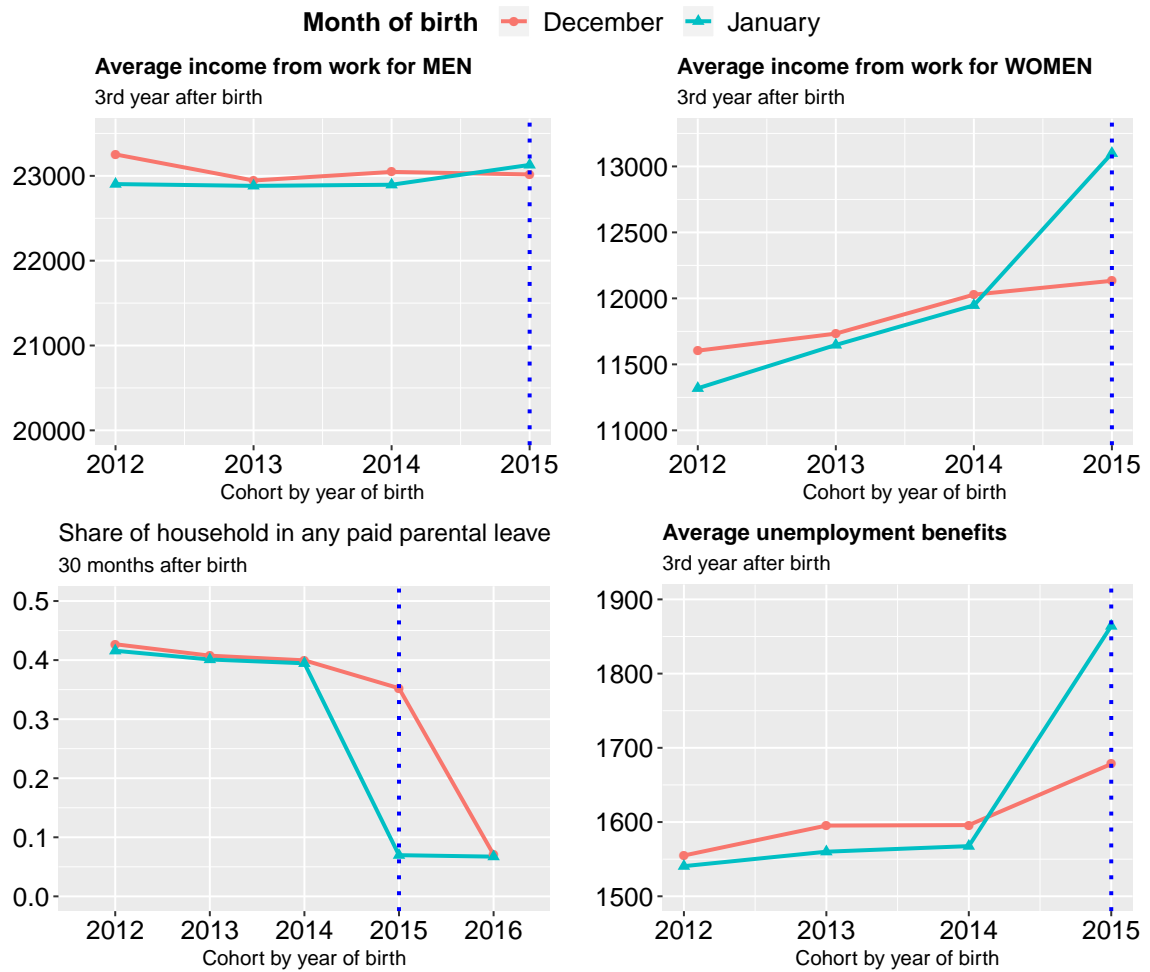
Source: Monthly families benefits files (*Allstat* and *Basestat* from CNAF). *Note*: The graphs compares across cohort defined by year of birth the average earnings of mothers (A) and fathers (B), the share of households in any parental leave (C) and the unemployment benefits received by mothers (D). The year refers to the year of the 1st of January. All outcomes are measured in the third year after birth on a sample of second-time parents. The dash line indicates the year of the reform.

Table 1: The parental leave reform

Period	**Before the reform:** *Births before 1ˢᵗ January 2015*	**After the reform:** *Births after 1ˢᵗ January 2015*
A. First child		
Length	6 months max to be taken consecutively after the end of the maternity leave, each month can be taken by any parent	6 months max for the mother & 6 months max for the father
Benefits	≈ 400€ full-time, 250€ up to 50% standard working hours, 150€ up to 80% standard working hours	Unchanged
Age of child	Maximum of 6 months of age plus the length of the maternity leave	Before 1st anniversary
Eligibility of the parent	Minimum level of earnings corresponding to one year of work at the minimum wage in last 2 years.	Unchanged
B. Second children		
Length	36 months max, each month can be taken by any parent	24 months max per parents, exceptional prolongation for a few months possible for low income households, 36 months max in total for both parents.
Benefits	Similar to those for a first-child	Unchanged
Age of child	Before 3rd anniversary	Unchanged
Eligibility of the parent	Minimum level of earnings corresponding to one year of work at the minimum wage in last 4 years, in last 5 years if more than 2 children. Previous period of parental leave counts as work	Unchanged

Table 2: Balancing Tests: First- and Second-time parents in the reform year

Birth in	*Before reform* December 2014	*After reform* January 2015	Difference	T-stat	p-value	N
A. First-time parents: Full sample						
Share Single Parent	15.0%	15.4%	-0.4%	-1.31	0.19	54 253
First-time parents: Only couples						
Age mother	28.9	28.9	0.0	-0.17	0.86	46 028
Age father	31.7	31.7	0.0	0.00	1.00	46 028
Earnings of father in 2013	19 839	20 104	-265	-1.49	0.14	46 028
Earnings of mother in 2013	15 657	15 602	55	0.29	0.77	46 028
Share mothers with zero earnings in 2013	16.5%	15.8%	0.6%	1.81	0.07	46 028
B. Second-time Parents: Full sample						
Share Single Parent	13.0%	12.7%	0.3%	1.39	0.16	72 012
Second-time Parents: Only couples						
Age mother	32.1	32.1	0.0	-0.53	0.60	62 749
Age father	35.3	35.4	-0.1	-1.21	0.23	62 749
Number of children	2.6	2.6	0.0	-1.49	0.14	62 749
Number children aged 3 and 5	0.6	0.6	0.0	-0.77	0.44	62 749
Earnings of father in 2013	21 527	21 773	-246	-1.46	0.15	62 749
Earnings of mother in 2013	13 193	13 064	129	0.80	0.42	62 749
Share mothers with zero earnings in 2013	26.6%	26.7%	-0.1%	-0.14	0.89	62 749
Quartiles of the earning distribution of the second-time mother in 2013 *Only strictly positive earnings included*						
Q1 earnings	9 092	9 172	-80	-0.41	0.67	46 033
Median earnings	16 879	16 998	-119	-1.01	0.31	46 033
Q3 earnings	22 811	22 920	-109	-0.86	0.38	46 033

Source: Monthly families benefits files, observed 11 month after birth (*Allstat* and *Basestat* from CNAF). *Note*: The table compares the average pre-determined characteristics of French households that had a child in December 2014 and January 2015. Panel A compare these characteristics for first-time parents while panel B reports these characteristics for second-time parents. As the reform only affected couples, these characteristics are compared only for this group in other rows. The bottom panel compares the quartiles of the earnings distribution two year before birth for second-time mothers living as a couple conditional on have a strictly positive earnings.

Table 3: Share of part-time workers among parents of a child born in the first quarter of 2015

	First child, 4-12 months of age	Second child, 24-36 months of age
A. Share of parent working part-time		
Mother	13.7	27.5
Father	4.7	6.8
B. Characteristics of fathers working part-time		
Median monthly wage	970	1040
Median hourly wage	11.6	9.3
Share with >1 year of seniority in the firm	66.3	77.5
Share working part-time previous year	68.9	64.3
N	146	189

Source: French Labor Force Survey *Note*: Panels A measures the share of part-time workers among mothers and fathers that had a child born in the first quarter of 2015. That rate is measured for mothers and fathers of a first-child between 4 to 12 months of age in the first column and of a second-child between 24 to 36 months of age in the second column. Panel B documents the characteristics of these fathers working part time.

Table 4: Share of parents taking at least one month of parental leave in the year

Birth in	December 14 (before reform)		January 15 (after reform)		Difference after - before reform	
	Share of leave	Nb months if leave	Share of leave	Nb months if leave	Share of leave	Nb months if leave
A. First-time parents, first year after birth						
A1. Mothers						
All leave	28.5	4.2	26.9	4.1	-1.6	-0.1
Full-Time	14.9	4.3	13.7	4.0	-1.2	-0.3
Part-Time	13.6	4.1	13.2	4.3	-0.4	0.2
A2. Fathers						
All leave	1.1	3.2	1.4	3.6	0.3	0.4
Full-time	0.4	3.2	0.5	3.2	0.1	0.0
Part-time	0.7	3.2	0.9	3.8	0.2	0.6
B. Second-time parents, third year after birth						
B1. Mothers						
All leave	39.2	9.4	10.7	5.3	-28.5	-4.2
Full-Time	20.6	9.4	5.7	5.9	-14.9	-3.5
Part-Time	18.6	9.5	5.0	4.6	-13.6	-4.9
B2. Fathers						
All leave	1.6	8.5	2.6	6.8	1.0	-1.7
Full-Time	0.6	8.5	0.8	6.6	0.2	-1.9
Part-Time	1.0	8.5	1.8	6.9	0.8	-1.6

Source: Monthly families benefits files (*Allstat* and *Basestat* from CNAF). *Note*: The Table reports the share of mothers and fathers taking at least one month of full- or part-time paid leave during the indicated period. The table also reports the average number of months of leave taken conditional on taking at least one month of leave. Panel A reports the share for first-time parents the first year after birth (from 0 to 12 months of age) while panel B reports that share for second-time parents the third year after birth (from 25 to 36 months of age).

Table 5: Regression estimates of the effect of the reform on paid parental leave take-up

Dependent variable: Probability to take at least one month of paid leave				
Outcome	Full-time leave		Part-time leave	
	(1)	(2)	(3)	(4)
A. First-time parents, before first anniversary of the child				
	A1. Mothers			
After reform	-0.009***	-0.002	-0.006*	0.008*
	(0.003)	(0.005)	(0.003)	(0.004)
	A2. Fathers			
After reform	0.002***	0.002***	0.002**	0.002*
	(0.001)	(0.001)	(0.001)	(0.001)
N	46,550	94,566	46,550	94,566
B. Second-time parents				
	B1. Mothers, from 30 to 36 months of age			
After reform	-0.149***	-0.146***	-0.136***	-0.136***
	(0.002)	(0.004)	(0.002)	(0.004)
	B2. Fathers, from 24 to 36 months of age			
After reform	0.002**	0.003***	0.008***	0.008***
	(0.001)	(0.001)	(0.001)	(0.001)
N	61,716	125,056	61,716	125,056
Method	Simple Diff.	Diff-in-Diff	Simple Diff.	Diff-in-Diff

Source: Monthly families benefits files (*Allstat* and *Basestat* from CNAF). *Note*: The Table shows regression results in which the dependent variable is the probability to take at least one month of paid-parental leave during the indicated period defined by the age of the child during the leave. Panel A and B report estimates for first- and second-time parents, respectively. Columns 1 and 2 report estimates for full- and part-time leave, respectively. Column 1 report estimates using simple comparisons between birth in December 2014 and January 2015. Column 2 report estimates using difference-and-differences specifications including also births in December 2013 and January 2014 as a control group. Robust standard errors are reported in parenthesis. (*), (**), and (***) denote statistical significance at, respectively, 10%, 5%, and 1% level.

Table 6: Estimated nontake-up of paid leave for parents working part-time after the reform

Birth in	2015	2016	2017
	A. First-time parents, Child less than 12 months of age		
	A1. Fathers		
Share Part time work	4.7	5.6	3.8
Share Part time paid leave	0.9	1.2	1.2
Estimated Non-take-up rate	80.8	78.6	68.4
	A2. Mothers		
Share Part time work	13.7	16.2	15.9
Share Part time paid leave	13.2	11.9	11.9
Estimated Non-take-up rate	3.6	26.5	25.2
	B. Second-time parents		
	B1. Fathers, youngest child from 25 to 36 months of age		
Share Part time work	6.8	5.2	na
Share Part time paid leave	1.8	1.8	1.6
Estimated Non-take-up rate	73.5	65.4	
	B2. Mothers, youngest child from 12 to 23 months of age		
Share Part time work	23.6	23.9	23.5
Share Part time paid leave	19.1	18.1	17.8
Estimated Non-take-up rate	19.1	24.3	24.3

Source: Labor Force Survey for part-time work and monthly families benefits files for participation to paid-leave benefits (*Allstat* and *Basestat* from CNAF). *Note*: The table compares the share of fathers and mothers working part-time estimated with the labor force survey with their share taking at least one month of paid part-time parental leave estimated with families benefits data. Panel A considers first-time parents while panel B considers second-time parents.

Table 7: Differences in response of fathers to the reform across households

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Baseline	Father independent worker	Local pre-reform participation rates of fathers in department		Pre-birth quartile in the earning distribution of the father			
			Above median	Below median	Q1	Q2	Q3	Q4
	A. First-time parents							
After reform	0.004***	0.009**	0.008***	0.001	0.004***	0.004	0.010***	0.0001
	(0.001)	(0.004)	(0.002)	(0.002)	(0.001)	(0.003)	(0.003)	(0.003)
N	23,349	1,837	46,540	46,857	23,349	23,345	23,353	23,350
	B. Second-time parents							
After reform	0.011***	0.020***	0.020***	0.003	0.006**	0.013***	0.013***	0.013***
	(0.002)	(0.004)	(0.002)	(0.002)	(0.003)	(0.004)	(0.004)	(0.003)
N	121,987	10,664	60,276	61,711	30,075	30,737	30,789	30,386

Source: Monthly families benefits files (*Allstat* and *Basestat* from CNAF). *Note*: The Table shows regression results from difference-in-differences models in which the dependent variable is the probability to take at least one month of paid-parental leave during the first year of age for first-time parent and the third year of age for second-time parents. Panel A and B report estimates for first- and second-time parents, respectively. Column 1 reports the baseline estimate for the entire population. Column 2 report the estimates performed separately for fathers that are categorized as independent workers. Columns 3 and 4 reports separate estimates depending on whether the households is living in a department where fathers take above or below median leave one year before the reform. Columns 5 to 8 reports separate estimates for groups categorized with respect to the quartile of the initial earning distribution of the father two years before birth. Robust standard errors are reported in parenthesis. (*), (**), and (***) denote statistical significance at, respectively, 10%, 5%, and 1% level.

Table 8: Effects of the reform on the income of second time parents

Outcomes	Prob. parental leave in the third year		Paid benefits of parental leave		Fathers' Labor Earnings		Mothers' Labor Earnings		Unemployment benefits of mother	
	A. ITT Estimates									
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
After reform	-0.286***	-0.282***	-819.2***	-896.4***	103.2	264.4	966.3***	1 047.1***	237.0***	236.8***
	(0.003)	(0.005)	(43.7)	(60.2)	(142.2)	(198.7)	(119.1)	(165.7)	(20.9)	(28.2)
N	61,716	125,056	61,716	125,056	61,716	125,056	61,716	125,056	61,716	125,056
	B. LATE of not taking parental leave in the third year using the reform as instrument									
Parental leave			-2,725.4***	-2,942.9***	609.5	1,127.5	3,480.0***	3,657.9***	829.0***	858.8***
			(158.9)	(222.3)	(501.5)	(716.2)	(422.1)	(598.5)	(73.5)	(101.4)
N			55,742	111,820	55,742	111,820	55,742	111,820	55,742	111,820
Estimation method	Simple Diff.	Diff-in-Diff	Simple Diff.	Diff-in-Diff	Simple Diff.	Diff-in-Diff	Simple Diff.	Diff-in-Diff	Simple Diff.	Diff-in-Diff

Source: Monthly families benefits files (*Allstat* and *Basestat* from CNAF). *Note*: The Table shows regression results in which the dependent variable is the probability of taking a parental leave (columns 1-2), the amount of paid parental leave (3-4), the labor earnings of fathers (5-6), mothers (7-8) and the unemployment benefits of the mother (9-10). Outcomes are all defined using the third after the birth of the child. Panel A shows intent-to-treat estimate of the effect of the reform, Panel B reports LATE estimates of the effects of the parental leave using the reform as an instrument for taking a parental leave. Robust standard errors in parenthesis. (*), (**), and (***) denote statistical significance at, respectively, 10%, 5%, and 1% level.

Table 9: Heterogeneous Effects of the Reform on Second-Time Parents

Sample	All households	Quartile of mothers' earnings two years before birth				
		No Earnings	Q1	Q2	Q3	Q4
	A. Effect of the reform on Take-up of paid leave by the mother (third year)					
After reform	-0.303***	-0.132***	-0.329***	-0.433***	-0.449***	-0.244***
	(0.003)	(0.005)	(0.008)	(0.008)	(0.008)	(0.008)
	B. LATE of not taking a parental leave in the third year on the indicated outcomes					
	B1. Paid leave benefits					
After reform	-2,645.4***	-3,961.8***	-3,154.0***	-2,724.1***	-1,899.8***	-2,086.7***
	(157.8)	(840.3)	(320.7)	(176.3)	(147.3)	(269.4)
	B2. Earnings of mother					
After reform	3,516.5***	2,035.2***	2,849.5***	4,713.0***	3,352.2***	2,669.8**
	(420.1)	(705.8)	(470.3)	(380.2)	(363.0)	(1,305.7)
	B3. Earnings of father					
After reform	520.7	1,331.2	-1,053.0	870.1	1,057.3	582.4
	(496.8)	(1,991.0)	(978.1)	(678.0)	(663.9)	(1,581.2)
	B4. Unemployment benefits					
After reform	764.3***	1,136.1***	1,606.2***	1,073.8***	283.2***	-323.7
	(71.9)	(176.8)	(147.9)	(123.1)	(100.3)	(302.9)
	B5. Total Household Income					
After reform	2,032.3***	698.4	100.2	4,315.1***	2,996.8***	597.7
	(557.7)	(1,838.0)	(976.6)	(715.9)	(645.8)	(1,195.3)
N	50,584	13,387	9,300	9,302	9,297	9,298
Estimation method	Simple-Diff	Simple-Diff	Simple-Diff	Simple-Diff	Simple-Diff	Simple-Diff

Source: Monthly families benefits files (*Allstat* and *Basestat* from CNAF). *Note*: The Table shows simple-differences regression results of the effects of the reform on the probability of taking a parental leave in the third year after birth (panel A). Other panels reports LATE estimates of the effects of not taking a parental leave on the indicated outcomes measure in the third year after birth. Reported outcomes are the amount of paid parental leave (panel B1), the earnings of the mother (panel B2), earnings of the mother (panel B3), the unemployment benefits of the mother (panel B4), and the total income of the household (panel B5). Robust standard errors in parenthesis. (*), (**), and (***) denote statistical significance at, respectively, 10%, 5%, and 1% level.

Table 10: Effect of the reform on additional outcomes on second-time parents

Outcome	(1) Divorce or separation	(2) Number of children	(3) Pregnancy	(4) Same social security code
After reform	0.002	0.004	0.0002	0.007***
	(0.002)	(0.003)	(0.0002)	(0.002)
N	57,217	57,217	57,217	62,749
Method	Simple Diff.	Simple Diff.	Simple Diff.	Simple Diff.

Source: Monthly families benefits files (*Allstat* and *Basestat* from CNAF). *Note*: The Table shows simple difference regressions using a sample of households with births in December 2014 and January 2015 estimating the effects of the reform on these outcomes the third year after birth. We consider the probability to be divorced or living as a single adult member (column 1), the number of children (column 2), the probability of pregnancy (column 3), the probability of keeping the same family benefit administration code (column 4). (*), (**), and (***) denote statistical significance at, respectively, 10%, 5%, and 1% level.

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