

Breaking Gender Norms: Parental Leave Benefits and Within-Household Bargaining*

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Abstract

Low take-up of parental leave by fathers is a major factor in determining the unequal career costs of parenthood for men and women. Can the design of public policies effectively increase fathers' participation in parental leave? This paper causally assesses how financial incentives shape household division of parental leave. We leverage exogenous variation in parental leave (PL) benefits induced by a sharp kink in the schedule of benefit amounts relative to individual pre-birth net earnings, combined with exhaustive German administrative data on the division of parental leave for all childbirths from 2014 to 2018. Using a *double Regression Kink Design*—an extension we make of the RKD methodology by [Card et al., 2015](#)—we analyze how both parents respond to changes in the generosity of their own and their partner's benefits. Our key finding is that a reduction in the mother's benefit leads to a substitution in parental inputs, decreasing her leave while increasing the father's take-up, especially along the intensive margin, without altering the total duration of parental leave taken by the household. Cross-elasticities are higher when fathers have higher replacement rates than their partners. Our findings also reveal strong asymmetries, since mothers are significantly less responsive to changes in the father's benefit.

JEL classification: D13, H53, J13, J22.

Keywords: Childcare, Program Participation, Parental Leave Benefits, Labor Supply, Gender Gaps.

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1 Introduction

The differential impact of parenthood on the careers of men and women, known as the *child penalty*, accounts for most of the remaining gender inequality in the labor market (Kleven, Landais, and Søgaaard, 2019, Kleven, Landais, Posch, et al., 2019, Cortes and Pan, 2023). A key factor driving this disparity is the low participation of fathers in parental leave and child-rearing, a consistent pattern across OECD countries. Family policies, particularly parental leave, have therefore the greatest potential to reduce gender inequality. Yet, despite increasing attention to this issue, we still know little about whether public policies can foster more equitable gender roles within households.

Most of the literature has focused on the length of parental leave, showing that extended leave can have adverse effects on women’s career (Lalive and Zweimuller, 2009, Glogowky et al., 2024, Kleven, Posch, et al., 2024). A few other studies have examined the effects of more generous replacement rates on the leave decisions of mothers or fathers, finding that financial incentives have a limited impact on these choices (Bana et al., 2020, Ginja et al., 2020, Ziegler and Bamieh, 2023). However, due to difficulties in linking household members in traditional data sources, these analyses typically consider leave decisions in isolation, assessing only how an individual’s replacement rate affects a parent’s own decision. This overlooks the potential cross-spousal effects, which may be large given that decisions about work and childcare are often made jointly within households.¹

This paper offers a comprehensive analysis of how economic incentives shape the division of parental leave within households, with a focus on how exogenous variation in the relative replacement rates of partners influences their allocation of leave. One question we ask is: Does fathers’ take-up of parental leave increase when they exogenously earn higher replacement rates than their partners? To answer these questions, we leverage rich administrative data on all childbirths in Germany between 2014 and 2018. These data allow us to link household members and observe their parental leave take-up, duration, and a range of detailed background characteristics, including gross and net income, socio-demographic factors, religious affiliation, insurance coverage, and job characteristics.

Leveraging exogenous changes in parental leave (PL) benefits induced by a sharp kink in the benefit schedule relative to individual pre-birth net earnings, we analyze how both parents respond to changes in the generosity of their own and their partner’s benefits using a *double Regression Kink Design* (d-RKD)—an extension we introduce to the RKD methodology (Card et al., 2015). Our key finding is that a reduction in the mother’s benefit leads to a substitution in parental inputs, decreasing her leave

while increasing the father's take-up, especially along the intensive margin, without altering the total duration of parental leave taken by the household. Cross-elasticities are higher when fathers have higher replacement rates than their partners. We will use our reduced-form estimates and a sufficient statistics approach to derive the optimal benefit level, accounting for both own and cross-elasticities.

The remainder of the article is organized as follows. Section 2 describes the institutional setting in Germany. Section 3 describes the data sources and provides descriptive statistics of the sample. Section 4 introduces the identification strategy.

2 Parental Leave in Germany

In general, parental leave (*Elternzeit*) and parental leave benefits (*Elterngeld*) are distinct elements of Germany's institutional setting for new parents. Parental leave provides parents with the right for unpaid, job-protected time off for childcare, typically up to three years per child. Parental leave benefits are a wage replacement benefit, compensating for income loss when parents reduce or stop working to care for their child. This paper focuses on parental leave benefits, with all references to parental leave implying the receipt of benefits.¹

Parental leave benefits in Germany can be used very flexibly. First, the benefit can be taken equally by both partners. Second, the introduction of Parental Benefit Plus (*ElterngeldPlus*) in 2015 allowed parents to earn income during parental leave without a reduction in their parental leave benefits, significantly increasing the complexity of the system.

Duration During the sample period (2014-2018), the German government provides parents with up to 14 months of shared parental leave.¹ If only one parent receives the parental leave benefit, the maximum duration is reduced to 12 months. There is no mandatory paternity leave, and the minimum period a parent can take leave is 2 months. Parents must use their parental leave benefit within 12 or 14 months after childbirth. However, they have flexibility in how they take the leave: they can take it simultaneously or separately and may work up to 32 hours per week while still receiving parental benefits. Around the birth of the child, mothers must take 6 weeks before and 8 weeks after childbirth of mandatory maternity leave at a 100% wage replacement rate. During the 8 weeks of maternity leave after birth, mothers must use parental leave benefits, which are reduced by the amount of maternity protection benefits.

¹Twin births do not entitle parents to additional leave.

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Compensation While on parental leave benefit, individuals receive compensation proportional to their reference income over the 12 months preceding childbirth.² For most recipients, the reference income is replaced at a constant rate of 65%, with a maximum cap of €1,800 per month, corresponding to a reference income of €2,769, above the mean in this population (1743.30€). For those with a reference income below €1,200, the replacement rate increases to 67%, and the minimum benefit amount is set at €300 per month. Figure 1 illustrates the kinked parental leave benefits schedule in relation to net earnings in the year prior to birth.

Special case: Parental Benefit Plus When parents work during parental leave, they are compensated in proportion to their revised reference income, which is calculated as the difference between their pre-birth net income and current labor income. This strongly disincentivizes part-time work. Therefore, in July 2015 Parental Benefit Plus (*Elterngeld Plus*) was introduced. It allows splitting up the claim for one full month of parental leave benefit into two claims of Parental Benefit Plus. In each month of Parental Benefit Plus, the benefit is halved. However, it allows a parent to work up to 32 hours without reducing parental leave benefits. To further increase the incentives for both partners to work part-time during parental leave, the Partnership Bonus (*Partnerschaftsbonus*) was also introduced in July 2015. Couples receive a claim on four additional months of Parental Benefit Plus, if both partners claim Parental Benefit Plus in the same months and work part-time in these months.³

3 Data and Sample Description.

Data. We use administrative data from the full population in Germany (*Elterngeldstatistik*), provided by the German Federal Statistical Office. These unique spell data track the use of parental leave for parents of children born between 2014 and 2018. Each observation represents a parent-child pair, and we can link parents within a household using the child's identifier. The dataset includes detailed information on paid parental leave benefits, as well as all variables used to compute them, such as pre-birth gross and net income and employment characteristics, e.g. employment type (e.g., self-

²The reference income is estimated based on the gross income and other characteristics influencing the amount on the payslip. In particular the withholding tax class, the insurance status in health, pension and unemployment insurance, as well as the church tax play an important role.

³If couples want to maximize the parental leave benefit, they have to take the following restrictions into consideration: First, the two months after birth are obligatory for the mother as mandatory maternity leave. Second, the father should take at least two months of parental leave benefit. These can however also be taken as four months of Parental Benefit Plus (*Elterngeld Plus*). Third, both partners should work at least four months part-time in the same months, to maximize the benefit of the Partnership Bonus (*Partnerschaftsbonus*).

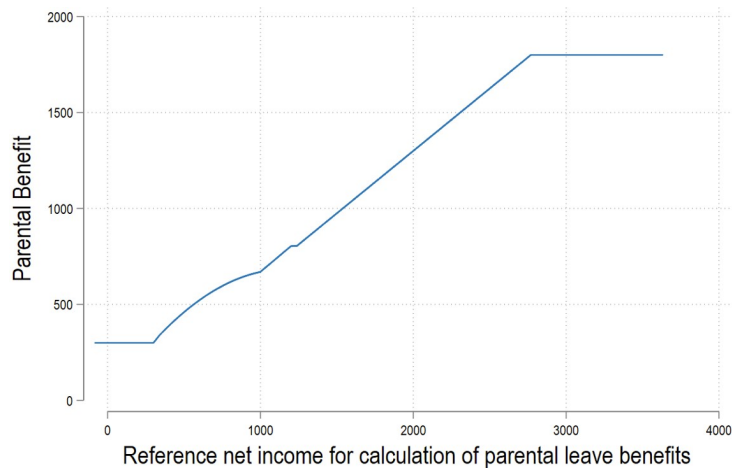


Figure 1: Monthly Parental Leave Benefits as a Function of Monthly Reference Income

employment or civil servant status⁴), withholding tax class, and insurance status. It also provides data on monthly net earnings during parental leave, along with individual socio-demographic information such as age, number of dependents, municipality of residence, country of birth, religion (Catholic, Protestant), and civil status. Note that this information is available only for individuals who take-up at least some leave. Access to fiscal data will soon allow us to overcome this limitation.

Sample Description. This paper leverages a kink in the schedule between PL benefits and reference income to identify the causal impact of the benefit amounts on household allocation of parental leave. The identification strategy requires comparability of individuals on either side of the kink, so we limit our baseline sample to households where at least one member has reference income within €500 of the kink point. The final sample includes 1,127,848 individuals from 563,924 households, representing 15.5% of the total population. Table 1 provides descriptive statistics for this sample. In the sample, 98.7% of mothers and 82.1% of fathers take at least two months of parental leave, and in 80.8% of households, both partners take leave⁵. However, leave division remains highly unequal, with mothers taking more than four times the leave duration of fathers (11.2 vs. 2.6 months), reflecting traditional gender roles. Around one-fifth of parents engage in paid work during their parental leave (see conditions above).

⁴Civil servants can be identified as they are not contributing to the public pension insurance. Only a small number of other occupations (employed pharmacists, doctors, architects, veterinarians, tax consultants and auditors) is also exempt from the contribution to the public pension insurance.

⁵This does not account for the very few parents, where both partners do not receive any parental leave benefit.]

Table 1: Descriptive statistics on PL claims, outcomes and individual characteristics

	Mothers			Fathers		
	Mean	SD	Obs	Mean	SD	Obs
PL claim characteristics						
Months of paid parental leave	11.1	2.2	563,924	2.1	1.9	563,924
Take-up of parental leave (%)	98.7	11.3	563,924	82.1	38.3	563,924
Both parents take up PL (%)	80.8	39.4	563,924	80.8	39.4	563,924
Months of paid parental leave (>0)	11.2	1.8	556,613	2.6	1.8	463,102
Work during PL (%)	21.0	40.7	556,613	22.5	41.7	463,102
Parental leave Plus (%)	1.6	12.7	556,613	0.7	8.5	463,102
Monthly net PL benefit	1,265.4	584.7	556,613	1,568.7	353.0	463,102
Income variables in reference year						
No income in ref. year (%)	7.8	26.8	556,613	1.9	13.6	463,102
Labor income in ref. year (%)	88.4	32.0	563,924	77.5	41.7	563,924
Self-employed income in ref. year (%)	6.3	24.2	556,613	9.7	29.7	463,102
Self-employed + labor income in ref. year (%)	3.6	18.6	563,924	5.0	21.7	563,924
Gross monthly income (€)	3,054.1	1577.0	556,613	4,074.8	1,390.1	463,102
Net monthly income (€)	2,028.5	1000.3	556,613	2,588.9	785.4	463,102
Civil servant (%)	25.4	43.5	556,613	14.4	35.1	463,102
Withholding tax class 1 (%)	32.7	46.9	532,557	29.6	45.7	458,255
Withholding tax class 2 (%)	0.8	8.8	532,557	0.1	2.9	458,255
Withholding tax class 3 (%)	12.6	33.1	532,557	23.0	42.1	458,255
Withholding tax class 4 (%)	44.1	49.7	532,557	39.6	48.9	458,255
Withholding tax class 5 (%)	9.8	29.7	532,557	7.7	26.7	458,255
Demographic information						
Age	33.4	3.8	556,613	35.8	4.9	463,102
Resident in Germany (%)	99.7	5.8	556,613	99.8	4.7	463,102
Resident in East Germany (%)	13.7	34.4	554,705	14.2	34.9	462,096
German citizenship (%)	93.0	25.5	556,613	94.3	23.1	463,102
Affiliated to Church (%)	59.1	49.2	523,271	52.5	49.9	454,294
Married (%)	78.1	41.3	563,924	78.4	41.2	563,924
First child (%)	77.0	42.1	554,089	62.2	48.5	461,744
Number of dependents	0.3	0.6	554,089	0.5	0.7	461,744

Notes: The table presents summary statistics for the baseline sample, which includes households where at least one member has a reference income near the kink point. Individual-level data is only available for individuals who have taken at least some parental leave, which accounts for the reduction in sample size for certain variables.

In our sample, women and men have average net monthly incomes of €2,028.5 and €2,588.9, respectively, leading to lower parental leave benefits for women compared to men (€1,265.4 vs. €1,568.7). The unconditional distribution of net income for both spouses across the entire population, not limited to the kink, is shown in Figure 2, where the vertical lines indicate the median. Mothers are more likely than fathers to have had no employment in the reference year and are more often employed rather than self-employed. Women are also more likely to be civil servants than men. Regarding individual characteristics, men are generally older than women, around 78% of house-

holds are married, and for 77% of women and 62.2% of men, the current one is their first child. Approximately 14% of households reside in East Germany, and between 52.5% and 59.1% of fathers and mothers have some religious affiliation.

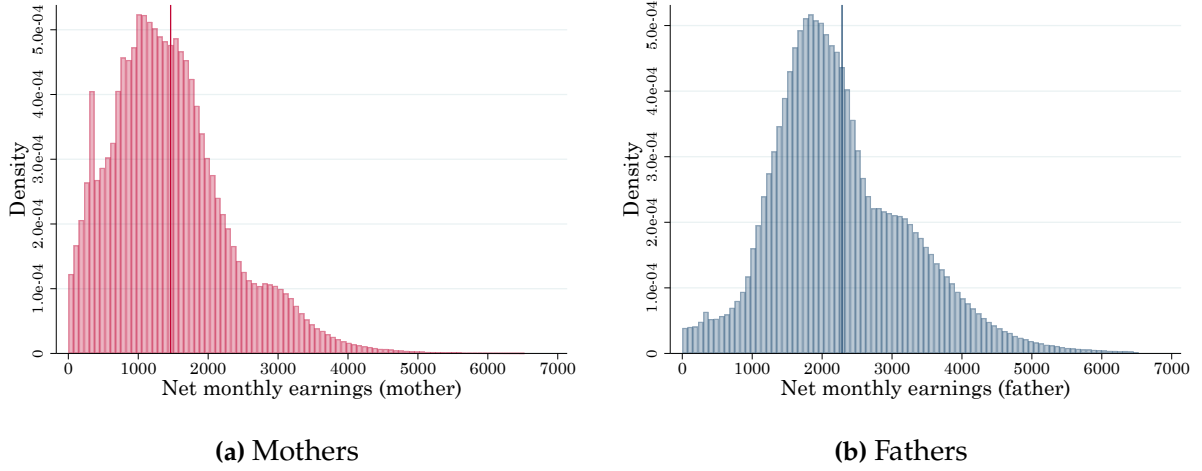


Figure 2: Distribution of net income for mothers and fathers receiving parental leave benefit

Notes. These figures show the distribution of net monthly earnings in the baseline sample, for mothers and fathers who take at least 2 months of parental leave (98.7% and 80.8%, respectively). The vertical lines correspond to the median in the respective distributions.

Table A.1 summarizes the characteristics of the subset of households where both partners take at least two months of parental leave, i.e. 80.8% of the total sample. Due to high levels of assortative mating, most of these households have partners with same replacement rates, meaning both are either on the left or right side of the kink. However, in 11.7% of cases, the mother has a lower replacement rate than the father, and in 28.2% of cases, the father's replacement rate is lower than the mother's. On average, households take 13.7 months of parental leave, with over 82% of households using the maximum 14 months to which they are entitled. Of the total leave duration, mothers account for 81.3% of the time taken. With respect to personal characteristics, fathers are, on average, 2.5 years older than mothers, and mothers contribute to total household income on average 40%, with an average net household income of €4,467.8 per month.

4 Empirical strategy

For each partner $j \in \{F, M\}$ in household h , we are interested in the relationship

$$pl_{jh} = \beta_0 + \beta_1 b_{jh} + \beta_2 b_{-jh} + u_{jh} \quad (1)$$

where the dependent variable is the number of months in parental leave and b is the PL benefit. While previous studies have provided some causal estimates of β_1 ⁶,

⁶See, for example, Asai, 2015, Bana et al., 2020, Ginja et al., 2020, Ziegler and Bamieh, 2023.

there is little knowledge about β_2 . The substitutability of spousal inputs in childcare is, however, a key parameter. When parental inputs are highly substitutable, a change in (relative) replacement rates results in larger gains in household disposable income, allowing couples to more easily reallocate time in response to changing economic incentives. Conversely, low substitutability, as implied by a small β_2 , indicates that couples have strong preferences for specific combinations of parental inputs, potentially at the expense of disposable income. The goal of this empirical analysis is twofold: (i) to test whether β_2 is statistically different from zero, and (ii) to quantify the magnitude of this effect. If $\beta_2 \neq 0$, this also suggests that prior estimates of β_1 were likely biased, due to strong correlation between own and partners' benefits.

Endogeneity. Estimating the relationship outlined in equation 1 is likely to result in biased estimates of both parameters, even with flexible controls for observed characteristics. This potential bias arises from the non-random allocation of parental benefits: these benefits are determined based on pre-birth net earnings, which are likely correlated with unobserved factors influencing parental leave duration. The empirical challenge therefore lies in finding credibly exogenous sources of variations in parental leave benefits. In this paper, we exploit the kinked schedules in Germany (see Figure 1) that govern the relationship between pre-birth net earnings and parental leave benefit levels, using an extended version of the Regression Kink Design (RKD) to estimate the response of parental leave duration to PL benefits.

Double regression kink design (double RKD). To identify the effect of own and partners' PL benefits on months in parental leave for each parent, we rely on a sharp kink in the schedule of PL benefits relative to previous net earnings for both partners. Our approach, that we name double regression kink design (D-RKD), corresponds to the following specification:

$$pl_{jh} = \beta_0 + \beta_{1j}(w_{jh} - k) + \delta_{1j}(w_{jh} - k)D_{w_{jh} \geq k} + \beta_{2j}(w_{-jh} - k) + \delta_{2j}(w_{-jh} - k)D_{w_{-jh} \geq k} + \varepsilon_{jh} \quad (2)$$

where we use as a dependent variable the number of months in parental leave.

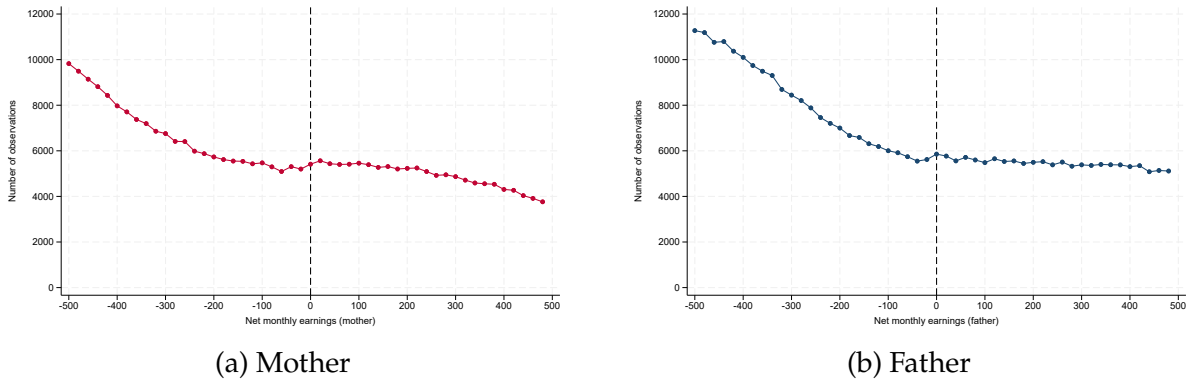
Interpretation of coefficients. The main interest is in the parameters δ_{1j} and δ_{2j} , for each partner $j \in \{F, M\}$. If $\delta_{2j} \neq 0$, this implies that the decision of each partner is affected by the generosity of partners' benefits. Imagine, for example, that $\delta_{1M} < 0$, i.e., a decrease in the benefit level of the mother reduces the number of months she spends in parental leave. This could, in principle, give rise to two scenarios: (1) the father does not increase his take-up in reaction to the mother's decision ($\delta_{2F} = 0$) or (2) the father

increases his take-up in reaction to the mother's decision ($\delta_{2F} > 0$). If scenario (1) is true, then the total duration a household spends in parental leave decreases with certainty; while if (2) is true, the total duration of parental leave for the household might be the same, while the allocation between the two partners changes.

4.1 Identifying assumptions

The main identifying assumption of the RKD is the smoothness of the distribution of pre-birth net monthly earnings (running variable) and of other pre-determined characteristics around the kink. Formally, these distributions should be continuously differentiable at $W = k$. Intuitively, this relates to the absence of sorting or manipulation around the kink. This local random assignment condition seems credible in the context, as few individuals are likely to be fully aware of the exact schedule of parental leave (PL) benefits, particularly given that the sample consists predominantly of first-time parents. Furthermore, most women in the sample have standard labor contracts in the year prior to PL, making it difficult to exert precise control over wages. We empirically investigate the smoothness of the distributions of the running variable and of other pre-determined characteristics around the kink. Figure 3 depicts the number of parental leave spells (our main outcome variable) per bin of pre-birth net monthly earnings for mothers (Panel (a)) and for fathers (Panel (b)). The number of observations is smooth around the kink in both samples.⁷

Figure 3: Distribution of parental leave spells around kink



Notes: The figure assesses the validity of the assumptions of the RK design by testing graphically the smoothness of the distribution of the individual assignment variable at the kink point in the PL schedules. It displays the probability density function of the assignment variable for the schedule of PL benefits, normalized at the kink point, for mothers (a) and fathers (b), respectively.

To visually assess the smoothness of other pre-determined characteristics, we plot the distribution of all observed covariates around the kink. As Figure A.1 shows, all

⁷Since earnings are only observed for individuals who take-up some leave, and given that not all fathers take-up some leave, the analysis on fathers has to be considered as provisional and will be improved using fiscal data.

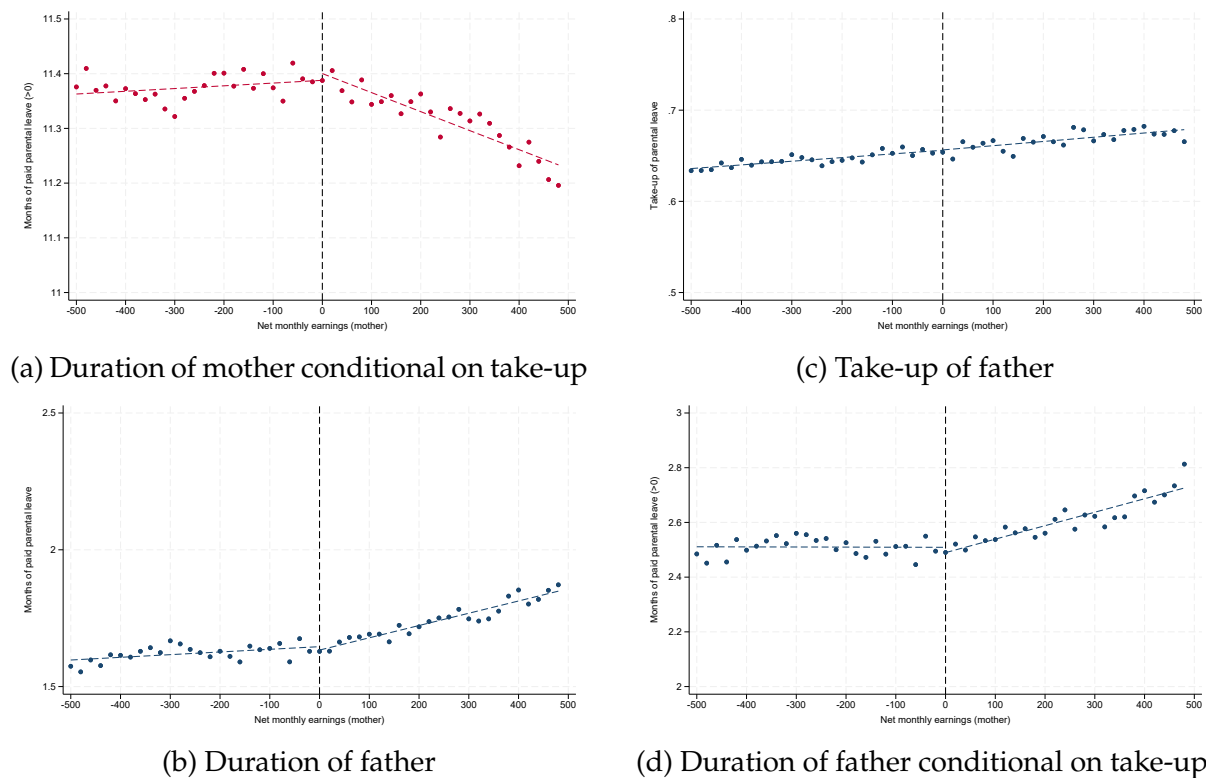
distributions of individual characteristics seem visually smooth around the kink in the full sample for mothers and fathers. When conducting an RKD on individual covariates, we cannot detect any significant discontinuity at the kink, which confirms the results of the visual checks.

5 Results

5.1 Graphical evidence

Before proceeding to a formal RKD analysis, we provide a graphical illustration of how parental decisions to allocate leave change around the kink. Figure 4 shows the evolution of parental leave duration of mothers and fathers within a bandwidth around the mother's kink. Note that the mother's kink corresponds to a sharp decrease in the replacement rate of her parental leave benefits.

Figure 4: Parents' PL duration around mother's kink



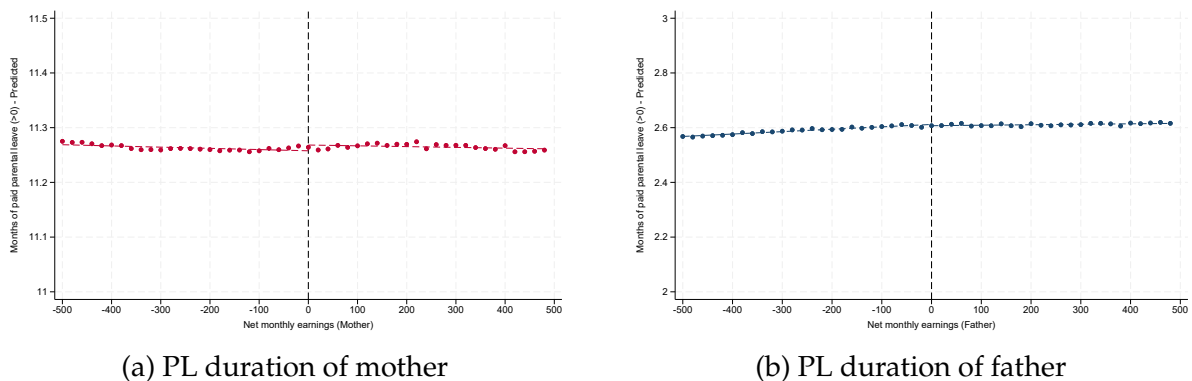
Notes: The figure plots the evolution of parents' PL duration around the kink in the mother's reference income. Panel (a) shows average PL duration of mothers conditional on take-up by bins of 20 euros of mother's reference income. Panel (b) shows average take-up rate of fathers by bins of 20 euros of mother's reference income. Panel (c) shows average PL duration of fathers (including 0) by bins of 20 euros of mother's reference income. Panel (d) shows average PL duration of fathers conditional on take-up by bins of 20 euros of mother's reference income.

This figure clearly shows that while PL durations of partners evolve smoothly before the kink, a strong discontinuity is visible exactly at the mother's kink. Specifically, Panel (a)

shows that the time a mother spends on parental leave exhibits a sharp decrease after the kink, consistent with a reduction in the generosity of her PL benefit. Conversely, Panel (b) shows that the time a father spends on parental leave increases in correspondence with the mother's kink, which suggests a substitution in parental inputs following a decrease in mother's benefit. Panel (c) and (d) shows that the increase in father's PL duration is driven by an increase in the intensive margin of leave duration rather than by an increase in take-up rates.

Before proceeding to the formal analysis, we want to corroborate that these discontinuities in parents' allocation of PL are driven by PL benefits and not by sorting of individuals on either side of the kink. Our approach is to check that predicted outcomes, rather than actual outcomes, are smooth around the kink. To do so, we first regress PL outcomes (take-up and duration) of each partner on all observable individual characteristics of the mother, such as religious affiliation, employment type, age, marriage status, number of children, month of child birth and region fixed-effects. We then plot the predictions against mother's reference income. Unlike true outcomes, Figure 5 shows that predicted outcomes do not exhibit any discontinuity around the kink, implying that behavioral changes of the two partners are not driven by changes in the composition of households on either sides of the kink.

Figure 5: Smoothness of predicted PL duration around mother's kink



Notes: Predicted PL durations are predicted values from a regression of observed PL months of mothers and their partners on observable mother's characteristics: dummy for religious affiliation, age, employment type (standard labor contract, self-employment, civil servant), dummy for marriage, nb. of dependents, month of childbirth, region of residence. These two are plotted against normalized reference income of the mother.

5.2 Baseline estimates from RKD analysis

Results are presented in Table 2. The empirical model outlined in 2 can only be estimated for households where income data is available, i.e., where both parents take at least some parental leave, which applies to 80.8% of households. This is a major limitation of this current version, that we are going to overcome with access to fiscal data. Before going

to this model, we first perform a simple RKD:

$$pl_{mh} = \gamma_0 + \gamma_{1m}(w_{mh} - k) + \gamma_{2m}(w_{mh} - k)D_{w_{mh} \geq k} + \epsilon_{mh} \quad (3)$$

to isolate the potential impact of the mother's benefits on her partner's leave take-up, considering both the extensive and intensive margins. It is important to note that this approach is likely to produce downward-biased estimates due to assortative mating. Fathers with partners receiving lower replacement rates are likely to have lower replacement rates themselves, which may confound estimates of cross-elasticities by capturing both the spouse's effect and their own benefit reduction. This equation is estimated using households where the mother's income falls within a €300 bandwidth around the kink, regardless of whether the father takes any parental leave. The results, depicted in Panel (1), show that a €100 decrease in the mother's benefit leads to a reduction of 1.9 days in her leave duration (equals 0.062 months), yielding an own-elasticity of 0.098. While there is no evidence that fathers adjust their leave decisions on the extensive margin, they do increase their leave duration on the intensive margin, with an implied cross-elasticity of -0.677.]

Estimates from model 2 are shown in Panel (2). This is estimated on the sample of households where both parents take-up some leave, and where the mother's reference income falls within a €300 bandwidth around the kink. The table reports causal estimates of mothers' PL benefits on the total months of PL taken by the household, as well as on the father's and mother's duration of leave. A €100 decrease in the mother's monthly net PL benefits (around 7.9%) reduces her leave duration by 3 days (around 1%) on average, resulting in a statistically significant elasticity of 0.158. Conversely, this same decrease leads to a 3-day increase in the father's leave, with a statistically significant elasticity of -0.712. The economic magnitude of the effect is modest. However, average effects are likely to mask significant heterogeneity depending on partners' relative position in the income distribution, an aspect that we will further investigate. The difference in the magnitude of the elasticities between the two partners reflects considerable differences in baseline PL durations. Importantly, the total household leave duration remains unchanged, suggesting that couples primarily respond to economic incentives by reallocating leave between partners rather than altering the overall time taken.

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Table 2: RKD estimates of the effects of PL benefits

Variable	$\hat{\alpha}$	se($\hat{\alpha}$)	$\hat{\varepsilon}$	se($\hat{\varepsilon}$)	P-val	Mean	N
Effect of PL benefit of mother							
1. All households							
Total months of household PL	-0.015	0.014	-0.020	0.019	0.292	13.031	164,979
Mother: months of PL (>0)	0.062	0.015	0.098	0.023	0.000	11.366	164,979
Father: months of PL (incl. 0)	-0.077	0.015	-0.831	0.164	0.000	1.665	164,979
Father: take-up of PL	-0.005	0.004	-0.145	0.114	0.203	0.656	164,979
Father: months of PL (>0)	-0.095	0.016	-0.677	0.117	0.000	2.537	108,236
2. Households sharing PL							
Total months of household PL	-0.002	0.013	-0.003	0.017	0.877	13.031	108,236
Mother: months of PL (>0)	0.098	0.019	0.156	0.030	0.000	11.366	108,236
Father: months of PL (>0)	-0.100	0.016	-0.712	0.117	0.000	2.537	108,236
Effect of PL benefit of father							
Total months of household PL	0.008	0.010	0.010	0.014	0.460	13.031	180,150
Mother: months of PL (>0)	-0.005	0.016	-0.009	0.026	0.741	11.366	180,150
Father: months of PL (>0)	0.013	0.014	0.092	0.101	0.361	2.537	180,150

Notes: α is the RK estimate of the average treatment effect of increasing PL benefits by 100 euros on the number of months in parental leave. Elasticities are computed by multiplying and dividing this by the PL benefit and average PL duration at the kink. The first panel reports estimates from a simple RKD of increasing PL benefits of mothers on their own take-up and their partners, without additional controls. This specification is performed on the sample of households where the mother has reference income in a bandwidth of 300€ around the kink, regardless of the father's income. The second panel reports estimates from the double-RKD where we also control for father's normalized reference income, interacted with his location relative to the kink. We perform this specification on the sample of households where the mother has reference income in a bandwidth of 300€ around the kink, and whether the father also takes up. In the third and last panel, we report estimates from the double-RKD, that we perform on the sample of households where the father has reference income in a bandwidth of 300€ around the kink, and the mother takes up some leave.[†]

Panel (3) descriptively explores the possible effects of fathers' PL benefits on the household's decisions to share parental leave. The model in Equation 2 is estimated for households where the father's reference income is observed and falls within a €300 bandwidth around the kink, including mothers across all income levels. Note that, because there may be selection of fathers' take-up depending on their unobserved treatment, these results have to be taken with caution. The results indicate that fathers' PL benefits do not significantly affect the total duration of leave taken by the household or how the partners divide the leave, revealing a notable asymmetry in how parents respond to financial incentives, possibly consistent with sequential decision making within the household.[‡]

While these results depend on the specific bandwidth chosen, Figures 6 and 7 explore how the estimates vary across different bandwidths, ranging from €100 to €500 around the kink. These figures present the results of the double RKD. For Figure 6, we use the sample of households where the mother's income is near the kink (same specification as Panel (2) of Table 2). For Figure 7 we accordingly use the sample of households where the father's income is around the kink (same specification as Panel (3) of Table 2). The

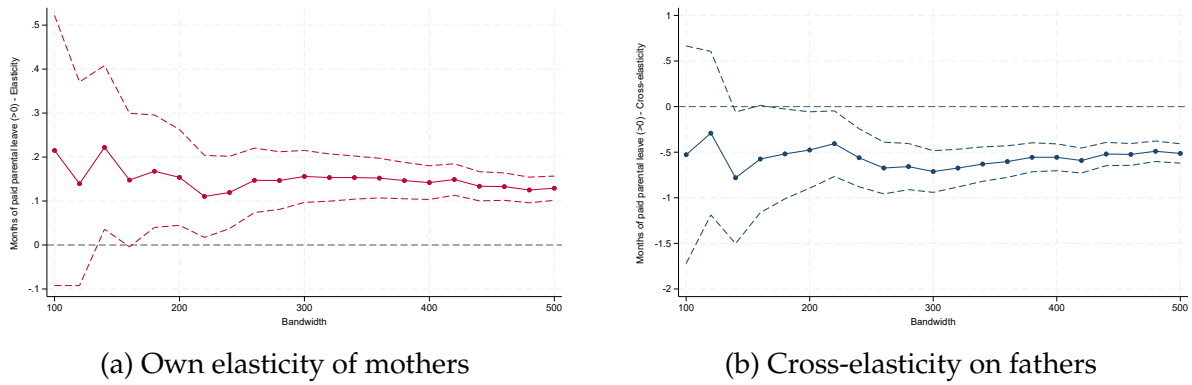
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We are including mother's income as a control in the third panel, right? If yes, we should include that.

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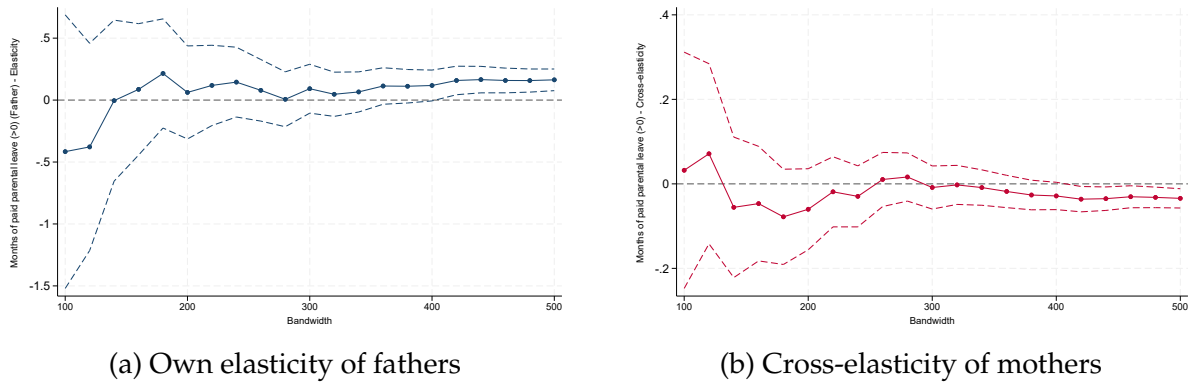
investigate asymmetry and its implications for optimal policy

Figure 6: Effects of increasing mothers' PL benefits on PL duration of partners



Notes. These figures represent the elasticities of parents' PL duration relative to increases in mothers' PL benefits. Estimates of elasticities are done for bandwidths from 100 to 500 by bins of €20 of mothers' normalized reference income.

Figure 7: Effects of increasing fathers' PL benefits on PL duration of partners



Notes. These figures represent the elasticities of parents' PL duration relative to increases in fathers' PL benefits. Estimates of elasticities are done for bandwidths from 100 to 500 by bins of €20 of fathers' normalized reference income.

results indicate that the point estimates are stable across bandwidths and that their precision improves with larger sample sizes, particularly for bandwidths exceeding €200. This pattern holds for all other models. }

6 Conclusion

Low take-up of parental leave by fathers has been a significant factor driving the highly unequal career costs of parenthood for men and women, commonly referred to as the child penalty. While parental leave policies have the potential to counter these disparities, our understanding of which policy designs are most effective in challenging traditional gender roles remains limited.

In this paper, we address this gap by evaluating the role of financial incentives in shaping the allocation of parental leave within households. Specifically, we investigate

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whether fathers increase their take-up of parental leave when they exogenously receive higher replacement rates than their partners. To isolate households where monetary opportunity costs are similar for both partners, we focus on couples earning comparable amounts prior to childbirth. ¶Exploiting a sharp kink in the German parental leave benefit formula - where benefits replace 65% of pre-birth net monthly earnings up to a cap of €1800 - we provide credible evidence that parents do not sort around the kink. This natural experiment enables us to examine how both partners respond to exogenous changes in parental leave benefits using an extension of the Regression Kink Design (RKD), which we term a "double-RKD."

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Is that correct when our sample consists of parents where one person is around the kink (the other one might generally be far away)?

Our analysis leverages German administrative data covering the full population from 2014 to 2018. These rich data allow us to link household members and access detailed information on parental leave usage, benefits, and each parent's employment and background characteristics. We find that reductions in the mother's parental leave benefits lead to a reallocation of leave within households, with fathers increasing their share of leave. Crucially, this reallocation occurs without altering the total duration of parental leave taken by the household. ¶Our findings indicate that households are responsive to economic incentives when making leave allocation decisions. Finally, we will use our reduced-form estimates to design optimal parental leave benefits that account for cross-spousal effects, which have been neglected in the literature so far.

PM:

Are we intentionally not mentioning the non-responsiveness to fathers' benefits here?

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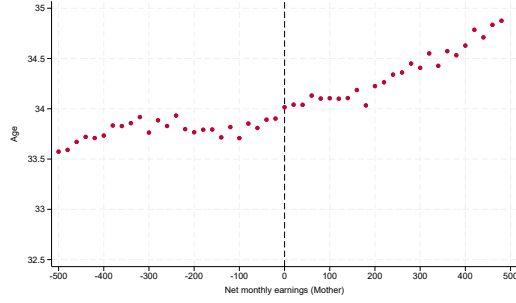
Appendix A Appendix: Additional Figures and Tables

Table A.1: Descriptive statistics of households sharing PL

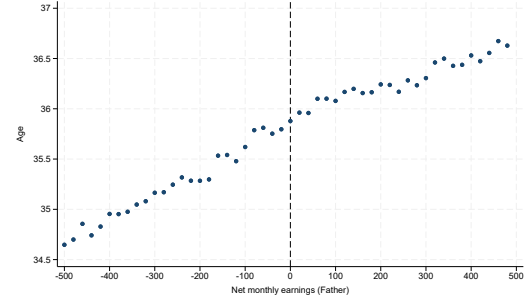
	Mean	SD	Obs
PL characteristics			
Mother has lower replacement rate (%)	11.7	32.1	455791
Father has lower replacement rate (%)	28.2	45.0	455791
Total nb. of months in PL	13.7	1.2	455791
Household takes 14 months of PL (%)	82.3	38.1	455791
Mother's contribution to household PL (%)	81.3	12.1	455791
PL mother (months)	11.1	1.9	455791
PL father (months)	2.5	1.6	455791
Baseline characteristics and income in ref. year			
Father's - mother's age	2.5	4.0	455791
Net monthly household income	4467.8	1264.7	455791
Mother's contribution to household income (%)	39.7	20.5	455791
Father's net monthly income (€)	2587.0	790.6	455791
Mother's net monthly income (€)	1880.8	1040.6	455791

Notes: The table presents summary statistics for the subset of households where both partners take-up at least 2 months of parental leave (80.8% of baseline sample).

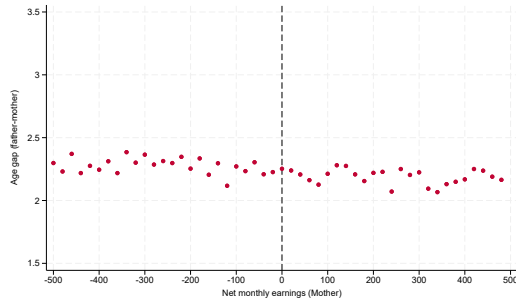
Figure A.1: Covariates around the kink



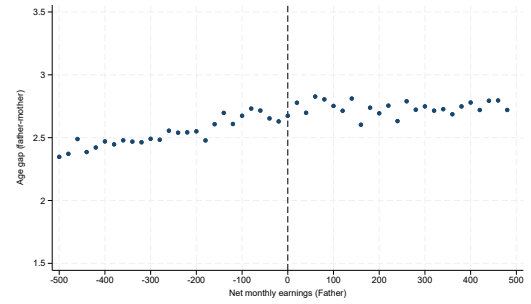
(a) Age mother



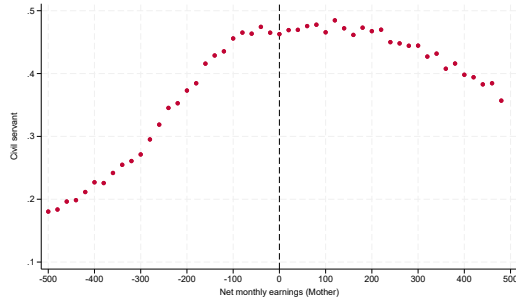
(b) Age father



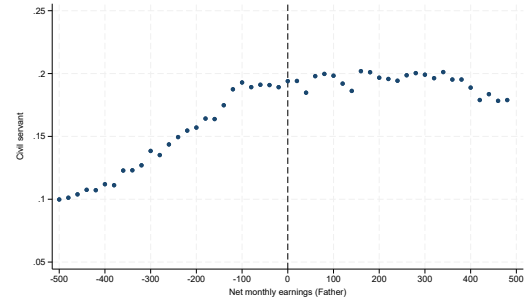
(c) Age gap mother



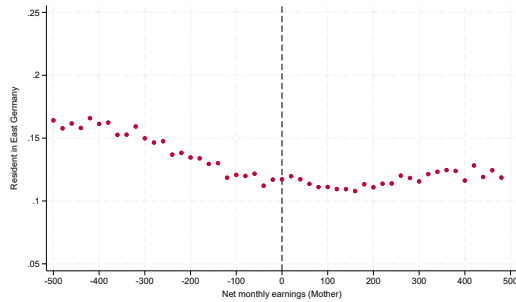
(d) Age gap father



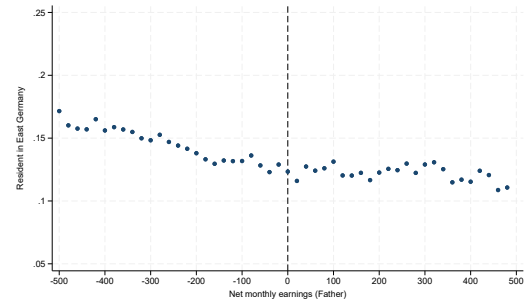
(e) Civil servant mother



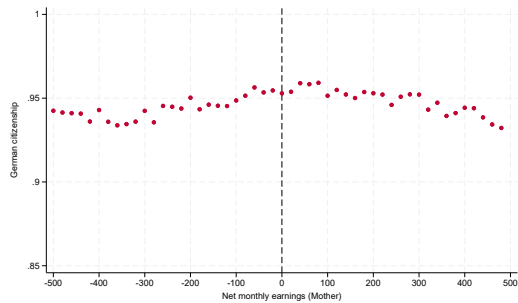
(f) Civil servant father



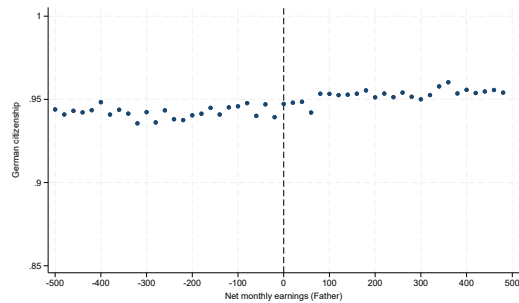
(g) Eastern Germany mother



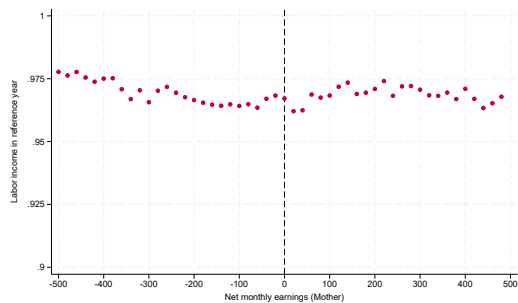
(h) Eastern Germany father



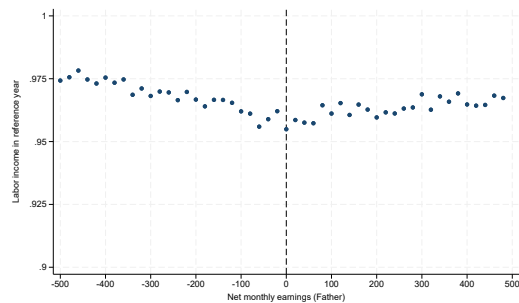
(i) German nationality mother



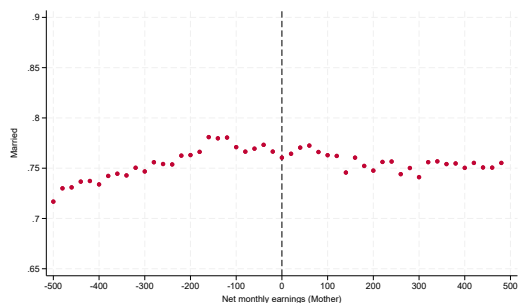
(j) German nationality father



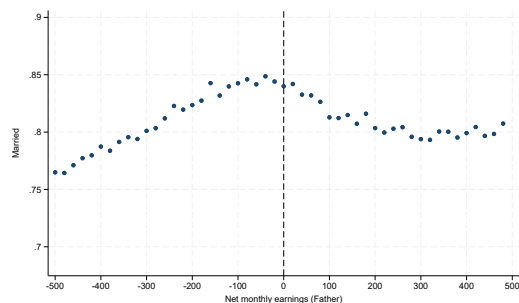
(k) Labor income mother



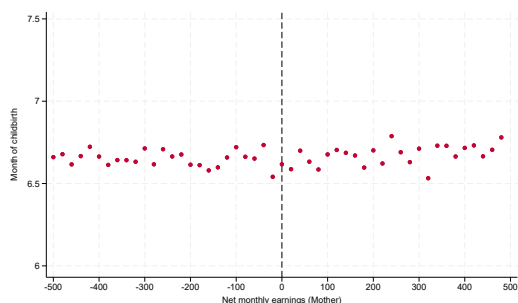
(l) Labor income father



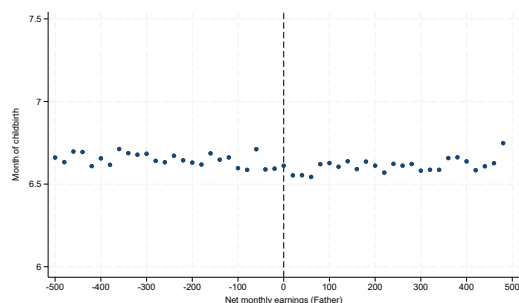
(m) Being married mother



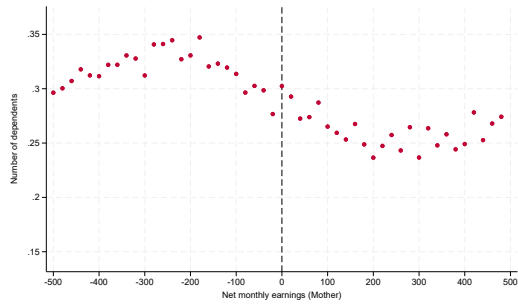
(n) Being married father



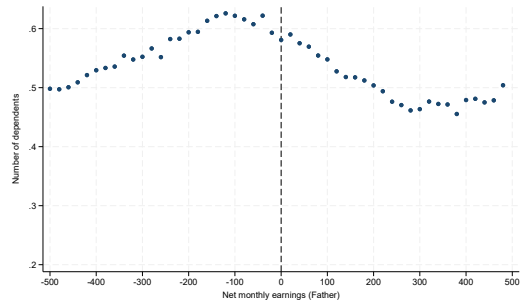
(o) Month of birth child mother



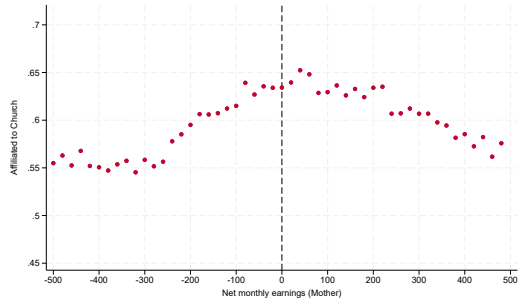
(p) Month of birth child father



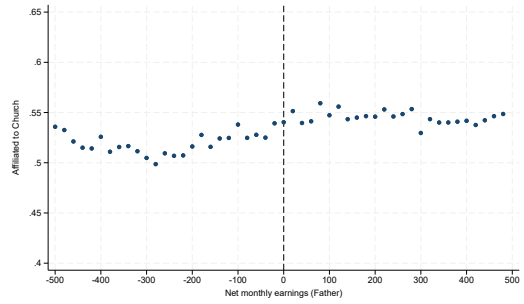
(q) Number of children mother



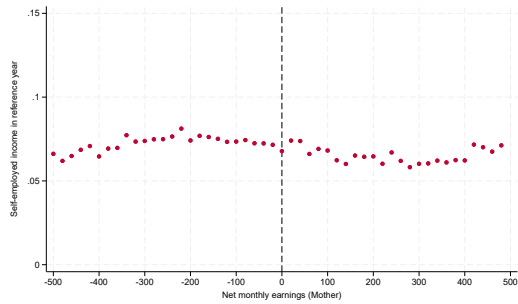
(r) Number of children father



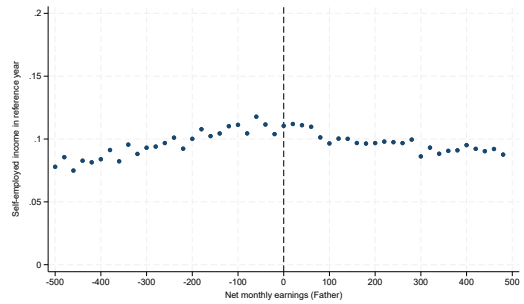
(s) Pays church taxes mother



(t) Pays church taxes father



(u) Self-employed mother



(v) Self-employed father

Notes: The figure shows covariates around the kinks for the income of mothers and fathers. On the left side, the covariates are plotted around the kink for mother income, on the right side around the kink of fathers. Civil servants are identified by not contributing to the public pension system. Some specific occupations like employed doctors or pharmacists also do not contribute to the public pension system, they are also included.

Appendix B Theoretical framework: a model of home production and labor supply

Unitary model: Similar to Ichino et al., 2024, consider a unitary model of a household that enjoys consumption C and the human capital accumulation of their offspring H , which is produced with the two parental inputs according to the production function given by:

$$H = \left[(1-s)H_f^{\frac{\beta-1}{\beta}} + sH_m^{\frac{\beta-1}{\beta}} \right]^{\frac{\beta}{\beta-1}}$$

where H_j is the share of his/her total time that a partner j devotes to childcare.

Consider the following maximization problem:

$$\begin{aligned} \max_{\{H_m, H_f, C\}} \quad & U(C, H) \\ \text{s.t.} \quad & C \leq w_m(1 - H_m) + pb_m H_m + w_f(1 - H_f) + pb_f H_f \end{aligned} \tag{B.1}$$

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Using FOCs, we get:

$$\begin{aligned} \left(\frac{H_m}{H_f} \right)^{\frac{-1}{\beta}} &= \frac{w_f - pb_f}{w_m - pb_m} \cdot \frac{s}{1-s} \\ \frac{H_m}{H_f} &= \left[\frac{w_f - pb_f}{w_m - pb_m} \cdot \frac{s}{1-s} \right]^{\beta} \end{aligned}$$

Applying logs on both sides:

$$\log(H_m) - \log(H_f) = \beta \log\left(\frac{s}{1-s}\right) + \beta \log(w_f - pb_f) - \beta \log(w_m - pb_m)$$

That we can rewrite as:

$$\log(H_m) - \log(H_f) = \gamma + \beta \log(w_f - pb_f) - \beta \log(w_m - pb_m) \tag{B.2}$$

Or, if we express $pb_j = \alpha_j w_j$ with parental benefits replacing previous wages at rate α :

$$\log(H_m) - \log(H_f) = \gamma + \beta \log(w_f(1 - \alpha_f)) - \beta \log(w_m(1 - \alpha_m))$$

$$\log(H_m) - \log(H_f) = \gamma + \beta \left(\log(w_f) - \log(w_m) \right) + \beta \left(\log(1 - \alpha_f) - \log(1 - \alpha_m) \right) \tag{B.3}$$