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When Mothers Out-Earn Fathers: Effects on Fathers' Decisions to Take Paternity and Parental Leave

Paola Biasi
Maria De Paola
Francesca Gioia

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Agar Brugiavini

When Mothers Out-Earn Fathers: Effects on Fathers' Decisions to Take Paternity and Parental Leave

Paola Biasi
(National Social Security Institute)

Maria De Paola
(University of Calabria)

Francesca Gioia
(University of Milan)

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Quando le madri guadagnano più dei padri: effetti sulle decisioni dei padri di fruire del congedo di paternità e parentale

Paola Biasi[a], Maria De Paola[a1], Francesca Gioia[b]

[a] *Istituto Nazionale della Previdenza Sociale*

[b] *University of Milan*

Sommario: Questo studio analizza l'influenza della norma sociale del capofamiglia maschile sulle decisioni dei padri in merito alle responsabilità di cura dei figli. Utilizzando dati amministrativi dell'INPS per il periodo 2013-2023, esaminiamo come la fruizione da parte dei padri del congedo di paternità (interamente retribuito) e del congedo parentale (parzialmente o non retribuito) vari in base al fatto che la partner sia o meno il principale percettore di reddito. I nostri risultati indicano che, in linea con l'ipotesi del "doing gender", i padri sono meno propensi a usufruire del congedo di paternità quando le mogli guadagnano più di loro. Al contrario, questa riluttanza scompare nel caso del congedo parentale, che comporta costi economici più elevati: ciò suggerisce che l'onere finanziario può superare il desiderio di conformarsi ai ruoli di genere tradizionali. Per rafforzare questi risultati, sfruttiamo due riforme normative esogene attraverso disegni quasi-sperimentali. In primo luogo, applichiamo un disegno di Differenza nella Discontinuità (Difference-in-Discontinuity), che utilizza la variazione nella durata massima del congedo di paternità. Questa riforma, riducendo verosimilmente lo stigma sociale legato alla fruizione del congedo da parte dei padri, ha un impatto maggiore tra i padri in famiglie dove la madre è la principale percettrice di reddito, fornendo ulteriore evidenza del ruolo delle norme di genere. In secondo luogo, utilizziamo un disegno di Discontinuità Regressiva (Regression Discontinuity Design) per valutare una riforma che ha aumentato la percentuale di retribuzione del congedo parentale, abbassando quindi il costo economico del non conformarsi al modello di specializzazione di Becker. In linea con le nostre aspettative, osserviamo una diminuzione dell'uso del congedo tra i padri in famiglie con madre breadwinner, a conferma della persistente influenza delle norme legate all'identità di genere quando i costi economici si riducono.

Keywords congedo di paternità, congedo parentale, norme di identità di genere

JEL Codes: D10, J12, J16

[1] Corresponding author: M. De Paola, Istituto Nazionale della Previdenza Sociale (INPS). Roma, Italia, e Dipartimento di Economia, Statistica e Finanza, G. Anania, - Università della Calabria, Via Ponte Bucci, 87036 Arcavacata di Rende (CS), Italy. E-mail: m.depaola@unical.it.

Email:: paola.biasi@inps.it (Paola Biasi); m.depaola@unical.it (Maria De Paola), francesca.gioia@unimi.it (Francesca Gioia).

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When Mothers Out-Earn Fathers: Effects on Fathers' Decisions to Take Paternity and Parental Leave

Paola Biasi[a], Maria De Paola[a1], Francesca Gioia[b]

[a]*National Social Security Institute*

[b]*University of Milan*

Abstract: This study investigates the influence of the male breadwinner norm on fathers' decisions regarding childcare responsibilities. Using administrative data from the Italian National Social Security Institute (INPS) for the period 2013-2023, we examine how fathers' uptake of paternity leave (fully subsidized) and parental leave (partially or not subsidized) varies depending on whether their partner is the primary earner. Our findings indicate that, consistent with the "doing gender" hypothesis, fathers are less likely to take fully subsidized paternity leave when their wives earn more than they do. In contrast, this reluctance disappears for parental leave, where taking time off involves higher economic costs, suggesting that the financial burden can outweigh the desire to conform to traditional gender roles. To further validate these findings, we exploit two exogenous policy changes using quasi-experimental designs. First, we apply a Difference-in-Discontinuity design that leverages variation in the maximum duration of paternity leave. This reform, arguably reducing the social stigma of paternal leave-taking, has a stronger impact among fathers in female-breadwinner households, providing additional evidence of the role of gender norms. Second, we use a Regression Discontinuity Design to evaluate a policy change which increased the replacement rate for parental leave and thus lowered the economic cost of deviating from the Becker specialization model. In line with our expectations, we find a decrease in leave uptake among fathers in female-breadwinner households, underscoring the prevailing influence of gender identity norms when economic costs are reduced.

Keywords: paternity leave, parental leave, gender identity norms

JEL Codes: D10, J12, J16

Corresponding author: M. De Paola: Italian National Institute of Social Security (INPS) and Department of Economics, Statistics and Finance "Giovanni Anania", University of Calabria, Via Ponte Bucci, 87036 Arcavacata di Rende (CS), Italy. E-mail: m.depaola@unical.it.

Email addresses: paola.biasi@inps.it (Paola Biasi); m.depaola@unical.it (Maria De Paola), francesca.gioia@unimi.it (Francesca Gioia).

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1. Introduction

Although women have achieved important gains in labor market outcomes in recent decades, income inequality between men and women is still considerable: women in the EU earned 12.7% less per hour than men on average in 2021 and this gender pay gap had barely changed in the last decade (European Commission, 2022). Inequality in partners' contributions to household income has important consequences for many couple's decisions, including the division of unpaid domestic work. In 2016, 92% of women in the European Union took care of their children daily, compared with 68% of men. In Italy, the average time dedicated to unpaid work each day is 3h08' higher for women than for men (ISTAT, 2019).

To explain the persistence of gender gaps in occupational choices, earnings and domestic and childcare chores, researchers have recently focused attention on the role played by gender identity norms in dictating appropriate behavior for individuals based on their gender. These norms traditionally designate the role of *breadwinners*, those responsible for the financial needs of the family, to fathers and the role of *caregivers*, those with the main responsibility for domestic chores, to mothers. These norms penalize deviations from prescribed behavior and influence rewards tied to economic decisions (Akerlof and Kranton, 2000).

According to the "doing gender" framework (West and Zimmerman, 1987), individuals tend to adopt behaviors tailored to their gender identity. Thus, when a woman's earnings surpass those of her male partner, she diverges from the traditional homemaker role and often tries to compensate for this departure by shouldering a more substantial portion of the childcare responsibilities and household chores (Brines, 1993, 1994). Similarly, men who deviate from the conventional breadwinner role tend to decrease their engagement in domestic tasks. This phenomenon, known as the "gender deviance neutralization hypothesis", is in contrast with the prediction of the comparative advantage and marital specialization models (Becker, 1965, 1991), whereby the division of both paid and unpaid work should hinge upon the income potential of each partner, designating the partner with the highest income potential, whether it be the husband or the wife, as the primary breadwinner and ascribing most of the chores related to parenthood to the partner who has the lowest opportunity cost in terms of forgone expected earnings.

In this paper, we investigate whether the "gender deviance neutralization hypothesis" affects fathers' behavior in terms of childcare responsibility and, if so, whether the impact varies with the economic costs of adhering to gender identity norms. More specifically, we examine whether the mother being the primary breadwinner affects the father's decision to take paternity leave and influences how parental leave is distributed in couples who choose to use this family support.

Our research examines the complex interplay between economic factors and gender norms in shaping the division of household labor within families. We hypothesize that couples may prioritize traditional gender roles, especially when the costs of doing so are small (or not immediate) and the social consequences of deviating from

these roles are significant. Conversely, when the economic costs of adhering to gender norms are substantial (and immediate and easily calculated by the partners), childcare responsibilities might be shared in accordance with economic rationale, disregarding traditional gender roles.

We test our hypothesis by leveraging specific features of the Italian welfare system, where, after childbirth, fathers can take both a fully paid paternity leave and a partially (or not at all) paid parental leave. Paternity leave does not entail any immediate economic cost, as it is fully paid, and is not transferable to the mother. Despite this, only about 60% of fathers in Italy made use of paternity leave in 2023. This low uptake might, at least partially, be related to social stigma, whereby fathers feel that taking paternity leave is socially unacceptable or not masculine as caregiving is predominantly seen as the mother's responsibility. This sentiment may be exacerbated in families where the traditional male breadwinner model is reversed because the mother earns more than the father. In such cases, avoiding taking paternity leave might be a way for fathers to reassert traditional gender roles within the couple. The decision to take paternity leave or not might also involve the consideration of other costs, for example fathers taking the leave might appear less committed to their jobs and this could potentially hinder their career progression. However, such costs should not vary on the basis of whether the father is the primary or secondary earner in the household, nor should they be affected by whether the leave is fully subsidized or not.

In contrast to paternity leave, parental leave in Italy is available to both parents and is only partially paid. For children of 6 years of age or under, the parent taking the leave receives 30% of his/her average daily wage, while, if children are aged between 6 and 12, the leave is unpaid. Given these regulations, the financial cost to the family is minimized when the leave is taken by the lower-earning member of the couple. In Italy (just as in many other developed countries), the second earner is predominantly (in about 70% of couples) the wife and this may contribute to the very low take up of parental leave by fathers. The remaining couples, those characterized by having a breadwinner mother, face an important trade-off: the violation of the male-as-the-breadwinner norm might still induce fathers to try to rebalance traditional gender roles by avoiding taking the leave (Bittman et al., 2003; Brines, 1993, 1994; Hochschild and Machung, 1989; Greenstein, 2000), but the decision to allocate the leave to the primary earner implies a direct and more significant economic cost for the family. Consequently, this raises the question of whether traditional gender roles are more influential than economic factors in determining the division of household chores within heterosexual couples or whether economic motives might outweigh gender identity norms.

The dynamics described above are presented more formally in two simple models, which describe the choice of whether to take paternity and parental leave, and empirically tested using various data sources provided by the Italian Social Security Institute (INPS). These data allow us to identify, for the period 2013-2023, both the number of eligible fathers who take paternity leave and how parental leave is allocated within couples, and to control for a rich set of demographics and working characteristics of the father, the mother and the child.

We employ three different methodological approaches to investigate whether fathers in female-breadwinner households are less inclined to engage in childcare as a strategy to "neutralize gender deviance", and to assess the extent to which decisions about the division of household labor in such families reflect a trade-off between adherence to gender norms and economic rationality. First, we address potential endogeneity in parents' earnings by replacing the actual probability of having an out-earning mother with the potential probability computed by constructing a potential income distribution drawn from the earnings distribution of employed women in the mother's demographic group, as in Galván (2022). The potential probability of having an out-earning mother is then used to examine the effect of violating the male-breadwinner norm on fathers' uptake of paternity leave - which entails no direct economic cost - and on couples' decisions to allocate parental leave to the father, thereby allowing an assessment of the trade-off between gender norms and economic incentives. Our results align with the theoretical predictions. In fact, we find that, when the couple has a new child, the father is significantly less likely to take paternity leave if the probability that the mother out-earns the father increases. Nevertheless, when examining parental leave, we see that parents tend to allocate it to minimize immediate economic losses rather than to conform to gender identity norms: when the probability that the mother earns more than the father rises, increasing the relative costs associated with her taking leave, the probability that the father will take parental leave increases. In addition, we find that the higher the salience of the gender identity norm (measured by the share of women in the municipal council, the probability of having a female mayor and the local endorsement of traditional gender roles based on responses to the European Values Survey), the stronger the negative effect of gender deviance neutralization on fathers' uptake of paternity leave, and the weaker the influence of economic incentives on their likelihood of taking parental leave when the mother is the primary earner.

The second methodological approach exploits quasi-experimental variation provided by a series of staggered reforms that gradually extended the duration of fully paid paternity leave from 1 to 10 days. Each reform received substantial media coverage, which not only increased awareness of paternity leave entitlements but also helped shape public discourse around the importance of paternal involvement in early childcare. Using a Difference-in-Discontinuity Design, in line with our model's predictions, we find that the extension of paternity leave had a positive and statistically significant impact on leave uptake, particularly among fathers in female-breadwinner households. This effect is plausibly driven by a reduction in the social penalties associated with deviating from traditional gender roles, as societal recognition of paternal caregiving increased.

Finally, the third methodological approach is a Regression Discontinuity Design that allows us to test the robustness of our findings concerning the role of immediate economic costs in shaping behavior. We exploit a sharp discontinuity introduced by the 2023 Italian Budget Law. This reform raised the replacement rate for one month of parental leave from 30% to 80% of the salary. Consistent with the prediction of our theoretical model, we find that this policy - by substantially lowering the economic cost of conforming to traditional gender norms - led to a significant decrease in fathers' parental leave take-up in female-breadwinner households. This suggests

that when the financial burden of adhering to conventional roles is reduced, couples may be more inclined to reinforce rather than challenge existing gender norms.

The paper is structured in 10 parts. Section 2 discusses how our work relates to existing literature. Section 3 describes the institutional context. Section 4 presents a simple theoretical model reflecting our assumptions. Section 5 explains the three methodological approaches adopted. In Section 6, we describe the data and present the descriptive statistics. Section 7 shows the results obtained when replacing actual earnings with potential earnings. In Section 8 we present the findings from our analysis of how extensions in the duration of paternity leave influence fathers' take-up behavior. Section 9 reports results of the study of the impact of the policy reform that reduced the economic cost of parental leave. Section 10 concludes the paper by summarizing our main findings and discussing their implications.

2. Contribution to Literature

Our work contributes to three strands of literature. First, we expand on the emerging literature that studies how gender norms drive individuals' behavior. According to this literature, gender norms are internalized during socialization and influence many decisions, including the division of paid and unpaid work in heterosexual couples. Several studies observed that women who earned more than their husbands tended to perform more household chores (Bittman, et al., 2003 in Australia; Evertsson and Nermo, 2004 in the United States) or a greater share of household tasks (Greenstein, 2000 in the United States) compared to women whose husbands earned more or had similar incomes. This phenomenon was notable because it contradicted traditional expectations that higher earning individuals would contribute less to household labor and corroborated the gender deviance neutralization hypothesis.

In a seminal paper, Bertrand et al. (2015) indicate gender identity norms, specifically the traditional roles of men as primary earners and women as primary caregivers, as the explanation for the discontinuity in the relative income distribution within married couples in the United States at the point where the wives start earning more than their husbands.[2] They suggest that when women's roles shift from being that of a female caregiver to that of

[2] The same approach has been applied to study the relative income distribution between spouses in different countries. Doumbia and Goussé (2021) find evidence of a significant discontinuity at the 50% threshold in the distribution of a wife's relative income in Canada. Codazzi et al. (2018) and Sprengholz et al. (2022) find evidence of a discontinuity in Brazil and Germany, respectively. On the other hand, Hederos Eriksson and Stenberg (2022) do not find any discontinuity in Sweden and both they and Binder and Lam (2020) question the existence of the discontinuity in the United States by highlighting the role of the presence of same-income earners, which creates a mass point at the 0.5 threshold, and suggesting that the continuity test should be made on data sets with a very large number of observations and after dropping same-income earners. See also Kuehnle et al. (2021).

a female breadwinner, they react by reducing their labor supply in an attempt to avoid gender role reversals in earnings.[3]

Using data on couples' labor supply in both the formal and informal employment sectors in Uruguay, Galván (2022) finds that the greater the likelihood of a wife earning more than her husband, the lower her probability of participating in formal employment and the greater the amount of housework she performs. In a related study using U.S. data, Galván and García-Peñalosa (2025) show that following the birth of the first child, housework increases significantly more for women who are the primary earners. This suggests that the presence of children may intensify the pressure on women to compensate for violating the male breadwinner norm by more closely conforming to traditional gender expectations around caregiving.[4] Grönqvist et al. (2025) examine a Swedish teacher wage reform that raised average salaries by about 15% and reduced the within-couple gender wage gap by roughly 25%. They show that women significantly decreased their use of temporary parental leave (TPL), consistent with higher opportunity costs of time, while men reduced TPL only marginally. Overall household leave days declined, but fathers partly offset this by providing more care through working from home. Ichino et al. (2025) examine how gender norms influence parental childcare in response to changes in mothers' and fathers' relative net pay. Using Swedish tax reforms, they estimate substitution elasticities for native and immigrant couples. Couples from more conservative cultural backgrounds tend to shift childcare more to mothers following a reduction in the father's tax rate and are less likely to reallocate childcare to fathers after a reduction in the mother's tax rate, thereby reinforcing traditional gender roles. Finally, gendered expectations also seem to affect other decisions that influence household income; for example, Giommoni and Rubolino (2024) study an Italian policy that grants a large tax credit to the main earner in a couple when the second earner reports income below a given threshold and find large bunching at the tax credit cutoff point among second-earner women, but no effect among second-earner men.

We contribute to this literature by showing that when competing economic motives in the form of immediate losses come into play, the gender norm may be less salient and the desire to compensate for its violation less pronounced. In addition, while most of the literature looks at the behavior of mothers, we focus on fathers.

[3] Zinovyeva and Tverdostup (2021) show evidence of a drop of the same magnitude as in the United States (0.5) in the distribution of households according to the female share of total earnings in Finland. However, instead of a gender identity norm, they provide an alternative explanation: the discontinuity emerges as a result of the presence of co-working spouses declaring the same income (mostly self-employed individuals or couples who work within the same firm) and it is associated with an increase in the relative earnings of women, rather than a decrease as predicted by the norm.

[4] Using data from China, Zhao et al. (2022) investigate the relationship between gender identity norms and wives' relative income within households. They show a negative correlation between both husbands' and wives' traditional gender identity and the wife's relative income. Using Danish data, Foged (2016) shows that couples are more likely to migrate when household earnings potential is disproportionally concentrated in one partner, yet they respond equally to male and female advantage. Other papers suggest that relative income within couples has little predictive power over childcare time allocation (Siminski and Yetsenga, 2022; Jessen et al., 2024; Hancock et al., 2025; Kleven et al., 2019).

Second, we add to the literature analyzing family policies aimed at enhancing fathers' participation in child care through paid and unpaid leave. This literature typically shows that leave has small or no effects on gender inequality. For instance, Kleven et al. (2020) examine the joint impact of parental leave and child care subsidies in Austria on reducing gender inequality in the labor market and find that both policies had virtually no impact. By using Norwegian register data and analyzing two parental leave reforms, Cools et al. (2015) find that, while a paternal leave quota increases the share of men taking paternity leave, it does not change the traditional allocation of parents' labor supply. Ekberg et al. (2013) find that the introduction of a paternity-leave quota in Sweden did not significantly affect the long-term wages and employment of either fathers or mothers. On the other hand, Rege and Solli (2013) find that this type of quota in Norway negatively affected fathers' future earnings, suggesting an increase in their childcare involvement. Also, Patnaik (2019) studying the Quebec Parental Insurance Program, which improved compensation and introduced a 5-week "Daddy quota" of leave for fathers, shows that this policy not only exerted a strong positive impact on fathers' participation, but also had a large and persistent impact on gender dynamics within households. Recently, using Danish data, Jørgensen and Søgaard (2024) provide evidence of parents' willingness to pay for a gender-traditional allocation of leave, finding that a significant proportion of fathers take little or no leave, even in cases where reallocating leave from the mother to the father could enhance the household's current disposable income.[5]

Our study offers new evidence on the use of paternity and parental leave in Italy, showing that gender identity norms, triggered by the mother's relative income power with respect to the father's, negatively affect the father's decision to take paternity leave and contribute to childcare. However, when the economic cost of adhering to traditional gender norms becomes particularly high, as it does with partially subsidized parental leave, fathers in households where the mother is the primary breadwinner are more likely to take the leave. In addition to comparing fathers' involvement under two types of leave (one without and one with economic costs), we also exploit two policy reforms: one involving a gradual extension of paternity leave duration, and the other increasing the parental leave replacement rate, thereby reducing the economic cost of allocating leave to the breadwinner mother. Our results show that the extension of paternity leave led to an increase in fathers' participation, particularly in households where the female partner out-earns the male. In contrast, the increase in the replacement rate significantly reduced fathers' take-up of parental leave in female-breadwinner households. These findings highlight that the impact of policies aimed at increasing fathers' involvement in child care may vary depending on the relative economic power within the couple and the influence of gender identity norms.

[5] Lassen (2021) shows that the 2002 Danish parental leave reform, which granted households greater flexibility in allocating extended parental leave, led to a substantial increase in mothers' leave uptake, while fathers' participation remained largely unchanged. Other studies have examined the broader effects of parental leave policies on outcomes such as fertility and marital stability (Farré and González, 2019; Raute, 2019; Avdic and Karimi, 2018).

As a third contribution, our research offers new insights into the child penalties literature that studies the impact of parenthood on parents' labor market outcomes and identifies parenthood as a pivotal moment for relative earnings, particularly for mothers, who experience a sharp drop in labor-force participation, working hours and wages (Angelov et al. 2016; Kleven et al. 2019; Sieppi and Pehkonen, 2019; de la Vega, 2022; Cortes and Pan, 2023). Within this context, family policies play a crucial role in shaping economic outcomes for both men and women in the labor market. Specifically, the introduction of quotas for fathers with newborn children in parental leave programs aims to modify fathers' behavior by encouraging greater involvement in childcare, with the broader goal of mitigating the negative labor market effects typically experienced by mothers. We show that the likelihood of allocating parental leave to the father increases when there is a trade-off between the immediate reduction in the contractual salary of the spouse taking parental leave and the costs associated with deviating from traditional gender norms in households where there are breadwinner mothers. This shift may contribute to reshaping societal norms and attitudes regarding gender roles. Indeed, if this greater involvement of fathers in childcare can initiate a virtuous cycle that diminishes the salience of gender norms over time, it might also lead to a reduction in the child penalties faced by mothers.

3. Institutional context

In Italy, there are three main policies to support parents and facilitate the reconciliation of work and family life: maternity leave[6], paternity leave and parental leave. In our paper, we focus on the latter two policies, as they both involve a degree of parental choice and directly concern fathers. By contrast, maternity leave is compulsory and therefore less informative about behavioral responses to social norms and economic incentives.

Paternity leave is a leave to be used by male dependent workers[7] in the period between the two months prior to the expected date of birth and the five months following the event of birth, adoption, foster care or temporary placement. Such leave for the employed father was established on an experimental basis for the years 2013-2015 (Law n. 92, 2012) as a measure aimed at generating a more equitable distribution of childcare between men and women and at establishing an early bond between father and child. Initially, the duration of the leave was set at a single day, but, following various legislative interventions, it was gradually lengthened until it reached the current duration of 10 days. In detail, the duration of the leave was increased to 2 days in 2016, to 4 in 2018, to 5 in 2019,

[6] Maternity leave is a five-month period of mandatory leave from work acknowledged to female workers. During the period of maternity leave, the worker is entitled to receive an allowance equal to 80% of the average global daily wage calculated on the basis of the last pay period prior to the start of the maternity leave, usually the last month of work preceding the month in which the leave begins.

[7] While paternity leave was introduced in 2013 for workers employed in the private sector, this leave was only made available to workers employed in the public sector from August 2022.

to 7 in 2020, and to 10 in 2021.[8] Paternity leave is a father's autonomous right and, therefore, it cannot be transferred to the mother. For the days of paternity leave, the father is entitled to receive a daily allowance equal to 100% of his salary.

Parental leave is an optional period of time off work available to parents (D.Lgs. n. 151/2001) aimed at offering them the opportunity to care for their child. It is an individual entitlement that lasts six months per parent for a total period between the two parents that cannot exceed ten months[9] unless the working father abstains from work for a period of at least three months, in which case, the total length of the leave can be extended to eleven months. The father can extend his leave for up to seven months.[10]

Parental leave can be taken at any time within the first 12 years of the child's life[11] and can be taken as a single leave period or multiple leave periods.

When taking parental leave, parents are entitled to a compensation equal to 30% of their average daily pay, calculated on the basis of their pay in the month preceding the beginning of the period of leave, for a maximum total period (mother and/or father) of six months if the leave is taken in a defined child age range (in the period considered by our analysis, this age range was 0-3 years from 2013 to 2014 and 0-6 years from 2015). If parental leave is taken when the age of the child is outside this range, the parent taking the leave is not entitled to any compensation. Given that parental leave is either unpaid or compensated only partially and proportionally to earnings, the financial cost of taking leave is minimized when it is taken by the lower-earning parent.

The 2023 Budget Law introduced a significant policy change by increasing the parental leave benefit from 30% to 80% of the employee's wage for one month of leave, to be taken within the first six years of the child's life - or within six years of the child's entry into the family in cases of adoption or foster care, and in any event, before the child reaches the age of majority. This provision applies to employees who completed their maternity or, alternatively, paternity leave after December 31, 2022.[12]

4. Theoretical model

[8] In Section 8, we take advantage of these policy reforms to investigate whether the responses of fathers differed between male-breadwinner and female-breadwinner households.

[9] This total period can even be used by parents simultaneously, but this solution is rarely adopted.

[10] Single employed parents (fathers or mothers) can claim parental leave for a maximum continuous or partial period of ten months.

[11] The same rights as natural parents are extended to dependent workers who are adoptive or foster parents. In this case, parental leave can be claimed within the first 12 years of the child's entry into the family, regardless of the age of the child at the time of adoption or foster care.

[12] In Section 9, we take advantage of this policy reform, which reduced the cost of having the leave claimed by the parent with higher earnings, to investigate whether the responses of fathers differed between male-breadwinner and female-breadwinner households.

We represent the decision to take paternity and parental leave using a simple theoretical framework that highlights the role of parents' relative incomes

We assume that the father, as a benevolent household head, maximizes the family's utility, which includes the well-being of all family members (Becker, 1974). Given that paternity leave is fully subsidized, it will be taken only if the utility it provides to the family exceeds that obtainable in its absence:

$$w_{Fa} + w_{Mo} + B - \beta max\left(\frac{w_{Mo}}{w_{Fa}} - 1; 0\right) - c \geq w_{Fa} + w_{Mo}$$

where w_{Fa} and w_{Mo} are the monthly earnings of father and mother, respectively; *B* is the benefit the family receives from the father's staying at home with the child; $\beta max\left(\frac{w_{Mo}}{w_{Fa}} - 1; 0\right)$ is the cost of deviating from the gender norm which only comes into play if there is a breadwinner mother in the couple[13], and increases with the relative income capacity of the mother depending on β, the sensibility to gender norms assumed to be increasing in the salience of the gender norm. *c* represents any other source of cost that arises when the father takes the leave but is not related to the relative earning capacity of the mother.

It is easy to show that in couples where the mother earns less than the father, the probability of taking the leave does not depend on the relative income of the mother, but only on *B* being higher than *c*. Instead, when gender identity norms are activated by there being displaced roles within the couple because the mother is the breadwinner, the father's likelihood of taking paternity leave decreases as the relative income capacity of the mother increases at a rate that depends on his sensitivity to gender norms.

Moreover, an increase in B (which, as discussed in Section 5.2 may arise from the extended duration of paternity leave) has a similar effect on both female- and male-breadwinner households. However, the reduction in β, the weight assigned to the cost of deviating from the identity gender norm (produced by the same reform), disproportionately affects couples with a female breadwinner.

Regarding parental leave, we consider how it is allocated between the partners in couples that have decided to make use of this benefit. As before, the decision is made to maximize family utility, which, in this case, entails a comparison of the household utility when the father takes the leave and when the mother takes it:

$$w_{Fa} + w_{Mo} + B_{Fa} - \gamma w_{Fa} - \beta max\left(\frac{w_{Mo}}{w_{Fa}} - 1; 0\right) - c_{Fa} \geq w_{Fa} + w_{Mo} + B_{Mo} - \gamma w_{Mo} - c_{Mo}$$

where γw_{Fa} and γw_{Mo} represent the economic cost of taking parental leave, that is the reduction (partial or full) in monthly earnings due to the days of leave, with $0 < \gamma \leq 1$. The benefits of staying at home with the child (*B*) are assumed to differ as a consequence of whether it is the mother or the father who takes the leave. The same applies to any other source of cost due to leave taking behavior (*c*), which is not connected with the relative earning capacity of the mother.

[13] Results do not change when, instead of assuming that the cost of deviating from the gender identity norm arises only in couples with a female breadwinner, we assume that this cost is simply higher in such couples.

It is easy to show that the leave will be taken by fathers only if:

$$B_{Fa} - B_{Mo} \geq \beta max\left(\frac{w_{Mo}}{w_{Fa}} - 1; 0\right) + \gamma(w_{Fa} - w_{Mo}) + (c_{Fa} - c_{Mo})$$

Therefore, in couples where the mother earns less than the father, an increase in the share the mother contributes to household income increases the probability that the leave will be taken by the father. On the other hand, in households where there is a breadwinner mother, the effect of the mother's contributing a higher share to household income on the probability that the leave is taken by the father depends on the trade-off between the cost of deviating from the gender norm and the immediate economic cost due to leave taking. Furthermore, a decrease in γ, resulting, for example, from the change in the parental leave replacement rate introduced in Italy in 2023, is expected to increase leave-taking among higher-earning fathers, while reducing the probability that the father will take the leave in households where the mother is the primary earner.

5. Methodology

In order to investigate how gender identity norms, which assign the role of *caregiver* to the mother and the role of *breadwinner* to the father, can affect couples' decisions regarding childcare duties, and whether this effect varies with the economic costs of adhering to these norms, we adopt three different methodologies.

The first methodological approach uses the predicted probability that the mother out-earns the father – instead of actual relative income of the parents – to address endogeneity concerns arising from having a female-breadwinner partner. We examine whether the presence of a potentially higher-earning mother affects fathers' decisions to take paternity and parental leave, exploring the roles of gender norms and economic incentives.

The second approach exploits the quasi-experimental variation introduced by the staggered extensions of paternity leave duration to identify, by means of a Difference-in-Discontinuity Design, the causal effects of shifts in social norms due to heightened visibility and legitimacy of paternal involvement.

The third methodological approach takes advantage of the sharp increase in the parental leave replacement rate enacted by the 2023 Budget Law to implement a Regression Discontinuity Design and provide causal evidence - through reduced financial costs - on the role of economic incentives on fathers' leave-taking behavior.

5.1 Methodology 1: Potential earnings

The use of father's and mother's income to compute whether the mother out-earns the father may bias our estimates if unobservable variables that determine selection in the marriage market also affect fathers' propension to

contribute to childcare.[14] For example, a man who marries a woman with higher employment and earnings perspective may be less sensitive to gender role norms and, therefore, more inclined to take leave and help the mother in her career choices even without concurrent earning losses. This would result in an upward bias in our estimates, potentially diminishing the negative effect expected under the gender neutralization assumption or amplifying the positive effect in line with Becker's comparative advantage theory. However, men who marry higher-earning women may also be more inclined to delegate responsibility, including childcare, to their partner. If so, our estimates may be biased downward.

To address this issue, we compute the probability that a female's earnings would exceed the father's by using the same methodology adopted by Galván (2022). We consider all the women employed in the private sector with positive earnings and assign each woman to a demographic group defined by age (six groups: 18-25, 26-33, 34-41, 42-49, 50-57 or 58-65), nationality (Italian, foreign), area of residence (north, center or south) and year. Then, for $p \in \{5, \dots, 95\}$, we define y_i^p as the p^{th} percentile of earnings among working woman in the mother's demographic group in the year of childbirth when studying paternity leave and in the year of leave claiming for parental leave. Using these values, we construct the probability that the mother earns more than the father as $\Pr MotherMore_i = \frac{1}{19}\sum_p 1_{\{y_{iMo}^p > y_{iFa}^o\}}$, where y_{iFa}^o is the father's observed monthly earnings, and estimate the following model:

$$Y_{it} = \beta_0 + \beta_1 PrMotherMore_{it} + \sum_{p=1}^{19} \beta_2^p Mother\ y^p{}_{it} + \beta_3 X_{it} + \beta_4 Fa_{it} + \beta_5 Mo_{it} + \lambda_t + u_{it} + \varepsilon_{it} \qquad [1]$$

where Y_{it} is our outcome variable which represents the probability that the father *i* will take paternity leave in year *t* or, alternatively, the probability that, in a couple using parental leave, the father *i* will claim it in year *t*; $Mother\ y^p{}_{it}$ are earnings in the mother's demographic group in each 5$^{\text{th}}$ percentile from the 5$^{\text{th}}$ to 95$^{\text{th}}$; X_{it} is a vector of control variables relating to the demographic characteristics of the children, the father and the mother (gender and age of the children[15], age and nationality of the father and the mother and residence of the father)[16]. Fa_{it} and Mo_{it} are vectors of control variables for the father and mother's working characteristics, respectively, (full-time employment, permanent contract, blue collar and mother's firm-size dummies). To mitigate potential concerns of endogeneity, we include in Fa_{it} the father's monthly earnings in *t*-1 instead of using the concurrent value. In addition to avoid that the effect of contingent situations (such as the use of parental leave, overtime work, etc.), instead of considering the effective average monthly earnings obtained by the worker, we consider the

[14] In Appendix A we report OLS estimates using father's and mother's income to compute whether the mother out-earns the father.

[15] Because paternity leave is available only within the first five months after childbirth, we include child age as a control variable only in the parental leave analysis.

[16] The residence of the father typically coincides with that of the mother.

"theoretical earnings" defined by the worker labor contract. In some specifications, we also add a control for the median of the mother's predicted income interacted with the father's monthly earnings in *t-1*. λ_t are fixed effects for the year and month of childbirth in the paternity leave estimates year and month of leave claiming fixed effects in parental leave estimates. We also include fixed effects for the firm that employs the father (u_{it}), which allow us to address endogeneity issues arising from fathers from a household with a breadwinner mother being selected into particular firms. The inclusion of father's firm fixed effects implies that we exploit any variation in a mother's relative earning capacity which may occur when fathers work in the same firm. ε_{it} is an error term.

Our parameter of interest is β_1 which represents the change in the probability that a father will take leave induced by a higher likelihood of having a female partner earning more than him. A positive value of the coefficient indicates that when the mother is more likely to out-earn the father, he is willing to contribute to childcare by taking leave, while a negative coefficient indicates that when the gender norm is violated because the mother is more likely to have the breadwinner role in the household, the father's probability of taking the leave diminishes. A negative coefficient on β_1 is consistent with the gender deviance neutralization hypothesis, while a positive coefficient would be consistent with the Becker comparative advantage model.

Our theoretical model predicts a negative coefficient for paternity leave, as any violation of traditional gender norms is not offset by economic gains. In contrast, the prediction for parental leave is less straightforward, as it hinges on whether traditional gender roles exert a stronger influence than economic considerations in shaping the division of household labor within heterosexual couples, or whether economic incentives are sufficient to override prevailing gender identity norms.

5.2 Methodology 2: Difference-in-Discontinuity Design

We offer additional evidence on the "doing gender" hypothesis in the context of a fully subsidized leave, that neutralizes economic incentives, by exploiting variation in mandatory paternity leave duration, which was initially set at one day and has been progressively extended over time to reach the current 10 days.

In the context of our theoretical model, the progressive extension of paternity leave duration may generate two key effects. The first applies to all fathers, irrespective of their partner's relative earning capacity, and consists in an increase in the perceived benefit B of taking leave. Specifically, as the available leave period lengthens, the potential advantages of the father's presence during the postnatal phase become more substantial.[17] Crucially, despite the extensions, fathers maintained full discretion over the number of days taken within the maximum entitlement. That is, the reform increased the upper limit of leave without mandating full uptake. Consequently, it

[17] When the available leave is very short, the fixed costs associated with accessing it - such as navigating bureaucratic procedures, obtaining necessary documentation, and coordinating with employers - can outweigh the perceived benefits, particularly for those only marginally inclined to take leave. As the duration increased, these fixed costs became relatively less burdensome, potentially tipping the balance in favor of utilization for some fathers.

was unlikely to deter fathers already inclined to take leave. On the contrary, by broadening the available options, the reform may have made leave-taking more appealing.

The second effect applies only to couples with a breadwinner mother and consists of a potential reduction in β, the social cost component, which captures the penalty associated with deviating from traditional gender norms. Each policy reform was accompanied by substantial media coverage[18], which not only enhanced public awareness of the availability of paternity leave but also reinforced cultural narratives emphasizing the value of paternal involvement in early childcare. This broader social messaging likely contributed to a reduction in the stigma - or perceived penalty - attached to non-traditional caregiving roles, effectively lowering β. As a result, the overall cost of leave-taking decreases, raising the probability that perceived benefits will outweigh total costs. Accordingly, our model predicts a positive effect of the reforms on fathers' likelihood of taking leave, with a particularly pronounced impact among couples with breadwinner mothers, for whom both the increase in B and the reduction in β jointly strengthen the incentive to take leave.

To test the predictions of our model and assess whether increases in the maximum allowed paternity leave influenced fathers' propensity to take up the benefit, we adopt an identification strategy that leverages two key features of the policy changes. First, extensions to the duration of paid paternity leave were implemented only in specific years over the period covered by our data (2013–2023). Second, eligibility for extended leave applied exclusively to fathers of children born after December 31 of the year preceding each reform, with the new provisions taking effect on January 1 of the reform year.

We construct a dataset that includes, for each year, births occurring shortly before and after 31 December. This results in a balanced sample around the cutoff of December 31. We define T_i observations falling within a reform-discontinuity window — i.e., children born within a narrow window immediately after December 31. In each of the reform years, the policy reform generated a sharp discontinuity in access to paternity leave benefits based on the child's date of birth, with only those whose children were born after December 31 being eligible for the new leave duration.

This institutional setting lends itself to a Regression Discontinuity Design (RDD), using the normalized child's date of birth as the running variable (RV_i), with December 31 as the cutoff. However, applying a standard RDD in this context might produce biased estimates because paternity leave uptake has steadily increased over time due to

[18] See for instance https://www.neodemos.info/2022/12/16/il-congedo-di-paternita-aiuta-le-madri-nel-lavoro-evidenze-dalla-spagna/; https://www.corriere.it/salute/figli-genitori/neonato/24_dicembre_02/sette-padri-su-dieci-usano-il-congedo-di-paternita-c-e-un-cambiamento-culturale-in-atto-61a8060e-c531-4a73-8593-9ed576a10xlk.shtml; https://www.corriere.it/salute/figli-genitori/25_marzo_19/il-congedo-di-paternita-e-ancora-un-tabu-la-disparita-che-danneggia-anche-le-mamme-542037a9-7031-499c-b6c8-375ce838exlk.shtml; https://www.corriere.it/economia/lavoro/25_marzo_19/congedo-di-paternita-utilizzo-triplicato-in-dieci-anni-ma-il-35-non-lo-usa-per-niente-6b5f6159-16e3-44a2-8bbe-7b47f4f60xlk.shtml; https://www.repubblica.it/rubriche/liberta-illiberta/2024/09/19/news/congedi_di_paternita_anche_per_la_parita_femminile-423509491/. Google Trends shows that searches for paternity leave have been steadily increasing over time, with some peaks around the years of major legislative reforms.

rising awareness and shifting social norms. Consequently, even small differences in birth timing could correlate with secular trends, leading to an overestimation of the policy effect.

To address this issue, we implement a Difference-in-Discontinuity (DiD-RD) design, following the approach of Grembi, Nannicini, and Troiano (2016). This method compares the discontinuity in leave uptake around December 31 in treatment time windows (2015-2016, 2017-2018, 2018-2019, 2019-2020, 2020-2021) to the discontinuity observed in placebo time windows, during which no reform occurred — namely, 2013-2014, 2014-2015, 2016-2017, 2021-2022 and 2022-2023. These placebo time windows serve as counterfactuals, allowing us to isolate the true effect of the policy from other temporal trends.

In order to test the predictions of our theoretical model, we estimate the following model, using Ordinary Least Squares (OLS), separately for the two groups of fathers: those who are the primary earner of the couple (male-breadwinner households), which are exposed only to the effect deriving from an increase in B, and those whose partner is the primary earner (female-breadwinner households), where both of the effects described above are at work:

$$Y_{it} = \alpha + \beta_1 RV_i + T_i[\beta_2 + \beta_3 RV_i] + \text{After}_{dec31}[\delta_1 + \delta_2 RV_i + T_i(\delta_3 + \delta_4 RV_i)] + \theta X_i + \mu_i \qquad [2]$$

where Y_{it} is a dummy variable equal to 1 if father i, whose child was born at time t, took paternity leave. T_i is a dummy indicating whether the father belongs to a group exposed to a different paternity leave duration due to a policy change (it is 0 otherwise). $After_{dec31}$ is a dummy equal to 1 if the child was born after December 31. RV_i is the running variable, defined as the child's date of birth normalized at the cutoff. The coefficient δ_3 is the difference-in-discontinuities (diff-in-disco) estimator, capturing the causal effect of the policy-induced extension of leave duration. Specifically, the treatment is defined as $DurationExtention_{it}$=$After_{dec31} * T_i$. X_i is a vector that contains controls for fathers and mothers' characteristics and μ_i is the stochastic error term of the model.

5.3 Methodology 3: Regression Discontinuity Design

To test the robustness of the gender norms-economic motives trade-off emerging from the first methodological approach, we exploit a policy reform introduced by the 2023 Italian Budget Law, which increased the wage replacement rate for one month of parental leave from 30% to 80% of the beneficiary's salary. The enhanced benefit applies to one of the three months of parental leave available to each parent (up to a maximum of six months per couple), can be used by either the mother or the father, or shared between them, and must be taken within the child's sixth year of life. The reform covers employees in both the private and public sectors whose maternity or paternity leave ends after December 31, 2022, thereby creating a sharp temporal cutoff.

The increase in the wage replacement rate results in a lower cost of the decision to neutralize gender deviance in female-breadwinner couples by allocating the leave to the highest earning partner. Therefore, the study of the change in the allocation decision of the leave within the couples following an exogenous change in the economic cost of adhering to the gender norm can give us additional causal evidence on the interplay between economic factors and gender norms in shaping the allocation of household labor within families.

To estimate the causal effect of the policy, we employ a Regression Discontinuity Design (RDD), comparing fathers whose relevant leave periods concluded just before the implementation date (control group) to those whose leave ended shortly after (treatment group). The running variable, RV, is defined as the end date of the relevant leave spell - specifically, the conclusion of maternity leave or, when fathers made use of paternity leave that lasted longer, the conclusion of paternity leave.

Our model predicts that the leave is allocated to the father when the net benefit of him taking it ($B_{Fa} - B_{Mo}$) exceeds the total cost, which includes: i) the cost of deviating from the gender norm (which applies only to female-breadwinner couples, $\beta max\left(\frac{w_{Mo}}{w_{Fa}} - 1; 0\right)$), ii) the economic cost due to reduced earnings during leave ($\gamma(w_{Fa} - w_{Mo})$) and iii) other costs ($c_{Fa} - c_{Mo}$). The policy reform we study reduces γ, the percentage of income that is not replaced during the leave. In male-breadwinner households $w_{Fa} - w_{Mo} > 0$ therefore leave-taking by the father has a financial cost, which is lowered by a reduction in γ, increasing the likelihood that he takes the leave. In contrast, in female-breadwinner households, $w_{Fa} - w_{Mo} < 0$, that is, for a given γ, fathers already have a financial incentive to take the leave, and a reduction in γ weakens that incentive. Therefore, the reform, by raising the wage replacement rate, is expected to increase fathers' leave-taking in male-breadwinner households but reduce it in female-breadwinner households.

To assess the causal impact of the reform, we estimate the following model separately for fathers in male-breadwinner and female-breadwinner households:

$$Y_i = \alpha + \beta_1 After_i + \beta_2\, f(RV_i - c) \; + \beta_3 X_i + e_i \qquad [3]$$

where *Yi* is a binary indicator equal to 1 if father *i* in couples who made use of parental leave within the first two years of the child's life used at least some parental leave at the 80% allowance rate. *After*$_i$ is an indicator for whether the relevant leave spell ended after the cutoff date (December 31, 2022), and *f(.)* is a smooth function of the running variable *RV*$_i$, centered at the cutoff *c*. *X*$_i$ is a set of control variables for child and parents' demographics and parents' working conditions. *e*$_i$ is the error term of the model.

6. Data and descriptive statistics

Our analysis is based on various data sources which are provided by the Italian Social Security Institute (INPS). Since we are going to study both paternity leave take-up and allocation of parental leave within the couple, we focus on two samples, one for each type of policy. The first one is composed of fathers eligible to take paternity leave from 2013 to 2023, while the second sample is composed of couples who used parental leave at least once in a given year over the same period.

6.1 Paternity leave

To identify men who became fathers from 2013 to 2023, we use INPS data on the Universal Child Allowance (AUU), a benefit introduced in 2022 which was aimed at all families with children under the age of 21, regardless of their income.[19] Thanks to the very high take-up of this benefit (over 90% for families with children aged less than 10), we can consider this dataset to be a faithful register of the birth rate in Italy over the sample period under scrutiny. Using this dataset, which provides information on the identification code of the mother and the father together with information on the children's year and month of birth, we identify the population of parents in each year starting from 2013 to 2023. Then, in order to identify the subset of working fathers employed in the private sector and eligible for paternity leave, we use INPS data on the universe of employment contracts[20] that track labor market outcomes.

This subsample represents the population of eligible fathers, who numbered about 2,1 million in the period considered in our analysis. However, we need information on the couple in order to investigate the impact of relative income. Therefore, we integrate our dataset with information relating to the labor market outcomes of mothers. Since we only have information on the mother if she is employed in the non-agricultural private sector, our sample is composed of 925,688 observations pertaining to couples whose members are both employed in the non-agricultural private sector. Each couple is observed in the years in which their children were born, so implying that, if there is only one newborn child in the timeframe from 2013 to 2023, the couple appears in our dataset once, while, in a case of more children, we have a number of observations equal to the number of children.[21] About 58% of fathers included in our sample had only one newborn child in the period considered.

Using yearly administrative data, we get information on monthly theoretical earnings for each worker in a given couple (mother and father) as defined by the worker labor contract, type of contract (full time or part-time, fixed-term or open ended), qualification, firm size and firm Ateco 2007 sector.[22] The data also include information

[19] The level of family income (and wealth) defines the amount received.
[20] These data are from the UNIEMENS modules, which all Italian firms in the non-agricultural private sector with at least one employee have to fill in and communicate to the Social Security Institute on a monthly basis.
[21] We consider only one observation for twins as the birth year is the same.
[22] For each worker, we select his or her main job in a given year, defined as the one with the highest number of days worked.

on the date of birth of each worker, her/his citizenship and municipality of residence and the birth date and gender of each child.

The sample is further restricted to couples in which both partners are between 18 and 65 years of age and to individuals with positive monthly earnings who have worked at least 4 months during the year.[23] Moreover, we have excluded 1% of the most extreme values at the bottom and at the top of the earnings distribution in order to reduce the effect of spurious outliers. Finally, we have only considered leave taken for the first child.[24]

The resulting dataset is enriched with information on paternity leave take-up. This information is represented by a binary variable (*Paternity Leave*), which takes the value of one if the father took paternity leave for a child born in a given year and zero otherwise.[25]

Finally, we have restricted attention to the observations for which we have all the main variables used in the analysis and we end up with a sample of 492,778 observations.

The data reveal the prevalence in Italy of the traditional household model, in which the male partner assumes the role of primary breadwinner (about 70%). Figure 1 depicts the density distribution of couples in our sample based on mothers' household income share: there is a marked reduction in density when the share exceeds 0.5 and this may suggest an aversion to deviating from the societal gender norm. We obtain a very similar distribution when excluding same-income earners, who only represent 0.5% of the couples in our sample.

<Figure 1>

Table 1 reports descriptive statistics of the sample used in our analysis of paternity leave. The first column summarizes data for the full sample, while the remaining columns correspond to subsamples stratified by the father's relative earnings position within the household. Specifically, the subsamples distinguish between households in which the father is the main earner (column 2) and those where the mother earns more than the father (column 3).

The probability that the mother earns more than the father (*PrMotherMore*) is, on average, 23% in the full sample, rising to 41% in households where the mother is the primary earner and falling to 15.5% in households where the father holds that role. For the full sample, the take-up of paternity leave is about 60%, on average with values that increased from 26% in 2013 to 74% in 2023. This average rate drops to 53% among fathers who are not the primary earners in their households, but rises to 63% among fathers in couples where they earn more than the mother.

[23] Only 9% of the fathers in our sample have worked fewer than 12 months during the year, while this percentage increases to 11% for mothers. As a consequence, our estimates do not qualitatively change when we restrict the sample to just couples working the full year.
[24] In section 7.2, we show that results are robust when considering all children.
[25] Since paternity leave can be requested within five months of the child's birth, for fathers who had children from August onwards, we checked whether they took leave within the following year. If they did, we assigned a value of one to our binary variable for the year of the child's birth.

As regards demographic characteristics, fathers in our dataset are about 35 years old on average, while mothers are typically younger with an average age of 32. These age patterns are observed also in the two subsamples. About 8% and 10% of fathers and mothers, respectively, are not native Italian. Fathers with an immigrant background are more prevalent in couples where the mother earns more than the father. Approximately 80% of the fathers in our sample reside in central or northern Italy.

When examining parents' working conditions, we observe that 54% of fathers in the whole sample hold blue-collar jobs, compared with about 30% of mothers. In addition, fathers are more likely to hold a full-time position than mothers (89% against 64%) and each parent has a similar likelihood of holding a permanent contract (89.5% against 91.5%). Average monthly earnings of fathers are around 386 euro higher than those of mothers (1,846 against 1,460).[26] Mothers who out-earn their partners are significantly more likely to work full-time (82.7% compared to 56.2% in traditional households) and less likely to hold blue-collar positions (25.1% vs. 31.9%). They are also more often employed in larger firms, with 47.2% working in such organizations compared to 39.1% of mothers whose partners are the main earners. Fathers in these couples show complementary patterns: they are less likely to work full-time (77.7% vs. 94.0%) and more likely to be employed in blue-collar occupations (58.4% vs. 52.3%), suggesting potential constraints on their earning capacity.

<Table 1>

These data are also used to assess the impact of the successive extensions of the duration of paternity leave over time. For this analysis, we restrict our sample to fathers of children born within the interval $RV_i \in [RV_i - h, RV_i + h]$, where h is the MES-optimal bandwidth selected following Calonico et al. (2018) (−84.374 to +84.374 days).[27] Descriptive statistics for this sample are provided in Table B1 in Appendix B of the paper.

[26] We therefore measure a 21 percent gender gap in monthly earnings. To understand potential selection issues deriving from the specific sample of couples with both members employed in the private sector, we compute the same statistic from Labor Force Survey data, which record self-reported *net* monthly earnings, top coded at 3,000 euros. We find a 20 percent gender pay gap between mothers and fathers employed in the non-agricultural private sector. The difference with administrative social security data is likely a consequence of using net, instead of gross, earnings and, more importantly, top coding. The share of fathers with top coded earnings is more than double that of mothers, likely biasing downwards the estimated gender pay gap.

[27] We also exclude from the sample individuals with an immigrant background, since a common administrative practice assigns January 1 as the default birth date for children born abroad without official documentation. Because our running variable is defined as the difference between the child's birth date and December 31, this practice could generate imbalances. Nevertheless, when we include these individuals in the estimates, the results remain very similar; the only difference is that in the balance checks we detect some statistically significant differences related to fathers' and mothers' immigrant background.

6.2 Parental leave

To identify couples who took advantage of parental leave in the 2013-2023 period, we use data from the Italian Social Security Institute (INPS) on applications for parental leave allowances. These data collect identification codes for the parent applying for the leave, the date on which the leave is taken, the date of birth of the child (which we use to compute his or her age), the child's identification code and the identification code of the other parent.

We use this information to create a yearly dataset in which we build a variable that denotes whether, in that given year, both parents took at least one day of parental leave or whether the leave was used exclusively by the mother or by the father. In about 84% of cases, the leave was taken by the mother, in about 6% by the father and in the remaining 10% of cases by both parents over the year. We consider as a dependent variable a dummy variable (*Parental leave*), which takes the value of one if the father used parental leave at least once during the year (i.e. when the leave was taken by both parents or exclusively by the father) and zero if the leave was used exclusively by the mother.

As for the dataset on fathers eligible for paternity leave, for the dataset of couples using parental leave, we exclude couples in which one of the partners is younger than 18 or older than 65. Likewise, we exclude 1% of the most extreme values at the bottom and at the top of the earnings distribution in order to reduce the effect of spurious outliers. In addition, we exclude couples in which one of the partners has worked for less than 4 months during the year. Finally, we restrict the attention to the leave taken for the first child and to couples for which we have all the main variables used in the analysis, so ending up with a sample composed of 1,263,324 couples who took advantage of parental leave during the 2013-2023 period.[28]

The data at hand allow us to build the same variables described in the previous sub-section. Figure 2 plots the density distribution of the couples in our sample on the basis of mother's share of household income. About 73% of observations in the sample pertain to households where the father is the primary earner. Similarly to the evidence from the paternity leave sample, we observe a drop in density that occurs once the share exceeds 0.5.

<Figure 2>

Table 2 presents descriptive statistics for the full sample and the two subsamples of interest. As shown in column (1), men take parental leave in approximately 14.7% of cases, indicating that child-rearing responsibilities in Italian families still primarily fall on mothers. This share rises slightly to 15% in households where the father is the primary earner and decreases to 13.7% in households where the mother is the main breadwinner.

[28] The larger number of observations in this sample, as compared with the sample used to study paternity leave, is due to the fact that paternity leave can only be used in the year of the child's birth, while parental leave can be used over a number of years. About 35% of couples used parental leave in only one of the years covered by our dataset, 23% in two different years, 15% in three years, 11% in four years and the remaining 15% in more than four years.

The average age of children for whom the leave is used is of about 37 months. Parents in this sample are older than those in the paternity leave sample, with fathers averaging 40 years and mothers 37.5 years. This is consistent with the analysis covering not only the year of the child's birth but also subsequent years of leave-taking.

Only 8% of fathers and 9.8% of mothers applying for parental leave are not native Italians. About 50% of fathers are employed in blue-collar jobs, while this percentage drops to 25% for mothers. In addition, fathers are more likely to hold a full-time position than mothers (92.5% against 58%) and almost as likely to hold a permanent contract (93% against 96%). Fathers' average monthly earnings are around 549 euro higher than mothers' (2,139 against 1,590 euros monthly). The probability that the mother earns more than the father is, on average, 21.7% in this sample.

The comparison between households in which mothers earn more than their partners reveals several notable patterns. Employment characteristics largely reflect those observed in the paternity leave sample. Mothers who out-earn their partners are significantly more likely to work full-time (82.3% vs. 49.2%) and are more frequently employed in large firms (65.8% vs. 58.7%). Fathers in these households are less likely to be employed full-time (81.8% vs. 96.4%) and are more often found in blue-collar occupations (57.1% vs. 46.7%).

<Table 2>

We started from these data to construct the dataset used to estimate the causal effect of the policy introduced in 2023 which has increased the replacement rate to 80% for one month of leave. At this aim, as explained in the previous section, we employ a Regression Discontinuity Design (RDD), comparing fathers whose relevant leave periods concluded just before the implementation date of 31 December 2022 (control group) to those whose leave ended shortly after (treatment group).

We construct a sample of couples (with both partners employed in the private non-agricultural sector as in all the other analysis) in which maternity or paternity leave was completed within the six months immediately preceding or following the cutoff date. For this sample, we track the use of parental leave over the 24 months following the birth of the child.[29] The sample includes 81,842 observations. Among these, 27.07% of couples did not make use of parental leave during the observation window, while the remaining 72.93% did. To evaluate how the policy affected the allocation of parental leave within couples, we restrict our main analysis to the 59,691 leave-taking couples;[30] 2.86% of them had only the father taking parental leave, 3.48% had both parents, and in 93.66% of couples the leave was taken only by the mother. We apply the Mean Squared Error (MSE) optimality criterion to select the bandwidth for our empirical analysis. The resulting sample includes fathers whose paternity

[29] Although the enhanced parental leave benefit can be used at any time until the child turns six, this analysis, due to the very recent implementation of the reform, focuses on its short-term effects. However, given that the need for parental care is most acute during the early stages of a child's life (see INPS Annual Report 2025), this short-term perspective provides meaningful insights.

[30] Notably, results are very similar when we consider overall take-up by fathers.

or maternity leave ended within 66.097 days before or after the threshold date of December 31, 2022. Descriptive statistics for the full sample, the optimal-bandwidth sample, and subgroups defined by whether the mother or the father is the primary earner are reported in Tables C1 and C2 in Appendix C.

7. Potential probability of having an out-earning mother: Paternity and Parental Leave Utilization

In this section, we report results obtained with our first methodological approach. In each table, the first set of OLS estimates considers the population of fathers eligible for fully compensated paternity leave with the aim of looking at the effect of deviating from prescribed gender roles on the probability that the father will take this type of leave. Instead, the second set of estimates (on the right of each table) uses the sample of couples that have taken advantage of the partly/not at all subsidized parental leave to examine the interplay of economic factors and gender norms by studying how having a potential out-earning mother affects the probability that parental leave will be taken by the father.

In Table 3, we estimate three specifications of model [1]. In the first specification, we only control for the probability that the mother earns more and this is computed as explained in Section 5.1. In the second specification, we include among controls the earnings in the mother's demographic group in every 5^{th} percentile from the 5^{th} to 95^{th} and, following Galván (2022), in the third specification we also add as a control variable the median of the mother's predicted income interacted with the father's monthly earnings in *t -1*.

<Table 3>

When we look at fathers' decision to take paternity leave (columns 1 to 3) we find that a 10 percentage points increase in the probability that a mother could earn more than the father reduces the likelihood that the father would take paternity leave by around 1 - 1.3 percentage points. This finding suggests that, when gender identity norms are questioned by "displaced" roles within the couple, parents allocate childcare in such a way as to neutralize such deviance and, thus, fathers become significantly less likely to take paternity leave. However, the decision about taking fully subsidized leave may hinge upon the fact that a father's choice to take the leave or not does not produce immediate economic consequences while there is an immediate loss deriving from not conforming to the norm when taking the leave. Hence, parents' decisions may differ when the costs of deviating from gender norms are compared with other immediate economic costs arising when taking this leave.

To delve into the interplay between economic factors and gender norms in shaping the division of household labor within families, we focus on the partly (or not at all) subsidized parental leave. During the period considered in our analysis, parental leave in Italy was either partially subsidized (30% of the wage) or not subsidized at all.

Consequently, the wage loss for the family is smaller when leave is taken by the lower-earning partner. Given this specific feature, the cost of incorrectly allocating parental leave is immediate and increases with the couple's wage gap. This implies that the tendency to neutralize the deviation from the traditional gender norm (which says that the mother should earn less than the father), by having the mother take on more childcare responsibilities, is counteracted by the economic cost the family incurs if the higher-earning mother takes the leave.

Estimates in columns (4) – (6) show that a 10 percentage points increase in the probability that a mother could earn more than the father increases the likelihood that the father would take parental leave by about 0.9 percentage points. Restricting the analysis to leave taken within the child's first year of life yields similar results, making them directly comparable to estimates for paternity leave, which is only available during this period (results not reported and available upon request). This pattern suggests that, when the cost of deviating from the gender norm is weighted with immediate economic losses arising from the wage cut for the parent taking the leave, the "doing gender" framework does not prevail and parents make their decisions on work childcare allocation by mainly trying to minimize household economic losses.

Table 4 shows that our results are robust when we cluster standard errors at the mother's demographic group level.[31] Qualitatively, the same results are found when we replace mother's characteristics with mother's demographic group fixed effects (results not reported and available upon request).

<Table 4>

7.2 Robustness checks

In Table 5, we replicate in several subsamples the same specification as in columns (2) and (5) in Table 3. In columns (1) and (6), we restrict the sample to households where both parents held permanent contracts and worked for at least 10 months in the year the paternity/parental leave was utilized. This restriction aims to exclude situations (22% in Paternity leave and 14% in Parental leave samples) where one or both parents had a lower likelihood of being entitled to the leave due to insufficient duration of work. Instead, in columns (2) and (7), we exclude the year 2020, when the Covid-19 pandemic introduced more flexible working conditions and additional policies to support parents. Our results hold in both subsamples.

<Table 5>

In columns (3), (4), (8) and (9), we estimate our model separately for fathers with and without a college degree. In fact, one could argue that the lower likelihood that fathers earning less than their partner will take paternity leave and the greater concern about economic losses when deciding on parental leave allocation may stem from differences in education. Fathers with lower education may be less aware of available policies supporting parents after childbirth and so use them less. They may also be more concerned about the income losses

[31] Results are also robust when clustering standard errors at the mother's demographic group and dropping singletons.

when deciding on parental leave allocation, potentially driving the positive coefficients we observe. As shown in Table 5, our results indicate that educational differences do not drive our findings. The effects remain statistically significant across both subsamples for both paternity and parental leave.

Finally, in columns (5) and (10), we extend our analysis of the choice of taking paternity and parental leave to all children by removing the first child restriction and show that the choices taken by households with only one child are similar to those observed when children who are not firstborn are also considered.[32]

7.3 Gender norms and the trade-off with immediate economic losses

The main assumption of the paper, and of the literature on the effect of parents' relative income capacity, is that an out-earning mother is interpreted by parents as a violation of the male breadwinner gender norm and that this, in turn, triggers a reaction intended to neutralize such deviance. If this is the case, then one would expect the out-earning mother effect to be amplified in circumstances where the gender norm is more salient and reduced in less conservative environments. In this section, we corroborate the role of gender norms that are triggered by higher relative earnings of the mother by studying whether the effects we observed vary according to the prominence of the gender identity norm.

We consider three indicators of the salience of the gender identity norm in the environment in which the parents live: the average share of women in the municipal council of the couple's town of residence (*Share Women*), the average probability of having a female mayor in the couple's town of residence (*Female Mayor*), and the average level of agreement with the World Values Survey statement "a man's job is to earn money, a woman's job is to look after home and family" in the couples region of residence (*Conservative*). An increase in *Share Women* and *Female Mayor* represents a reduction in the salience of the gender identity norm while a higher agreement with the above statement (a higher value of *Conservative*) represents an increase in the salience of the gender norm.[33]

In Table 6, we replicate the same specification as in Table 3, columns (2) and (5), thus controlling for potential endogeneity in earnings, and study whether the effect of the probability that the mother will earn more than the father differs as a consequence of the salience of the gender identity norms, as represented by the three indicators described above.

<Table 6>

[32] We obtain qualitatively similar results when restricting the analysis to higher-order births or only to second order births (results not reported but available upon request).

[33] *Share Women* takes a mean value of 0.32 in the Paternity leave and 0.33 in the Parental leave samples. *Female Mayor* is 0.31 and 0.33 on average and *Conservative* is 0.36 and 0.35 on average in the Paternity leave and Parental leave samples, respectively.

Data on paternity leave show that the negative effect of having an out-earning mother on the father's decision to take paternity leave decreases significantly as the gender norm becomes less salient, as indicated by the increasing share of women in the municipal council (column 1). Likewise, when the parents' environment is more conservative (column 3), the negative effect of violating the gender norm on the father's decision to take paternity leave increases significantly. On the other hand, the gender of the mayor (column 2) does not seem to affect paternity leave decisions in households with an out-earning mother.

Similarly, when looking at a couple's decision to allocate parental leave to the father, we find that, the lower salience of the gender identity norm, as represented by higher *Share Women* and *Female Mayor*, significantly increases the likelihood of fathers' taking parental leave when the mother earns more than the father, while *Conservative* environments negatively affect fathers' use of parental leave (columns 4, 5 and 6). Thus, when gender identity norms are less prominent, the choice of which parent will take leave is more likely to focus on economic costs to minimize the household's financial losses.

8. Paternity Leave Extensions and Salience of the Gender Norm: the Impact on Fathers' Leave-Taking

In this section, we present the results of our analysis examining how fathers respond to the staggered extensions in paternity leave duration (Methodology 2), comparing households in which the mother is the primary earner to those where the father is the main breadwinner. The analysis is conducted on a sample restricted to fathers of children born within the interval $RV_i \in [RV_i - h, RV_i + h]$, where h is the MES-optimal bandwidth (bias corrected), as defined by Calonico et al. (2018), ranging from −101.506 to +101.506 days.

Before turning to the results, we perform the usual specification tests to validate our identification strategy. As a first step, we test for continuity in the forcing variable - namely, the child's date of birth - around the policy cutoffs. Figures B1 and B2 in Appendix B present density tests across both treatment (reform discontinuity windows) and non-treatment years (no reform discontinuity window), for fathers who earn more than their partners and those who earn less, respectively. In all cases, we find no evidence of discontinuities in the distribution of births, suggesting the absence of manipulation around the policy threshold.[34]

[34] We find no evidence of manipulation when conducting the test on the full sample. This result holds both when analyzing the entire sample as a whole and when distinguishing between reform-discontinuity windows and non-treatment years. The absence of manipulation is consistent across both subgroups: fathers who earn less than their partners and those who earn more.

As with any standard Regression Discontinuity (RD) design, we also perform a second specification test to assess the validity of our identification strategy by examining the balance of predetermined covariates around the cutoff. Specifically, we test whether changes in paternity leave duration are systematically associated with observable characteristics that should be unaffected by the reform. To do so, we implement a difference-in-discontinuity regression using a linear polynomial in the running variable and a first-order interaction term. The outcome variables in this balance test include a set of time-invariant individual and work-related characteristics of both fathers and mothers. We focus on work characteristics that are unlikely to change within the narrow bandwidth around the cutoff.[35] Results reported in Table B2 in Appendix B of the paper indicate that the selected covariates are generally balanced around the December 31 cutoff. The coefficients on the difference-in-discontinuity estimator are small in magnitude and not statistically significant at conventional levels for most of the dependent variables. We find a statistically significant difference only in the share of blue-collar mothers in both subgroups, which represents the sole exception. Apart from this, the overall pattern suggests that covariates are reasonably balanced at the threshold. To further improve precision and account for any residual imbalances, we include these covariates as controls in some regression specifications.

Table 7 reports difference in discontinuity estimates. Columns (1) and (2) report results for the subsample of male-breadwinner households, while columns (3) and (4) show estimates from the same specifications applied to the subsample of female-breadwinner households. Columns (1) and (3) present results from our baseline specification (without controls). Consistent with the predictions of our model, we find that extending the duration of paternity leave increases take-up by 2.8 percentage points among fathers in male-breadwinner households, and by 5.1 percentage points among those in female-breadwinner households. The estimated effect of the increase in the maximum duration of the leave corresponds to an increase of approximately 4.7% over the mean of paternity leave take-up (0.596) for male-breadwinner households, which represents a modest but non-negligible effect. Instead, the estimated effect corresponds to a 10.2% increase relative to the mean (0.499) in female-breadwinner households, indicating a meaningful effect in economic terms. The higher magnitude reflects the possible existence of both the effect of an increase in the benefits of taking paternity leave and a decrease in the cost of deviating from gender norms due to the growing social recognition of the importance of the leave for fathers.

Columns (2) and (4) add the full set of control variables. The estimated effects remain positive and statistically significant, with an increase of 2.8 and 4.2 percentage points, respectively - still indicating a meaningful difference across household earning structures.

[35] Variables such as father and mother age (at the birth of the child) were excluded from this test, because (due to the unavailability of exact birth dates for parents in our data) these variables are constructed based on the difference between the child's and the parent's year of birth, and thus mechanically vary at the cutoff. Similarly, variables such as full-time contract, permanent job and father and mother wages are only available at the annual level and may change over the course of a worker's career, making them unsuitable for our balance test.

Similar results are obtained when using a narrower bandwidth (±58.083 days), as well as when extending the sample to include fathers of children born within six months before and after the cutoff and estimating specifications with a quadratic polynomial in the running variable. These additional results are available upon request.

<Table 7>

9. Reduced Parental Leave Costs and the interplay between economic factors and gender norms

The comparison between paternity (fully subsidized) and parental (partially or not subsidized) leave has allowed us to show the role of immediate economic costs of adhering to the gender norm in fathers' leave decisions. We have found that, when the cost of deviating from the male-breadwinner gender norm is considered alongside the wage losses resulting from leave, households tend to choose work–childcare arrangements that minimize overall economic losses.

Here, we provide additional evidence using our third methodological approach, which examines the impact of the 2023 reform that increased the parental leave replacement rate, thereby reducing the economic costs of "neutralizing gender deviance" in female-breadwinner couples by allocating leave to the higher-earning partner.

We begin by validating our empirical strategy through a continuity check of the forcing variable around the policy implementation cutoff, using the McCrary (2008) density test. This diagnostic assesses whether potential beneficiaries manipulated the timing of their leave to qualify for the enhanced parental leave benefit. The method estimates the log density of observations on either side of the December 31, 2022 cutoff using kernel local linear regression. In principle, such manipulation could occur if parents deliberately timed the end of their maternity or paternity leave to fall just after the policy change. However, because the reform was announced and implemented with little advance notice, strategic timing was unlikely. We perform the test separately for two groups - fathers who earn more than their partners and those who earn less - and in both cases, the estimated discontinuity in the distribution of the end date of maternity/paternity leave is statistically insignificant (t-statistic = -0.5929, p-value = 0.5532 and t-statistic =-0.4805, p-value=0.6308, respectively), indicating no evidence of manipulation around the threshold (see Figure C1 Appendix C). These results support a key identification assumption of our RDD approach, reinforcing confidence that our estimates reflect true causal effects of the policy change rather than artifacts of selection.

We also assess the continuity of observable characteristics at the cutoff estimating a parametric model using OLS within the optimal bandwidth to evaluate treatment effects at the cutoff. The results are presented in Table C3 in Appendix C and indicate no statistically significant discontinuity in baseline characteristics at the threshold,

suggesting a high degree of covariate balance and supporting the credibility of our regression discontinuity design.[36]

Table 8 presents parametric Regression Discontinuity Design (RDD) estimates of the effect of the enhanced parental leave allowance (80% wage replacement) on the likelihood that, in couples using parental leave, the father takes at least some parental leave within the first two years of their child's life. Estimates are shown separately for couples in which the mother earns less than the father (columns 1 and 2) and those in which the mother earns more (columns 3 and 4). Odd columns report specifications without controls, while estimates in even columns include the full set of controls.

<Table 8>

The results indicate a positive effect of the policy among male-breadwinner households, statistically significant at the 10 percent level without controls (column 1) but becoming insignificant once controls are included (column 2). For households in which the mother earns more, the estimated effect is negative and statistically insignificant in both specifications (columns 3 and 4). However, a statistically significant effect emerges for this group when a non-parametric approach is applied. As shown in Table 9, across all specifications (conventional, bias-corrected, and robust) the policy effect is negative and statistically significant for households where the mother is the higher earner, whereas for male-breadwinner households estimates remain positive but statistically insignificant. These findings suggest that the two groups exhibit distinct behavioral responses to the policy as predicted by our theoretical framework.

Overall, the findings support the hypothesis of an interplay between economic costs and gender norms. When the economic cost of having the higher earning mother taking the leave reduces because of a higher replacement rate, the relative weight of economic motives decreases in favor of the desire to align with gender norms and fathers become less likely to take parental leave. This result is in line with the findings of Patnaik (2019), who reports that financial incentives under the Quebec Parental Insurance Program, which improved compensation, had the greatest impact on fathers' leave-taking among families where fathers earn less than mothers.

<Table 9>

10. Concluding remarks

[36] In addition, we examined the continuity of observable characteristics at the cutoff using nonparametric local polynomial regression techniques (Cattaneo, Idrobo, and Titiunik, 2020) implemented via the rdrobust Stata package. For each covariate, we estimated local linear regressions on either side of the threshold and tested for discontinuities in mean levels at the cutoff. Results from conventional, bias-corrected, and robust specifications all indicated no statistically significant discontinuities, providing further evidence against sorting or systematic differences across the cutoff (see Table C4 in Appendix C).

The economic literature has shown that the birth of a child has a significant impact on individuals' trajectories in the labor market, particularly for women and especially in societies with traditional gender roles. Among other prescriptions, such roles predict that fathers are the primary breadwinners with responsibility for providing for the family's economic needs, while women predominantly take on caregiving roles within the household. These social norms can influence women's economic choices directly or indirectly, often affecting women's economic outcomes through decisions made by their male partners.

In this paper, we consider father's decisions to take on childcare responsibilities by taking leave from work and study how such choices are influenced by the relative earning power of the mother.

Several factors may contribute to explaining fathers' low take up of the leave. For example, fathers may consider leave taking as a signal of low commitment to their jobs and might prefer not to take the leave in order to avoid hampering their career opportunities. On the other hand, some fathers might not be fully aware of their right to leave or how to apply for it. However, the weight of such factors in the decision to take leave should not vary according to whether the father is the primary or secondary earner in the household.

Low leave take-up by fathers might also be due to their encountering social stigma or feeling that taking paternity leave is less masculine and/or socially unacceptable, as caregiving responsibilities are still predominantly viewed as the mother's duty. These considerations may be magnified in cases where the mother has greater earning power. Indeed, traditional gender roles are displaced in couples where the mother out-earns the father and the desire to neutralize such deviance may affect a father's decision to contribute to childcare regardless of economic considerations. We suggest that, in couples where the mother out-earns the father, fathers might prioritize re-establishing traditional gender roles when deciding whether to take leave if the social consequences of deviating from these roles are evident, particularly when the economic costs of doing so are not immediately apparent. Conversely, when the economic costs of adhering to gender norms are immediate and easily measured by the partners, childcare responsibilities might be divided on the basis of economic reasoning, rather than traditional gender roles.

To delve into the complex interplay between economic factors and gender norms in a father's decision to take on childcare responsibilities, we take advantage of specific features of the Italian welfare system, which, after a child's birth, permits fathers to take both fully paid paternity leave and partially (or not at all) paid parental leave. We use administrative data on Italian workers provided by the National Social Security Institute which allow us to have information on parents applying for paternity leave and/or parental leave. The data at hand also allow the gathering of information on the working characteristics of both parents, which enables us to measure their relative income power within the couple. We focus on couples with children born after 2013 and then we consider the period from 2013 to 2023, during which fathers had both the possibility to apply for paternity leave (introduced in 2013) and/or parental leave (introduced in 2001).

Our findings reveal that fathers in couples with higher probability of having the mother earning more are significantly less likely to take paternity leave. As paternity leave is fully subsided, this implies that fathers are less likely to take advantage of the possibility to spend time with their newborn child in households with a *breadwinner* mother, even though this does not entail any wage cost. In contrast, we find that couples using parental leave are more likely to allocate it to the male partner the higher the probability that the mother earns more than the father does because allocating it to the lower-income earner within the couple is the choice which minimizes wage loss within the household.

These findings are robust to a series of controls that account for the demographic characteristics and working conditions of both parents and remain significant in several subsamples.

We interpret our findings as evidence of a complex interplay between gender identity norms that are triggered by the presence of an out-earning mother and economic motives represented by immediate economic losses. When the breadwinner norm is violated, fathers are more inclined to reduce their contribution to caregiving responsibilities, so leaving this role to the mother, who is traditionally responsible for home production, in order to restore a gender equilibrium. On the other hand, when the cost of violating the gender norm is weighted with immediate losses due to a wage cut for the parent taking parental leave, economic motives prevail and the father is more likely to take the leave so as to minimize losses to household earnings. This interpretation is supported in the data by evidence which shows that, as the prominence of gender identity norms increases (as indicated by the proportion of women in the municipal council, the likelihood of there being a female mayor and average beliefs as evaluated on the basis of responses to a World Value Survey question), the negative impact of gender deviance neutralization on fathers' decisions to take paternity leave becomes greater. Additionally, the influence of economic factors on fathers' likelihood of taking parental leave when their partner earns more diminishes as these norms become more salient.

To further validate our findings and examine how economic incentives and gender norms influence fathers' leave-taking behavior, we analyze two policy changes in paternity and parental leave regulations and test whether responses align with our theoretical model. First, we exploit a series of staggered reforms that gradually extended fully paid paternity leave from 1 to 10 days, accompanied by extensive media coverage that increased public awareness and reinforced cultural narratives about the importance of paternal involvement in early childcare. This setting allows us to test the influence of gender norms: consistent with our model, we find a significant increase in fathers' leave uptake - particularly in female-breadwinner households - suggesting a reduction in the social cost of defying traditional gender roles. Second, to assess the role of immediate economic costs associated with adhering to gender norms, we exploit a sharp discontinuity introduced by the 2023 Italian Budget Law, which raised the wage replacement rate for one month of parental leave from 30% to 80%. As predicted by our model, this reform significantly reduced fathers' leave uptake in female-breadwinner households by lowering the financial cost of conforming to traditional gender expectations.

Our results suggest that achieving gender parity in wages could be an important step toward reaching parity in childcare responsibilities.

Table 1. Descriptive Statistics. Fathers eligible for the paternity leave

	Full Sample (N = 492,778) Mean (SD) [Min-Max]	Male-breadwinner (N = 341,867) Mean (SD) [Min-Max]	Female-breadwinner (N = 150,911) Mean (SD) [Min-Max]
Paternity leave	0.598 (0.490) [0 – 1]	0.626 (0.484) [0 – 1]	0.533 (0.499) [0 – 1]
Probability mother earns more	0.234 (0.233) [0 – 1]	0.155 (0.172) [0 – 1]	0.414 (0.253) [0 – 1]
Father monthly earnings	1.846 (0.817) [0.252 – 5.621]	2.063 (0.810) [0.253 – 5.621]	1.355 (0.587) [0.252 – 4.099]
Father monthly earnings (t-1)	1.747 (1.283) [0 – 336.613]	1.908 (1.350) [0 – 336.613]	1.383 (1.027) [0.001 – 176.853]
Father immigrant background	0.084 (0.278) [0 – 1]	0.079 (0.270) [0 – 1]	0.095 (0.293) [0 – 1]
Father age	34.808 (5.514) [19 – 65]	34.963 (5.502) [19 – 65]	34.458 (5.525) [19 – 64]
Father blue collar	0.542 (0.498) [0 – 1]	0.523 (0.499) [0 – 1]	0.584 (0.493) [0 – 1]
Father full time	0.890 (0.313) [0 – 1]	0.940 (0.238) [0 – 1]	0.777 (0.416) [0 – 1]
Father permanent contract	0.895 (0.306) [0 – 1]	0.934 (0.248) [0 – 1]	0.807 (0.394) [0 – 1]
Father living North centre	0.795 (0.404) [0 – 1]	0.796 (0.403) [0 – 1]	0.790 (0.407) [0 – 1]
Father firm size	3937.8 (17763.5) [1 – 157153]	3694.7 (16823.6) [1 – 157153]	4488.5 (19716.7) [1 – 157153]
Mother monthly earnings	1.460 (0.673) [0.149 – 4.171]	1.302 (0.611) [0.149 – 4.170]	1.819 (0.669) [0.269 – 4.171]
Mother immigrant background	0.102 (0.303) [0 – 1]	0.105 (0.306) [0 – 1]	0.096 (0.295) [0 – 1]
Mother age	32.300 (4.767) [18 – 62]	32.153 (4.746) [18 – 62]	32.633 (4.798) [18 – 58]
Mother blue collar	0.298 (0.457) [0 – 1]	0.319 (0.466) [0 – 1]	0.251 (0.433) [0 – 1]
Mother full time	0.643 (0.479) [0 – 1]	0.562 (0.496) [0 – 1]	0.827 (0.378) [0 – 1]
Mother permanent contract	0.915 (0.278) [0 – 1]	0.901 (0.298) [0 – 1]	0.947 (0.224) [0 – 1]
Mother firm - small	0.344 (0.475) [0 – 1]	0.375 (0.484) [0 – 1]	0.273 (0.445) [0 – 1]
Mother firm - medium	0.240 (0.427) [0 – 1]	0.234 (0.423) [0 – 1]	0.255 (0.436) [0 – 1]
Mother firm - big	0.416 (0.493) [0 – 1]	0.391 (0.488) [0 – 1]	0.472 (0.499) [0 – 1]
Son	0.514 (0.500) [0 – 1]	0.515 (0.500) [0 – 1]	0.512 (0.500) [0 – 1]

Source: Administrative data from the Italian Social Security Institute

Table 2. Descriptive Statistics. Couples using parental leave

	Full Sample (N = 1,263,324) Mean (SD) [Min-Max]	Male-breadwinner (N = 920,113) Mean (SD) [Min-Max]	Female-breadwinner (N = 343,211) Mean (SD) [Min-Max]
Paternity leave	0.147 (0.354) [0 – 1]	0.150 (0.357) [0 – 1]	0.137 (0.344) [0 – 1]
Probability mother earns more	0.217 (0.220) [0 – 1]	0.149 (0.161) [0 – 0.947]	0.398 (0.251) [0 – 1]
Father monthly earnings	2.139 (0.998) [0.398 – 7.361]	2.370 (1.010) [0.398 – 7.361]	1.519 (0.631) [0.398 – 4.612]
Father monthly earnings (t-1)	2.054 (1.692) [0 – 685.745]	2.240 (1.694) [0 – 685.745]	1.557 (1.580) [0.001 – 398.812]
Father immigrant background	0.080 (0.271) [0 – 1]	0.075 (0.263) [0 – 1]	0.093 (0.290) [0 – 1]
Father age	40.036 (6.145) [20 – 65]	40.191 (6.114) [20 – 65]	39.619 (6.207) [20 – 65]
Father blue collar	0.495 (0.500) [0 – 1]	0.467 (0.499) [0 – 1]	0.571 (0.495) [0 – 1]
Father full time	0.925 (0.264) [0 – 1]	0.964 (0.186) [0 – 1]	0.818 (0.386) [0 – 1]
Father permanent contract	0.933 (0.250) [0 – 1]	0.965 (0.185) [0 – 1]	0.848 (0.359) [0 – 1]
Father living North centre	0.864 (0.343) [0 – 1]	0.867 (0.339) [0 – 1]	0.856 (0.352) [0– 1]
Father firm size	4983.027 (19710.719) [1 – 157,153]	4872.636 (19011.350) [1 – 157,153]	5278.972 (21470.791) [1 – 157,153]
Mother monthly earnings	1.590 (0.734) [0.250 – 4.646]	1.422 (0.659) [0.250 – 4.646]	2.041 (0.735) [0.406 – 4.646]
Mother immigrant background	0.098 (0.297) [0 – 1]	0.099 (0.299) [0 – 1]	0.094 (0.292) [0 – 1]
Mother age	37.459 (5.492) [19 – 65]	37.405 (5.509) [19 – 65]	37.605 (5.442) [19 – 65]
Mother blue collar	0.254 (0.435) [0 – 1]	0.273 (0.445) [0 – 1]	0.204 (0.403) [0 – 1]
Mother full time	0.582 (0.493) [0 – 1]	0.492 (0.500) [0 – 1]	0.823 (0.382) [0 – 1]
Mother permanent contract	0.961 (0.193) [0 – 1]	0.952 (0.213) [0 – 1]	0.985 (0.120) [0 – 1]
Mother firm - small	0.199 (0.399) [0 – 1]	0.219 (0.414) [0 – 1]	0.143 (0.350) [0 – 1]
Mother firm - medium	0.195 (0.396) [0 – 1]	0.193 (0.395) [0 – 1]	0.199 (0.399) [0 – 1]
Mother firm - big	0.606 (0.489) [0 – 1]	0.587 (0.492) [0 – 1]	0.658 (0.474) [0 – 1]
Son	0.484 (0.500) [0 – 1]	0.484 (0.500) [0 – 1]	0.483 (0.500) [0 – 1]
Child Age	37.182 (35.948) [3 – 143]	37.793 (36.228) [3 – 143]	35.545 (35.133) [3 – 143]

Source: Administrative data from the Italian Social Security Institute

Table 3. Potential relative earnings and father's probability of taking paternity and parental leave. OLS estimates

	Paternity leave			Parental leave		
	(1)	(2)	(3)	(4)	(5)	(6)
Probability mother earns more	-0.108***	-0.124***	-0.126***	0.090***	0.090***	0.091***
	(0.005)	(0.005)	(0.005)	(0.003)	(0.003)	(0.003)
Mother y^p	NO	YES	YES	NO	YES	YES
Median of mother's earning* Father's monthly earnings (t-1)	NO	NO	YES	NO	NO	YES
Observations	492778	492778	492778	1263324	1263324	1263324
R^2	0.145	0.147	0.147	0.065	0.065	0.065

Standard errors are robust to heteroskedasticity and clustered at the father level. Significance at the 10 percent level is represented by *, the 5 percent level by **, and the 1 percent level by ***. Estimates on paternity leave include dummies for year and month of childbirth and estimates on parental leave include dummies for the year and month of leave claiming. All estimates include father's firm fixed effects and region of residence dummies. Controls for child characteristics include gender and, for parental leave estimates, the age of the child. Father and mother characteristics include age and nationality. Father work characteristics include being blue collar, working full-time, having a permanent contract and father's monthly earnings at t-1. Mother work characteristics include being blue collar, working full-time, having a permanent contract and firm size dummies.

Table 4. Potential relative earnings and father's probability of taking paternity and parental leave. SE clustered at the mother's demographic group

	Paternity leave			Parental leave		
	(1)	(2)	(3)	(4)	(5)	(6)
Probability mother earns more	-0.108***	-0.124***	-0.126***	0.090***	0.090***	0.091***
	(0.008)	(0.009)	(0.010)	(0.008)	(0.008)	(0.008)
Mother y^p	NO	YES	YES	NO	YES	YES
Median of mother's earning* Father's monthly earnings	NO	NO	YES	NO	NO	YES
Observations	492778	492778	492778	1263324	1263324	1263324
R2	0.692	0.693	0.693	0.396	0.397	0.397

Standard errors are robust to heteroskedasticity and clustered at mother's demographic group level. Significance at the 10 percent level is represented by *, the 5 percent level by **, and the 1 percent level by ***. Estimates on paternity leave include dummies for year and month of childbirth and estimates on parental leave include dummies for the year and month of leave claiming. All estimates include father's firm fixed effects and region of residence dummies. Controls for child characteristics include gender and, for parental leave estimates, the age of the child. Father and mother characteristics include age and nationality. Father work characteristics include being blue collar, working full-time, having a permanent contract, and father's monthly earnings at t-1. Mother work characteristics include being blue collar, working full-time, having a permanent contract and firm size dummies.

Table 5. Robustness to different sample specifications. OLS estimates

	Paternity leave					Parental leave				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Both parents working at least 10 months	Excluding year 2020	Graduated fathers	Non graduated fathers	All children	Both parents working at least 10 months	Excluding year 2020	Graduated fathers	Non graduated fathers	All children
Probability mother earns more	-0.070***	-0.121***	-0.141***	-0.125***	-0.116***	0.106***	0.097***	0.123***	0.079***	0.093***
	(0.006)	(0.005)	(0.013)	(0.006)	(0.004)	(0.003)	(0.003)	(0.006)	(0.003)	(0.002)
Observations	382629	443135	97043	395735	849145	1083205	1080213	234654	1028670	1653703
R^2	0.150	0.152	0.114	0.156	0.146	0.042	0.070	0.040	0.070	0.061

Standard errors are robust to heteroskedasticity and clustered at the father level. Significance at the 10 percent level is represented by *, the 5 percent level by **, and the 1 percent level by ***. Estimates on paternity leave include dummies for year and month of childbirth and estimates on parental leave include dummies for the year and month of leave claiming. All estimates include father's firm fixed effects and region of residence dummies. Controls for child characteristics include gender and, for parental leave estimates, the age of the child. Father and mother characteristics include age and nationality. Father work characteristics include being blue collar, working full-time, having a permanent contract, and father's monthly earnings at t-1. Mother work characteristics include being blue collar, working full-time, having a permanent contract and firm size dummies. All estimates include also *Mother* y^p.

Table 6. Gender norms and the trade-off with immediate economic losses. OLS estimates

	Paternity leave			Parental leave		
	(1)	(2)	(3)	(4)	(5)	(6)
Probability mother earns more	-0.161***	-0.124***	-0.087***	0.053***	0.088***	0.112***
	(0.015)	(0.006)	(0.017)	(0.008)	(0.003)	(0.009)
Share Women	-0.020			-0.002		
	(0.013)			(0.007)		
Share Women*Probability mother earns more	0.114***			0.113***		
	(0.043)			(0.022)		
Female mayor		0.002			-0.005***	
		(0.002)			(0.001)	
Female mayor**Probability mother earns more		0.001			0.007**	
		(0.007)			(0.003)	
Conservative 5			0.120*			0.046
			(0.072)			(0.038)
Conservative 5 # Probability mother earns more			-0.105**			-0.064**
			(0.045)			(0.025)
Observations	492778	492778	492778	1263324	1263324	1263324
R^2	0.147	0.147	0.147	0.065	0.065	0.065

Standard errors are robust to heteroskedasticity and clustered at the father level. Significance at the 10 percent level is represented by *, the 5 percent level by **, and the 1 percent level by ***. Estimates on paternity leave include dummies for year and month of childbirth and estimates on parental leave include dummies for the year and month of leave claiming. All estimates include father's firm fixed effects and region of residence dummies. Controls for child characteristics include gender and, for parental leave estimates, the age of the child. Father and mother characteristics include age and nationality. Father work characteristics include being blue collar, working full-time, having a permanent contract, and father's monthly earnings at t-1. Mother work characteristics include being blue collar, working full-time, having a permanent contract and firm size dummies. All estimates include also *Mother* y^p.

Table 7. Difference in Discontinuity estimates. Effect on father's probability of taking paternity leave

	Male-breadwinner households		*Female-breadwinner households*	
	(1)	(2)	(3)	(4)
Duration Extension	0.028***	0.028***	0.051***	0.042***
	(0.008)	(0.008)	(0.011)	(0.010)
RV	-0.000***	-0.000***	-0.000**	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
T	0.053***	0.057***	0.022***	0.036***
	(0.006)	(0.006)	(0.007)	(0.007)
T*RV	-0.000	-0.000	-0.000**	-0.000**
	(0.000)	(0.000)	(0.000)	(0.000)
$After_{dec31}$	0.048***	0.035***	0.010	-0.001
	(0.007)	(0.006)	(0.008)	(0.007)
$After_{dec31}$*RV	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
Duration Extension*RV	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Controls	No	Yes	No	Yes
Paternity leave (mean)	0.596	0.596	0.499	0.499
Observations	297,334	297,334	119,790	119,790
R^2	0.008	0.121	0.005	0.169

The Table reports results from estimating of model [2] in the subsample of male-breadwinner households and female-breadwinner households. Controls include a child gender dummy, father and mother demographic characteristics (age and a dummy for residing in the Centre-North), father and mother work characteristics (blue collar, working full-time, having a permanent contract, monthly earnings). Standard errors are clustered at the RV level. The analysis is conducted on a sample restricted to births within ±101.509 days of December, based on the MSE-optimal bandwidth selection method. Significance at the 10 percent level is represented by *, the 5 percent level by **, and the 1 percent level by ***.

Table 8. Parametric estimates. Reduced Parental Leave Costs and allocation of leave to Fathers

	Male-breadwinner households		*Female-breadwinner households*	
	(1)	(2)	(3)	(4)
Treatment	0.0139*	0.0075	-0.0161	-0.0103
	(0.0078)	(0.0061)	(0.0118)	(0.0095)
Running Variable	-0.0002	-0.0000	0.0002	0.0001
	(0.0001)	(0.0001)	(0.0002)	(0.0001)
Treatement*Running Variable	0.0002	-0.0000	-0.0001	-0.0001
	(0.0002)	(0.0001)	(0.0003)	(0.0002)
Observations	16431	24782	6972	10391
R2	0.000	0.085	0.000	0.045

The table reports parametric regression discontinuity estimates of the effect of enhanced parental leave compensation on fathers' leave-taking behavior. The sample includes fathers whose children were born within a data-driven bandwidth around the policy cutoff. The dependent variable is a binary indicator for parental leave uptake. Controls include a child gender dummy, father and mother demographic characteristics (age, nationality and a dummy for residing in the Centre-North), father and mother work characteristics (blue collar, working full-time, having a permanent contract, monthly earnings).

Table 9. Non-parametric estimates. Reduced Parental Leave Costs and allocation of leave to Fathers

	Male-breadwinner households		*Female-breadwinner households*	
	(1)	(2)	(3)	(4)
Conventional	0.011	0.010	-0.032**	-0.027*
	(0.008)	(0.008)	(0.015)	(0.014)
Bias-corrected	0.012	0.011	-0.037**	-0.031**
	(0.008)	(0.008)	(0.015)	(0.014)
Robust	0.012	0.011	-0.037**	-0.031*
	(0.010)	(0.009)	(0.017)	(0.017)
Controls	No	Yes	No	Yes
Observations	42408	42408	17283	17283
Effective obs Left	8853	8640	2683	2937
Effective obs Right	9320	9041	2543	2786
BW est	73.117	71.384	50.545	55.280
BW bias	111.121	111.036	85.140	88.121

The table reports non-parametric regression discontinuity estimates of the effect of enhanced parental leave compensation on fathers' leave-taking behavior. The sample includes fathers whose children were born within a data-driven bandwidth around the policy cutoff. The dependent variable is a binary indicator for parental leave uptake. "Conventional" refers to standard local linear estimates, "Bias-corrected" applies bias correction following Calonico et al. (2014), and "Robust" reports bias-corrected estimates with robust confidence intervals. Controls include a child gender dummy, father and mother demographic characteristics (age, nationality and a dummy for residing in the Centre-North), father and mother work characteristics (blue collar, working full-time, having a permanent contract, monthly earnings). Bandwidths are selected using the MSE-optimal procedure.

Figure 1. Density distribution of mother's household income share: paternity leave

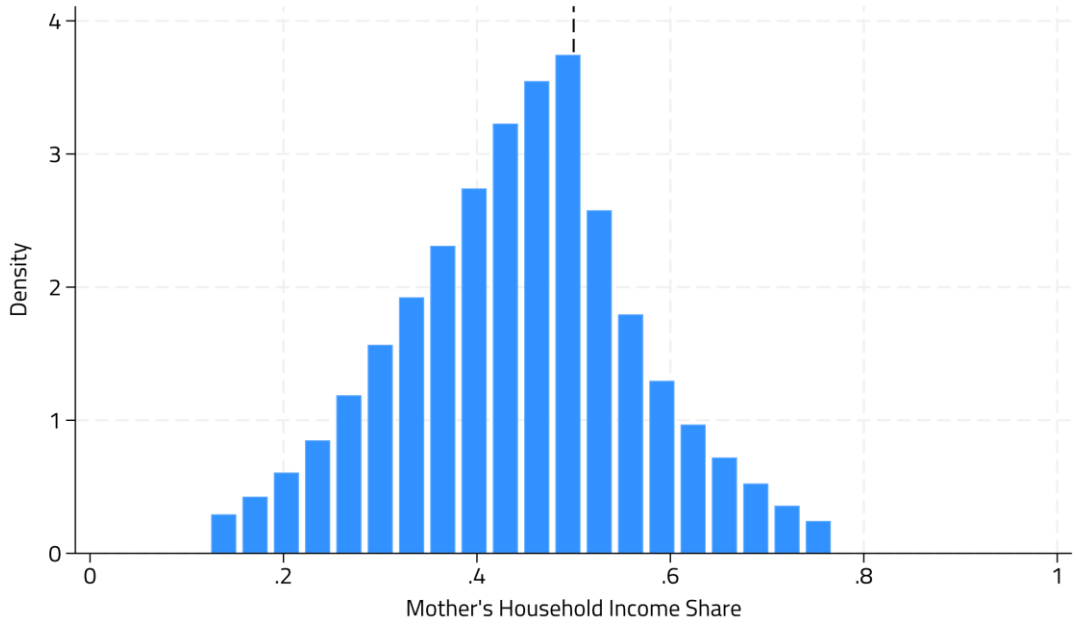
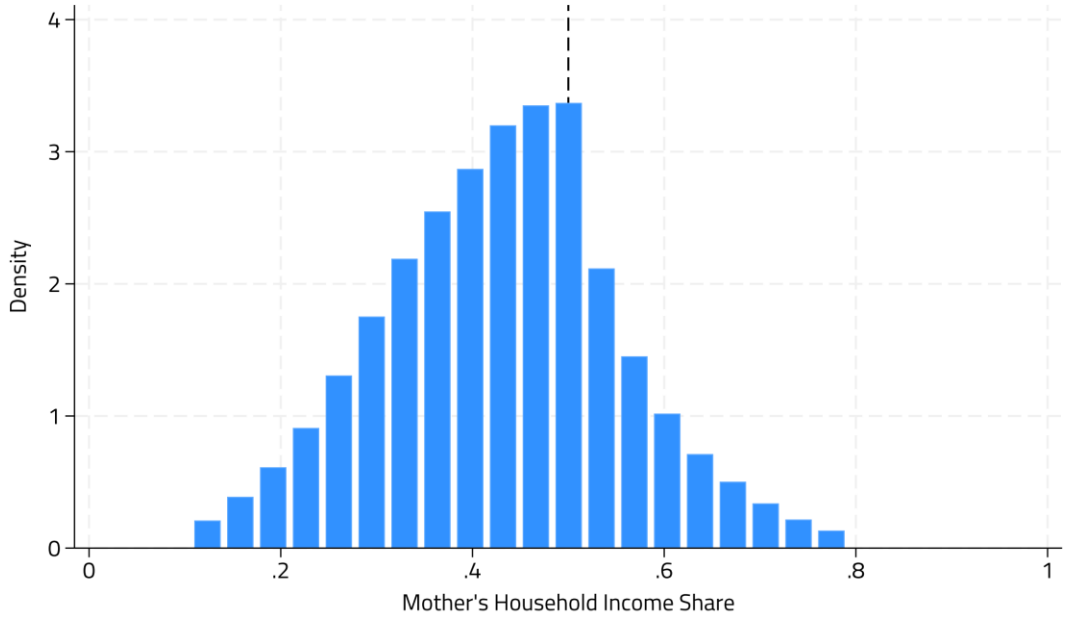


Figure 2. Density distribution of mother's household income share: parental leave



Appendix A. OLS estimates using father's and mother's income to compute whether the mother out-earns the father

We estimate the following model:

$$Y_{it} = \beta_0 + \beta_1\, Mother\ earns\ more\ than\ father_{it} + \beta_2 X_{it} + \beta_3 Fa_{it} + \beta_4 Mo_{it} + u_{it} + \lambda_t + \varepsilon_{it}$$

where Y_{it} is our outcome variable which represents the probability that the father *i* will take paternity leave in year *t* or, alternatively, the probability that, in a couple using parental leave, the father *i* will claim it in year *t*; $Mother\ earns\ more\ than\ father_{it}$ is a dummy equal to one for couples where the mother out-earns the father and zero otherwise; X_{it} is a vector of control variables relating to the demographic characteristics of the children, the father and the mother (gender and age of the children[37], age and nationality of the father and the mother and residence of the father[38]); Fa_{it} and Mo_{it} are vectors of control variables for the father and mother's working characteristics, respectively, (monthly earnings / household income, full-time employment, permanent contract, blue collar and mother's firm-size dummies).[39] We also include fixed effects, u_{it}, for the firm that employs the father, which allow us to address endogeneity issues arising from fathers from a household with a breadwinner mother being selected into particular firms. The inclusion of father's firm fixed effects implies that we exploit any variation in a mother's relative earning capacity which may occur when fathers work in the same firm. λ_t are fixed effects for the year and month of childbirth in the paternity leave estimates year and month of leave claiming fixed effects in parental leave estimates. ε_{it} is an error term. In some specifications, we enrich the model by also considering the mother's share of household income.

Relative earnings are measured using contractual rather than actual monthly earnings, avoiding bias from temporary changes due to leave, sickness, or overtime.

In Table A1, we estimate several specifications of the model.[40] We find that in couples where the breadwinner gender norm is violated because the mother earns more than the father, the out-earned father is about 1.6 percentage points less likely to take paternity leave (column 1). In addition, we find that the likelihood of taking paternity leave decreases as the income power of the mother increases: for a 10 percentage point increase in the share of household income contributed by the mother, the father becomes about 0.5 percentage points less likely to contribute to childcare by taking paternity leave (col 2) and this effect is significantly greater in households where the mother out-earns the father (col 3). Finally, in column (4), in order to better model the non-linearity of the effect, we control for deciles of the distribution of the mother's share of household income, leaving the first decile as reference category. Figure A1 depicts the predicted probability of paternity leave based on this model specification.[41] Data support our theoretical prediction by showing that a father's likelihood of contributing to childcare by taking paternity leave is pretty stable as the mother's share of household income increases, but is lower than 50%. On the other hand, we observe a marked reduction in households where the mother contributes a larger share of the income and out-earns the father (from the 8th decile).

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[37] We only control for the age of the child in parental leave estimates because paternity leave is limited to the first five months following childbirth.

[38] The residence of the father typically coincides with that of the mother.

[39] Our results are robust if we consider father's and mother's working characteristics in *t-1*.

[40] The estimated models are able to explain about 14% of the variability observed in the data, so indicating that the variables considered represent relevant factors in the decision-making, but also that there are other aspects that we do not observe, but which play an important role in explaining the phenomenon under examination.

[41] Whiskers represent 95% confidence intervals. X-axis labels represent the range of mother's household income share that corresponds to each decile.

In columns (5) to (8), we replicate the specifications from the first four columns using the parental leave sample.[42] Therefore, our outcome variable is a dummy variable that takes the value of one when, in a given year, the father uses parental leave and zero when parental leave is used exclusively by the mother. We find that, when the mother earns more than the father, the probability that the father will take parental leave increases by about 0.3 percentage points (col 5). This positive and statistically significant correlation remains stable and increases in magnitude when we control for the share of income earned by the mother which, in turn, positively affects the likelihood of fathers contributing to childcare by taking leave (col 6). Interestingly, not only are fathers significantly more likely to take-up the leave as the share of income contributed by the mother increases, but this effect is significantly amplified when the mother out-earns the father (col 7). When using controls for the decile of the mother's share of income (col 8), we see that the positive effect becomes particularly relevant from the 8th decile of the distribution of mother's share of household income, which corresponds to about 50%. This is clearly shown by Figure A2, which supports our theoretical predictions: the predicted probability of father's taking parental leave increases as the mother's share of income increases. There is a noticeable increase at the 8th decile, after which the probability of the father taking parental leave stabilizes, though it continues to show a slight positive trend. This indicates that when the mother earns more than the father, gender identity norms associated with the mother being the primary earner are counterbalanced by the economic incentives for fathers to take the leave.

All results are robust if we include dummies for mother's sector of activity among controls (results not reported and available upon request).

As in Table A1, the first four specifications refer to fathers' decisions to take paternity leave while the last four columns refer to parental leave.

Our main results are also confirmed when using as an alternative measure of relative income the sum of the total income of all members of the family unit and the income deriving from movable assets, net of specific deductions, expenses or allowances.[43] This indicator includes not only wages earned in the private sector, but also income from any other work activity. This allows us to account for situations where one member of the couple earns additional income outside the private sector. We compute the mother's household income share by subtracting the father's earnings from the ISR indicator and dividing the result by the ISR and we define *Mother earns more than father* as a dummy which takes the value of 1 if the mother's household income share is higher than 0.5.

[42] Instead of controlling for the year of the child's birth (which typically coincides with the year in which paternity leave was taken, given that it must be used within five months of the child's birth, see Section 3), we control for the age of the child and the year in which parental leave was used.

[43] This indicator is called ISR and is derived from applications for the Universal Child Allowance (UCA), which we used as a registry of children born during the period under investigation. The amount of economic support that families receive through the UCA depends on their economic circumstances, assessed using the ISEE (Indicatore della Situazione Economica Equivalente), a means-testing tool that evaluates the economic situation of individuals and families. The ISEE is a composite indicator that considers household income, real estate and financial wealth, adjusted for household composition and the presence of disabled members. For our analysis, we utilize the ISR (Indicatore Situazione Reddituale), a component of the ISEE that represents the household's income indicator without any adjustments.

Table A1. Mother's relative earnings and father's probability of taking paternity and parental leave. OLS estimates

	Paternity leave				Parental leave			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mother earns more than father	-0.016***	-0.004*			0.003***	0.015***		
	(0.002)	(0.002)			(0.001)	(0.001)		
Mother's Household Income Share (IS)		-0.054***	-0.039***			0.137***	0.138***	
		(0.010)	(0.010)			(0.005)	(0.005)	
Mother earns more*Mother IS			-0.017***				0.025***	
			(0.004)				(0.002)	
Mother IS- 2 dec				0.001				0.004***
				(0.003)				(0.001)
Mother IS- 3 dec				-0.004				0.007***
				(0.003)				(0.001)
Mother IS- 4 dec				-0.002				0.014***
				(0.003)				(0.001)
Mother IS- 5 dec				-0.003				0.021***
				(0.003)				(0.001)
Mother IS- 6 dec				-0.001				0.027***
				(0.003)				(0.002)
Mother IS- 7 dec				0.001				0.039***
				(0.003)				(0.002)
Mother IS- 8 dec				-0.001				0.057***
				(0.004)				(0.002)
Mother IS- 9 dec				-0.008**				0.060***
				(0.004)				(0.002)
Mother IS- 10 dec				-0.037***				0.067***
				(0.004)				(0.002)
Observations	492778	492778	492778	492778	1263324	1263324	1263324	1263324
R^2	0.144	0.144	0.144	0.145	0.069	0.067	0.067	0.067

Standard errors are robust to heteroskedasticity and clustered at the father level. Significance at the 10 percent level is represented by *, the 5 percent level by **, and the 1 percent level by ***. Estimates on paternity leave include dummies for year and month of childbirth and estimates on parental leave include dummies for the year and month of leave claiming. All estimates include father's firm fixed effects and region of residence dummies. Controls for child characteristics include gender and, for parental leave estimates, the age of the child. Father and mother characteristics include age and nationality. Father work characteristics include being blue collar, working full-time and having a permanent contract. Mother work characteristics include being blue collar, working full-time, having a permanent contract and firm size dummies. Columns (1) and (5) also control for father and mother's monthly earnings while the remaining specifications control for household income.

Figure A1. Mother's relative earnings and father's predicted probability of taking paternity leave

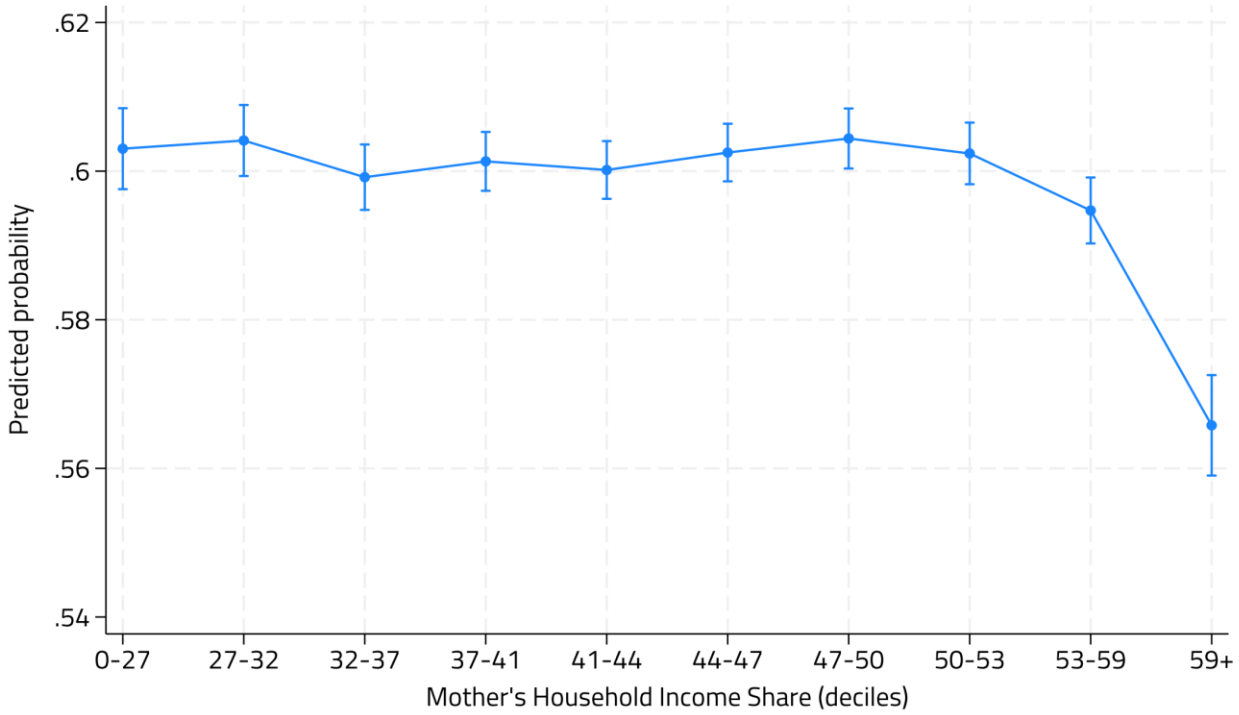
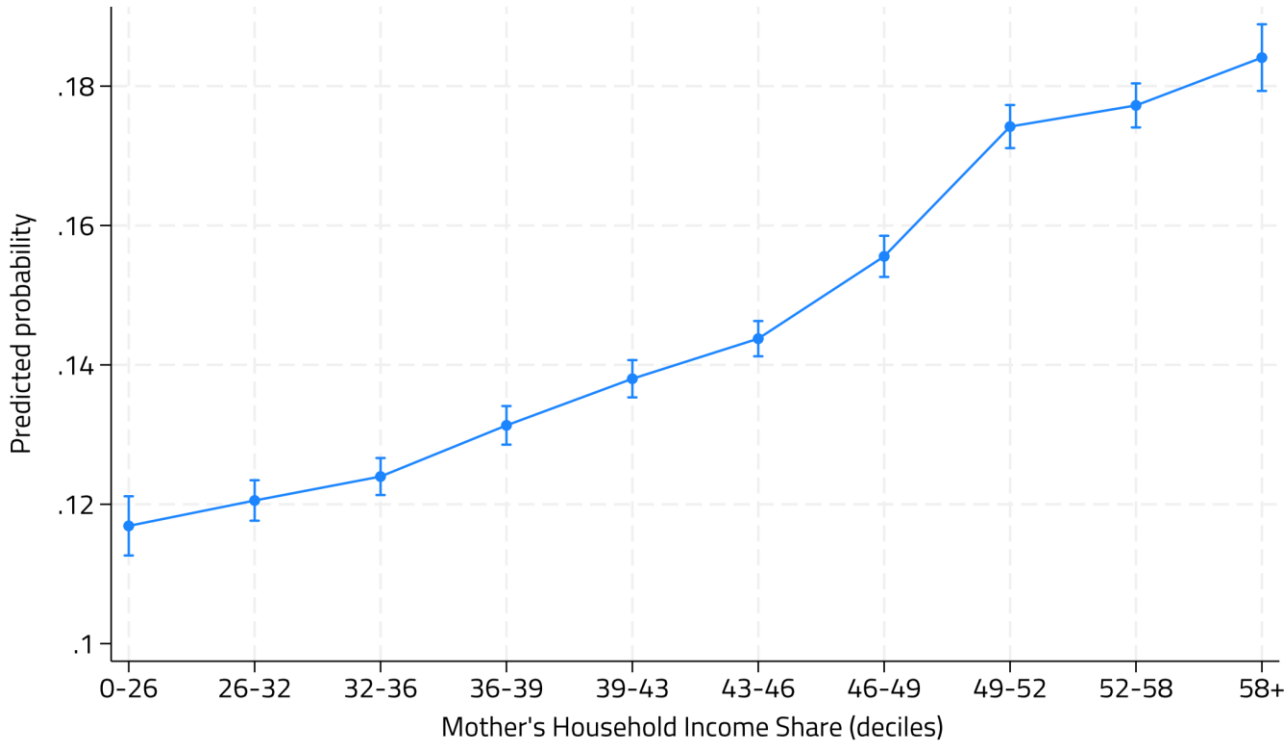


Figure A2. Mother's relative earnings and father's predicted probability of taking parental leave



Appendix B. Descriptive statistics and identification checks Difference-in-Discontinuity design (DiD-RD)

Table B1. Descriptive statistics

Variable	Full Sample (N=417,124)	Male-breadwinner (N=297,334)	Female-breadwinner (N=119,790)
	Mean (SD) [Min-Max]	Mean (SD) [Min-Max]	Mean (SD) [Min-Max]
Paternity leave	0.568 (0.495) [0–1]	0.596 (0.491) [0–1]	0.498 (0.500) [0–1]
Son	0.513 (0.500) [0–1]	0.513 (0.500) [0–1]	0.513 (0.500) [0–1]
Father lives in North/Centre	0.781 (0.414) [0–1]	0.786 (0.410) [0–1]	0.768 (0.422) [0–1]
Father age	35.99 (5.39) [18–65]	36.12 (5.35) [18–65]	35.64 (5.46) [18–64]
Mother age	33.40 (4.63) [18–58]	33.31 (4.62) [18–57]	33.64 (4.64) [18–58]
Father blue collar	0.523 (0.499) [0–1]	0.501 (0.500) [0–1]	0.578 (0.494) [0–1]
Father full-time	0.900 (0.300) [0–1]	0.947 (0.224) [0–1]	0.783 (0.412) [0–1]
Father permanent contract	0.905 (0.293) [0–1]	0.941 (0.236) [0–1]	0.817 (0.387) [0–1]
Father firm size (medium)	0.278 (0.448) [0–1]	0.279 (0.449) [0–1]	0.275 (0.447) [0–1]
Father firm size (big)	0.453 (0.498) [0–1]	0.480 (0.500) [0–1]	0.387 (0.487) [0–1]
Father firm size (small)	0.269 (0.443) [0–1]	0.241 (0.428) [0–1]	0.338 (0.473) [0–1]
Father firm size	3760.51 (17081.84) [1–158323]	3582.87 (16316.10) [1–158323]	4201.45 (18841.38) [1–158323]
Father earnings	22557.05 (10454.37) [1011–67469]	25169.34 (10307.49) [1032–67469]	16072.99 (7608.00) [1011–48921]
Mother blue collar	0.265 (0.441) [0–1]	0.285 (0.451) [0–1]	0.216 (0.411) [0–1]
Mother full-time	0.602 (0.489) [0–1]	0.515 (0.500) [0–1]	0.820 (0.384) [0–1]
Mother permanent contract	0.926 (0.262) [0–1]	0.914 (0.280) [0–1]	0.955 (0.207) [0–1]
Mother firm size	3416.49 (16675.83) [1–158323]	3091.69 (15684.91) [1–158323]	4222.68 (18888.31) [1–158323]
Mother firm size (medium)	0.233 (0.423) [0–1]	0.229 (0.420) [0–1]	0.245 (0.430) [0–1]
Mother firm size (big)	0.426 (0.495) [0–1]	0.402 (0.490) [0–1]	0.487 (0.500) [0–1]
Mother firm size (small)	0.340 (0.474) [0–1]	0.369 (0.483) [0–1]	0.268 (0.443) [0–1]
Mother earnings	17050.02 (8567.03) [597–50048]	15140.81 (7771.78) [597–50046]	21788.91 (8610.53) [1140–50048]

Source: Administrative data from the Italian Social Security Institute

Table B2. Balance Test Around the Cutoff (Difference-in-Discontinuity Design)

	Male-breadwinner households		*Female-breadwinner households*	
	Coefficient	Std. Error	Coefficient	Std. Error
Son	0.005	(0.007)	0.006	(0.012)
Central and Northern Italy	-0.008	(0.006)	0.004	(0.010)
Father blue-collar worker	-0.010	(0.007)	-0.015	(0.011)
Mother blue-collar worker	-0.013**	(0.007)	-0.010*	(0.010)
Father firm size – medium	-0.010	(0.007)	-0.008	(0.010)
Mother firm size – medium	-0.004	(0.006)	-0.008	(0.010)
Father firm size – big	-0.004	(0.007)	-0.002	(0.011)
Mother firm size – big	-0.001	(0.007)	0.009	(0.012)
Observations	297,334		119,790	

This table reports results from difference-in-discontinuity regressions testing the balance of predetermined characteristics around the policy cutoff. Each row displays the coefficient on the treatment indicator *DurationExtension* from a number of separate regressions in which the dependent variable is the covariate listed in the row. All regressions include a linear polynomial in the running variable and interaction terms between this variable and *T*, *After* and *DurationExtension*. The analysis is conducted on a sample restricted to births within ±101.56 days of December, based on the MSE-optimal bandwidth selection method. Standard errors are reported in parentheses.

Figure B1. McCrary test. Paternity Leave, male-breadwinner households

Reform discontinuity window

(2015-2016, 2017-2018, 2018-2019, 2019-2020, 2020-2021)

(t-statistic = -0.924, p-value = 0.356)

No reform discontinuity window

2013-2014, 2014-2015, 2016-2017, 2021-2022, 2022-2023)

(t-statistic = 0.570, p-value = 0.568)

Figure B2. McCrary test. Paternity Leave, female-breadwinner households.

Reform discontinuity window

(2015-2016, 2017-2018, 2018-2019, 2019-2020, 2020-2021)

(t-statistic = -0. 227, p-value = 0.821)

No reform discontinuity window

(2013-2014, 2014-2015, 2016-2017, 2021-2022, 2022-2023)

(t-statistic =-0.765 p-value = 0.445)

Appendix C. Descriptive statistics and identification checks Regression Discontinuity Design (RDD)

Table C1. Descriptive statistics

Variable	Full Sample (N= 59,691)	Male-breadwinner (N= 42,408)	Female-breadwinner (N=17,283)
	Mean (SD) [Min-Max]	Mean (SD) [Min-Max]	Mean (SD) [Min-Max]
Parental leave	0.063 (0.244) [0–1]	0.063 (0.243) [0–1]	0.064 (0.244) [0–1]
So	0.514 (0.500) [0–1]	0.514 (0.500) [0–1]	0.513 (0.500) [0–1]
Father lives in North/Centre	0.843 (0.364) [0–1]	0.847 (0.360) [0–1]	0.834 (0.372) [0–1]
Father immigrant background	0.098 (0.298) [0–1]	0.094 (0.292) [0–1]	0.108 (0.310) [0–1]
Father age	36.149 (5.522) [18–65]	36.312 (5.487) [18–65]	35.749 (5.586) [18–62]
Mother immigrant background	0.112 (0.315) [0–1]	0.114 (0.318) [0–1]	0.106 (0.307) [0–1]
Mother age	33.495 (4.584) [18–54]	33.419 (4.557) [18–54]	33.681 (4.646) [18–54]
Father blue collar	0.534 (0.499) [0–1]	0.514 (0.500) [0–1]	0.583 (0.493) [0–1]
Father full-time	0.922 (0.268) [0–1]	0.961 (0.194) [0–1]	0.827 (0.379) [0–1]
Father permanent contract	0.920 (0.272) [0–1]	0.955 (0.206) [0–1]	0.832 (0.374) [0–1]
Father firm size (medium)	0.282 (0.450) [0–1]	0.284 (0.451) [0–1]	0.277 (0.447) [0–1]
Father firm size (big)	0.500 (0.500) [0–1]	0.52 (0.500) [0–1]	0.451 (0.498) [0–1]
Father firm size (small)	0.218 (0.413) [0–1]	0.196 (0.397) [0–1]	0.272 (0.445) [0–1]
Father firm size	4667.702 (19702.039) [1–144678]	4343.774 (18522.473) [1–144678]	5462.535 (22314.623) [1–144678]
Father earnings	24113.906 (10660.126) [1141–67422]	26911.139 (10447.482) [1636–67422]	17250.221 (7638.407) [1141–49125]
Mother blue collar	0.280 (0.449) [0–1]	0.298 (0.458) [0–1]	0.235 (0.424) [0–1]
Mother full-time	0.632 (0.482) [0–1]	0.549 (0.498) [0–1]	0.834 (0.372) [0–1]
Mother permanent contract	0.973 (0.163) [0–1]	0.969 (0.174) [0–1]	0.983 (0.129) [0–1]
Mother firm size	4361.156 (18942.806) [1–144678]	3889.77 (17642.092) [1–144678]	5517.817 (21765.485) [1–144678]
Mother firm size (medium)	0.240 (0.427) [0–1]	0.239 (0.426) [0–1]	0.242 (0.428) [0–1]
Mother firm size (big)	0.508 (0.500) [0–1]	0.480 (0.500) [0–1]	0.577 (0.494) [0–1]
Mother firm size (small)	0.252 (0.434) [0–1]	0.281 (0.449) [0–1]	0.181 (0.385) [0–1]
Mother earnings	18789.791 (8393.583) [789–50033]	16881.45 (7623.654) [789–50017]	23472.364 (8357.808) [2266–50033]

Source: Administrative data from the Italian Social Security Institute

Table C2. Descriptive statistics in the optimal bandwidth

Variable	Full Sample (N= 23,403)	Male-breadwinner (N= 16,431)	Female-breadwinner (N=6,972)
	Mean (SD) [Min-Max]	Mean (SD) [Min-Max]	Mean (SD) [Min-Max]
Parental leave	0.067 (0.250) [0–1]	0.067 (0.250) [0–1]	0.067 (0.250) [0–1]
Son	0.515 (0.500) [0–1]	0.517 (0.500) [0–1]	0.511 (0.500) [0–1]
Father lives in North/Centre	0.838 (0.369) [0–1]	0.840 (0.366) [0–1]	0.831 (0.375) [0–1]
Father immigrant background	0.096 (0.294) [0–1]	0.092 (0.289) [0–1]	0.104 (0.305) [0–1]
Father age	35.97 (5.519) [18–65]	36.154 (5.489) [18–65]	35.537 (5.565) [18–64]
Mother immigrant background	0.111 (0.314) [0–1]	0.114 (0.318) [0–1]	0.103 (0.305) [0–1]
Mother age	33.287 (4.530) [19–53]	33.211 (4.517) [19–52]	33.468 (4.555) [19–53]
Father blue collar	0.533 (0.499) [0–1]	0.512 (0.500) [0–1]	0.582 (0.493) [0–1]
Father full-time	0.917 (0.275) [0–1]	0.959 (0.197) [0–1]	0.818 (0.386) [0–1]
Father permanent contract	0.916 (0.277) [0–1]	0.953 (0.212) [0–1]	0.830 (0.376) [0–1]
Father firm size (medium)	0.280 (0.449) [0–1]	0.279 (0.449) [0–1]	0.283 (0.450) [0–1]
Father firm size (big)	0.496 (0.500) [0–1]	0.518 (0.500) [0–1]	0.442 (0.497) [0–1]
Father firm size (small)	0.224 (0.417) [0–1]	0.202 (0.402) [0–1]	0.275 (0.446) [0–1]
Father firm size	4663.546 (19644.199) [1–144678]	4301.767 (18306.116) [1–144678]	5516.157 (22463.297) [1–144678]
Father earnings	23806.596 (10579.267) [1141–67131]	26692.392 (10339.793) [2068–67131]	17005.605 (7606.238) [1141–49125]
Mother blue collar	0.279 (0.448) [0–1]	0.297 (0.457) [0–1]	0.236 (0.425) [0–1]
Mother full-time	0.634 (0.482) [0–1]	0.552 (0.497) [0–1]	0.828 (0.377) [0–1]
Mother permanent contract	0.968 (0.176) [0–1]	0.963 (0.189) [0–1]	0.979 (0.142) [0–1]
Mother firm size	4569.906 (19534.157) [1–144678]	4051.545 (18047.563) [1–141628]	5791.534 (22609.502) [1–144678]
Mother firm size (medium)	0.238 (0.426) [0–1]	0.238 (0.426) [0–1]	0.239 (0.426) [0–1]
Mother firm size (big)	0.508 (0.500) [0–1]	0.478 (0.500) [0–1]	0.579 (0.494) [0–1]
Mother firm size (small)	0.253 (0.435) [0–1]	0.284 (0.451) [0–1]	0.182 (0.386) [0–1]
Mother earnings	18794.408 (8325.85) [988–50033]	16917.351 (7588.985) [988–49884]	23218.091 (8312.215) [2266–50033]

Source: Administrative data from the Italian Social Security Institute

Table C3. Balance checks. Parental Leave. Parametric estimates in the optimal bandwidth

Male-breadwinner households

	(1) Son	(2) Mother Imm	(3) Father Imm	(4) Father blue collar	(5) Mother blue collar	(6) Father firm - medium	(7) Mother firm - medium	(8) Father firm - big	(9) Mother firm - big	(10) Center_North
Treatment	0.021	-0.007	-0.001	-0.018	-0.021	-0.007	-0.000	0.016	0.007	0.003
	(0.016)	(0.010)	(0.009)	(0.016)	(0.014)	(0.014)	(0.013)	(0.016)	(0.016)	(0.012)
Running Variable	-0.000	-0.000	-0.000	0.000	0.000	0.001**	0.000	-0.000	-0.000	-0.001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Treat*Run	-0.000	0.000	0.000	-0.000	0.000	-0.001***	-0.001	0.001*	0.000	0.001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	0.507***	0.116***	0.088***	0.526***	0.305***	0.300***	0.248***	0.499***	0.467***	0.828***
	(0.011)	(0.007)	(0.006)	(0.011)	(0.010)	(0.010)	(0.009)	(0.011)	(0.011)	(0.008)
Obs.	16,431	16,431	16,431	16,431	16,431	16,431	16,431	16,431	16,431	16,431
R^2	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.001

Female-breadwinner households

	(1) Son	(2) Mother Imm	(3) Father Imm	(4) Father blue collar	(5) Mother blue collar	(6) Father firm - medium	(7) Mother firm - medium	(8) Father firm - big	(9) Mother firm - big	(10) Center_North
Treatment	0.018	-0.002	-0.001	0.007	-0.004	-0.034	-0.015	0.024	-0.011	0.011
	(0.024)	(0.014)	(0.014)	(0.024)	(0.020)	(0.021)	(0.020)	(0.024)	(0.024)	(0.018)
Running Variable	-0.000	0.000	-0.000	-0.000	-0.000	0.000	0.001	0.000	-0.000	-0.001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Treat*Run	-0.000	0.000	0.001*	0.000	0.001	0.000	-0.001*	-0.001*	0.001**	0.001
	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)
Constant	0.506***	0.102***	0.094***	0.571***	0.227***	0.291***	0.262***	0.449***	0.563***	0.813***
	(0.016)	(0.010)	(0.010)	(0.016)	(0.014)	(0.015)	(0.014)	(0.016)	(0.016)	(0.012)
Obs.	6,972	6,972	6,972	6,972	6,972	6,972	6,972	6,972	6,972	6,972
R2	0.000	0.000	0.001	0.000	0.001	0.001	0.001	0.001	0.001	0.001

The table reports results from separate linear local polynomial regressions estimated using OLS using the optimal bandwidth of +-66.097, with the dependent variable indicated in each column.

Table C4. Balance checks. Parental Leave. Non parametric estimates

	Male-breadwinner households			**Female-breadwinner households**		
	Conventional	***Bias-Corrected***	***Robust***	***Conventional***	***Bias-Corrected***	***Robust***
Son	0.005	0.001	0.001	0.002	-0.008	-0.008
	(0.019)	(0.019)	(0.023)	(0.028)	(0.028)	(0.033)
Father imm. Background	0.005	0.005	0.005	-0.001	-0.002	-0.002
	(0.008)	(0.008)	(0.009)	(0.013)	(0.013)	(0.016)
Mother imm. Background	0.007	0.011	0.011	-0.006	-0.007	-0.007
	(0.011)	(0.011)	(0.013)	(0.014)	(0.014)	(0.017)
Father blue-collar worker	-0.006	-0.008	-0.008	0.002	0.006	0.006
	(0.016)	(0.016)	(0.020)	(0.027)	(0.027)	(0.033)
Mother blue-collar worker	-0.019	-0.025	-0.025	0.028	0.038	0.038
	(0.017)	(0.017)	(0.019)	(0.025)	(0.025)	(0.028)
Father firm size medium	-0.009	-0.010	-0.010	-0.021	-0.022	-0.022
	(0.018)	(0.018)	(0.022)	(0.025)	(0.025)	(0.030)
Mother firm size medium	0.023	0.030	0.030	-0.037	-0.043	-0.043
	(0.019)	(0.019)	(0.022)	(0.027)	(0.027)	(0.032)
Father firm size big	0.020	0.020	0.020	0.008	0.005	0.005
	(0.015)	(0.015)	(0.018)	(0.027)	(0.027)	(0.033)
Mother firm size big	-0.013	-0.018	-0.018	-0.015	-0.019	-0.019
	(0.019)	(0.019)	(0.022)	(0.024)	(0.024)	(0.029)
Residence Centre-North	-0.006	-0.009	-0.009	0.024	0.027	0.027
	(0.015)	(0.015)	(0.017)	(0.022)	(0.022)	(0.026)

Each row reports estimates from separate local polynomial regressions estimated using the rdrobust package, with the dependent variable indicated in the first column. To improve precision, all regressions include the remaining covariates as controls. Optimal bandwidths are selected using the Mean Squared Error (MSE) minimization criterion with asymmetric bandwidths, as implemented in rdrobust.

Figure C1. McCrary test. Parental Leave, male-breadwinner households

Panel A: Male-breadwinner households

Panel B: Female-breadwinner households

The figure depicts the estimates of the McCrary density test using the rddensity procedure with a triangular kernel and MSE-optimal, asymmetric bandwidths. In Panel A we consider male-breadwinner households and the estimation sample consists of 16,431fathers, selected from an initial pool of 42,408 fathers who earned more than their partner. In Panel B we consider female-breadwinner households and the estimation sample consists of 6,972 fathers, selected from an initial pool of 17,283 fathers who earned less than their partner. Histograms represent the log density of the running variable, computed as the difference between the threshold and the end date of maternity/paternity leave. Red bars (left of the threshold) correspond to non-eligible fathers, while blue bars (right of the threshold) refer to those eligible for the 80% wage replacement rate. Source: INPS administrative data.

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