Swedish Institute for Social Research (SOFI)

Stockholm University

WORKING PAPER 11/2023

FATHERS BUT NOT CAREGIVERS

by

Lina Aldén, Anne Boschini

and Malin Tallås Ahlzén

SAMMANFATTNING AV SOFI WORKING PAPER 11/2023

Vi studerar de fäder i Sverige som inte tar ut några föräldrapenningdagar under barnets två första levnadsår. Dessa fäder kännetecknas framför allt av att de har en svagare ekonomisk ställning jämfört med andra fäder. Skillnaderna har blivit tydligare över tid, och vi finner stöd för att synen på könsroller har fått ökad betydelse.

Idag är det vanligt i många länder att en del av föräldraledigheten är reserverad till vardera föräldern, och det finns en stor litteratur som studerar vad effekterna är av sådana reformer. Däremot vet vi mindre om de fäder som avstår från sina reserverade dagar, trots att de utgör en dryg femtedel av alla fäder i Sverige. Eftersom delad föräldraledighet anses fördelaktigt för barnet och även främjar ekonomisk jämställdhet, är det viktigt från ett policyperspektiv att förstå vilka fäder som *inte* tar ut någon betald föräldraledighet.

I den här studien använder vi kvasiexperimentell variation både i reformerna som reserverade föräldrapenningdagar till vardera föräldern och i könsnormer i kombination med svenska registerdata för att karaktärisera de pappor som inte tar ut någon betald föräldraledighet under barnets två första år. Vi avgränsar studien till svenskfödda män som blir fäder för första gången under åren 1995–2015 och bor tillsammans med barnets moder.

Vi finner att de fäder som inte tar ut föräldrapenningdagar i större utsträckning möter fysiska hinder, i form av inskrivning på sjukhus eller kriminalitet innan barnets födsel, än den genomsnittliga pappan. Dock gäller det relativt få fäder, och mer karaktäriserande för gruppen är ekonomiska begränsningar såsom att vara egenföretagare, ha en låg inkomst och en inkomst som understiger moderns. Över tid har de ekonomiska begränsningarna blivit alltmer framträdande för dessa fäder, relativt alla fäder. Vår analys visar att reformerna som reserverade föräldrapenningdagar till vardera föräldern bidrog till denna trend på så sätt att fäder med ekonomiska hinder reagerade på reformerna i lägre utsträckning andra fäder.

Utifrån ett teoretiskt perspektiv kan de skillnader vi funnit bero på att fäder som inte tar ut föräldraledighet har en mer traditionell syn på könsroller. I linje med detta finner vi att regionala skillnader i attityder gällande könsroller stämmer väl överens med variationen i andelen fäder som inte tar föräldraledighet. För att fånga orsakssamband använder vi oss av nationalekonomisk forskning som visat att föräldraskapet är mer könsstereotyp i familjer med en könsblandad barnaskara. Analysen visar att det för senare år är vanligare att fadern inte tar ut föräldrapenningdagar i familjer där antingen fadern eller modern vuxit upp med ett syskon av motsatt kön, om dessutom en förälder var lågutbildad. Det indikerar att fäder som inte tar ut någon föräldrapenning i ökande grad tillhör hushåll med mer traditionella könsnormer.

Sammantaget visar studien att åtgärder som avser att uppmuntra fler fäder att ta ut föräldrapenningdagar bör fokusera på fäders ekonomiska förutsättningar och att bryta traditionella könsnormer.

SOFI Working Paper Nr. 11/2023, ”Fathers but not caregivers”, är författat av Anne Boschini, SOFI, Lina Aldén (Linnéuniversitet) och Malin Tallås Ahlzén (SOFI). Kontakt: Anne Boschini, anne.boschini@sofi.su.se.

Fathers but not caregivers*

Lina Aldén[+], Anne Boschini[χ] and Malin Tallås Ahlzén[§]

Despite multiple reforms aimed at encouraging fathers to take parental leave, a significant portion of fathers still choose not to take any leave. In this paper, we exploit quasi-experimental variation in parental leave reforms and in gender norms to provide a causal analysis of how the group of fathers with no parental leave uptake has changed over time using high-quality Swedish register data. To account for selection into fatherhood and general trends in the population of fathers, we study differences in traits relative to the average father. We find that while some of the non-leave taking fathers have poor health or criminal convictions, they are not very different in this regard from the total population of fathers. Instead, we observe a clear trend indicating that the non-leave taking fathers are increasingly facing economic constraints in terms of having a low income and earning less than the mother. We show that the fathers with weak labor market attachment are the least compliant with parental leave quotas and present suggestive evidence that non-leave taking fathers and mothers in couples with such fathers have become more likely to conform to traditional gender norms. The results suggest that reforms reserving additional months for each parent will have a limited impact on the fathers who do not take any parental leave. Instead, policies may need to target the lack of economic resources or gender norms of both the father and the mother.

Keywords: Men; parental leave; gender norms; father's quota

JEL Classification: D13; J13; J16; J18

---

* We thank the Swedish Research Council for financial support. We are grateful to Erica Lindahl and participants at the 'Fathers and Families' workshop in September 2023 in Stockholm for helpful comments and suggestions. This project was approved by the Swedish Research Ethics Board (Event No 2018/108-31/5).

[+] Department of Economics and Statistics, Linneaus University, lina.alden@lnu.se.

[χ] Swedish Institute for Social Research (SOFI), Stockholm University, anne.boschini@sofi.su.se.

[§] Swedish Institute for Social Research (SOFI), Stockholm University, malin.ahlzen@sofi.su.se.

1. Introduction

The division of parental leave between parents has received extensive attention in research over the past decades (see e.g., Canaan et al., 2022, for an overview). Many countries have implemented policies reserving some period for fathers to encourage a more equal division of parental leave.[1] Although the uptake of paternity leave has increased in most countries after the implementation of such reforms, there is still a non-negligible share of fathers who do not take any leave (see e.g., OECD, 2016). From a policy perspective it is important to identify why some fathers are not complying with the reforms, both from a child perspective (e.g., Cools et al., 2015) and a gender equality point of view (e.g., Angelov et al., 2016; Kleven et al., 2019). Despite this, the question has received limited attention from researchers.

From a theoretical point of view, non-parental leave taking fathers might differ from other fathers in terms of physical impediments for taking parental leave, but also in terms of economic constraints or social norms. In this paper, we utilize high-quality Swedish register data and quasi-experimental variation in parental leave reforms and gender norms to provide comprehensive and causal evidence of how the characteristics first-time fathers with no parental leave uptake during the child's first two years have changed over time.

We begin by mapping fathers' physical or economic impediments for taking parental leave using detailed information on health, criminal records, earnings, and work history. We find that while non-leave taking fathers, compared to the average father, have become more likely to have had a criminal conviction or have been hospitalized prior to childbirth, the absolute share of fathers facing such impediments is relatively low. Instead, a low income, being self-employed, and earning less than the mother stand out as even more defining traits relative to all fathers, a pattern that has become more salient over time.

[1] In 2019, the European Parliament mandated all members to reserve at least two months of paid parental leave for each parent (Directive 2019/1158).

Using the implementation of the reform reserving days for each parent in 1995 and its expansions in 2002 and 2016, which earmarked one, two, and three months of paid leave, respectively, to each parent, we provide a causal analysis of these compositional changes among the non-leave taking fathers. In line with the descriptive evidence, we find that prior the 1995 reform the non-leave taking fathers were overrepresented among low-income earners, the self-employed, and among fathers earning less than the mother. We further show that the implementation of the reserved days contributed to making the non-leave taking fathers more selected in terms of having a weak labor market attachment and earnings less than the mother. As a comparison we also analyze fathers who took at most half of the reserved days for fathers. These fathers are in general more similar to the average father. However, as more days have been reserved for each parent, they increasingly share the same traits as the non-leave taking fathers. As such, it appears that taking at most half of the reserved parental leave days has become more like taking no parental leave.

That the non-leave taking fathers increasingly comprise low-income fathers and fathers who earn less than the mother could, based on theory, be a result of that these fathers have more traditional gender norms. To investigate if gender norms can explain why some fathers do not take parental leave, we exploit two empirical strategies. First, we exploit regional variation in gender norms and study if the probability of not taking parental leave is larger in regions with more traditional gender norms (e.g., Guiso et al. 2008; Fogli and Fernandez, 2009; Hyde and Mertz, 2009; Aldén and Neuman, 2022). To proxy for gender norms, we use data from the World Value Survey on gender attitudes at the county level. This first set of evidence suggests that stronger traditional gender norms are associated with fathers being more likely *not* to take any parental leave.

Second, to provide a causal analysis of the importance of gender norms, we use the sibling-sex composition in the family in which the father grew up as proxy for gender norms.

Brenøe (2021) shows that parenting is more gender-typical in families with gender-mixed children, suggesting that fathers and mothers who grew up in such families may have more traditional gender norms.[2] Based on theory, we expect that a father's decision to take parental leave or not is affected both by his and the mother's gender norms (e.g., Allen and Hawkins, 1999). We therefore investigate how the father's *and* the mother's sibling-sex composition affect the *father's* probability of not taking any parental leave. To study causal effects, we focus on first-born sons and daughters (i.e., the father and mother of a child) and leverage that the gender of the second-born child should be random. Specifically, to study the impact of the father's (mother's) gender norms on his parental leave uptake, we estimate the effect of him (the mother) having a second-born sister (brother) compared to having a second-born brother (sister) on his probability of not taking any parental leave. We find that, on average, having a sister compared to a brother has practically no impact on the father's probability of not taking any parental leave. The same holds for mothers' sibling-sex composition. Given that parents with higher educational attainment hold more gender equal attitudes and treat their children in a less gender typical way (Geisler and Kreyenfeld, 2011), we also study heterogeneous effect by the father's and mother's parental education. For both the father's and mother's sibling-sex composition, there is an increase in the likelihood of no parental leave uptake among fathers if at least one of the father's or mother's parents, respectively, has primary education. This pattern is most salient in recent cohorts of first-time fathers. Taken together we interpret the findings as suggestive evidence of that more traditional gender norms lead to a higher probability of the father *not* taking any parental leave.

We contribute to the literature in several ways. There is an extensive literature on parental leave uptake, but most of this research focuses on the division of the leave between mothers and fathers and factors that contribute to a more equal division. Several studies (e.g., Duvander

[2] Noemi et al. (2018) find that having a same-sex sibling increases men's earnings, marriage propensity, and fertility compared to having an opposite-sex sibling.

and Johansson, 2012; Ekberg et al., 2013; Dahl et al., 2014; Tallås Ahlzén, 2022) have shown that the reforms aimed at stimulating increased paternal leave, such as the introduction and expansion of reserved parental leave for each parent, have in fact been successful. Moreover, Ma et al. (2020) analyzes the characteristics of fathers who are forerunners in terms of a larger parental leave uptake but also the fathers who take less parental leave during 1993 to 2010. They find that young, foreign-born, and low-income fathers tend to lag behind in taking parental leave. We are aware of only two previous studies focusing on fathers who do not use any parental leave. Duvander (2021) uses Swedish data to map the characteristics of fathers of children born in 2015–2017, who take no, or little, parental leave within the child's first two years. The study finds that taking no parental leave appears to be related to the connection to the child, fathers' characteristics, and working conditions. For fathers of children born in 1994–2017, the working conditions and individual characteristics of fathers taking no parental leave matter across the entire time period but there is an overall tendency of declining importance, the exception being low-educated fathers who are increasingly likely to take no parental leave, relative to high educated fathers. Similarly, Saarikallio-Torp and Miettinen (2021) study fathers' parental leave uptake using Finnish data on children born 2010–2015, and their findings are consistent with Duvander (2021). In particular, low-income and low-educated Finnish fathers are more likely to take no or little parental leave. Saarikallio-Torp and Miettinen (2021) also provide descriptive evidence of how the share of fathers taking no parental leave changed with the parental quota in 2013. They find no correlation (not even the birth-related paternity leave), but suggestive evidence of a compositional effect consisting in a decline of non-users among high-earning fathers.

We take these findings further by mapping the fathers who take no parental leave (or at most half of the reserved days) along new dimensions, e.g., health and criminal behavior. In particular, we add to insights about time trends for Swedish fathers taking no parental leave by studying differences relative to the average father.[3] In this way, we account for selection into fatherhood but also general trends in the population of fathers, and, thus, study changes that are unique to the non-leave taking fathers. Moreover, we use quasi-experimental approaches that allows us to provide causal estimates of compositional changes in physical and economic constraints but also relating to gender norms. As such, we contribute with important insights for policy. To increase fathers' parental leave uptake at the extensive margin, the results in this paper point to that policies should target economically constrained fathers and fathers earning less than their partners. While some of the non-leave taking fathers have a bad health or criminal conviction, they are not very different in this regard from the total population of first-time fathers. The results also point to that reforms reserving additional months for each parent will have a limited impact on the fathers who do not take any parental leave. Instead, policies may need to directly target the lack of economic resources or gender norms of both parents.

The paper proceeds as follows. Section 2 briefly presents the Swedish parental leave system, followed by the theoretical framework in Section 3 and a description of the data in Section 4. In section 5, we present the descriptive evidence on the of the non-leave taking fathers compared to all fathers, both from an individual and household perspective and changes over time. In Sections 6 and 7, we study how the daddy-quota reforms and regional and between-family variation in gender norms, respectively, affect the composition of non-leave taking fathers. Section 8 concludes.

2. Trends in parental leave uptake among fathers in Sweden

In Sweden both parents have been entitled to parental leave benefits since 1974.[4] For a long time, the shared leave was almost exclusively used by mothers. To encourage a more gender

[3] Recent findings suggest that there are time trends in the composition of fathers (Aldén et al., 2022).
[4] Today, Swedish parents are entitled to 18 months of job protection, and 480 days of paid parental leave benefits. Out of these 480 paid days, 390 days have a replacement rate of almost 80 percent of the labor income up to a cap and 90 days are at a low flat rate. Parents with insufficient income to qualify for parental leave benefits receive a

equal uptake between parents, several reforms have been implemented. In 1995, the first parental leave quota in Sweden was implemented, earmarking one month of paid parental leave benefits to each parent. However, the reform left the total number of days of parental leave unchanged. In 2002, another month of parental leave benefits was earmarked to each parent, followed by a third month in 2016. The reform of 2002 also extended the shared days of parental leave, leaving the uptake of mothers potentially unaffected by the quota (Försäkringskassan, 2014). This reform can therefore be expected to have a weaker impact on fathers' uptake than the reforms of 1995 and 2016. In 2012, it became possible for parents to take parental leave simultaneously for 30 days during the child's first year. According to ISF (2018) many fathers start their parental leave uptake by taking such 'double-days'.

Since the implementation of reserved days for each parent, fathers' total days of parental leave uptake has increased. Specifically, it has increased from 47 days for children born in 1994 to 125 days for children born in 2010. However, the increase in the number of days that the average father takes when the child is relatively young is more modest. In the child's first year, fathers took around 22 days in 1994 compared to about one month of parental leave in 2016, and a substantial share of the leave days is taken when the child is older than two years old.

Figure 1 shows how the share of first-time fathers taking no or little parental leave has changed over time.[5] We report the share taking no leave days (panel A) or at most half of the quota days (Panel B) during the child's first year, the child's first two years, and up to the age to which parental leave days can be taken (total). Panel A shows that there was a sharp drop in the share of fathers who took no parental leave in 1995 when the first quota was implemented,

basic benefit. Before 2002 parents were entitled to 360 days of income-based benefits. Both the income cap and the two types of flat rate benefits have been raised several times throughout the studied time period. In 2016, the cap was 10 PBA, and the flat rate for the 90 days was SEK 180 per day and that for the basic benefit was 250 SEK per day (Försäkringskassan, 2022). In addition to the parental leave days, fathers are entitled to 10 days of birth related paternity leave, which is to be taken within 60 days of the birth of the child. The online appendix Figure A1 reports time trends in average parental leave uptake.

[5] In the Online Appendix B, we present the corresponding figures including all child parities. While the share of fathers taking no parental leave is lower for first parity fathers, the pattern is very similar for fathers of first parity children and any parity.

and since then the share of fathers taking no parental leave at all is relatively stable around 4 percent.

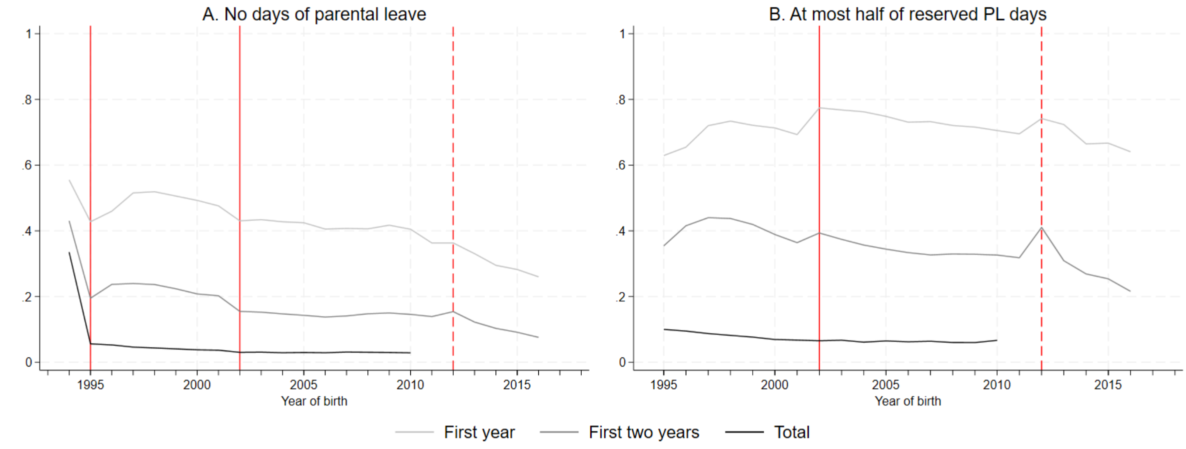

Figure 1. The share of fathers by degree of parental leave uptake for children born 1994–2016
Note: Panel A shows the share of fathers who do not take any leave. Panel B shows the share of fathers at most half of the reserved amount of leave (15 days from 1995–2001 and 30 days from 2002). The lines represent the different time spans of the first year, the first two years and in total (by age 12 for child cohorts 2014–2016, and age eight for earlier cohorts). Red vertical lines indicate the introduction of the quotas, and the red dashed line indicates the introduction of 'double-days' in the parental leave insurance. Due to data availability, we include only births until July for 2016.

For parental leave early in the child's life, panel A also displays a drop in 2002 when the quota was extended to two months. Between 2002 and 2012 about 15 percent of the fathers took no parental leave in the first two years. For the later child cohorts, there is a decline in the share of fathers who take no parental leave when the child is less than one (or two) year(s) old, but in 2016 still about 30 percent and 10 percent of fathers take no leave when their children are younger than one and two years, respectively. Panel A further reveals a relatively sharp decline after the double-days were introduced. While the double-days have encouraged more fathers to take at least some parental leave in the child's first year of life, evaluations suggest that the number of days increased at the expense of the reserved days (that could not be substituted for double-days) (ISF, 2018).

As a comparison, Panel B in Figure 1 reports the trend in the share of fathers taking at most half of the quota days of parental leave. In 1995–2001 this corresponds to taking no more than 15 days of leave, and for the period from 2002 and onwards it corresponds to taking at most 30 days of leave. Panel B shows that fathers' parental leave early in the child's life tends to cover relatively few days; in 1995–2010 about one third of all fathers in each cohort took no more than half of the reserved days in the first two years. Meanwhile, more than 90 percent of the fathers took at least half of their reserved days before the child was eight years old. Thus, all in all Figure 1 clearly illustrates that a non-negligible share of the fathers still takes no, or little, parental leave despite attempts from policy makers to increase fathers' involvement in childcare.

3. Theoretical framework

In this section, we outline theoretical mechanisms to understand what characterizes the fathers who take no parental leave. We divide the mechanisms into physical constraints, economic constraints related to alternative costs and bargaining power, and gendered social norms.

3.1 Physical constraints

A first explanation as to why some fathers do not take any parental leave is that they, for some reason, are physically impeded from doing so. Constraints we consider are father's bad health and incarceration.

Ill parents face the dilemma of taking care of themselves while being an active parent. Studies show that parental illness can make it difficult for parents to meet the needs of the children and that the illness may challenge parents' beliefs in their ability as parents (e.g., Angst and Deatrick, 1996). Bad health can therefore be a reason for why some fathers do not take any parental leave. At a household level, we can expect that if the mother is ill, then the father is more likely to take parental leave to meet the needs of the children.

Another possible constraint is incarceration. The number of children who grow up with an incarcerated parent has increased, both in the US and in Europe.[6] In Sweden, each year about 8,000 children and youth have an imprisoned parent (Socialstyrelsen, 2018). On the one hand, fathers' incarceration may physically prevent them from taking leave. On the other hand, fathers' involvement may not be desired or advised as it can create stressors within the family with negative implications for the children, both in the short and long run (e.g., Roettger and Swisher, 2013; Dobbie et al., 2019). As a result, we expect that convicted men are overrepresented among fathers not taking any parental leave relative to the overall population of fathers.[7]

3.2 Economic constraints

Economic models of the division of household work give predictions about how socioeconomic resources, individual and relative, affect fathers' parental leave use (Becker, 1965; Gronau, 1977). When it comes to individual resources, we expect that men with high earnings should be less likely to take any parental leave than men with low earnings, due to a higher opportunity cost (in absolute terms) as parental leave implies time away from work and forgone earnings. For high-earning men on the career track, being on parental leave could also have a negative long-run impact on career progression and hence future earnings.

Another group for whom the opportunity cost of parental leave may be particularly high are the self-employed. In this case, being absent from work may imply a drop in both current and future earnings as there may not be a substitute who can step in and temporarily take care of the

[6] In the US, the share of children with an incarcerated parents increased from 1.3 percent in 1990 to 2.2 percent in 2015 (Wildeman and Western, 2010). In most countries in Europe, the share has roughly doubled, although from low levels (Children of Prisoners Europe, 2017).

[7] This holds even in the light of the new literature suggesting that becoming a father can deter from further criminal activities – see e.g., Dasgupta et al (2022), Massenkoff and Rose (2022).

business.[8] In a similar way, taking parental leave might have negative implications for future earnings for a person with short tenure on the job, a temporary contract, or a low-demand job. In addition to fathers with high earnings, we therefore also expect that self-employed fathers and fathers with low tenure or atypical contracts to be more likely not to take any parental leave (e.g., Sundström and Duvander, 2002).

In addition to individual earnings and work conditions, relative resources may also affect the division of parental leave. Based on time allocation theory, fathers who contribute with more resources to the household should be less likely to take parental leave than fathers in households where the mother has equal or higher earnings than the father, as this would compromise household finances to a larger extent. In bargaining models, the division of parental leave is instead the result of negotiations within the family, where the outcome is determined by the parents' relative resources (see e.g., Manser and Brown, 1980; Lundberg och Pollak, 1996). In households where the father devotes more time to paid employment and have higher earnings than the mother, the father has more power to negotiate for less childcare and is, therefore, less likely to take parental leave. Thus, both time allocation and bargaining models predict that fathers with higher earnings than the mother should be overrepresented among the fathers who do not take any parental leave.

When, as in this paper, investigating why fathers do not take any days of parental leave despite quotas, the mechanisms at hand are somewhat different. All the economic constraints above apply, but the total days of parental leave benefits are reduced if the father does not take his reserved days. Consequently, the quotas imply a higher cost of allocating all leave to the mother. Unless the relative earnings and alternative costs of parents are such that fathers can

[8] Self-employment has been put forward as a way to balance work and family commitments. It is argued that self-employment offers flexibility in how much and when and where to work, which facilitates childcare. Research from Anglo-Saxon countries gives some support for this hypothesis for women (Lombard, 2001), but there is no such evidence for men nor for countries with family-friendly policies and a generous welfare system, such as Sweden.

compensate for the mother being on unpaid parental leave, the parental leave quotas introduce a tradeoff between economic incentives and the value of the total time that parents can spend with the child, which does not arise in absence of parental leave quotas. On the one hand, if the total parental leave time spent with the child is key, economic incentives and the importance of relative resources should be less important in the decision of taking parental leave or not. On the other hand, if the total time spent at home with the child during the first year(s) is not as important, families may refrain also from the reserved leave if individual and relative resources produce such incentives.[9]

3.3 Social constraints

Gender-ideology theory assumes that gender norms influence people's beliefs about the appropriate roles and tasks of men and women (e.g., Berk, 1985; West and Zimmerman, 1987; Risman, 1998). In such models, the division of tasks, in this case parental leave, between the parents is a result of gendered beliefs of men's and women's roles in childcare. On a societal level, mothers are expected to be the prime caregiver of infants and fathers to be the breadwinners. Couples that comply with the norms will then, regardless of their individual or relative earnings or, as specific to the Swedish case, regardless of losing parental leave days, follow a 'traditional' division of tasks. This may be particularly salient in households where the father holds a lower socioeconomic status, as taking no leave may be a strategy to display masculinity (e.g., Gornick, 2015; Bloksgarard, 2015). One strong masculine norm relates to the notion of the ideal worker prioritizing work, which constrains the leave taking both via culture and work structure (Haas and Hwang, 2017).

[9] Data on childcare enrollment is presently unavailable, which makes it difficult to study the variation in actual total parental leave length. We can only analyze the uptake of parental leave benefits, and given the flexibility of the Swedish parental leave system, benefits do not automatically correspond to a given length of parental leave (Duvander and Viklund, 2014).

While fathers are less likely to take parental leave if the average uptake among coworkers is low (Bygren and Duvander, 2006, Lappegård, 2012), they can themselves become agents of change (Haas, 2002). Findings have shown that fathers' parental leave is susceptible to exogenous variations in the uptake of parental leave among peers, both at the workplace and within the family (Dahl. et al., 2012; Carlsson and Reshid, 2022; Tallås Ahlzén, 2022). Research further shows that the mother's attitudes affect the father's uptake of parental leave. For example, mothers may limit men's involvement in childcare – referred to as maternal gate keeping (Allen and Hawkins, 1999) – and this may impede fathers from taking parental leave.

4. Data

4.1 Data sources

We collect data on parental leave from the MiDas database at the Social Insurance Office, covering all payments of parental leave benefits since 1994. The data includes information about the type of benefit, net and gross days, amounts and dates that the benefit covers. The information is reported by child and beneficiary. In the analysis we use the net days of parental leave benefits, meaning that days with partial replacement are summed up so that one day corresponds to full-time replacement.[10]

To this data we add information about socioeconomic characteristics such as age, education, employment, occupation, and earnings, which are collected from different registers at Statistics Sweden. Using the multigeneration register at Statistics Sweden we link fathers (and mothers) to their parents and siblings. We further add data on health from the inpatient care register at the Social Insurance Office and data on criminal convictions from the official crime register collected by the National Council for Crime Prevention (BRÅ).

[10] Duvander and Viklund (2014) show that the correlation between leave days and benefits used is very high for fathers, implying that unpaid parental leave should not be a problem in our case.

4.2 Measures

No parental leave is defined as taking no parental leave, neither income based nor the low flat rate, in the first two years of the child's life. This measure does not include the ten days of birth related paternity leave. We focus on parental leave within the child's first two years (as does Duvander and Johansson, 2019) for two reasons. First, fathers being on parental leave when the child is less than two years old are more likely to be an active caregiver also when the child started pre-school. Therefore, early parental leave uptake can be considered as more in conformity with the intention of the reforms that reserved leave days for each parent. Second, studying parental leave within two years makes the analysis of Swedish parental leave outcomes more comparable to the uptake in other, less flexible, countries (e.g., Iceland, Finland, and Norway) (OECD, 2021).

To capture physical impediments for taking parental leave, we consider parental health and criminal behavior. To capture poor parental health, we use data on *hospitalizations* from the inpatient registry. An individual is defined as having been hospitalized if the person has been hospitalized for any diagnosis at least seven consecutive days in the year before the birth of the child. To proxy for the likelihood of being imprisoned (and thereby being impeded to take parental leave), we use data on criminal convictions (as we lack data on imprisonment). An individual is defined as having a criminal conviction if he or she has been convicted for a crime other than traffic-related offenses, at some point before the year of birth of the child.[11]

To capture potential economic constraints impeding the fathers from taking any parental leave, we consider the following measures to proxy for fathers' alternative cost and bargaining power: total income, unemployment, self-employment, and the fathers' contribution to household income. *Total income* is defined as total income the year before birth stemming from

[11] There is a literature of parenthood as a potential "turning point" in a criminal career, see e.g., Monsbakken et al. (2013). Our measure is meant to capture the possible effects of criminal activity before the child is born on parental leave uptake.

earnings as employee or from self-employment and capital income. We use income deciles that are constructed annually based on the sample of fathers, including individuals with a zero income. Our income measure does not include any transfers, such as social assistance or unemployment benefits. As a complementary measure to income, we use *individual disposable income,* which includes labor and capital income as well as economic transfers and is a better proxy of the individual's economic living standard. Further, a person is defined as *unemployed* if the individual collects unemployment benefits the year before childbirth. An individual is defined as *self-employed* if most of the individual's labor income comes from self-employment, including both non-limited and limited liability firms. The father's contribution to household income is measured as the father's income as percent of household income in the year before the birth of the child. Household income includes the father's and mother's labor income (from wage- and self-employment) and capital income, as well as zero income (requiring that at least one parent to have positive income).

4.3 Sample restrictions

The main sample includes first-time Swedish-born fathers of children born in Sweden 1995–2015.[12] (In the analysis of the reforms that reserved parental leave days for each parent we also include fathers of children born in 1994 and in the first half of 2016.[13]) We focus on first-time fathers for several reasons. First, by focusing on first-time fathers we limit the analysis to pre-birth characteristics. Since the birth of a child is not exogenous to individual outcomes, e.g., earnings and health, individuals may change their behavior in anticipation of having a child and

[12] As shown in Figure 1, the introduction of the first 'daddy-month'-quota drastically changed the share of fathers taking any parental leave. Because we only observe parental leave uptake for one year prior to the reform, we consider it to be more informative to start the analysis in 1995.

[13] We have data on parental leave uptake until June 30, 2018. Because we study the parental leave uptake during the child's first two years, we cannot include fathers of children born in 2016 in the main analysis. However, in the reform analysis the sample comprises fathers of children born in a 6-month window around the reforms. Therefore, we can include fathers of children born in the first half of 2016 in the analysis of the daddy quota reform implemented in 2016.

after the child is born. By analyzing first-time fathers, we avoid behavioral changes due to older siblings. Second, first-time fathers should be more likely to conform to new policy reforms and to be the more sensitive to changes in social norms. Restricting the analysis to first-time fathers, if anything, reduces the likelihood for non-compliers to the reforms reserving parental leave days for each parent, leading to a possible underestimation of the reform effects.[14] Because we want to analyze characteristics before childbirth and the impact of reforms, we further restrict the sample to parents and children born in Sweden to ensure access to complete data and that the parents are familiar with the Swedish parental leave system. Moreover, the analysis of social norms requires information about the fathers' (and mothers') siblings and parental education, which is available for Swedish-born men (and women). Given the finding in Duvander (2021), Saarikallio-Torp and Miettinen, (2021), and Ma et al. (2020) of foreign-born fathers being over-represented by those not taking any parental leave, the restriction of the sample to Swedish-born fathers implies an underestimation of the number of fathers in Sweden taking no or little parental leave.

To focus on fathers who do not contribute to the shared responsibilities, we remove the 26,843 children for whom no parental leave have been taken by neither parent. We further restrict the analysis to fathers who live together with the mother in the year of birth of the child and/or the year after. The focus on fathers in cohabiting couples is motivated by that couples that are not cohabiting when the child is born face completely different possibilities and trade-offs in parental leave uptake and differs from cohabiting couples in other respects. This means that we exclude about 14 percent of the fathers who do not take any parental leave and 6 percent of all fathers. Although the non-leave taking fathers are more than four times more likely than

[14] In the Online Appendix B, we report the results from the main analyses presented in the paper for fathers of any parity. In these estimations we control for child parity. In general, the results are similar to the main results.

all fathers to be separated from the mother, most of these fathers are cohabiting with the mother.[15]

Table 1. Descriptive statistics of fathers who take no or at most half of the reserved parental leave days and all fathers

	(1) No PL	(2) All fathers	(3) No PL	(4)	(5) At most half of reserved days	(6)	(7) All fathers	(8)
			1995–2000	2010–2015	1995–2000	2010–2015	1995–2000	2010–2015
Age at birth								
< 20	0.023	0.009	0.026	0.020	0.018	0.013	0.011	0.007
20-24	0.166	0.127	0.186	0.177	0.185	0.182	0.156	0.128
25-29	0.338	0.361	0.369	0.318	0.398	0.350	0.405	0.342
30-34	0.296	0.336	0.279	0.279	0.276	0.276	0.301	0.331
35-39	0.127	0.127	0.101	0.143	0.091	0.128	0.096	0.143
40-	0.050	0.040	0.040	0.064	0.033	0.050	0.031	0.049
Education								
Primary	0.146	0.092	0.164	0.142	0.145	0.115	0.122	0.078
Secondary	0.649	0.613	0.688	0.611	0.720	0.656	0.700	0.559
University	0.196	0.292	0.139	0.238	0.129	0.223	0.174	0.359
Missing info	0.010	0.004	0.009	0.009	0.006	0.006	0.004	0.004
Student	0.110	0.076	0.120	0.098	0.098	0.081	0.085	0.070
Child characteristics								
Child is a boy	0.513	0.516	0.515	0.517	0.512	0.516	0.514	0.516
Observations	104,449	639,902	37,155	23,688	67,819	58,856	166,646	187,262

Notes: The parental leave uptake refers to the number of paid parental leave days during the child's first two years. Taking at most half of the reserved days corresponds to at most 15 and 30 days for children born before and after 2002, respectively. Educational attainment is measured the year before the birth of the child. Primary education corresponds to at most nine years of education. An individual is defined as student if he has received any student-related income in the year before childbirth.

Table 1 presents descriptive statistics for all fathers in our sample and for the fathers who take no parental leave during the first two years of their child's life. Columns (1) and (2) present statistics for all childbirth cohorts while columns (3)–(8) presents statistics for children born early (1995–2000) and late (2010–2015) in the time period studied for fathers taking no paid

[15] The difference in not cohabiting with the mother between the non-leave taking parents and all parents has increased over time. Descriptive evidence shows that among fathers of children born in 1995–2000 the share was 17.0 percent and 6.7 percent for fathers who did not take any leave and for all fathers, respectively. Among fathers of children born in 2010–2015, the corresponding shares were 22.5 and 6.3 percent. The more causal analysis using the reforms reserving paid parental leave days for each parent introduced in 1995, 2002, and 2016, points in the same direction. While the share of separated fathers among the non-leave taking fathers increased after the implementation of the first reserved month (see Online Appendix Table A8), none of the extensions in 2002 and 2016 made fathers more selected on this margin.

parental leave (No PL), at most half of the reserved parental leave days , and the average for all fathers. Most fathers were 25 years or older at childbirth; the majority were between 25 and 29 and very few – less than 2 percent – were below 20 years old. While there has been a general increase in the age of birth, a slight overrepresentation of non-leave taking fathers is visible in both the youngest and oldest age groups. In line with the patterns by age, few of the fathers are students; on average, only about 11 and 8 percent of the non-leave taking fathers and all fathers, respectively, received student allowance in the year before childbirth, and these shares have decreased over time.

Turning to education, Table 1 reveals that fathers who take no parental leave have lower educational attainment compared to all fathers. There is a general decrease in the share with only primary education and an increase in the share with at least secondary education. However, these changes have been more pronounced among all fathers. Among fathers who take no parental leave the share with primary and university education amounted to about 14 and 24 percent, respectively, in the 2010–2015 cohort compared to about 8 and 36 percent among all fathers.

5. Descriptive evidence of physical and economic constraints

In this section we map trends in the traits related to physical and economic impediments of first-time fathers with no parental leave uptake, both at the individual and at household level. To study trends, we present statistics for fathers of children born in 1995–2000 and 2010–2015. To account for trends in traits common to all fathers, we report the extent to which fathers with no parental leave uptake differ from all fathers. Further, alongside the trends for fathers who take no parental leave, we present the trends for fathers taking some (but no more than half of their reserved days) of parental leave to illustrate the potential distinctiveness in characteristics of fathers taking no leave.

5.1 Physical constraints

Figure 2 shows the extent to which non-leave taking first-time fathers and fathers taking at most half of the reserved amount of parental leave days are physically constrained based on fathers' health and criminal behavior prior to childbirth. The figure also includes traits of mother and both parents jointly.

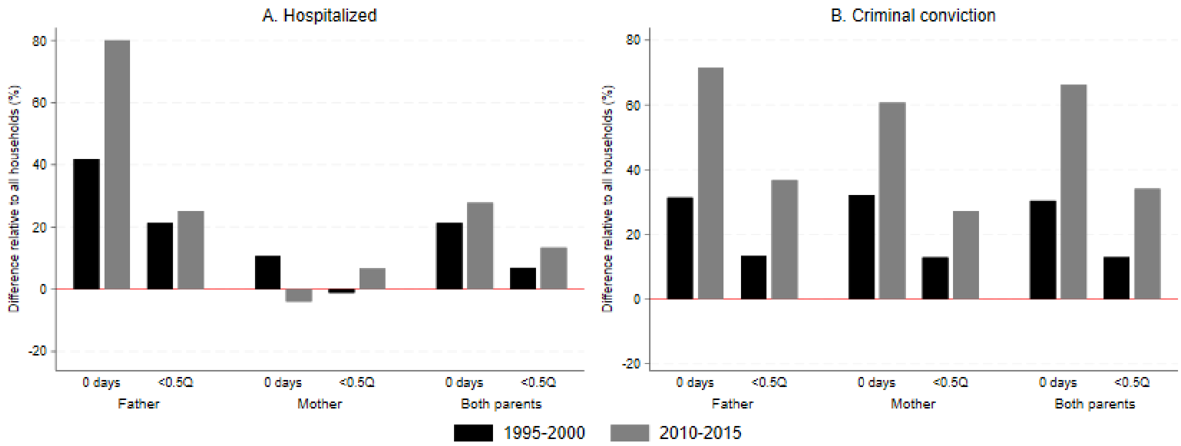

Figure 2. Physical or mental constraints of fathers who take no or at most half of the reserved parental leave days relative to all fathers.
Note: The difference relative to all fathers is expressed as the share of fathers taking zero or at most half of the reserved parental leave days (<0.5Q), respectively, minus the share of all fathers, relative to the share of all fathers. The parental leave uptake refers to the number of paid parental leave days during the child's first two years. Taking at most half of the reserved days corresponds to at most 15 and 30 days for children born before and after 2002, respectively. Hospitalization is defined as having been hospitalized for any diagnosis at least 7 days in the year before birth of the child. Criminal conviction is defined as being convicted for any crime, except traffic-related crimes, at some point before the child's year of birth.

Fathers who do not take parental leave are more likely to have been hospitalized in the year preceding the birth of the child and are more likely to have a criminal conviction. When it comes to hospitalization, only a very small share – less than 1 percent – of the fathers have been hospitalized (see Appendix Table A1). The difference relative to all fathers is fairly small for the earliest cohort – non-leave taking fathers are about 40 percent more likely to have been hospitalized – but it grows over time so that non-leave taking fathers are about 80 percent more likely than the average father to have been hospitalized in the latest cohort. As one would expect, the difference relative to all fathers is considerably smaller if the mother has been hospitalized prior to childbirth, as such a situation most likely put higher demands on fathers to be involved in childcare. Similarly, this difference is relatively small if both parents have been hospitalized before childbirth.

The non-leave taking fathers are also overrepresented, and increasingly so, when it comes to having a criminal conviction. This is equally the case when the mother or both parents have had a conviction at some point before childbirth. The increased overrepresentation at the individual level is a result of a decreasing share with a criminal conviction among all fathers combined with a slight increase in the corresponding share among the non-leave taking fathers. In the 2010–2015 cohort, the share of non-leave taking fathers with a criminal conviction was about 11 percent compared to 7 percent among all fathers (see Appendix Table A1). Fathers who take at most half of the reserved parental leave days (and the corresponding mothers) are generally much more similar to all fathers along both dimensions than fathers not taking any leave.

Taken together, the descriptive evidence suggests that the non-leave taking fathers comprise fathers who increasingly face physical constraints in terms of hospitalization and criminal convictions, although at very low levels.

5.2 Economic constraints

Turning to economic constraints, Figure 3 describes how fathers taking no or at most half of the reserved parental leave days differ from all fathers in terms of total income, unemployment, self-employment, household income, and relative income (to the mother). When it comes to individual total income, panel A shows that first-time fathers with a low total income are overrepresented among the non-leave taking fathers. Also, the difference relative to all fathers has increased over time. In the very bottom of the income distribution, the share of fathers who take no parental leave is about twice as large as that of all fathers in the earliest cohort while in the latest cohort the share has grown to being nearly three times as large.

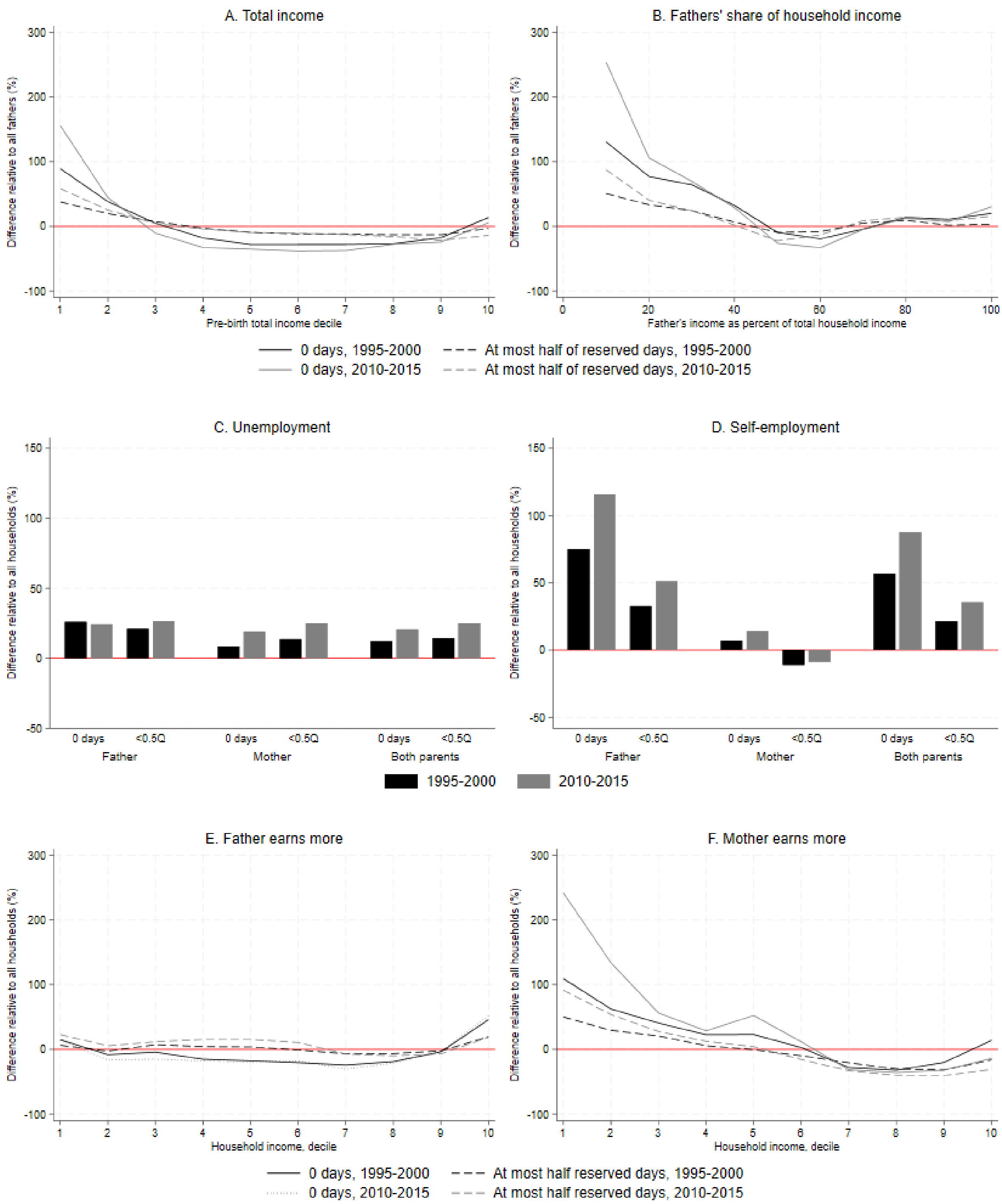

Figure 3. Economic constraints of first-time fathers who take no or at most half of the reserved parental leave days relative to all fathers.

Note: The difference relative to all fathers is the share of fathers taking no or at most half of the reserved parental leave days (<0.5Q), respectively, minus the share of all fathers, relative to the share of all fathers. Panel A: Pre-birth income refers to the father's labor income. The income deciles are constructed annually relative to the sample of fathers, including individuals with zero income. Panel B: The measure includes labor income (requiring at least one parent to have positive income). Panel C: An individual is defined as unemployed a person is defined as *unemployed* if the individual collects unemployment benefits in the year before childbirth. Panel D: An individual is defined as self-employed if the majority of the individual's labor income comes from self-employment, including both non-limited and limited liability firms. Panels E-F: Income deciles are constructed annually, and the household rank is relative to the sample of parents. Fathers are defined to earn less (more) than the mother if he earns less (more) than 40 (60) percent of household income. The income measure includes labor income, as well as zero income (requiring at least one parent to have positive income).

In 2010–2015 cohort, about 48 percent of the non-leave taking father belong the lower third of the total income distribution compared to about 33 percent among all fathers (see Appendix Table A1).

Panel C further shows that the non-leave taking fathers are somewhat more likely to be unemployed before childbirth compared to all fathers. The share unemployed has decreased over time but to the same degree among all fathers, and as result the relative share of the non-leave taking fathers is practically unchanged. In the 2010–2015 cohort, the level of unemployment is about 7 percent among fathers not taking any leave and 5.6 percent among all fathers (see Appendix Table A1). The pattern is very similar for mothers and when considering both parents.

Panel D reports that self-employment is more common among the non-leave taking fathers (on average, 11 vs. 6 percent – see Appendix Table A1). Further, there has been a relative increase in the share of self-employed in the latest cohort; it has increased by 6 percentage points for non-leave taking fathers compared to 2 percentage points for all fathers. It has also become more common that both parents are self-employed. In contrast, the difference by the mother's self-employment is small.

Turning to the household level Panel B shows that, above all, fathers who earn less than the mother are overrepresented among the non-leave taking fathers. While many fathers, about 38 percent, earn at least 60 percent of the household income, the share of fathers who contribute with less than 40 percent to the household income has increased over time, in particular among the non-leave taking fathers, from 17 to 24 percent (see Appendix Table A1). Panel F further reveals that these fathers primarily belong to households with a low total income and that this pattern has become more salient in the most recent cohort. When it comes to the non-leave taking fathers who earn more than the mother, reported in Panel E, they are primarily overrepresented in the top of the household income distribution. Thus, over time it is primarily fathers who earn less than the mother *and* belong to low-income households who have become more likely to take no parental leave relative to all fathers.[16] Like the physical constraints, fathers who take at most half of the reserved parental leave days are in general much more similar to all fathers in terms of the characteristics related to economic constraints compared to the non-leave taking fathers.

To sum up, the descriptive evidence points to that the non-leave taking fathers have become more selected over time in terms of both physical and economic constraints. However, the smaller differences relative to all fathers together with low absolute levels suggest that physical constraints are somewhat less important than economic constraints in explaining why fathers do not take parental leave. Further, the non-leave taking fathers appear primarily to face economic constraints in terms of a low total income and high alternative cost of being absent from work due to self-employment. The non-leave taking fathers also increasingly belong to households where the father earns less than the mother and total household income is low. As such, the non-leave fathers share characteristics that distinguish them from fathers taking at least some parental leave.

6. Trends in the traits of non-leave taking using the reserved days

In this section, we exploit the parental leave quotas, implemented in Sweden in 1995, 2002, and 2016, respectively, to causally study what characterizes the non-leave taking and compositional changes over time. As a comparison, we also study the impact on fathers taking at most half of the reserved parental leave days. The first reform earmarked one month of paid parental leave benefits to each parent but left the total number of days of parental leave unchanged. The 2002 reform earmarked an additional month to each parent and increased the total number of days

[16] In the Online Appendix we present the descriptive evidence for all child parity and find no striking differences compared to the results for first parity children.

correspondingly, followed by a third month in the 2016 reform (keeping the total number of days constant).

Evaluations have shown that the different reforms affected different groups of fathers (Försäkringskassan, 2019), but we know little about how the reforms affected the composition in the group of fathers taking no parental leave. To investigate this, we estimate effects of each reform on the fathers' individual and household characteristics using the following regression discontinuity (RD) design:

$$y_i^{father} = \alpha_0 + \gamma_1 Treated_i + \gamma_2 (Treated_i * NoPL_i) + \gamma_3 NoPL_i + \gamma_4 f(Birthdate_i) + \gamma_5 (f(Birthdate_i) * No\ PL_i) + \varepsilon_i \qquad (1).$$

y_i^{father} is the outcome variable, in this case the probability that a father has a certain characteristic. As outcomes, we focus on the characteristics that the descriptive analysis in Section 5 revealed as the most important explanations for why fathers do not take any parental leave: having a low total income (belonging to the lower third of the total income distribution), being self-employed (at the individual level), and earning less than the mother at the household level (earning less than 40 percent). To that we add two complementary outcomes. First, we include belonging to the bottom third of the disposable income distribution to capture any transfers due to, e.g., sickness, unemployment, poverty or imprisonment. Second, motivated by that non-leave taking fathers who contributed less to household income appear to be concentrated to low-income households, we include a combined measure of earning an income in the bottom third of the disposable income distribution and at the same time contribute with less than 40 percent of household income. $Treated$ is an indicator variable of the child being born after a reform was implemented. $No\ PL$ equals 1 for fathers who did not take any parental leave during the child's first two years, and 0 for fathers who took at least some leave. The reform effect of the fathers who took some leave is γ_1.[17] The reform effect specific to fathers taking no parental leave is captured by γ_2. The pre-reform difference in the outcome between the fathers taking no parental leave and fathers who took some leave is captured by γ_3. Thus, the sum of γ_2 and γ_3 is the difference between the two groups of fathers after the reform. γ_4 is a function of the running variable – the child's birthdate – that is allowed to differ on each side of the cutoff. In the main specification this is a second-order polynomial, and we apply triangular weights. γ_5 captures the corresponding trends in the running variable for the fathers taking no parental leave. Standard errors are robust and clustered at the birth date of the child. To study the impact of the reserved days on fathers who took at most half of the reserved days, we simply replace the indicator for taking no parental leave with an indicator for taking 0–15, 0–30 or 0—45 days in the regression for the first, second, third reform, respectively.

The analysis is restricted to fathers whose child is born within 6 months of each reform. The underlying assumption for consistent estimates is that parents cannot manipulate the treatment status, meaning that controls and treated are comparable. Given that the exact date of birth is difficult to control, an analysis focused on births close to the cutoff effectively deals with this concern.[18]

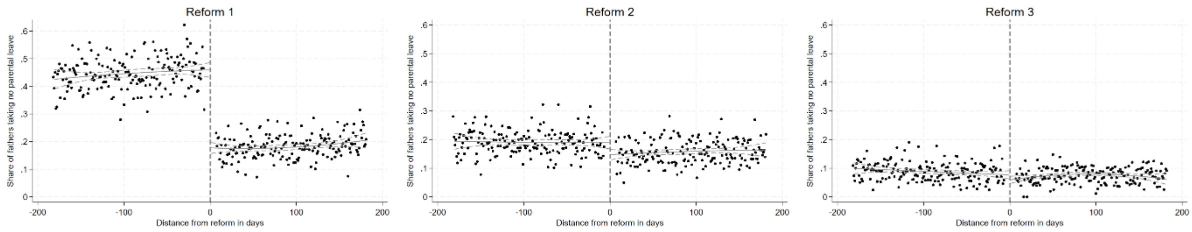

Figure 4. The share of fathers taking no parental leave, by birthdate of the child
Notes: The analysis includes all births within 6 months of each reform. No parental leave refers to paid benefits within the child's first two years. Birth date of the child is normalized to the date of implementation, indicated by the vertical line.

[17] The average reform effect captures potential seasonal variation among fathers, and the reform effect on fathers taking parental leave. Thus, an outflow of fathers with some trait (outcome) following the reform will appear also here as an inflow of fathers.
[18] See e.g., Tallås Ahlzén (2022) for an extensive discussion about the identifying assumption.

Figure 4 shows the reform effect on the share of fathers taking no parental leave in the first two years. As was depicted in Figure 1, there was a sharp decline in the number of fathers taking no parental leave when the first month was reserved for each parent in 1995. Also, for the second and third reforms extending the days reserved to each parent, there is a significant, but smaller drop in the number of fathers taking no parental leave both in 2002 and 2016. As such, all reforms may have affected the composition of the non-leave taking fathers.

The estimates in Table 4 show how the group of fathers taking no parental leave (columns 1–5) and fathers taking at most half of the reserved paid parental leave days (columns 6–10) in the child's first two years changed relative to other fathers, with respect to the characteristics of interest. Panel A, B, and C present the effects of the first, second, and third reserved months, respectively.

Beginning with the first reserved month introduced in 1995, the pre-reform differences show, much like the descriptive evidence, that the fathers taking no parental leave days were more likely to be self-employed, low-income earners, have a low disposable income, earn less than the mother and also to be overrepresented among fathers having a low disposable income *and* earning less than the mother. As can be seen in the top of panel A, the first reserved month made the non-leave taking fathers more selected relative to all fathers in terms of having a low total and disposable income. Further, at the household level, the non-leave taking fathers who earned less than the mother *and* earned a low income were less likely to respond to the reform.[19]

The second reserved month had a, in many regards, similar impact on the composition of fathers taking no paid parental leave. Panel B reveals analogous, but somewhat smaller, pre-reform differences in the various traits (in 2001) relative to the fathers who take some parental leave days. As for the first reserved month, non-leave taking fathers with low disposable income were less likely to respond to the expansion of the reserved days in 2002.

[19] All results in Table 4 are robust for controlling for the gender of the child and municipality fixed effects (see Online Appendix Table A1) and to a specification using the optimal bandwidth (see Online Appendix Table A2).

Table 4. Reform analysis using regression discontinuity.

	Fathers taking no parental leave					Fathers taking at most half of the reserved parental leave days				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Business owner	Low disposable income	Low income	Low household (hh) share	Low disp inc + hh share	Business owner	Low disposable income	Low income	Low household (hh) share	Low disp inc + hh share
A: Reform 1995										
Treated X No PL / Less PL	0.011	0.125**	0.082*	0.043	0.064**	-0.010	0.060	0.037	0.000	0.020
	(0.021)	(0.049)	(0.047)	(0.027)	(0.027)	(0.017)	(0.041)	(0.038)	(0.022)	(0.022)
Treated	0.011	-0.014	0.003	-0.004	-0.009	0.009	-0.032	-0.017	-0.004	-0.011
	(0.007)	(0.025)	(0.025)	(0.012)	(0.012)	(0.007)	(0.026)	(0.026)	(0.012)	(0.012)
No PL/ Less PL	0.046***	0.145***	0.155***	0.054***	0.045**	0.046***	0.145***	0.155***	0.054***	0.045**
	(0.012)	(0.029)	(0.028)	(0.016)	(0.017)	(0.012)	(0.029)	(0.028)	(0.016)	(0.017)
Control mean	0.027	0.281	0.280	0.073	0.064	0.027	0.281	0.280	0.073	0.064
Observations	29,972	29,972	29,972	29,972	29,972	29,972	29,972	29,972	29,972	29,972
B: Reform 2002										
Treated X No PL / Less PL	0.023	0.108**	0.071	0.078**	0.074**	0.013	0.013	-0.003	-0.018	-0.016
	(0.022)	(0.048)	(0.049)	(0.037)	(0.037)	(0.016)	(0.038)	(0.037)	(0.023)	(0.023)
Treated	0.004	-0.041**	-0.018	-0.003	-0.006	-0.001	-0.036	-0.012	0.011	0.007
	(0.007)	(0.018)	(0.019)	(0.011)	(0.010)	(0.008)	(0.022)	(0.021)	(0.012)	(0.011)
No PL / Less PL	0.052***	0.081**	0.091**	0.057**	0.054*	0.024**	0.066**	0.068**	0.042**	0.044**
	(0.014)	(0.038)	(0.038)	(0.028)	(0.028)	(0.012)	(0.029)	(0.030)	(0.019)	(0.019)
Control mean	0.032	0.322	0.320	0.091	0.076	0.032	0.317	0.314	0.093	0.075
Observations	30,167	30,167	30,167	30,167	30,167	30,167	30,167	30,167	30,167	30,167
C: Reform 2016										
Treated X No PL/ Less PL	-0.059	0.035	0.091	0.158**	0.137**	-0.009	0.057	0.094**	0.065**	0.064**
	(0.049)	(0.063)	(0.062)	(0.063)	(0.056)	(0.021)	(0.039)	(0.044)	(0.031)	(0.027)
Treated	0.005	-0.019	-0.017	-0.020	-0.022	0.001	-0.036	-0.039*	-0.028*	-0.032**
	(0.009)	(0.021)	(0.020)	(0.013)	(0.013)	(0.010)	(0.022)	(0.022)	(0.015)	(0.014)
No PL / Less PL	0.083**	0.143***	0.119***	0.057	0.064*	0.038***	0.058**	0.033	-0.012	0.000
	(0.034)	(0.046)	(0.045)	(0.043)	(0.037)	(0.014)	(0.030)	(0.033)	(0.026)	(0.022)
Control mean	0.051	0.332	0.331	0.115	0.094	0.047	0.322	0.319	0.114	0.091
Observations	30,458	30,458	30,458	30,458	30,458	30,458	30,458	30,458	30,458	30,458

Notes: No PL and Less PL refers to zero days or at most half of the reserved paid parental leave days in the child's first two years. Low (disposable) income is defined as having an income in the lower third of the pre-birth (disposable) income distribution of all sampled fathers. Low household (hh) income share is defined as the father contributing with less than 40 percent to the pre-birth household income. All estimations are conditional on the parents living together either the year of birth or the year after. Estimates from separate RD-estimations using a 6-month reform window on each side, triangular weights, and quadratic separate slopes. Standard errors are clustered at the running variable, the birth date of the child. *** p<0.01, **p<0.05, * p<0.1

Moreover, the reform increased the overrepresentation of non-leave taking fathers among those earning less than the mother (column 4, Panel B), also in combination of having low disposable income (column 5, Panel B).

For the third reform (see Panel C)– reserving three months of parental leave for each parent – there is a reform effect specific to fathers taking no parental leave for the likelihood of having a lower income than the mother, and in combination with a low disposable income. Like the two first reforms, the pre-reform differences reveal that the non-leave taking fathers were more likely than all fathers to be self-employed, to have a low total and disposable income, but also earn less than the mother in combination with having a low disposable income (column 5, Panel C).

Like the descriptive evidence in Section 5, the pre-reform differences in the economic characteristics between fathers who took at most half of the reserved parental leave days and all fathers are generally smaller than for the non-leave taking fathers. Further, there is no clear evidence of that the reform had any compositional effects on these fathers. The only exception is the 2016 reform that reserved three months of parental leave for each parent. Specifically, the reform increased the probability that fathers taking at most half of the reserved days have a low total income, earn less than the mother, and that they have a low disposable income in combination with earning less than the mother. This point to that the reforms, by increasing the number of average number of parental leave days a father takes, may have led to a shift in norms such that taking at most half of the reserved days has become more like taking no parental leave days.[20]

[20] In the Online Appendix Table A3, we present analyses using the mother's traits. With one exception – the mother having a low total and low disposable income in 1995 – none of the reforms had a statistically significant effect on mother's characteristics, and the estimated effects and pre-reform differences are generally small. The first reserved month increased the probability that the mother had a low total and a low disposable income by 15.9 and 13.8 percentage points, respectively, but the extension of the quota had no further impact in this regard. Again, this shows that the low-income household were least likely to respond to the reserved month. However, reserving months for each parent appear mainly to have affected the composition of the non-leave taking fathers in terms of their own characteristics (and less the characteristics of the mothers).

In summary, the causal analysis of the characteristics of and compositional changes among the non-leave taking fathers confirms the salient patterns reported in the descriptive section 5. Specifically, it shows that the non-leave taking fathers face economic constraints in terms of being self-employed, having a low income and earning less than the mother. While there is limited evidence of the reforms having compositional effects in terms of self-employment, the reforms have made the non-leave taking fathers more selected when it comes to being having a low total and disposable income and earning less than the mother. The introduction of the first and second reserved months in 1995 and 2002, respectively, nearly or roughly doubled the likelihood (relative to the control mean) of the non-leave taking father being in the bottom three deciles of the pre-birth disposable income distribution, while the second and third reserved months more than doubled the probability of earning less than the mother. In contrast, the selection into the group of fathers taking at most half of the reserved parental leave days is less affected by the reforms. However, as more days have been reserved to each parent, the uptake at this margin appear to in practice have become more similar to taking no parental leave days.

7. The role of gender norms

The analysis thus far has shown a trend where the fathers who take no parental leave (compared to all fathers) increasingly comprise fathers who face economic impediments to take such leave. This raises the question of what has led families with low-income fathers to increasingly miss out on paid parental leave, partly at odds with theory as both time allocation and bargaining models predict that fathers with higher earnings than the mother should be overrepresented among the non-leave taking fathers. Moreover, some research suggests that only one in three households ever calculate the financial implications of taking parental leave (e.g., Salmi and Lammi-Taskula, 2015), pointing to other forces being at play. In this section we therefore focus on how gender norms affect fathers' probability of not taking any parental leave. For this purpose, we use two empirical strategies: 1) geographical variation in gender norms and 2) quasi-experimental variation in gender norms across families.

7.1 Variation in local gender norms

We begin by leveraging the considerable geographical variation in parental leave uptake of fathers across Swedish regions – see Appendix Figure A1 – and how it relates to gender norms. We make use of the approach of a vast literature analyzing consequences of gender inequalities using cross-country variation (e.g., Guiso et al. 2008; Fogli and Fernandez, 2009; Hyde and Mertz, 2009; Aldén and Neuman, 2022), but apply it to Swedish regions. Our overall hypothesis is that there is a negative association between traditional gender norms at the local level and the uptake of father's parental leave.

Variation in gender norms at the local level may reflect household norms but also norms of peers, e.g., at the workplace. As proxies for gender norms, we use the share of respondents in the World Value Survey (WVS), by region, that agrees with the following three statements: 'University is more important for a boy than for a girl'; 'Men make better political leaders than women do'; 'When jobs are scarce, men should have more right to a job than women'.[21] Unfortunately, the WVS only has information about the region of the respondent in three years (1996, 2006 and 2011) over our observation period and only at the coarser county level.[22] Despite that relatively few respondents agree with these questions, which is in accordance with Sweden being relatively gender equal, there is regional variation in the gender norm proxies (see Appendix Table A2).[23] Because we only have three years of data per region, we abstract

[21] See Inglehart et al (2014) for the dataset and www.worldvaluessurvey.org for codebooks and detailed documentation.
[22] We only include regions with at least 20 respondents per wave of the World Value Survey. The results are robust to restricting the analysis to regions with at least 50 respondents per wave.
[23] The statement with the highest share of agreeing respondents is 'Men make better political leaders than women do', where on average 12 percent agrees with a maximum of 29.2 percent of the respondents in one region. For the other two measures, the average share of respondents agreeing with the statements is 4.5 and 5.1 percent, respectively, but with considerable regional variation. See Appendix Table A2 for further details.

from studying trends and pool all observations to get a first indication of the role of gender norms for fathers' parental leave uptake.

Table 5 reports how the proxies for gender norms at the local level are associated with the probability of taking no (see column 1) or at most half of the reserved (see column 2) parental leave days among the fathers in our main sample. The results are in line with the overarching hypothesis of more fathers taking no parental leave in regions with more traditional gender norms.

Table 5. Gender norms and the probability of taking no or at most half of the reserved parental leave days among fathers of children born in 1995–2015

	(1) No PL	(2) At most half of reserved days
University is more important for a boy than for a girl	0.866***	0.926***
	(0.080)	(0.211)
Observations	395,614	395,614
R-squared	0.016	0.018
Men make better political leaders than women do	0.375***	0.411***
	(0.058)	(0.112)
Observations	395,614	395,614
R-squared	0.012	0.016
When jobs are scarce, men should have more right to a job than women	0.923***	1.045***
	(0.099)	(0.228)
Observations	395,614	395,614
R-squared	0.015	0.018

Notes: The table shows the relationship between different measures of social gender norms and the probability of taking no or at most half of the reserved parental leave days. The parental leave uptake refers to the number of paid parental leave days during the child's first two years. Taking at most half of the reserved days corresponds to at most 15 and 30 days for children born before and after 2002, respectively. The measures for gender norms are the share of individuals in a county who agrees with a certain statement. Robust standard errors, clustered at birth municipality, in parentheses. *, **, and *** indicates statistical significance at the 10-, 5, and 1-percent level.

More precisely, a one standard deviation (0.039) increase in the share of respondents in a region agreeing with 'University is more important for a boy than for a girl' increases the probability of fathers not taking any parental leave by 3.4 percentage points.[24] Correspondingly, the

[24] This has been calculated, using estimates from column 1) and standard deviations from Appendix Table A2, as $\beta \times \text{WVS\_norm\_std} = 0.866 \times 0.039 = 0.034$.

probability of no parental leave uptake increases by 2.4 percentage points when the share of respondents agreeing with ‘Men make better political leaders than women do’ increases with one standard deviation (0.063), and by 3.2 percentage points when the share of respondents agreeing with ‘When jobs are scarce, men should have more right to a job than women’ increases with one standard deviation (0.035). The estimates for other margins – taking at most half of the reserved days – are generally similar. In sum, this first set of descriptive results provide suggestive evidence of that gender norms affect fathers’ parental leave uptake, and specifically, that more traditional norms are related to few and no parental leave days among fathers.

7.2 Variation in the sibling-sex composition across families

To study the causal impact of gender norms on fathers’ parental leave uptake, we leverage that siblings not only shape the environment in which individuals grow up, but that they also affect how parents interact with their children. More specifically, research indicates that parents of opposite-sex children tend do more gender-targeted parenting than parents of same-sex children (e.g., McHale et al., 2003; Brenøe, 2021). This has been shown to influence, e.g., women’s gender conformity. Using Danish data, Brenøe (2021) studied how having a younger brother affects women’s behavior and choices as adults. She found that women who grew up with a brother (compared to a sister) acquired more traditional gender roles in terms of choice of occupation and partner. Therefore, as a second strategy to study how gender norms affect fathers’ parental leave uptake, we use quasi-experimental variation in the sibling-sex composition across families in which the fathers grew up as a proxy for gender norms and estimate its impact on the probability of taking no or at most the reserved days of parental leave. Based on previous research, we expect that the fathers who grew up with a sister should have more traditional gender norms than fathers who grew up with a brother.

Specifically, to estimate the causal effect we exploit that the assignment of the gender of the second-born child is virtually random. Therefore, we restrict the analysis to fathers who are the first-born son in families with two children and compare the outcome of first-born sons who have a second-born sister to that of first-born sons who have a second-born brother.[25] We further restrict the sample to fathers who are the first-born child to both the mother and father. We only include families with an age difference of maximum four years between the first- and second-born sibling and where the first- or second-born sibling is not a twin.

To study how having a younger sister affects the father's parental leave uptake, we estimate a linear probability model using the following specification:

$$y_i^{first-born} = \alpha_0 + \alpha_1 Sister_i^{second-born} + X_i'\beta + \varepsilon_i \qquad (2),$$

where $y_i^{first-born}$ is the outcome of the (first-born) father, in this case a dummy variable that equals 1 if the father does not take any parental leave during the child's first two years, and 0 if the father takes at least some leave during the first two years. $Sister_i^{second-born}$ is a dummy variable that equals 1 if the second-born sibling is a sister and 0 if the sibling is a brother. Thus, α_1 shows the effect of having a second-born sister compared to a second-born brother on the probability of not taking any parental leave. The identifying assumption is that the gender of the second child is random, conditional on the first-born child's gender and conditional on having a second child. X_i' is a vector including the following control variables: fixed effects for the father's birth year, spacing to the second-born sibling, and county of birth, and the father's parental age at birth and parental level of education.

As traditional gender norms can be upheld by both the father and the mother, we also study how the mother's sibling-sex composition affects the father's parental leave uptake. For this purpose, we create a similar sample of fathers but for whom the mother of the child has one

[25] We focus on two-child families because the different sibling-sex compositions are more comparable when holding family size fixed. In the robustness analyses, presented in Online Appendix Tables A4–A7 and commented on in footnote 27, we also run regressions using a sample of families with *at least* two children.

younger sibling and estimate the impact of the mother having a second-born brother compared to a second-born sister, on the father's parental leave uptake. We estimate a slightly modified version of specification (2), where the main variable of interest is a dummy variable that equals 1 if the mother has a second-born brother and 0 if she has a second-born sister. We include analogous control variables based on the mother's own and family characteristics.

Appendix Table A4 presents descriptive statistics of the pre-determined characteristics related to childhood environment for the fathers and mothers included in the two samples. As one would expect, if the gender of the second-born child is random, there is practically no variation in these characteristics by sibling-sex composition. While there are statistically significant differences by parental age at birth and, in some cases, parental educational attainment, they are very small. In the regressions, we control for any differences in these characteristics.

Table 6 presents the main results: panel A for the father's and panel B for the mother's sibling-sex composition. Column (1) presents unconditional results and in column (2) and (3) we add the control variables presented above sequentially. Column (3) presents our preferred specification. Regardless of specification, having a younger sister compared to a younger brother has no impact on the father's probability of taking no or at most half of the reserved parental leave days. This is also the case when using the mother's sibling-sex composition (see panel B). When we investigate if this relationship has changed over time (see column 4 and 8), the estimates suggest that first-time fathers in the most recent cohort (2010–2015) are more likely to take no parental leave if they (or the mother) have a younger sister (brother) compared to a brother (sister). However, the estimates are small and not statistically significant at conventional levels.

Table 6: Effect of having an opposite-sex sibling on the probability to take no or at most half of the reserved parental leave days among fathers

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	No parental leave days				At most half of the reserved parental leave days			
A. Father's sibling-sex composition								
Second-born sister	0.001	0.000	0.001	-0.002	0.004	0.003	0.003	0.004
	(0.001)	(0.001)	(0.001)	(0.005)	(0.003)	(0.003)	(0.003)	(0.005)
Second-born sister x Cohort 2010–2015				0.007				0.008
				(0.009)				(0.010)
Observations	98,009	98,009	98,009	53,752	98,009	98,009	98,009	53,752
R-squared	0.000	0.010	0.011	0.025	0.000	0.013	0.021	0.031
B. Mother's sibling-sex composition								
Second-born brother	-0.001	-0.002	-0.002	-0.004	0.002	0.001	0.001	0.001
	(0.002)	(0.002)	(0.002)	(0.004)	(0.002)	(0.002)	(0.002)	(0.007)
Second-born brother x Cohort 2010-2015				0.009				-0.002
				(0.006)				(0.009)
Observations	100,666	100,666	100,666	55,973	100,666	100,666	100,666	55,973
R-squared	0.000	0.011	0.013	0.025	0.000	0.015	0.024	0.033
Controls for birth county, birth year, birth spacing, and parental age at birth	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Parental education	No	No	Yes	Yes	No	No	Yes	Yes

Notes: The table shows the effect of the father's and mother's sibling-sex composition the probability to take no or at most half of the reserved parental days among fathers. The parental leave uptake refers to the number of paid parental leave days during the child's first two years. Taking at most half of the reserved days corresponds to at most 15 and 30 days for children born before and after 2002, respectively. In panel A we estimate the impact of the father having second-born sister compared to having a second-born brother and in panel B the impact of the mother having a second-born brother compared to having a second-born sister. Column (4) and (8) presents estimates where we allow the effect to vary by birth cohorts. Birth county, birth year, spacing, parental age at birth, and parental education are entered as fixed effects. Robust standard errors, clustered at birth county, in parentheses. *, **, and *** indicates statistical significance at the 10-, 5-, and 1-percent level.

The transfer of gender-specific human capital to the children most likely depends on parental characteristics, such as education. For example, it is likely that parents with a high level of education are more positive towards equality and thus treat their children in a less gender-typical way (Geisler and Kreyenfeld, 2011). As such, this type of heterogeneity by parental education may conceal an effect of sibling-sex composition. We therefore study if the effect of having a sister varies by the father's and mother's parental education. For this purpose, we focus on fathers where 1) at least one of his parents has primary education and no parent has university education and 2) at least one parent has university education and no parent has primary education. Table 7 presents the results.

Indeed, the results suggest that having a younger sister compared to a brother increases the probability of taking no or at most half of the reserved parental leave days for fathers who grew up in families where the parents have primary or secondary education whereas the effect is close to zero if at least one parent has university education (see column 1). However, the estimates are small and not statistically significant at conventional levels. Turning to trends, Table 7 suggests that a gradient by parental education in the impact of having a younger sister has emerged in most recent father cohort (see columns 2 and 3), but only for fathers taking no parental leave. Specifically, in the 1995–2000 cohort having a younger sister had essentially no impact on fathers' probability to take no parental leave, regardless of parental education. However, in the 2010–2015 cohort, we see a positive effect of having a second-born sister for fathers with parents with primary or secondary education. Specifically, in this case having a second-born sister compared to a brother increases the father's probability to take no parental leave by 1.5 percentage points (se column 3). Although the interaction term suggests that the corresponding effect for fathers with at least one parent with university education is smaller and close to zero, the difference is not statistically significant.

Panel B reveals a similar heterogeneity by parental education for the mother's sibling-sex composition. The mother having a younger brother compared to a younger sister increases the probability that the father takes no parental leave by 1.5 percentage points if the mother has at least one parent with primary education (but no university education).[26]

[26] The similarity of the coefficients of the mother's and father's sibling-sex composition may be a result of that they belong to same household and the presence of assortative mating in gender norms. However, only 27 percent of the fathers are included in both samples, which makes it unlikely for assortative mating to be driving our results.

Table 7: Effect of having an opposite-sex sibling on the probability of no or at most half of the reserved parental leave days among fathers, by parental education

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	No parental leave days					At most half of the reserved parental leave days				
VARIABLES	1995–2015	1995–2000	2010–2015	1995–2000	2010–2015	1995–2015	1995–2000	2010–2015	1995–2000	2010–2015
A. Father's sibling-sex composition										
Second-born sister	0.004	-0.001	0.015**	-0.001	0.016**	0.004	0.008	0.007	0.008	0.008
	(0.002)	(0.009)	(0.007)	(0.009)	(0.007)	(0.004)	(0.011)	(0.011)	(0.011)	(0.010)
Second-born sister x Mother/father university education	-0.003	0.002	-0.015	0.003	-0.017*	-0.003	-0.007	-0.002	-0.006	-0.004
	(0.003)	(0.016)	(0.009)	(0.014)	(0.010)	(0.005)	(0.018)	(0.012)	(0.018)	(0.014)
Observations	71,753	18,697	20,163	18,697	20,163	71,753	18,697	20,163	14,613	17,752
R-squared	0.013	0.016	0.017	0.032	0.039	0.024	0.024	0.039	0.031	0.040
B. Mother's sibling-sex composition										
Second-born brother	-0.002	-0.001	0.015**	-0.002	0.013**	0.000	-0.001	-0.001	-0.002	-0.002
	(0.003)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.010)	(0.008)	(0.010)	(0.008)
Second-born brother x Mother/father university education	-0.002	-0.009	-0.009	-0.008	-0.005	0.004	0.004	0.003	0.004	0.006
	(0.006)	(0.010)	(0.007)	(0.010)	(0.008)	(0.008)	(0.014)	(0.012)	(0.014)	(0.011)
Observations	72,096	19,290	20,132	19,290	20,132	72,096	19,290	20,132	19,290	20,132
R-squared	0.014	0.016	0.018	0.034	0.042	0.027	0.025	0.039	0.033	0.049
Controls for birth county, birth year, birth spacing, and parental age at birth	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parental education	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls for low disposable income and low household income share	No	No	No	Yes	Yes	No	No	No	Yes	Yes

Notes: The table shows the effect of the father's and mother's sibling-sex composition on the probability to take no or at most half of the reserved parental leave days among fathers. The parental leave uptake refers to the number of paid parental leave days during the child's first two years. In panel A we estimate the impact of the father having second-born sister compared to a brother and in panel B the impact of the mother having a second-born brother compared to a sister. We focus on fathers where at least one of the father's (mother's) parents has primary education (but none has university education) and at least one of the father's (mother's) parents has university education (and the other parent at least secondary education). Columns (2)–(3) and (7)–(8) present estimates where we allow the effect to vary by birth cohort. Birth county, birth year, spacing, parental age at birth, and parental education are entered as fixed effects. Robust standard errors, clustered at birth county, in parentheses. *, **, and *** indicates statistical significance at the 10-, 5-, and 1-percent level.

Again, the interaction term points to that the corresponding estimate is smaller if the mother has at least one parent with university education but the difference is not statistically significant.[27]

As a final analysis, we ask whether the effect of the father and mother having a sibling of the opposite-sex in the most recent father cohort, is related to the changed composition of the non-leave taking fathers in terms of a higher likelihood of having a low disposable income and earning less than the mother. For this purpose, we use conditional analysis (see columns 4–5 and 9–10 in Table 7). While conditioning on having a low income and earning less than the mother increases the size of the estimates as well as their precision using the father's sibling-sex composition, it slightly reduces the estimates using the mother's sibling-sex composition. All in all, the results are very similar to the unconditional results.

Taken together, this second, and plausibly more causal, set of evidence suggests that gender norms do affect fathers' decision of not taking parental leave for fathers, at least among fathers of children born in recent years. The results corroborate well with the theoretical expectation that fathers who grew up in families with less traditional gender norms – measured by parental education – are less likely to take parental leave. However, there is also evidence of that fathers' parental leave uptake is affected by the mothers' gender norms. This is in line with so-called maternal gatekeeping, i.e., that mothers who hold more traditional gender norms may perceive themselves as the main caregiver of the child and thus limit men's involvement in childcare. As such, this points to that the group of non-leave taking fathers increasingly belong to households with more traditional gender norms.

[27] We present a set of robustness checks in the appendix and in the online appendix. In the main results we restrict the sample to two-child families. As a robustness test, we removed this restriction. Allowing for more siblings produces similar results as those presented in Table 6, although we lose some precision (see panel A in the Online Appendix Table A4–A7). Using this sample, we also control for number siblings, which leaves the estimates largely unchanged (see panel B in the Online Appendix Table A4–A7). As a further robustness check, we control for child gender (if the child is a boy or not) using the sample of two-child families. This increases the precision of the results using the father's sibling-sex composition while those using the mother's sibling-sex composition are practically unchanged (see panel C in the Online Appendix Table A4–A7).

8. Conclusion

Despite the implementation of various reforms aimed at promoting fathers' uptake of parental leave, a non-negligible share of fathers still chooses not to take any leave before their child reaches the age of two. This paper investigates the underlying factors, including physical, economic, and social constraints, that contribute to fathers' decision not to take parental leave. This area of study has been largely overlooked, as existing research primarily focuses on fathers who do take leave.

Our findings reveal a notable trend of non-leave taking fathers increasingly facing economic constraints characterized by low income, self-employment, and earnings lower than the mother. By exploiting parental leave reforms that reserved parental leave days for each parent, we demonstrate that these compositional changes are salient also when accounting for potential unobserved differences among fathers and that the reforms contributed to making the non-leave taking fathers more selected along the dimensions mentioned.

Furthermore, our findings indicate that gender norms affect fathers' decision of taking no parental leave. By examining regional variation in gender attitudes and leveraging quasi-experimental variation in sibling-sex composition of both the father and the mother across families as proxies for gender norms, we document a positive correlation between more traditional gender norms and the likelihood of fathers not taking any parental leave. This relationship is particularly pronounced for first-time fathers with children from more recent cohorts. Notably, we find no evidence of that the influence of gender norms is driven solely by fathers with low income and lower earnings than the mother. Rather, our results suggest an increased concentration of fathers *and* mothers adhering to more traditional gender roles among the non-leave taking fathers. Similarly, the reform analysis indicates that fathers with a weak attachment to the labor market have shown the least responsiveness to the introduction of the reserved parental leave days. Consequently, reforms expanding the allocation of parental leave to each parent will most likely have limited impact on fathers who do not take any leave. Instead, policies should directly address the lack of economic resources or challenge prevailing gender norms. In conclusion, our study highlights the ongoing challenge of low parental leave uptake among fathers and underscores the importance of considering the role of physical, economic, and social constraints.

References

Aldén, L., Boschini, A., & Sundström, M. (2022). Who Becomes a Father? The Rising Importance of Non-Cognitive Ability. The Rising Importance of Non-Cognitive Ability (September 2, 2022). http://dx.doi.org/10.2139/ssrn.4405212

Aldén, L., & Neuman, E. (2022). Culture and the gender gap in choice of major: An analysis using sibling comparisons. Journal of Economic Behavior and Organization, 201, 346–373. https://doi.org/10.1016/j.jebo.2022.07.026

Angelov, N., Johansson, P., & Lindahl, E. (2016). Parenthood and the Gender Gap in Pay. Journal of Labor Economics, 34(3), 545–579. https://doi.org/10.1086/684851

Angelov, N., Johansson, P., & Lindahl, E. (2020). Sick of family responsibilities? Empirical Economics, 58(2), 777–814. https://doi.org/10.1007/s00181-018-1552-2

Angst, D. B., & Deatrick, J. A. (1996). Involvement in Health Care Decisions: Parents and Children with Chronic Illness. Journal of Family Nursing, 2(2), 174–194. https://doi.org/10.1177/107484079600200205

Becker, G. S. (1965). A Theory of the Allocation of Time. The Economic Journal, 75(299), 493. https://doi.org/10.2307/2228949

Bloksgaard, L. (2015). Negotiating leave in the workplace: leave practices and masculinity constructions among Danish fathers. In Björk Eydal, G. & Rostgaard, T. (Eds.). Fatherhood in the Nordic welfare states. Bristol University Press

Brenøe, A. A. (2021). Brothers increase women's gender conformity. Journal of Population Economics, 35(4), 1859–1896. https://doi.org/10.1007/s00148-021-00830-9

Canaan S., A.-S., Lassen, P. Rosenbaum., Steingrimsdottir, H. (2022). Maternity Leave and Paternity Leave: Evidence on the Economic Impact on Legislative Changes in High Income Countries. IZA Discussion Paper No. 15129

Cools, S., Fiva, J. H., & Kirkebøen, L. J. (2015). Causal Effects of Paternity Leave on Children and Parents. The Scandinavian Journal of Economics, 117(3), 801–828. https://doi.org/10.1111/sjoe.12113

Dahl, G. B., Løken, K. V., & Mogstad, M. (2012). Peer Effects in Program Participation. Social Science Research Network. https://doi.org/10.2139/ssrn.2101948

Dasgupta, K., Diegmann, A., Kirchmaier, T., & Plum, A. (2022). The gender reveal: The effect of sons on young fathers' criminal behavior and labor market activities. Labour Economics, 78, 102224. https://doi.org/10.1016/j.labeco.2022.102224

Dobbie, W., Gronqvist, H., Niknami, S., Palme, M., & Priks, M. (2019). The intergenerational effects of parental incarceration. Working Paper Series rwp19-031, Harvard University, John F. Kennedy School of Government.

Duvander, A. (2014). How Long Should Parental Leave Be? Attitudes to Gender Equality, Family, and Work as Determinants of Women's and Men's Parental Leave in Sweden. Journal of Family Issues, 35(7), 909–926. https://doi.org/10.1177/0192513x14522242

Duvander, A., & Johansson, M. (2012). What are the effects of reforms promoting fathers' parental leave use? Journal of European Social Policy, 22(3), 319–330. https://doi.org/10.1177/0958928712440201

Duvander, A., & Johansson, M. (2019). Does Fathers' Care Spill Over? Evaluating Reforms in the Swedish Parental Leave Program. Feminist Economics, 25(2), 67–89. https://doi.org/10.1080/13545701.2018.1474240

Duvander, A.-Z. (2021). *Pappor som inte använder föräldrapenningen -En analys av vilka pappor som tar ut noll eller få dagar med föräldrapenning och hur det har förändrats för barn födda åren 1994–2017*. Rapport 2021:12. Göteborg: Inspektionen för socialförsäkringen.

Ekberg, J., Eriksson, R., & Friebel, G. (2013). Parental leave: A policy evaluation of the Swedish “Daddy-Month” reform. Journal of Public Economics, 97, 131–143. https://doi.org/10.1016/j.jpubeco.2012.09.001

Engdahl, M., & Nybom, M. (2021). Arbetsmarknadseffekter av konjunkturnedgångar. IFAU report 2021:8.

Fernandez, R., & Fogli, A. (2009). Culture: An Empirical Investigation of Beliefs, Work, and Fertility. American Economic Journal: Macroeconomics, 1(1), 146–177. https://doi.org/10.1257/mac.1.1.146

Försäkringskassan (2014). *Föräldraförsäkringen och den nya föräldranormen*

Försäkringskassan (2019*). Jämställd föräldraförsäkring -utvärdering av de reserverade månaderna i föräldraförsäkringen*. Socialförsäkringsrapport 2019:2

Försäkringskassan (2022). *Förändringar inom Socialförsäkrings- och Bidragsområdena*. Last updated: 2022-10-01

Geisler, E., & Kreyenfeld, M. (2009). Against all odds: Fathers’ use of parental leave in Germany. Journal of European Social Policy, 21(1), 88–99. https://doi.org/10.1177/0958928710385732

Gornick. J. (2015). Parental leave and fathers: Extending and deepening the knowledge base. In Björk Eydal, G. & Rostgaard, T. (Eds.). Fatherhood in the Nordic welfare states. Bristol University Press

Gronau, R. (1977). Leisure, Home Production, and Work--the Theory of the Allocation of Time Revisited. Journal of Political Economy, 85(6), 1099–1123. https://doi.org/10.1086/260629

Guiso, L., Monte, F., Sapienza, P., & Zingales, L. (2008). Culture, Gender, and Math. Science, 320(5880), 1164–1165. https://doi.org/10.1126/science.1154094

Hall, C. and E. Lindahl (2018). *Familj och arbete under småbarnsåren: Hur använder föräldrar förskola och föräldraförsäkring?* Socialförsäkringsrapport 2018:9. Stockholm: Försäkringskassan.

Hjalmarsson, R., Holmlund, H., & Lindquist, M. J. (2015). The effect of education on criminal convictions and incarceration: Causal evidence from micro-data. The Economic Journal, *125*(587), 1290-1326. https://doi.org/10.1111/ecoj.12204

Hyde, J. S., & Mertz, J. E. (2009). Gender, culture, and mathematics performance. Proceedings of the National Academy of Sciences of the United States of America, 106(22), 8801–8807. https://doi.org/10.1073/pnas.0901265106

Inglehart, R., Haerpfer, C., Moreno, A., Welzel, C., Kizilova, K., Diez-Medrano, J., Lagos, M., Norris, P., Ponarin, E. & Puranen B. (eds.). (2014). World Values Survey: All Rounds - Country-Pooled Datafile Version: https://www.worldvaluessurvey.org/WVSDocumentationWVL.jsp. Madrid: JD Systems Institute.

Johnsen, J., Ku, H., & Salvanes, K. G. (2020). Competition and Career Advancement: The Hidden Costs of Paid Leave. IZA DP No. 13596.

Kleven, H. J., Landais, C., Posch, J., Steinhauer, A., & Zweimüller, J. (2019). Child Penalties across Countries: Evidence and Explanations. AEA Papers and Proceedings, 109, 122–126. https://doi.org/10.1257/pandp.20191078

Lappegård, T. (2012). Couples’ Parental Leave Practices: The Role of the Workplace Situation. Journal of Family and Economic Issues, 33(3), 298–305. https://doi.org/10.1007/s10834-012-9291-6

Lombard, K. V. (2001). Female self-employment and demand for flexible, nonstandard work schedules. Economic Inquiry, 39(2), 214–237. https://doi.org/10.1111/j.1465-7295.2001.tb00062.x

Lundberg, S., & Pollak, R. A. (1996). Bargaining and Distribution in Marriage. Journal of Economic Perspectives, 10(4), 139–158. https://doi.org/10.1257/jep.10.4.139

Ma, L., Andersson, G., Duvander, A., & Evertsson, M. (2020). Fathers' Uptake of Parental Leave: Forerunners and Laggards in Sweden, 1993–2010. Journal of Social Policy, 49(2), 361–381. http://doi.org/10.1017/s0047279419000230

Manser, M., & Brown, M. (1980). Marriage and Household Decision-Making: A Bargaining Analysis. International Economic Review, 21(1), 31. https://doi.org/10.2307/2526238

Massenkoff, Maxim and Rose, Evan K., Family Formation and Crime (August 2022). NBER Working Paper No. w30385- http://dx.doi.org/10.2139/ssrn.4196329

McHale, S. M., Crouter, A. C., & Whiteman, S. D. (2003). The Family Contexts of Gender Development in Childhood and Adolescence. Social Development, 12(1), 125–148. https://doi.org/10.1111/1467-9507.00225.

Monsbakken, C. W., Skardhamar, T., & Lyngstad, T. H. (2013). Crime and The Transition to Parenthood: The Role of Sex and Relationship Context. British Journal of Criminology, 53(1), 129–148. https://doi.org/10.1093/bjc/azs052

Noemi, P., Lundborg, P., Mikkelsen, S., & Webbink, D. (2018). The effect of a sibling's gender on earnings and family formation. Labour Economics, 54, 61-78. https://doi.org/10.1016/j.labeco.2018.06.006

OECD (2016). Parental leave: Where are the fathers? Men's uptake of parental leave is rising but still low. OECD Policy Brief March 2016. https://www.oecd.org/policy-briefs/parental-leave-where-are-the-fathers.pdf

OECD (2021). Parental leave systems. Policy Brief 2.1. https://www.oecd.org/els/soc/PF2_1_Parental_leave_systems.pdf

Patnaik, A. (2019). Reserving Time for Daddy: The Consequences of Fathers' Quotas. Journal of Labor Economics, 37(4), 1009–1059. https://doi.org/10.1086/703115

Roettger, M. E., & Swisher, R. R. (2013). Incarcerated fathers: Implications for father involvement. *Father involvement in young children's lives: A global analysis*, 107-122.

Saarikallio-Torp, M., & Miettinen, A. (2021). Family leaves for fathers: Non-users as a test for parental leave reforms. Journal of European Social Policy, 31(2), 161–174. https://doi.org/10.1177/0958928721996650

Salmi, M., & Lammi-Taskula, J. (2015). Policy goals and obstacles for fathers' parental leave in Finland. in Eydal, G. B., & Rostgaard, T. (Eds.). *Fatherhood in the Nordic welfare states: Comparing care policies and practice*. Bristol University Press. https://doi.org/10.2307/j.ctt1t894gw

Socialstyrelsen (2018). Barn med frihetsberövade föräldrar – Kartläggning och analys. Rapport 2018-12-54.

Sundström, M., & Duvander, A.-Z. E. (2002). Gender division of childcare and the sharing of parental leave among new parents in Sweden. European Sociological Review, 18 (4), 433–447. https://doi.org/10.1093/esr/18.4.433

Tallås Ahlzén, M. (2022). *Essays in Swedish Family Policy*. Doctoral thesis, Stockholm University. Stockholm

Wellington, A. J. (2006). Self-employment: The new solution for balancing family and career? Labour Economics, 13(3), 357–386. https://doi.org/10.1016/j.labeco.2004.10.005

APPENDIX FIGURES AND TABLES

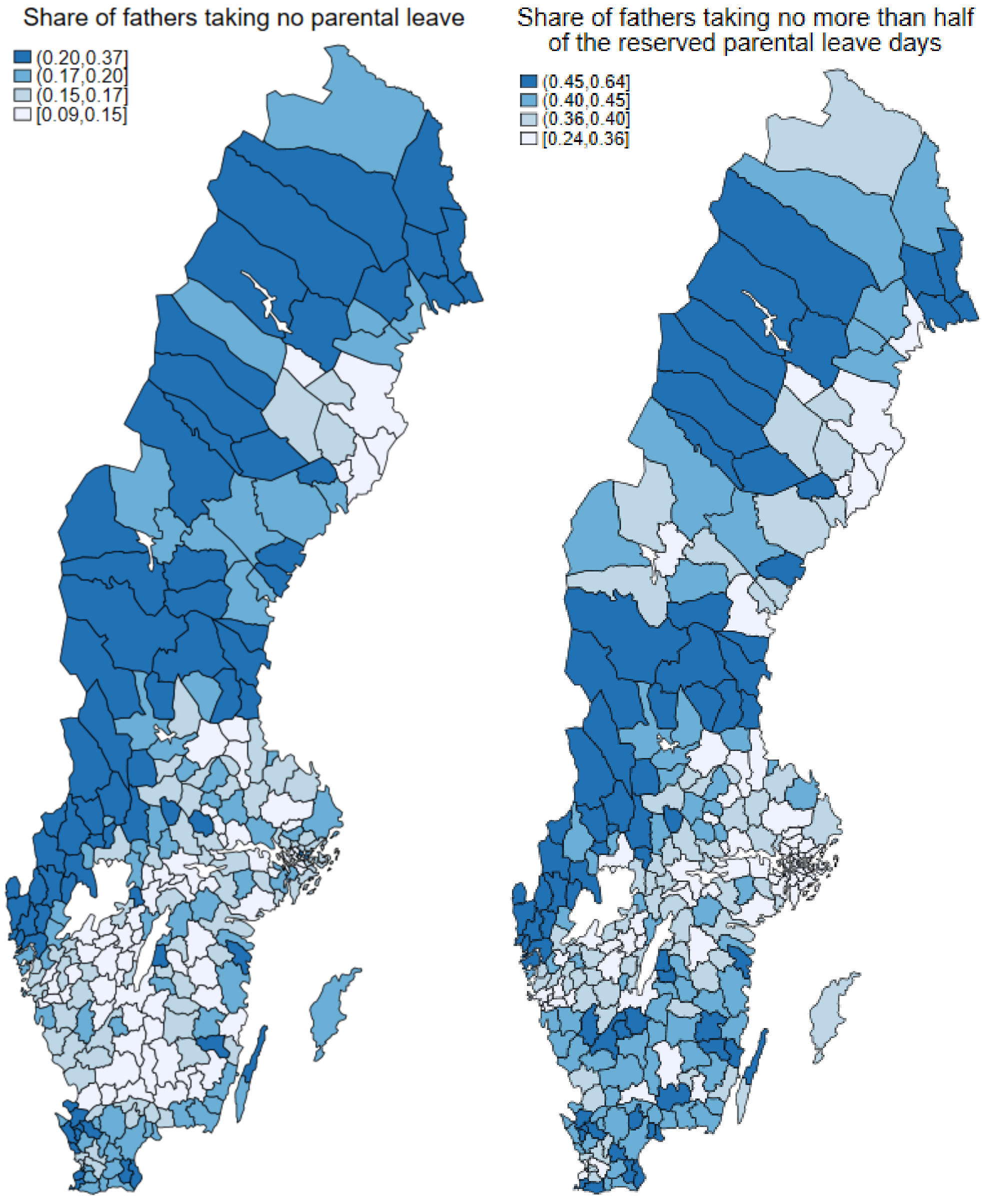

Figure A1. Geographical variation in share of fathers taking no or at most half of the reserved parental leave days during the child's first two years old, 1995–2015.

Table A1. Financial and physical constraints of fathers who take no or at most half of the reserved parental leave days and all fathers, absolute values

	No PL	All fathers	No PL		At most half of the reserved PL		All fathers	
			1995–2000	2010–2015	1995–2000	2010–2015	1995–2000	2010–2015
Physical constraints								
Hospitalization	0.004	0.002	0.004	0.003	0.004	0.002	0.003	0.002
Hospitalization, mother	0.004	0.004	0.006	0.003	0.005	0.003	0.005	0.003
Criminal conviction	0.107	0.070	0.106	0.111	0.091	0.088	0.080	0.065
Criminal conviction, mother	0.015	0.010	0.014	0.018	0.012	0.014	0.011	0.011
Financial constraints								
Low pre-birth income								
P0–10	0.220	0.100	0.189	0.256	0.138	0.158	0.100	0.100
P0–33	0.484	0.333	0.460	0.515	0.397	0.421	0.333	0.333
P0–10, mother	0.146	0.100	0.138	0.155	0.114	0.125	0.100	0.100
P0–33, mother	0.420	0.333	0.402	0.437	0.380	0.416	0.333	0.333
Low pre-birth disposable income								
P0–10	0.228	0.100	0.194	0.265	0.142	0.163	0.100	0.100
P0–33	0.478	0.334	0.457	0.508	0.398	0.415	0.334	0.334
P0–10, mother	0.154	0.100	0.142	0.168	0.122	0.135	0.100	0.100
P0–33, mother	0.417	0.334	0.398	0.437	0.386	0.417	0.334	0.334
High pre-birth income								
P66–P100	0.287	0.333	0.293	0.274	0.300	0.277	0.333	0.333
P90–P100	0.112	0.100	0.114	0.105	0.097	0.086	0.100	0.100
P66–P100, mother	0.266	0.333	0.276	0.253	0.269	0.231	0.333	0.333
P90–P100, mother	0.077	0.100	0.080	0.073	0.069	0.058	0.100	0.100
Father's share of hh income	0.536	0.561	0.546	0.522	0.558	0.556	0.562	0.560
Low share (< 40 percent)	0.203	0.111	0.170	0.244	0.127	0.159	0.103	0.120
High share (> 60 percent)	0.378	0.352	0.369	0.385	0.373	0.401	0.351	0.358
Unemployed	0.157	0.110	0.244	0.070	0.234	0.071	0.193	0.056
Unemployed, mother	0.206	0.163	0.313	0.078	0.329	0.082	0.289	0.066
Self-employed	0.112	0.057	0.081	0.142	0.061	0.099	0.046	0.066
Self-employed, mother	0.023	0.021	0.018	0.029	0.014	0.023	0.016	0.025
Number of fathers	104,449	639,902	37,155	23,688	67,819	58,856	166,646	187,262

Notes: The parental leave uptake refers to the number of paid parental leave days during the child's first two years. Taking at most half of the reserved days corresponds to at most 15 and 30 days for children born before and after 2002, respectively. Hospitalized is defined as having been hospitalized for any diagnosis at least 7 days in the year before birth of the child. Criminal conviction is defined as being convicted for any crime (except traffic relate), at some point before the child's year of birth. Pre-birth income refers to the father's labor income (including income from wage- and self-employment and capital income). The income deciles are constructed annually relative to the sample of fathers and includes individuals with a zero income. The household income includes income from wage- and self-employment and capital income, as well as zero income (but requiring at least one parent to have positive income). Fathers are defined to earn less than the mother if he earns less than 40% of household income and more than the mother if he earns more than 60% of household income. An individual is defined as unemployed if receiving unemployment benefits the year before childbirth. An individual is defined as self-employed if the majority of the individual's labor income comes from self-employment, including both non-limited and limited liability firms.

Table A2: Descriptive statistics on gender attitude variables from the World Value Survey

Region	'When jobs are scarce, men should have more right to a job than women'	'University is more important for a boy than for a girl'	'Men make better political leaders than women do'
Stockholm	0.028	0.028	0.094
Uppsala	0.086	0.086	0.241
Södermanland	0.095	0.048	0.190
Östergötland	0.116	0.047	0.093
Jönköping	0.030	0.017	0.160
Kronoberg	0.077	0.103	0.205
Kalmar	0.091	0.091	0.091
Blekinge	0.172	0.034	0.069
Skåne	0.043	0.055	0.101
Halland	0.034	0.034	0.069
Västra Götaland	0.043	0.056	0.114
Värmland	0.167	0.104	0.292
Örebro	0.042	0.056	0.042
Gävleborg	0.045	0.136	0.273
Västernorrland	0.040	0.060	0.240
Västerbotten	0.083	0.104	0.250
Norrbotten	0.029	0.118	0.206
Mean	0.045	0.051	0.120
Standard deviation	0.035	0.039	0.063

Note: The table show the average share agreeing to the statements "When jobs are scarce men should have more right to a job than women" and "University is more important for a boy than for a girl", and "Men make better political leaders than women do", collected from the World Value Survey for the waves in 1996, 2006, and 2011. We include regions with at least 20 respondents per wave.

Table A3: Descriptive statistics on parental leave uptake and childhood environment of first-born fathers

	(1)	(2)	(3)	(4)	(5)	(6)
	No parental leave days			Less than half of the reserved parental leave days		
	Second-born sister	Second-born brother	t-test (p-value)	Second-born sister	Second-born brother	t-test (p-value)
No PL / Less PL	0.155	0.155	0.724	0.343	0.338	0.143
	(0.362)	(0.361)		(0.475)	(0.473)	
Spacing between siblings (years)	2.8	2.9	<0.01	2.8	2.9	< 0.01
	(0.9)	(0.9)		(0.9)	(0.9)	
Mother's age at birth	24.9	25.0	<0.01	24.9	25.0	< 0.01
	(3.9)	(3.9)		(3.9)	(3.9)	
Father's age at birth	27.3	27.5	<0.01	27.3	27.5	< 0.01
	(4.3)	(4.4)		(4.3)	(4.4)	
Mother's education						
Primary	0.234	0.237	0.245	0.234	0.237	0.245
	(0.423)	(0.425)		(0.423)	(0.425)	
Secondary	0.499	0.494	0.094	0.499	0.494	0.094
	(0.500)	(0.500)		(0.500)	(0.500)	
University	0.267	0.269	0.438	0.267	0.269	0.438
	(0.443)	(0.444)		(0.443)	(0.444)	
Father's education						
Primary	0.291	0.287	0.133	0.291	0.287	0.137
	(0.454)	(0.452)		(0.454)	(0.452)	
Secondary	0.464	0.465	0.858	0.464	0.465	0.858
	(0.499)	(0.499)		(0.499)	(0.499)	
University	0.244	0.248	0.169	0.244	0.248	0.169
	(0.430)	(0.432)		(0.430)	(0.432)	
Observations	50,189	47,820		50,189	47,820	

Notes: The table shows descriptive statistics of the sample of first-born fathers. Column (1) and (4) shows statistics for fathers with a second-born sister and column (2) and (5) for fathers with a second-born brother. The parental leave uptake refers to the number of paid parental leave days during the child's first two years. Taking at most half of the reserved days (Less PL) corresponds to at most 15 and 30 days for children born before and after 2002, respectively. Column (3) and (6) report p-values from a t-test of statistical significance of the difference in means between first-born fathers with a second-born sister and first-born fathers with a second-born brother.

Table A4: Descriptive statistics on parental leave uptake and childhood environment of first-born mothers

	(1)	(2)	(3)	(4)	(5)	(6)
	No parental leave days			At most half of the reserved parental leave days		
	Second-born brother	Second-born sister		Second-born brother	Second-born sister	
No PL / Less PL	0.150	0.151	0.567	0.332	0.331	0581
	(0.357)	(0.358)		(0.471)	(0.471)	
Spacing between siblings (years)	2.8	2.8	<0.01	2.8	2.8	<0.01
	(0.9)	(0.9)		(0.9)	(0.9)	
Mother's age at birth	24.9	25.0	<0.01	25.0	25.0	<0.01
	(3.9)	(3.9)		(3.9)	(3.9)	
Father's age at birth	27.5	27.5	<0.01	27.5	27.5	<0.01
	(4.4)	(4.4)		(4.4)	(4.4)	
Mother's education						
Primary	0.220	0.221	0.797	0.220	0.221	0.797
	(0.414)	(0.415)		(0.414)	(0.415)	
Secondary	0.518	0.518	0.911	0.518	0.518	0.911
	(0.500)	(0.500)		(0.500)	(0.500)	
University	0.260	0.260	0.962	0.260	0.260	0.962
	(0.439)	(0.439)		(0.439)	(0.439)	
Father's education						
Primary	0.282	0.280	0.359	0.282	0.280	0.357
	(0.450)	(0.449)		(0.450)	(0.449)	
Secondary	0.473	0.481	0.023	0.473	0.481	0.023
	(0.499)	(0.500)		(0.499)	(0.500)	
University	0.244	0.240	0.093	0.244	0.240	0.923
	(0.430)	(0.427)		(0.430)	(0.427)	
Observations	54,232	46,434		54,232	46,434	

Notes: The table shows descriptive statistics of the sample of first-born mothers. Column (1) and (4) shows statistics for fathers with a second-born sister and column (2) and (5) for fathers with a second-born brother. The parental leave uptake refers to the number of paid parental leave days during the child's first two years. Taking at most half of the reserved days (Less PL) corresponds to at most 15 and 30 days for children born before and after 2002, respectively. Column (3) and (6) report p-values from a t-test of statistical significance of the difference in means between first-born mothers with a second-born sister and first-born mothers with a second-born brother.

ONLINE APPENDIX A and B

Online Appendix A

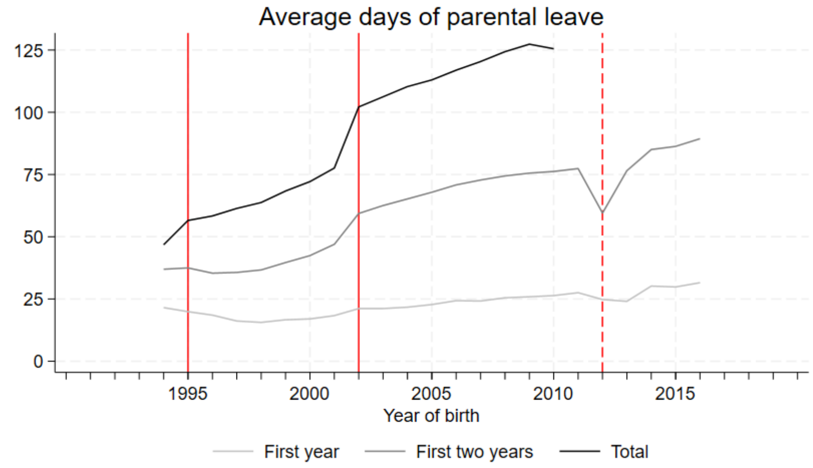

Figure A1. Average days of parental leave taken by fathers
Note: The figure shows the average net days of paid parental leave benefits in the child's first year and first two years and in total (by age 12 for cohorts 2014–2016, and age 8 for earlier cohorts). Red vertical lines indicate the introduction of the reserved parental leave days for each parent, and the red dashed line indicates the introduction of 'double-days' in the parental leave insurance.

Table A1. Reform analysis using regression discontinuity with control variables

	Fathers taking no parental leave					Fathers taking at most half of the reserved parental leave days				
	(1) Business owner	(2) Low disposable income	(3) Low income	(4) Low household (hh) share	(5) Low disp inc + hh share	(6) Business owner	(7) Low disposable income	(8) Low income	(9) Low household (hh) share	(10) Low disp inc + hh share
A: Reform 1995										
Treated X No PL / Less PL	0.016	0.125***	0.084*	0.039	0.060**	-0.005	0.049	0.025	0.002	0.020
	(0.022)	(0.047)	(0.047)	(0.027)	(0.027)	(0.017)	(0.039)	(0.036)	(0.023)	(0.024)
Treated	0.009	-0.016	0.001	-0.002	-0.007	0.008	-0.030	-0.014	-0.004	-0.010
	(0.007)	(0.024)	(0.023)	(0.012)	(0.012)	(0.007)	(0.025)	(0.024)	(0.013)	(0.013)
No PL/ Less PL	0.045***	0.144***	0.156***	0.058***	0.048***	0.045***	0.144***	0.156***	0.059***	0.048***
	(0.012)	(0.029)	(0.026)	(0.017)	(0.018)	(0.012)	(0.029)	(0.026)	(0.017)	(0.018)
Control mean	0.026	0.282	0.280	0.073	0.064	0.026	0.282	0.280	0.073	0.064
Observations	29,421	29,421	29,421	29,421	29,421	29,421	29,421	29,421	29,421	29,421
B: Reform 2002										
Treated X No PL / Less PL	0.026	0.108**	0.080*	0.075**	0.072*	0.012	0.005	-0.007	-0.016	-0.014
	(0.022)	(0.046)	(0.047)	(0.037)	(0.037)	(0.017)	(0.037)	(0.036)	(0.022)	(0.022)
Treated	0.003	-0.043**	-0.024	-0.002	-0.004	-0.001	-0.035	-0.015	0.011	0.007
	(0.007)	(0.019)	(0.019)	(0.012)	(0.011)	(0.009)	(0.022)	(0.021)	(0.012)	(0.011)
No PL/ Less PL	0.047***	0.073*	0.075**	0.056**	0.053*	0.024*	0.064**	0.062**	0.043**	0.045***
	(0.015)	(0.038)	(0.036)	(0.028)	(0.028)	(0.013)	(0.028)	(0.027)	(0.017)	(0.017)
Control mean	0.032	0.323	0.321	0.091	0.076	0.032	0.319	0.315	0.093	0.075
Observations	29,540	29,540	29,540	29,540	29,540	29,540	29,540	29,540	29,540	29,540
C: Reform 2016										
Treated X No PL / Less PL	-0.067	0.041	0.090	0.141**	0.121**	-0.007	0.056	0.090**	0.069**	0.065**
	(0.048)	(0.064)	(0.063)	(0.060)	(0.055)	(0.021)	(0.038)	(0.043)	(0.029)	(0.026)
Treated	0.007	-0.018	-0.014	-0.018	-0.022*	0.002	-0.033	-0.034	-0.028**	-0.033**
	(0.009)	(0.020)	(0.021)	(0.013)	(0.013)	(0.010)	(0.022)	(0.022)	(0.014)	(0.014)
No PL/ Less PL	0.091***	0.131***	0.112**	0.060	0.064*	0.037**	0.036	0.012	-0.007	0.001
	(0.033)	(0.049)	(0.046)	(0.041)	(0.037)	(0.015)	(0.029)	(0.032)	(0.025)	(0.022)
Control mean	0.051	0.333	0.331	0.115	0.094	0.047	0.322	0.319	0.114	0.091
Observations	30,021	30,021	30,021	30,021	30,021	30,021	30,021	30,021	30,021	30,021

Notes: All estimations include an indicator for if the child is a boy and municipality fixed effects. No PL and Less PL refers to taking zero days or at most half of the reserved days of paid parental leave in the child's first two years. Low (disposable) income is defined as having an income in the lower third of the pre-birth (disposable) income distribution of all fathers. Low household (hh) income share is defined as the father contributing with less than 40 percent to the pre-birth household income. All estimations are conditional on the parents living together either the year of birth or the year after. Estimates from separate RD-estimations using a 6-month reform window on each side, triangular weights, and quadratic separate slopes. Standard errors are clustered at the running variable, the birth date of the child. *** p<0.01, **p<0.05, * p<0.1.

Table A2. Reform analysis using regression discontinuity, optimal bandwidth

	Fathers taking no parental leave					Fathers taking at most half of the reserved parental leave days				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Business owner	Low disposable income	Low income	Low household (hh) share	Low disp inc + hh share	Business owner	Low disposable income	Low income	Low household (hh) share	Low disp inc + hh share
A: Reform 1995										
Treated X No PL / Less PL	0.016	0.119*	0.101	0.025	0.032	-0.011	0.105*	0.117**	0.007	0.022
	(0.029)	(0.070)	(0.067)	(0.043)	(0.043)	(0.025)	(0.057)	(0.055)	(0.034)	(0.035)
Treated	0.009	0.024	0.048	0.006	0.000	0.010	-0.007	0.012	0.002	-0.007
	(0.010)	(0.041)	(0.039)	(0.016)	(0.016)	(0.010)	(0.041)	(0.040)	(0.017)	(0.016)
No PL/ Less PL	0.044***	0.155***	0.136***	0.055**	0.054*	0.044***	0.155***	0.136***	0.055**	0.054*
	(0.017)	(0.045)	(0.045)	(0.028)	(0.029)	(0.017)	(0.045)	(0.045)	(0.028)	(0.029)
Control mean	0.023	0.275	0.275	0.076	0.066	0.023	0.275	0.275	0.076	0.066
Observations	14,059	11,698	11,698	10,868	11,197	14,059	11,698	11,698	10,868	11,197
B: Reform 2002										
Treated X No PL / Less PL	-0.006	0.064	-0.008	-0.023*	0.011	-0.037	-0.041	-0.039	-0.011	-0.030
	(0.030)	(0.068)	(0.074)	(0.012)	(0.049)	(0.024)	(0.054)	(0.056)	(0.034)	(0.031)
Treated	0.002	-0.025	-0.003	0.002	0.004	0.012	-0.009	-0.000	0.019	0.011
	(0.011)	(0.029)	(0.031)	(0.002)	(0.015)	(0.012)	(0.034)	(0.036)	(0.019)	(0.016)
No PL/ Less PL	0.054***	0.116**	0.165***	0.021*	0.083**	0.039**	0.110**	0.132***	0.064**	0.061**
	(0.020)	(0.054)	(0.059)	(0.012)	(0.039)	(0.018)	(0.044)	(0.049)	(0.028)	(0.025)
Control mean	0.031	0.315	0.313	0.091	0.077	0.032	0.309	0.309	0.090	0.075
Observations	10,503	13,298	10,503	10,503	12,348	10,503	13,298	10,503	10,503	12,348
C: Reform 2016										
Treated X No PL / Less PL	-0.014	0.119	0.149	0.162*	0.161*	-0.035	0.136**	0.126*	0.048	0.098**
	(0.093)	(0.121)	(0.111)	(0.097)	(0.082)	(0.033)	(0.069)	(0.075)	(0.046)	(0.043)
Treated	-0.031**	0.052	0.056*	-0.020	-0.026	-0.024	0.026	0.035	-0.025	-0.036*
	(0.013)	(0.034)	(0.034)	(0.020)	(0.019)	(0.015)	(0.037)	(0.036)	(0.021)	(0.019)
No PL/ Less PL	0.075	0.093	0.030	0.047	0.019	0.052**	0.005	-0.013	0.012	-0.001
	(0.069)	(0.086)	(0.082)	(0.068)	(0.055)	(0.023)	(0.054)	(0.057)	(0.040)	(0.031)
Control mean	0.049	0.313	0.311	0.116	0.095	0.048	0.307	0.305	0.116	0.094
Observations	10,316	9,026	9,345	13,112	13,655	10,316	9,026	9,345	13,112	13,655

Notes: No PL and Less PL refers to taking zero and at most half of the reserved days, respectively, of paid parental leave in the child's first two years. Low (disposable) income is defined as having an income in the lower third of the pre-birth (disposable) income distribution of all fathers. Low household (hh) income share is defined as the father contributing with less than 40 percent to the pre-birth household income. All estimations are conditional on the parents living together either the year of birth or the year after. Estimates from separate RD-estimations using a 6-month reform window on each side, triangular weights, and quadratic separate slopes. Standard errors are clustered at the running variable, the birth date of the child. *** p<0.01, **p<0.05, * p<0.1.

Table A3. Reform analysis using regression discontinuity using the mother's characteristics.

	Fathers taking no parental leave			Fathers taking at most half of the reserved parental leave days		
	(1)	(2)	(3)	(4)	(5)	(6)
	Low disposable income	Low income	Business owner	Low disposable income	Low income	Business owner
A: Reform 1995						
Treated X No PL/ Less PL	0.138***	0.159***	0.012	0.102***	0.116***	0.008
	(0.039)	(0.040)	(0.012)	(0.035)	(0.036)	(0.010)
Treated	-0.044**	-0.081***	-0.004	-0.058***	-0.095***	-0.002
	(0.022)	(0.023)	(0.006)	(0.022)	(0.022)	(0.007)
No PL/ Less PL	0.043*	0.037	-0.014**	0.043*	0.037	-0.014**
	(0.024)	(0.027)	(0.006)	(0.024)	(0.027)	(0.006)
Control mean	0.334	0.335	0.016	0.334	0.335	0.016
Observations	29,972	29,972	29,972	29,972	29,972	29,972
B: Reform 2002						
Treated X No PL/ Less PL	0.014	-0.047	0.011	0.050	0.002	0.009
	(0.046)	(0.050)	(0.015)	(0.034)	(0.033)	(0.011)
Treated	-0.003	-0.020	-0.001	-0.026	-0.036	-0.002
	(0.020)	(0.020)	(0.006)	(0.022)	(0.022)	(0.008)
No PL/ Less PL	0.095***	0.127***	0.001	0.042*	0.081***	-0.011
	(0.033)	(0.032)	(0.010)	(0.025)	(0.022)	(0.007)
Control mean	0.331	0.332	0.019	0.318	0.323	0.021
Observations	30,167	30,167	30,167	30,167	30,167	30,167
C: Reform 2016						
Treated X No PL/ Less PL	0.048	0.055	0.012	0.088**	0.097**	-0.002
	(0.077)	(0.081)	(0.022)	(0.041)	(0.039)	(0.013)
Treated	-0.005	-0.021	-0.003	-0.028	-0.046**	-0.001
	(0.020)	(0.018)	(0.006)	(0.023)	(0.020)	(0.007)
No PL/ Less PL	0.038	0.022	-0.001	0.096***	0.089***	-0.007
	(0.056)	(0.054)	(0.014)	(0.031)	(0.030)	(0.009)
Control mean	0.339	0.340	0.022	0.321	0.320	0.023
Observations	30,458	30,458	30,458	30,458	30,458	30,458

Notes: No PL and Less PL refers to zero days and at most than half of the reserved days, respectively, of paid parental leave in the child's first two years. Low (disposable) income is defined as having an income in the lower third of the pre-birth (disposable) income distribution of all fathers. Low household (hh) income share is defined as the father contributing with less than 40 percent to the pre-birth household income. All estimations are conditional on the parents living together either the year of birth or the year after. Estimates from separate RD-estimations using a 6-month reform window on each side, triangular weights, and quadratic separate slopes. Standard errors are clustered at the running variable, the birth date of the child. *** p<0.01, **p<0.05, * p<0.1.

Table A4: Robustness checks for effect of the father's sibling-sex composition on the probability to take no parental leave among fathers

VARIABLES	(1)	(2)	(3)	(4) 1995–2000	(5) 2010–2015
A. No restrictions on family size					
Second-born sister	0.000	0.002	0.003	0.006	0.008
	(0.001)	(0.004)	(0.002)	(0.006)	(0.005)
Second-born sister x Cohort 2010–2015		-0.001			
		(0.005)			
Second-born sister x Mother/father university education			-0.004	-0.003	-0.011*
			(0.003)	(0.011)	(0.006)
Observations	159,350	88,003	117,293	30,261	33,717
R-squared	0.010	0.024	0.011	0.014	0.013
B. No restriction on family size + controls for family size					
Second-born sister	0.000	0.002	0.003	0.006	0.008
	(0.001)	(0.004)	(0.002)	(0.006)	(0.005)
Second-born sister x Cohort 2010–2015		-0.001			
		(0.005)			
Second-born sister x Mother/father university education			-0.004	-0.003	-0.011*
			(0.003)	(0.011)	(0.006)
Observations	159,350	88,003	117,293	30,261	33,717
R-squared	0.011	0.024	0.011	0.014	0.013
C. Control for gender of first-born child					
Second-born sister	0.001	-0.002	0.004*	-0.000	0.016**
	(0.001)	(0.005)	(0.002)	(0.009)	(0.007)
Second-born sister x Cohort 2010–2015		0.008			
		(0.009)			
Second-born sister x Mother/father university education			-0.004	0.000	-0.016*
			(0.003)	(0.015)	(0.009)
Observations	96,402	52,893	70,550	18,369	19,861
R-squared	0.011	0.025	0.013	0.017	0.017

Notes: The table shows the effect of having a younger sister compared to a brother on the probability to take no parental leave among fathers. We measure the parental leave uptake during the child's first two years. All regressions include fixed effects for birth county, birth year, spacing, parental age at birth, and parental education. In panel A, we remove the restriction on family size. In panel B, we control for family size using the sample with no restriction on family size. In panel C, we control for the gender of first-born child by adding an indicator for if the child is a boy using the sample of two-child families. Robust standard errors, clustered at birth county, in parentheses. *, **, and *** indicates statistical significance at the 10-, 5-, and 1-percent level.

Table A5: Robustness checks for effect of the father's sibling-sex composition on the probability to take at most half of the reserved parental leave among fathers

VARIABLES	(1)	(2)	(3)	(4) 1995–2000	(5) 2010–2015
A. No restrictions on family size					
Second-born sister	0.002	0.009*	0.005	0.014*	0.003
	(0.003)	(0.004)	(0.003)	(0.007)	(0.008)
Second-born sister x Cohort 2010–2015		-0.002			
		(0.008)			
Second-born sister x Mother/father university education			-0.006	-0.008	-0.001
			(0.004)	(0.013)	(0.010)
Observations	159,350	88,003	117,293	30,261	33,717
R-squared	0.021	0.031	0.023	0.021	0.036
B. No restriction on family size + controls for family size					
Second-born sister	0.002	0.009*	0.005	0.014*	0.002
	(0.003)	(0.004)	(0.003)	(0.008)	(0.008)
Second-born sister x Cohort 2010–2015		-0.002			
		(0.008)			
Second-born sister x Mother/father university education			-0.006	-0.008	-0.001
			(0.004)	(0.013)	(0.010)
Observations	159,350	88,003	117,293	30,261	33,717
R-squared	0.021	0.031	0.023	0.022	0.036
C. Control for gender of first-born child					
Second-born sister	0.003	0.004	0.005	0.008	0.009
	(0.003)	(0.006)	(0.003)	(0.012)	(0.011)
Second-born sister x Cohort 2010–2015		0.008			
		(0.011)			
Second-born sister x Mother/father university education			-0.005	-0.008	-0.005
			(0.005)	(0.018)	(0.013)
Observations	96,402	52,893	70,550	18,369	19,861
R-squared	0.021	0.032	0.024	0.025	0.039

Notes: The table shows the effect of having a younger sister compared to a brother on the probability to take at most half of the reserved parental leave days among fathers. We measure the parental leave uptake during the child's first two years. All regressions include fixed effects for birth county, birth year, spacing, parental age at birth, and parental education. In panel A, we remove the restriction on family size. In panel B, we control for family size using the sample with no restriction on family size. In panel C, we control for the gender of first-born child by adding an indicator for if the child is a boy using the sample of two-child families. Robust standard errors, clustered at birth county, in parentheses. *, **, and *** indicates statistical significance at the 10-, 5-, and 1-percent level.

Table A6: Robustness checks for effect of the mother's sibling-sex composition on the probability to take no parental leave among fathers

VARIABLES	(1)	(2)	(3)	(4) 1995–2000	(5) 2010–2015
A. No restriction on family size					
Second-born brother	0.000	-0.003	-0.001	-0.000	0.011*
	(0.002)	(0.004)	(0.003)	(0.006)	(0.006)
Second-born brother x Cohort 2010–2015		0.010*			
		(0.005)			
Second-born brother x Mother/father university education			0.001	-0.010	-0.002
			(0.005)	(0.010)	(0.008)
Observations	162,442	90,010	117,191	30,825	33,085
R-squared	0.013	0.026	0.014	0.015	0.017
B. No restriction on family size + controls for family size					
Second-born brother	0.000	-0.003	-0.001	-0.000	0.010*
	(0.002)	(0.004)	(0.003)	(0.006)	(0.006)
Second-born brother x Cohort 2010–2015		0.010*			
		(0.005)			
Second-born brother x Mother/father university education			0.001	-0.010	-0.002
			(0.005)	(0.010)	(0.008)
Observations	162,442	90,010	117,191	30,825	33,085
R-squared	0.013	0.026	0.014	0.015	0.017
C. Control for gender of first-born child					
Second-born brother	-0.002	-0.004	-0.001	0.000	0.015**
	(0.002)	(0.004)	(0.003)	(0.006)	(0.006)
Second-born brother x Cohort 2010–2015		0.009			
		(0.006)			
Second-born brother x Mother/father university education			-0.002	-0.012	-0.008
			(0.006)	(0.010)	(0.007)
Observations	98,963	55,042	70,843	18,902	19,844
R-squared	0.013	0.025	0.014	0.017	0.019

Notes: The table shows the effect of the mother having a younger brother compared to a sister on the probability to take no parental leave among fathers. We measure the parental leave uptake during the child's first two years. All regressions include fixed effects for birth county, birth year, spacing, parental age at birth, and parental education. In panel A, we remove the restriction on the mother's family size. In panel B, we control for the mother's family size using the sample with no restriction on family size. In panel C, we control for the gender of first-born child by adding an indicator for if the child is a boy using the sample of two-child families. Robust standard errors, clustered at birth county, in parentheses. *, **, and *** indicates statistical significance at the 10-, 5-, and 1-percent level.

Table A7: Robustness checks for effect of the mother's sibling-sex composition on the probability to take at most half of the reserved days of parental leave among fathers

VARIABLES	(1)	(2)	(3)	(4) 1995–2000	(5) 2010–2015
A. No restriction on family size					
Second-born brother	0.002	0.003	0.001	0.005	-0.003
	(0.002)	(0.006)	(0.004)	(0.008)	(0.009)
Second-born brother x Cohort 2010–2015		-0.006			
		(0.007)			
Second-born brother x Mother/father university education			0.003	-0.001	0.004
			(0.007)	(0.010)	(0.014)
Observations	162,442	90,010	117,191	30,825	33,085
R-squared	0.025	0.034	0.029	0.023	0.043
B. No restriction on family size + controls for family size					
Second-born brother	0.002	0.003	0.001	0.005	-0.004
	(0.002)	(0.006)	(0.004)	(0.008)	(0.009)
Second-born brother x Cohort 2010–2015		-0.006			
		(0.007)			
Second-born brother x Mother/father university education			0.003	-0.001	0.004
			(0.007)	(0.010)	(0.014)
Observations	162,442	90,010	117,191	30,825	33,085
R-squared	0.025	0.034	0.029	0.023	0.043
C. Control for gender of first-born child					
Second-born brother	0.002	0.002	0.001	0.001	-0.002
	(0.002)	(0.007)	(0.005)	(0.009)	(0.008)
Second-born brother x Cohort 2010–2015		-0.004			
		(0.009)			
Second-born brother x Mother/father university education			0.003	0.001	0.006
			(0.008)	(0.014)	(0.011)
Observations	98,963	55,042	70,843	18,902	19,844
R-squared	0.024	0.033	0.028	0.026	0.040

Notes: The table shows the effect of the mother having a younger brother compared to a sister on the probability to take at most half of the reserved days of parental leave among fathers. We measure the parental leave uptake during the child's first two years. All regressions include fixed effects for birth county, birth year, spacing, parental age at birth, and parental education. In panel A, we remove the restriction on the mother's family size. In panel B, we control for the mother's family size using the sample with no restriction on family size. In panel C, we control for the gender of first-born child by adding an indicator for if the child is a boy using the sample of two-child families. Robust standard errors, clustered at birth county, in parentheses. *, **, and *** indicates statistical significance at the 10-, 5-, and 1-percent level.

Table A8. Reform analysis using regression discontinuity for probability of being separated.

	Fathers taking no parental leave		**Fathers taking at most half of the reserved days of parental leave**	
	(1)	(2)	(3)	(4)
A: Reform 1995				
Treated X No PL / Less PL	0.122***	0.120***	0.042*	0.045**
	(0.027)	(0.027)	(0.023)	(0.022)
Treated	0.000	0.002	0.002	0.002
	(0.008)	(0.008)	(0.008)	(0.008)
No PL / Less PL	0.076***	0.074***	0.076***	0.074***
	(0.015)	(0.015)	(0.015)	(0.015)
Control mean	0.036	0.037	0.036	0.037
Observations	32,277	31,631	32,277	31,631
B: Reform 2002				
Treated X No PL / Less PL	0.029	0.014	-0.011	-0.017
	(0.034)	(0.036)	(0.022)	(0.022)
Treated	-0.013*	-0.012*	-0.015**	-0.015**
	(0.007)	(0.007)	(0.008)	(0.007)
No PL / Less PL	0.170***	0.168***	0.110***	0.111***
	(0.021)	(0.022)	(0.017)	(0.017)
Control mean	0.032	0.032	0.032	0.032
Observations	32,079	31,346	32,079	31,346
C: Reform 2016				
Treated X No PL / Less PL	-0.059	-0.084	-0.076***	-0.087***
	(0.061)	(0.058)	(0.024)	(0.023)
Treated	-0.011*	-0.014**	-0.006	-0.007
	(0.006)	(0.006)	(0.006)	(0.007)
No PL / Less PL	0.324***	0.308***	0.161***	0.156***
	(0.042)	(0.043)	(0.017)	(0.017)
Control mean	0.034	0.034	0.031	0.031
Observations	32,326	31,815	32,326	31,815
Control for if child is a boy and municipality fixed effects	No	Yes	No	Yes

Notes: The table shows the effect of the first, second, and third reserved month of parental leave on the probability of fathers' being separated. No PL / Less PL refers to zero days or at most half of the reserved parental leave days in the child's first two years. All estimations are conditional on the parents living together either the year of birth or the year after. Estimates from separate RD-estimations using a 6-month reform window on each side, triangular weights, and quadratic separate slopes. Standard errors are clustered at the running variable, the birth date of the child. *** p<0.01, **p<0.05, * p<0.1.

Online Appendix B

This appendix presents the main figures and tables from the paper “Fathers but not caregivers” using a sample that includes fathers of any child parity. In the main analysis we restrict the analysis to first-time fathers. We use the same sample restrictions as in the main analysis in all other respects.

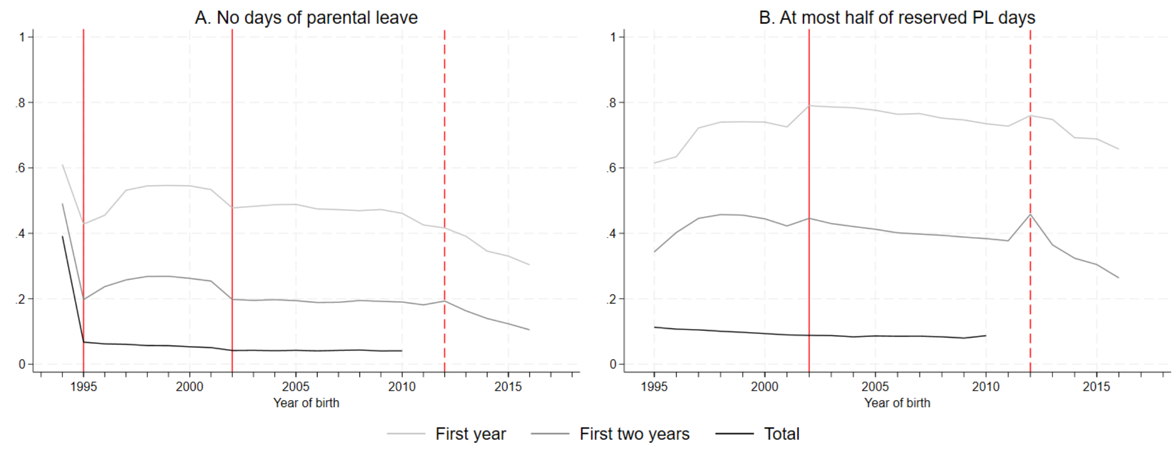

Figure B1. The share of fathers by degree of parental leave uptake for children born 1993–2016 (any parity)
Note: Panel A shows the share of fathers who do not take any leave. Panel B shows the share of fathers at most half of the reserved amount of leave (at most 15 days from 1995–2001 and 30 days from 2002). The lines represent the different time spans of the first year, the first two years and in total (by age 12 for child cohorts 2014–2016, and age eight for earlier cohorts). Red vertical lines indicate the introduction of the quotas, and the red dashed line indicates the introduction of ‘double-days’ in the parental leave insurance. Due to data availability, we include only births until July for 2016.

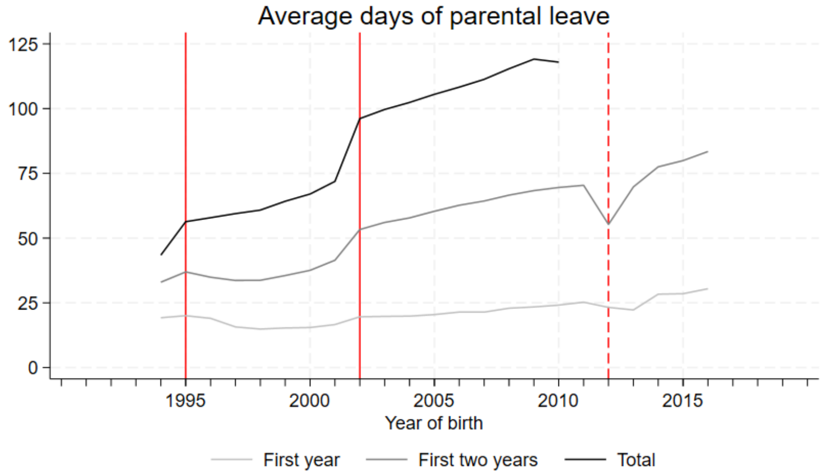

Figure B2. Average days of parental leave taken by fathers (any parity)
Note: The figure shows the average net days of paid parental leave benefits in the child's first year and first two years and in total (by age 12 for cohorts 2014–2016, and age 8 for earlier cohorts). Red vertical lines indicate the introduction of the reserved parental leave days for each parent, and the red dashed line indicates the introduction of 'double-days' in the parental leave insurance.

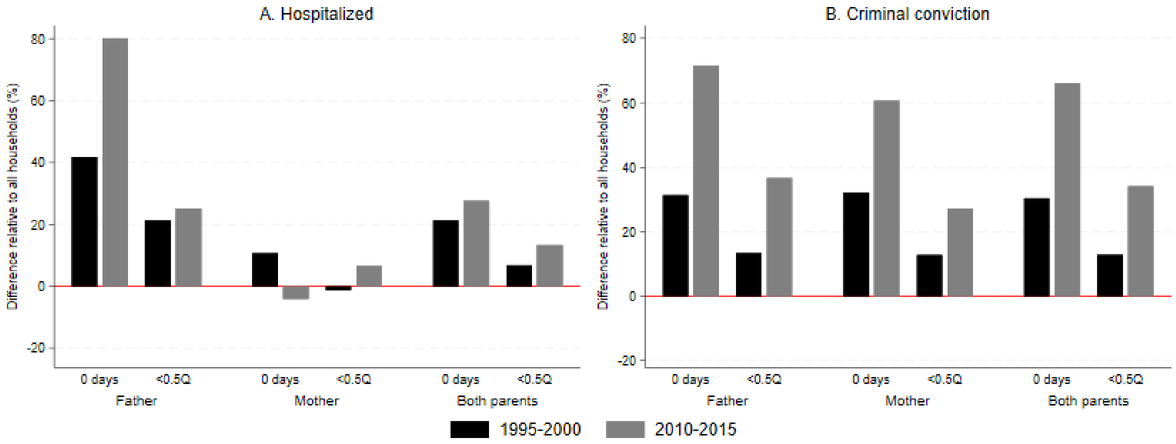

Figure B3. Physical or mental constraints of fathers who take no or at most half of the reserved parental leave days relative to all fathers (any parity).

Note: The difference relative to all fathers is expressed as the share of fathers taking no or at most half of the reserved parental leave days (<0.5Q), respectively, minus the share of all fathers, relative to the share of all fathers. Taking at most half of the reserved days corresponds to at most 15 and 30 days for children born before and after 2002, respectively. Hospitalization is defined as having been hospitalized for any diagnosis at least 7 days in the year before birth of the child. Criminal background is defined as being convicted for any crime, except traffic-related crimes, at some point before the child's year of birth.

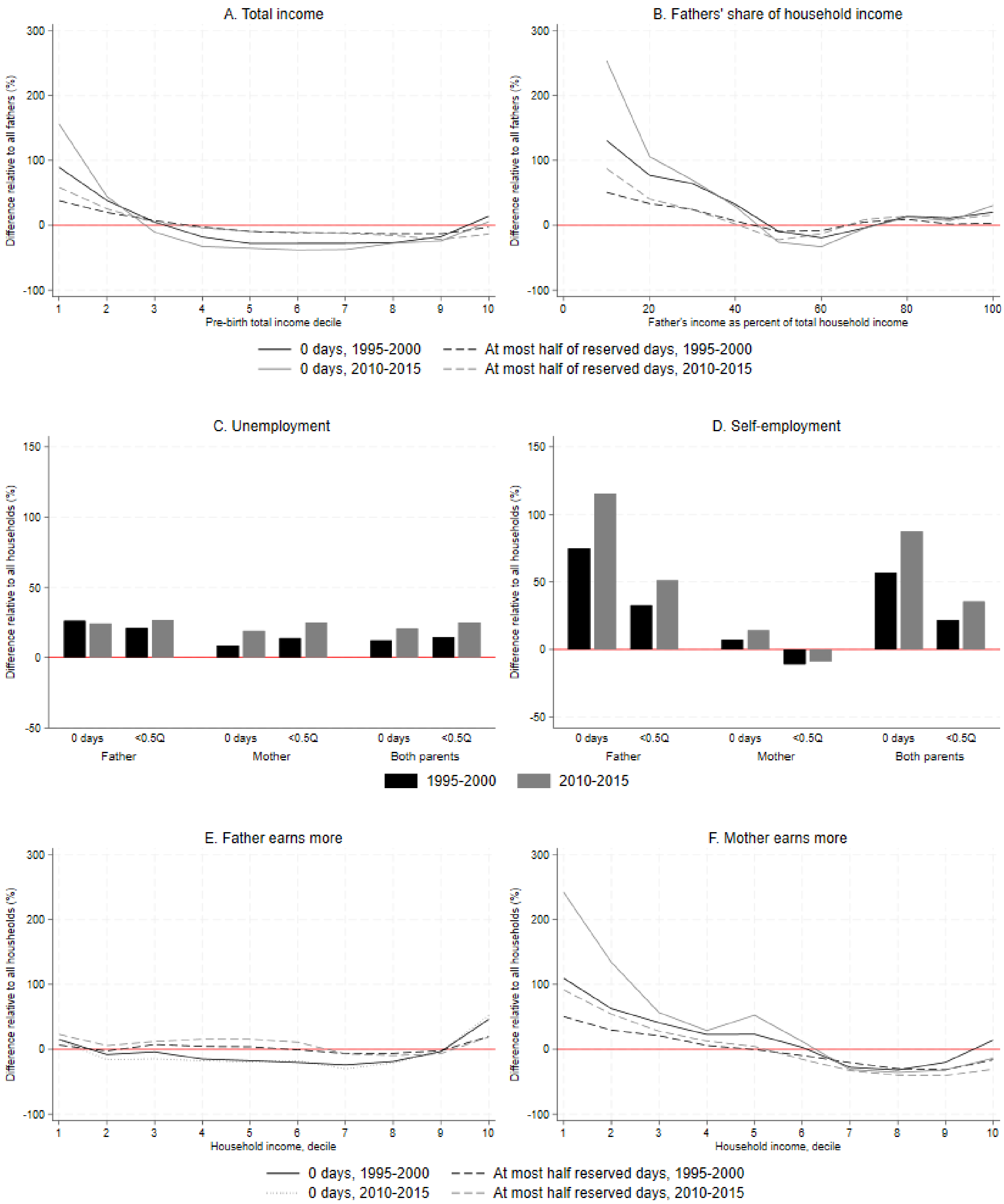

Figure B4. Economic constraints of first-time fathers who take no or at most half of the reserved parental leave days relative to all fathers (any parity).

Note: The difference relative to all fathers is the share of fathers taking no or at most half of the reserved parental leave days (<0.5Q), respectively, minus the share of all fathers, relative to the share of all fathers. Panel A: Pre-birth income refers to the father's labor income. The income deciles are constructed annually relative to the sample of fathers, including individuals with zero income. Panel B: The measure includes labor income (requiring at least one parent to have positive income). Panel C: An individual is defined as unemployed a person is defined as *unemployed* if the individual collects unemployment benefits in the year before childbirth. Panel D: An individual is defined as self-employed if most the individual's labor income comes from self-employment, including both non-limited and limited liability firms. Panels E-F: Income deciles are constructed annually, and the household rank is relative to the sample of parents. Fathers are defined to earn less (more) than the mother if he earns less (more) than 40 (60) percent of household income. The income measure includes labor income, as well as zero income (requiring at least one parent to have positive income).

Table B6: Descriptive statistics of fathers who take no parental leave or at most half of the reserved parental leave days and all fathers, any child parity

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	No PL	All	No PL		At most half of the reserved days		All fathers	
			1995–2000	2010–2015	1995–2000	2010–2015	1995–2000	2010–2015
Age at birth								
<20	0.009	0.004	0.011	0.007	0.003	0.004	0.005	0.003
20-24	0.084	0.073	0.100	0.087	0.089	0.100	0.087	0.074
25-29	0.248	0.268	0.289	0.227	0.333	0.275	0.317	0.247
30-34	0.334	0.360	0.329	0.311	0.347	0.320	0.348	0.346
35-39	0.212	0.205	0.172	0.234	0.158	0.207	0.165	0.227
40-	0.114	0.090	0.100	0.134	0.071	0.095	0.078	0.104
Education								
Primary	0.139	0.099	0.169	0.125	0.137	0.094	0.137	0.081
Secondary	0.641	0.609	0.659	0.613	0.705	0.668	0.675	0.554
University	0.214	0.289	0.163	0.256	0.155	0.236	0.184	0.363
Missing info	0.007	0.003	0.008	0.006	0.003	0.002	0.004	0.003
Student	0.063	0.051	0.077	0.052	0.047	0.043	0.059	0.046
Child characteristics								
First-born child	0.357	0.443	0.383	0.338	0.420	0.410	0.425	0.442
Second-born child	0.405	0.369	0.386	0.415	0.372	0.397	0.367	0.380
Third-born child or higher parity	0.238	0.188	0.230	0.247	0.208	0.193	0.208	0.178
Child is a boy	0.512	0.515	0.514	0.513	0.513	0.513	0.514	0.515
Observations	292,722	1,444,618	96,923	70,141	169,440	85,817	392,123	423,489

Notes: The parental leave uptake refers to the number of paid parental leave days during the child's first two years. Taking at most half of the reserved days corresponds to at most 15 and 30 days for children born before and after 2002, respectively. Educational attainment is measured the year before the birth of the child. Primary education corresponds to at most nine years of education. An individual is defined as student if he has received any student-related income in the year before childbirth.

Table B6: Financial and physical constraints of fathers who take no parental leave or at most half of the reserved parental leave days and all fathers, absolute values

	No parental leave	All fathers	No parental leave		At most half of the reserved days		All fathers	
			1995–2000	2010–2015	1995–2000	2010–2015	1995–2000	2010–2015
Physical constraints								
Hospitalization	0.001	0.001	0.002	0.001	0.001	0.001	0.002	0.001
Hospitalization, mother	0.002	0.002	0.003	0.001	0.002	0.001	0.003	0.001
Criminal conviction	0.105	0.075	0.113	0.101	0.080	0.073	0.087	0.067
Criminal conviction, mother	0.014	0.011	0.015	0.016	0.010	0.011	0.011	0.011
Financial constraints								
Low pre-birth income								
P0–10	0.188	0.100	0.176	0.206	0.073	0.083	0.100	0.100
P0–33	0.421	0.333	0.429	0.422	0.305	0.332	0.333	0.333
P0–10, mother	0.136	0.100	0.133	0.140	0.074	0.096	0.100	0.100
P0–33, mother	0.435	0.333	0.414	0.446	0.311	0.392	0.333	0.333
Low pre-birth disposable income								
P0–10	0.190	0.100	0.178	0.207	0.077	0.084	0.100	0.100
P0–33	0.412	0.334	0.423	0.410	0.306	0.325	0.334	0.334
P0–10, mother	0.148	0.100	0.139	0.154	0.082	0.108	0.100	0.100
P0–33, mother	0.428	0.334	0.405	0.442	0.322	0.395	0.334	0.334
High pre-birth income								
P66–P100	0.325	0.333	0.317	0.329	0.335	0.295	0.333	0.333
P90–P100	0.129	0.100	0.125	0.130	0.093	0.079	0.100	0.100
P66–P100, mother	0.250	0.333	0.268	0.238	0.320	0.227	0.333	0.333
P90–P100, mother	0.074	0.100	0.079	0.069	0.081	0.052	0.100	0.100
Father's share of household income	0.579	0.583	0.578	0.574	0.589	0.602	0.584	0.580
Low share (< 40 percent)	0.145	0.090	0.133	0.165	0.063	0.074	0.083	0.098
High share (> 60 percent)	0.499	0.437	0.478	0.505	0.454	0.497	0.445	0.429
Unemployed	0.134	0.101	0.215	0.065	0.175	0.063	0.175	0.053
Unemployed, mother	0.192	0.160	0.293	0.081	0.286	0.08	0.274	0.066
Self-employed	0.126	0.070	0.096	0.151	0.057	0.080	0.061	0.078
Self-employed, mother	0.029	0.025	0.024	0.033	0.012	0.022	0.021	0.028
Number of fathers	292,722	1,444,618	96,923	70,141	169,440	85,817	392,123	423,489

Notes: The parental leave uptake refers to the number of paid parental leave days during the child's first two years. Taking at most half of the reserved days corresponds to at most 15 and 30 days for children born before and after 2002, respectively. Hospitalized is defined as having been hospitalized for any diagnosis at least 7 days in the year before childbirth. Criminal conviction is defined as being convicted for any crime (except traffic relate), at some point before childbirth. Pre-birth income refers to the father's labor income (including capital income). The income deciles are constructed annually relative to the sample of fathers (including zero income). The household income includes labor and capital, as well as zero income (requiring at least one parent to have positive income). Fathers are defined to earn less than the mother if he earns less than 40% of household income and more than the mother if he earns more than 60% of household income. An individual is defined as unemployed if receiving unemployment benefits the year before childbirth. An individual is defined as self-employed if most of the individual's labor income comes from self-employment, including both non-limited and limited liability firms.

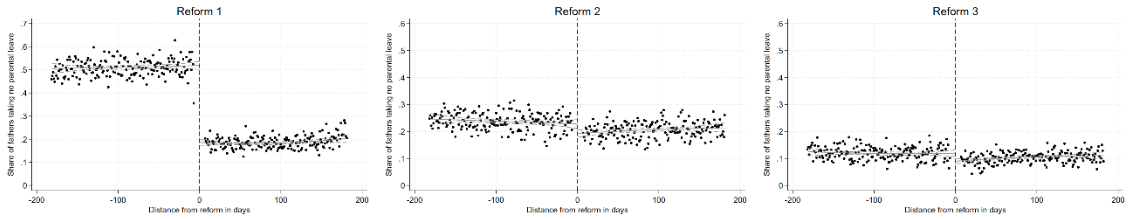

Figure B7. The share of fathers taking no parental leave, by birthdate of the child (any child parity)
Note: The analysis includes all births within 6 months of each reform. No parental leave refers to paid benefits within the child’s first two years. Birth date of the child is normalized to the date of implementation, indicated by the vertical line.

Table B8. Reform analysis using regression discontinuity among fathers of any child parity

	Fathers taking no parental leave					Fathers taking at most half of the reserved parental leave days				
	(1) Business owner	(2) Low disposable income	(3) Low income	(4) Low household (hh) share	(5) Low disp inc + hh share	(6) Business owner	(7) Low disposable income	(8) Low income	(9) Low household (hh) share	(10) Low disp inc + hh share
A: Reform 1995										
Treated X No PL/ Less PL	-0.001	0.129***	0.111***	0.040**	0.047***	-0.024*	0.095***	0.061***	-0.001	0.007
	(0.013)	(0.025)	(0.032)	(0.016)	(0.017)	(0.012)	(0.019)	(0.024)	(0.012)	(0.013)
Treated	0.016**	-0.023	-0.008	-0.001	-0.004	0.018***	-0.041***	-0.021	0.000	-0.003
	(0.007)	(0.014)	(0.014)	(0.009)	(0.008)	(0.007)	(0.015)	(0.015)	(0.009)	(0.008)
No PL/ Less PL	0.042***	0.097***	0.116***	0.049***	0.045***	0.042***	0.097***	0.116***	0.049***	0.045***
	(0.008)	(0.013)	(0.015)	(0.010)	(0.010)	(0.008)	(0.013)	(0.015)	(0.010)	(0.010)
Control mean	0.027	0.352	0.326	0.073	0.066	0.027	0.352	0.326	0.073	0.066
Observations	75,144	75,144	75,144	75,144	75,144	75,144	75,144	75,144	75,144	75,144
B: Reform 2002										
Treated X No PL/ Less PL	-0.002	0.042	0.053	0.047**	0.048**	-0.002	-0.004	0.016	-0.007	-0.007
	(0.017)	(0.035)	(0.034)	(0.023)	(0.022)	(0.013)	(0.029)	(0.029)	(0.017)	(0.016)
Treated	0.004	-0.043***	-0.036***	0.000	-0.004	0.002	-0.038**	-0.036**	0.010	0.006
	(0.006)	(0.013)	(0.013)	(0.008)	(0.008)	(0.008)	(0.016)	(0.015)	(0.010)	(0.009)
No PL/ Less PL	0.055***	0.056**	0.047*	0.033*	0.032*	0.028**	0.038	0.030	0.022	0.023*
	(0.011)	(0.028)	(0.028)	(0.019)	(0.018)	(0.011)	(0.025)	(0.025)	(0.014)	(0.013)
Control mean	0.032	0.347	0.345	0.091	0.077	0.032	0.341	0.339	0.093	0.076
Observations	64,965	64,965	64,965	64,965	64,965	64,965	64,965	64,965	64,965	64,965
C: Reform 2016										
Treated X No PL/ Less PL	0.014	0.035	0.053	0.062**	0.058*	0.012	0.038	0.037	0.034*	0.028
	(0.026)	(0.043)	(0.040)	(0.030)	(0.030)	(0.014)	(0.024)	(0.025)	(0.018)	(0.017)
Treated	0.012*	-0.041***	-0.032***	-0.016**	-0.019***	0.006	-0.052***	-0.041***	-0.023**	-0.025***
	(0.007)	(0.012)	(0.012)	(0.007)	(0.007)	(0.008)	(0.013)	(0.013)	(0.009)	(0.008)
No PL/ Less PL	0.096***	0.078***	0.076***	0.069***	0.075***	0.037***	0.010	0.010	0.007	0.019
	(0.018)	(0.029)	(0.029)	(0.020)	(0.020)	(0.009)	(0.017)	(0.018)	(0.013)	(0.013)
Control mean	0.051	0.382	0.359	0.115	0.096	0.047	0.371	0.346	0.114	0.093
Observations	69,011	69,011	69,011	69,011	69,011	69,011	69,011	69,011	69,011	69,011

Note: No PL / Less PL refers to zero days or at most half of the reserved parental leave days in the child's first two years. All estimations include controls for child parity and are conditional on the parents living together either the year of birth or the year after. Estimates from separate RD-estimations using a 6-month reform window on each side, triangular weights, and quadratic separate slopes. Standard errors are clustered at the running variable, the birth date of the child. *** p<0.01, **p<0.05, * p<0.1.

Table B9. Gender norms and the probability of taking no parental leave among fathers of any child parity over the period 1995–2015

	(1) No PL	(2) At most half of the reserved days
University is more important for a boy than for a girl	0.697*** (0.080)	0.509** (0.200)
Observations	885,550	885,550
R-squared	0.016	0.016
Men make better political leaders than women do	0.303*** (0.050)	0.236** (0.098)
Observations	885,550	885,550
R-squared	0.014	0.015
When jobs are scarce, men should have more right to a job than women	0.753*** (0.095)	0.606*** (0.208)
Observations	885,550	885,550
R-squared	0.016	0.016

Note: The table shows the relationship between different measures of social gender norms and the probability of taking no or at most half of the reserved parental leave days. The parental leave uptake refers to the number of paid parental leave days during the child's first two years. Taking at most half of the reserved days corresponds to at most 15 and 30 days for children born before and after 2002, respectively. The measures for gender norms are the share of individuals in a county who agrees with a certain statement. Robust standard errors, clustered at birth municipality, in parentheses. *, **, and *** indicates statistical significance at the 10-, 5, and 1-percent level.

Table B10: Effect of having an opposite-sex sibling on the probability to take no or at most half of the reserved paid parental leave days among fathers of any child parity

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	No parental leave days				At most half of the reserved parental leave days			
A. Father's sibling-sex composition								
Second-born sister	0.002	0.001	0.002	0.004	0.003	0.001	0.001	0.006
	(0.002)	(0.002)	(0.002)	(0.005)	(0.002)	(0.002)	(0.002)	(0.005)
Second-born sister x Cohort 2010-2015				-0.003				-0.006
				(0.006)				(0.007)
Observations	212,301	212,301	212,301	117,407	212,301	212,301	212,301	117,407
R-squared	0.008	0.015	0.016	0.021	0.008	0.019	0.025	0.025
B. Mother's sibling-sex composition								
Second-born brother	0.001	0.000	0.000	0.001	0.003	0.002	0.003	0.004
	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)
Second-born brother x Cohort 2010-2015				0.005				-0.002
				(0.004)				(0.006)
Observations	221,486	221,486	221,486	123,619	221,486	221,486	221,486	123,619
R-squared	0.009	0.015	0.017	0.023	0.008	0.018	0.026	0.026
Controls for birth county, birth year, birth spacing, and parental age at birth	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Parental education	No	No	Yes	Yes	No	No	Yes	Yes

Notes: The table shows the effect of the father's and mother's sibling-sex composition the probability to take no or at most half of the reserved parental days among fathers of any child parity. The parental leave uptake refers to the number of paid parental leave days during the child's first two years. Taking at most half of the reserved days corresponds to at most 15 and 30 days for children born before and after 2002, respectively. In panel A we estimate the impact of the father having second-born sister compared to having a second-born brother and in panel B the impact of the mother having a second-born brother compared to having a second-born sister. Column (4) and (8) presents estimates where we allow the effect to vary by birth cohorts. Birth county, birth year, spacing, parental age at birth, and parental education are entered as fixed effects. Robust standard errors, clustered at birth county, in parentheses. *, **, and *** indicates statistical significance at the 10-, 5-, and 1-percent level.

Table B11: Effect of having an opposite-sex sibling on the probability to take no or at most half of the reserved days of parental leave among fathers of any child parity, by parental education

	(1)	(2)	(3)	(4)	(5)	(6)
	No parental leave days			At most half of the reserved days		
VARIABLES	1995–2015	1995–2000	2010–2015	1995–2015	1995–2000	2010–2015
A. Father's sibling-sex composition						
Second-born sister	0.006*	0.009	0.007	0.005	0.009	-0.005
	(0.003)	(0.007)	(0.004)	(0.003)	(0.008)	(0.006)
Second-born sister x Mother/father university education	-0.006*	-0.006	-0.009	-0.005	-0.001	0.005
	(0.004)	(0.011)	(0.007)	(0.004)	(0.013)	(0.008)
Observations	157,952	41,285	45,426	157,952	41,285	45,426
R-squared	0.016	0.012	0.022	0.026	0.017	0.041
A. Mother's sibling-sex composition						
Second-born brother	0.003	0.007	0.008	0.006	0.007	0.001
	(0.004)	(0.004)	(0.006)	(0.005)	(0.006)	(0.007)
Second-born brother x Mother/father university education	-0.006	-0.012	-0.003	-0.005	-0.003	0.004
	(0.006)	(0.008)	(0.007)	(0.006)	(0.011)	(0.009)
Observations	161,572	44,094	45,142	161,572	44,094	45,142
R-squared	0.018	0.013	0.023	0.028	0.018	0.044
Controls for birth county, birth year, birth spacing, and parental age at birth	Yes	Yes	Yes	Yes	Yes	Yes
Parental education	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The table shows the effect of the father's and mother's sibling-sex composition on the probability to take no or at most half of the reserved parental leave days among fathers. The parental leave uptake refers to the number of paid parental leave days during the child's first two years. In panel A we estimate the impact of the father having second-born sister compared to a brother and in panel B the impact of the mother having a second-born brother compared to a sister. We focus on fathers where at least one of the father's (mother's) parents has primary education (but none has university education) and at least one of the father's (mother's) parents has university education (and the other parent at least secondary education). Columns (2)–(3) and (5)–(6) present estimates where we allow the effect to vary by birth cohort. Birth county, birth year, spacing, parental age at birth, and parental education are entered as fixed effects. Robust standard errors, clustered at birth county, in parentheses. *, **, and *** indicates statistical significance at the 10-, 5-, and 1-percent level.