

Heterogeneous Effects of Parenthood on Couples' Division of Paid Labor: the Role of Breadwinner Status in European Cross-National Perspective

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Abstract

While it is well established that parenthood affects employment decisions within households, less is known about how this effect varies across couple types in different countries. Using difference-in-differences analysis with propensity score matching and multilevel modeling with cross-level interactions, this study explores heterogeneity in the parenthood effect on couples' division of paid labor by pre-birth relative earning power in different European contexts. The results show that the decline in the female share of couples' paid working hours after parenthood is stronger in male main earner couples than in equal earner or female main earner couples before childbirth. Our cross-national findings demonstrate that institutional and cultural factors influence couples' employment following parenthood, whereby the magnitude of these moderating effects depends on the couple's pre-birth relative earning pattern. Longer paid maternity and family leave for mothers exacerbates the parenthood effect on couples' division of paid work, while a higher level of childcare provision weakens this effect. However, these policy impacts are only observed among male main earner couples, which we attribute to opportunity costs and bargaining power differences across couples. Egalitarian gender norms weaken the effect of parenthood on the paid labor division between partners regardless of couple type.

Keywords

transition to parenthood; couples' division of paid labor; employment; gender; difference-in-differences; multilevel modeling

Introduction

The transition to parenthood is a key life-course event influencing the division of labor between partners because the birth of a child increases the demand for both household tasks and economic resources (Wood et al. 2018). Traditionally, women invest more time in housework and less time in employment following motherhood (Killewald & García-Manglano 2016; Kühhirt 2012; Lundberg & Rose 2000). In contrast, men's paid working time either remains stable or slightly increases after becoming fathers (Glauber & Gozjolko 2011; Hoherz & Bryan 2020; Kaufman & Uhlenberg 2000), with only a marginal rise in childcare and non-routine tasks (Bianchi & Milkie 2010; Hook & Wolfe 2012; Zoch & Heyne 2023). Traditional gender patterns of employment within couples make the female partner economically dependent in the relationship, whereby the reduced economic power of new mothers carries negative repercussions for their bargaining power (Stauder & Röhlke 2022), their financial situation in case of separation (Andress et al. 2006) and retirement (Fasang et al. 2012). Because of the potential lifelong socio-economic vulnerability associated with labor specialization post-motherhood, we focus our analysis on women's share of paid work within couples. Our research is developed in a European perspective where most countries have experienced increasing female employment participation since the 1970s (Thévenon 2009).

While many couples still shift to gendered employment patterns following parenthood, societal change in gender roles has been one of the most important trends in recent decades. Throughout the second half of the 20th century, women's labor force participation rose substantially in all industrialized countries. After these initial advances, however, the progress toward egalitarian gender roles has slowed and, perhaps more importantly, has led to heterogeneity across the population, a phenomenon coined with terms such as “stalled revolution” or “incomplete revolution” (England 2010; Esping-Andersen 2009). As a result, there is heterogeneity across couples in how they divide paid labor after becoming parents (Kanji 2011; Kühhirt 2012; Musick et al. 2022; Schober 2013). Against this background, an important area for research progress on gender roles is to improve our understanding of the mechanisms behind this heterogeneity in couples' post-birth division of paid labor. In other words, more evidence is needed on the individual and contextual determinants that either facilitate or inhibit gender egalitarian employment patterns within couples following parenthood to understand which socio-demographic groups might be lagging behind and why (Brand & Thomas 2013).

An increasing body of research has shown that the average effect of parenthood on the labor division between partners masks quite some variations across sub-populations. Research has found heterogeneity in the paid work situation after the first childbirth by individual factors such as educational attainment (Fuller & Cooke 2018; Musick et al. 2020; Solera & Mencarini 2018), employment characteristics (Cools & Strøm 2016; Dieckhoff et al. 2020; Schober 2013), gender attitude (Campolo et al. 2013; Schober 2013), ethnic background (Glauber 2007; Glauber & Gozjolko 2011; Van Winkle & Fasang 2020), and cohort (Avellar & Smock 2003; Craig et al. 2010; Musick et al. 2022). Individual factors have only limited explanatory power, given that the division

of paid labor within a couple is the result of decision processes between partners and therefore is likely influenced by couples' characteristics. However, less research attention has been focused on the influence of couples' characteristics on the employment division between partners following the birth of a first child (Begall & Grunow 2015; Herrarte et al. 2012; Kanji 2011; Kühhirt 2012; Sanchez & Thomson 1997; Schober 2013; Wood et al. 2018). Building upon existing research, the present study aims to investigate heterogeneity in the parenthood effect on the division of paid labor across heterosexual dual earner couples by assessing the role of their pre-birth relative earning patterns as male main earner, equal earners, or female main earner. This is because individuals' income relative to that of their partners is an important indicator of bargaining power and specialization within couples.

Research in this area has explored how couples' post-birth division of labor varies by their earning pattern (Angelov et al. 2016; Begall & Grunow 2015; Dunatchik 2023; Kanji 2011; Kühhirt 2012; Schober 2013; Wood et al. 2018) or by their employment situation (Herrarte et al. 2012; Lundberg & Rose 2000; Sanchez & Thomson 1997). In general, these studies have indicated that the negative effect of parenthood on mothers' employment is less strong in couples where the female partner has a higher pre-birth relative income vis-à-vis the male partner. This research body usually examines mothers' and fathers' employment situations individually and is based on single country studies. Examining mothers' and fathers' changes in workload separately could mask how relative earning power and specialization play a role in couples' joint employment decision-making. To our knowledge, only a couple of single country studies have measured couple-level outcomes in the division of working time between partners (Dunatchik 2023; Wood et al. 2018). Assessing how couples' joint responses to parenthood vary by their pre-birth relative earning pattern in different country contexts can help us to comprehend how couple-level mechanisms and country factors jointly influence the negotiation process between partners around this major life event. Furthermore, contextual factors such as the welfare state regime (Geist 2005; Neilson & Stanfors 2014), family policy (Anxo et al. 2011; Ciccia & Bleijenbergh 2014), working-time system (Gash 2008; Stier & Lewin-Epstein 2000) and gender culture (Aboim 2010; Pfau-Effinger 2005) have been shown to be important in shaping couples' employment dynamics. What is lacking in the literature is evidence on whether these country factors affect all couple types to the same extent. The latter can be important for policy-makers: for example and hypothetically, if certain policy contexts, such as childcare provision, only make a difference for equal earner couples, then this could reveal issues around gaps in policy take-up. We contribute to the literature by examining whether contextual policy and cultural factors have the same influence across couples with different breadwinning models.

Our study extends the existing research by exploring reasons for heterogeneity in the parenthood effect on couples' division of paid labor across couple types in different country contexts. We ask the following two research questions: 1) *How does the effect of parenthood on couples' division of paid working hours vary by their pre-birth relative earning pattern?* and 2) *How does the country context moderate the pre- to post-parenthood change in couples' division of paid working time for different couple types?* More specifically, we look at the moderating role of

three contextual factors: the duration of paid maternity and family leave available for mothers, the level of formal childcare provision and the gender normative context. Overall, this study brings both theoretical and empirical contributions to the research field of parenthood effects on the division of paid labor between partners. First, examining heterogeneous effects of parenthood on couples' employment division by subgroups instead of the more commonly used average effects approach helps to extend our understanding of factors shaping socio-economic disadvantages (Xie et al. 2012). Specifically, in our study, we assess heterogeneity in parenthood effects on the division of labor across couples with different earning patterns, allowing us to discern the relative importance of gender role theory (West & Zimmerman 1987) versus specialization (Becker 1991) and bargaining theories (Lundberg & Pollak 1996). Second, by testing several country-level indicators in a cross-national comparative sample of European countries, we investigate for which couple types policy and cultural factors can make a difference. Europe offers an ideal case study for our analysis due to its country diversity in terms of family policies and gender normative context. Unlike other relevant studies that use country factors as an analytical framework to contextualize the results (Bittman 1999; Craig & Mullan 2010; Musick et al. 2020), our study quantifies the moderating role of these factors. Moreover, we examine whether the moderating role of family policies and gender normative context differs across couple types, which is an approach that can provide useful results for policy-making.

Theories on Couples' Division of Labor

The division of labor between partners has been theorized through different perspectives, including economic-based theories such as Becker's theory of marriage or bargaining theory, as well as gender-role theory. According to *Becker's theory of marriage*, a couple's division of labor is a rational calculus aiming to maximize family utility based on both partners' relative economic position and resources (Becker 1991). This suggests that it is usually the lower-earning partner who shifts time investment from paid employment to unpaid housework and childcare following parenthood. *Bargaining theory* assumes a similar negotiation process between partners but with the purpose of maximizing individual utility (Lundberg & Pollak 1996). As such, the partner with a higher income is more likely to bargain for fewer household tasks after childbirth to be able to focus more on career advancement. Notably, these economic-based theories are gender neutral in the sense that both men and women can be either the main or secondary earners with the same expected effects of their relative economic power. Hence, according to these theories, the mother would reduce her level of paid work in male main earner couples, whereas the father would reduce his level of paid work in female main earner couples; in equal earner couples, there would be no change in the division of paid labor after childbirth.

Gender-role theory, on the other hand, predicts gender-specific changes in couples' division of labor following the first childbirth regardless of each partner's relative labor market potential. Men are socialized into the role of breadwinner to earn money, whereas the role constructed for women is that of kin keeper who takes over housework (Berk 1985; Brines 1994). Gender identities

are manifested and reinforced through a gendered division of labor inside the family, which is what the *doing gender hypothesis* explains (West & Zimmerman 1987). After becoming parents, couples adopt a more gendered division of labor to confirm and enhance the gender identity of each partner. Different from economic-based theories with a gender-neutral idea, gender-role theory argues that women reduce their level of paid work after childbirth because of gendered expectations. As a result, women with higher earnings would also have a reduction in employment following motherhood.

Our first hypothesis draws on both gender role theory and economic-based theories. We start with the premise that gendered social norms are prevalent throughout Europe, albeit to different extents¹ (Aboim 2010; Boeckmann et al. 2015; Mandel et al. 2020; Pollmann-Schult 2016). Following gender-role theory, we therefore expect there to be a general tendency for all couple types to adopt a more traditional division of labor after becoming parents. Indeed, the female share of couples' paid working hours generally decreases following parenthood in many European countries (Kühhirt 2012; Sanchez & Thomson 1997; Wood et al. 2018). However, this gendered parenthood effect on the division of paid labor between partners is not expected to be equally strong across couple types. Both Becker's theory of marriage and bargaining theory emphasize the role of relative earning power within a couple. Therefore, the gendered division of labor after parenthood is expected to be less strong for couples in which the female partner has a higher relative income. Existing research has shown that women who were main earners prior to childbirth are more likely to continue working full-time (Kanji 2011) and less likely to decrease working time after becoming a mother (Kühhirt 2012). There is also empirical evidence from Belgium indicating that couples in which the woman earned more than the man before parenthood are more likely to have an egalitarian or female-dominant division of working time after the birth of a first child (Wood et al. 2018). Similar findings have been observed for British middle- and high-income couples, where wives with high relative earnings are less likely to reduce their share of paid work after motherhood (Dunatchik 2023). Our hypothesis posits that *there is a general decline in the female share of couples' paid working hours after parenthood in Europe, and this decline is expected to be stronger for male main earner couples than for those with two equal earners or a female main earner prior to childbirth (H1)*.

The Differential Role of Country Context for Different Couple Types

Neither Becker's theory of marriage nor the abovementioned bargaining theory discusses the role of country context, instead assuming universally valid mechanisms driving couples' division of labor. Nevertheless, existing research has uncovered important country differences and demonstrated, for instance, that couples in Germany shift more strongly to a gendered division of

¹ Here we assume that gender norms play a role in all European countries to some degree. Nonetheless, it is important to note that there is significant variation in the extent of the gender normative climate and associated gender practices across European countries. This cross-country variation will be the subject of our cross-national analysis in Hypotheses 2, 3 and 4.

paid labor following parenthood than those in the US or in the UK (Musick et al. 2020). This can be explained by long maternity leaves and insufficient childcare services, as well as relatively more transitional gender norms, which support the male breadwinner model in Germany (Aisenbrey & Fasang 2017; Musick et al. 2020). Previous studies have mainly used country differences to contextualize research findings, without testing which specific factors drive these country variations. In what follows, we propose and test specific country-level indicators that influence the division of paid labor among first-time parents and make a theoretical argument as to how country factors may play a differential role for different couple types. We consider three contextual factors: the duration of paid maternity and family leave for mothers, the level of formal childcare provision, and a country's gender normative context.

Although paid maternity and family leave helps women to protect their jobs during and after childbearing (Boeckmann et al. 2015; Pettit & Hook 2005; Stier et al. 2018), research has revealed that entitlement to particularly long periods of leave for mothers may weaken their further employment trajectories, as couples become accustomed to a traditional division of labor (Evertsson 2016; Rønsen & Sundström 2002). Furthermore, an institutional context of long periods of leave available to mothers may also strengthen gendered attitudes and expectations toward women. This in turn could result in a reduction in women's paid working time and employment income, as well as a delay in their career progress (Evertsson 2016; Rønsen & Sundström 2002). We expect that the impact of a country's duration of paid maternity and family leave for mothers may vary across couple types. Female partners with higher relative earning power have a stronger labor force attachment and professional investment; thus, they may not take up the maximum family leave to which they are entitled because of the high opportunity costs faced by this decision (Lappegard 2008). Hence, the effect of leave duration on the division of labor between partners following parenthood is expected to be less strong for these couples. We therefore hypothesize that *longer paid maternity and family leave for mothers is associated with a more gendered division of paid working hours after becoming parents in male main earner couples but less so in equal earner and female main earner couples (H2)*.

Next, formal childcare provision is a family-supportive arrangement that positively influences women's employment following the birth of a child (Andringa et al. 2015; Boeckmann et al. 2015; Budig et al. 2016). By helping both partners balance work and family responsibilities (Notten et al. 2017), childcare services reduce the need for a division of labor within couples. Therefore, one partner, usually the woman, is no longer required to stay home with the children, which means that both partners are more likely to participate in the labor force and work full-time. Previous research has shown that public childcare expansion has profited the employment of lower educated mothers more than that of higher educated mothers (Scherer & Pavolini 2023). In a similar vein, we could expect that the influence of formal childcare provision on couples' post-parenthood division of paid labor may differ between couple types. In couples where the female partner is the main or equal earner, women face higher opportunity costs when cutting back their time at work; thus, these couples are more prepared to search and pay for private childcare solutions if public provision is inaccessible (Suárez 2013). In male main earner couples, however,

reducing working hours or staying at home may present itself as an acceptable option for women if public childcare services are not easily available and alternatives are costly. Hence, male main earner couples' employment decisions are expected to be more affected by the level of formal childcare provision in a country. This leads to the hypothesis that *the availability of formal childcare services reduces the negative effect of parenthood on women's relative paid working time, particularly in male main earner couples (H3)*.

Studies on cross-country variations in the division of labor between partners have pointed out that employment dynamics within couples are also guided by gender norms (Mandel et al. 2020; Musick et al. 2020; Solera & Mencarini 2018), for instance, cultural expectations as to whether men and women should have the same participation in the workforce as well as in housework. A progressive gender normative context encourages a more equal division of paid and unpaid work between partners (Boeckmann et al. 2015; Dotti Sani & Scherer 2018; Mandel et al. 2020; Musick et al. 2020). Different from the impact of family policies, we expect gender culture to affect all couple types in a similar way. A gender-normative societal climate and the desire of individuals to reaffirm gender-conforming behavior may result in gendered behavior for everyone regardless of relative economic position. Previous research has repeatedly shown that a gender-normative climate leads couples to behave in gender-conforming ways regardless of rational reasons to do otherwise (Bittman et al. 2003; West & Zimmerman 1987). Women who out-earn their partners invest more time in childcare and housework than women who earn an equal amount as their partners (Bittman et al. 2003; Young & Schieman 2018). Studies on dual-earner couples have indicated that men perform fewer household activities even when they work less in paid employment than their partners (Hook 2010) or are unemployed (Gough & Killewald 2011; Van der Lippe et al. 2018). The explanation for such non-rational behavior is that men and women who deviate from predominant gender stereotypes have a tendency to re-confirm their gender identity by engaging in other gender-typical practices (Bittman et al. 2003). This highlights the pervasiveness of strong gendered expectations on all couple types, regardless of relative earning pattern. Additionally, Blumberg and Coleman (1989) state that female *net economic value* is higher in countries with a more egalitarian gender culture, which in turn increases the bargaining power of all women in these countries. We therefore hypothesize that *living in a country with progressive gender norms weakens the negative parenthood effect on the female share of couples' paid working hours regardless of pre-birth breadwinner couple type (H4)*.

Methods

Data and Sample

This study is based on longitudinal micro-level data from the European Union Statistics on Income and Living Conditions (Eurostat 2022) supplemented by macro-level indicators from the Organization for Economic Co-operation and Development (OECD) and the International Social

Survey Programme (ISSP). The EU-Silc is a representative yearly survey of individuals and their household members conducted across 31 European countries and includes a wide range of socio-economic and demographic information. This survey collects data from both co-resident partners, enabling us to make inferences about the effect of parenthood on couples' division of labor. The longitudinal data consist of a rotating panel that follows individuals for a maximum period of four years; we include couples that were first observed between 2009 and 2017 and subsequently participated for three or four years consecutively (Borst 2018). The period of our analysis covers the years after the 2008 economic recession until before the beginning of the COVID-19 pandemic.

Our analytical sample consists of all heterosexual, married or cohabiting, dual-earner couples of working and childbearing age, i.e., women aged 25 to 45 years old and men aged 25 to 60 years old when first observed at T-1 (see Table 1). We generate groups of treated and control couples based on their parenthood and self-reported employment status at different observation years (see Table 1). The groups differ by the presence or absence of the birth of a first child reported at T0. We select couples who are dual earners at T-1 and evaluate how the presence or absence of first-time parenthood at T0 influences their division of paid labor at T1 and T2, when the average age of the children in the treated group is 12 and 24 months, respectively. In comparison, standard paid maternity leave in the countries studied lasts between 1.6 and 13 months, with an average of 5.2 months, which means that the large majority of women will no longer be on standard paid maternity leave at T1 (see Table A1 in the online Appendix).

Table 1 *Treatment and Control Groups*

	T-1	T0	T1	T2
<i>Treated</i>	Childless Both partners: employed, working hours > 0	1 child aged < 1	1 child Both partners: employed or homemaker (N = 1,822)	1 child Both partners: employed or homemaker (N = 626)
<i>Control</i>	Childless Both partners: employed, working hours > 0	Childless	Childless Both partners: employed or homemaker (N = 9,429)	Childless Both partners: employed or homemaker (N = 5,328)

Variables

The outcome variable is the pre- to post-parenthood change in the female share of couples' total self-reported paid hours usually worked per week in main job. The change calculated as the difference in the percentage of the couple's total paid working hours performed by the female partner between T-1 (pre) and T1/T2 (post). A change in our outcome variable may be a consequence of changes in the paid working hours of the female partner, the male partner, or changes in both partners' time dedicated to paid work, thus reflecting the couple's post-parenthood work strategies. We run a robustness check using changes in the female partner's absolute self-

reported paid working hours as the outcome variable, which shows similar results to ours. This finding is in line with our hypotheses and suggests that a very large part of a couple's work arrangements is made at the expense of reduced female participation in paid work (see Table A2 in the online Appendix).

Our main explanatory variable is the parenthood dummy (treatment) that equals 1 if a couple reports zero children at T-1 and a child under the age of 1 at T0. We examine heterogeneous effects by couple type, for which our analysis is stratified into two subsamples on the basis of a couple's pre-parenthood earning distribution: i) *male main earner* couples, in which the woman earns less than 45% of the couple's total yearly gross income (1,122 treated, 4,574 control couples), and ii) *equal and female main earner* couples, in which the woman earns 45% or more of the couple's total yearly gross income (700 treated, 4,845 control couples). We collapse female main and equal earners because we cannot produce statistically robust estimates for a separate category of female main earners. More specifically, the number of couples in which the female's share of household income surpasses 55% results in only 222 treated cases at T1 and 77 at T2. Nevertheless, we run the analyses with the three couple types as a robustness check; the results demonstrate patterns similar to those found in the analysis of only two couple types (see Table A3 in the online Appendix). Additionally, a robustness check employing a couple typology with a cut-off of 40% of the household income also shows similar results (see Table A4 in the online Appendix).

The macro-level information on family policies is derived from the OECD Statistics Database. The indicator for *paid maternity and family leave duration available for mothers* measures the total number of weeks of paid leave available to mothers, ranging from 14 weeks in Switzerland to 164 weeks in Slovakia in 2009. *Formal childcare provision* is operationalized as the percentage of children aged 0 to 2 enrolled in formal childcare arrangements such as childcare centers or registered childminders looking after children either in their own home or the home of the child. The 2009 indicator we use ranges between 3% in Slovakia and 62% in Denmark. *Gender normative context* is measured as the country-level average of a battery of attitudinal items in the ISSP dataset. The items are designed to capture gender-role attitudes, and we calculate an index by taking the average value of the respondents' answers to the following four questions from the ISSP 2002: a. "A pre-school child is likely to suffer if his or her mother works"; b. "All in all, family life suffers when the woman has a full-time job"; c. "A job is all right, but what most women really want is a home and children"; d. "A man's job is to earn money; a woman's job is to look after the home and family". Responses to these questions range from 1 (*strongly agree*) to 5 (*strongly disagree*); thus, higher values mean that individuals have more egalitarian gender attitudes. The Likert scale of these four items indicates a Cronbach's alpha reliability coefficient of 0.774, and the country-level average of this scale ranges from 2.46 in Hungary to 3.74 in Denmark. We find high inter-year correlations for each macro-level indicator (see Table A5, Table A6 and Table A7 in the online Appendix). Because of this relatively low variability over time, we opt to include each macro-level indicator measured in a year before the treatment of the first cohort of couples we analyze. The three country-level variables of interest are not consistently available for all countries in the analysis; therefore, we exclude those countries with missing values for them. Table

A8 in the online Appendix shows an overview of the country-level variables.

We use propensity score matching to pair treated and control couples based on a range of observable individual, household and country characteristics related to parenthood, as well as the couple's division of paid working hours: age, educational attainment (secondary or below, secondary, and post-secondary/tertiary), marital status (married vs. cohabiting), total disposable household yearly income harmonized in EUR, female share of couples' total yearly gross income harmonized in EUR, and country of residence. The variables for matching are measured at T-1 to avoid endogeneity bias. We exclude all observations of these variables with reported missing values. Table 2 shows the descriptive statistics of all variables used in the analysis.

Table 2 Descriptive Statistics of the Individual- and Couple-Level Variables at T-1 (Prior to Treatment) for the Treatment and Control Groups

Variables	Treatment		Control		Min	Max
	Mean/Prop	SD	Mean/Prop	SD		
<i>Female partner</i>						
Age	30.49	4.47	35.77	7.39	18	45
Age squared	949.57	286.71	1334.25	516.45	324	2025
Lower Secondary Education	.04		.11		0	1
Secondary Education	.29		.43		0	1
Post-Secondary Education	.67		.46		0	1
<i>Male Partner</i>						
Age	32.85	5.23	38.85	8.62	19	60
Age squared	1106.50	368.58	1583.45	672.63	441	3025
Lower Secondary Education	.09		.14		0	1
Secondary Education	.39		.49		0	1
Post-Secondary Education	.52		.37		0	1
<i>Couple</i>						
Difference in Female Share of Couple's Total Working Hours	-9.07	18.90	-0.20	7.16	-76	65
Female Share of Yearly Couple's Earnings	39.76	13.96	44.14	13.05	1	99
Married (Vs. cohabiting)	.60		.65		0	1
Yearly Household Income	49,143.40	44,797.96	38,993.57	30,154.36	2,902.25	1,425,067.0
	Mean		SD		Min	Max
<i>Country</i>						
Paid maternity and family leave duration available for mothers	58.01		43.08		14	164
Formal childcare provision	28.73		16.96		3	62
Gender normative context	3.00		0.32		2.46	3.74

Authors' calculations with EU-SILC Longitudinal data, releases from 2012 to 2019.

In the first step of our analytical strategy, we combine the strengths of two approaches toward causal inference (Heckman et al. 1997) to identify the effect of parenthood on couples' paid labor division. We use a difference-in-differences (DID) model that accounts for all time-constant individual characteristics, as well as period effects, through a within-person and between-person analysis of change in couples' division of paid working time. More specifically, the within-person comparison allows us to eliminate unobserved individual fixed effects. Additionally, in contrast to a simple fixed-effects estimator, the between-person comparison with the trend of a control group accounts for any common period effects that affect the treatment and control groups in identical ways, as well as any aging effects. To make the parallel trends assumption more plausible, the respective control group is based on the similarity in propensity scores at T-1, or prior to parenthood, by combining the DID with propensity score matching (PSM). We therefore condition on confounding variables measured at T-1 to make the group of parents and non-parents more similar in terms of observable characteristics that might influence first childbirth, as well as the couple's division of paid labor. PSM reduces selection bias into parenthood across the matching covariates by an average of 86.8% for all couples and 83.2% and 77.5% in the subsamples of male main earner couples and female equal or main earner couples, respectively (see Figure A1, Figure A2 and Figure A3 in the online Appendix).

The changes in the female share of couples' division of paid working time following parenthood are compared between the treated and control groups to estimate the average treatment effect (ATE) at T1 according to the following model:

$$ATE^{DID-PSM} = \frac{1}{N_{P_1}} \sum_{a \in P_1} (Y_{a,T_1}^1 - Y_{a,T_1}^0) - \frac{1}{N_{P_0}} \sum_{b \in P_0} w_{ab} (Y_{b,T_1}^0 - Y_{b,T_1}^0)$$

We compare two groups of couples: the treated couples a ($P = 1$) with a first-born child (Y^1) at T0 and the control couples b ($P = 0$) that remain childless (Y^0) throughout T0, T1, and T2. w_{ab} represents the matching weights. The DID estimator is the average difference in average changes in the female share of couples' paid working hours pre- and post-parenthood between the treated and control groups. This DID-PSM analysis is stratified for different couple types based on pre-birth relative earning patterns: male main earner couples and female equal or main earner couples. By considering all control couples in the analyses instead of only those with a high probability of having a first child at T0, the ATE strengthens the external validity of our assumptions. Nonetheless, it also includes couples with no chance or a very low chance of having a first child born at T0 in the control group. To strengthen the internal validity of our estimates, we run a robustness check with average treatment effects on the treated (ATT), for which we only use control couples with propensity scores very similar to those of the treated couples, i.e., those with a very high probability of becoming parents at T0. We find that the results of the ATT are similar to those of the ATE (see Table A9 in the online Appendix).

Our analytical strategy uses a DID model and is therefore based on the parallel trends assumption. Accordingly, in the absence of childbirth, the trends in the female share of couples'

paid working hours for treatment and control couples would have evolved constantly and in parallel over time (Lechner 2011). Furthermore, according to more recent literature, the parallel trends assumption would be more plausible if the treatment and control groups are similar not only in trends but also in levels (Kahn-Lang & Lang 2020). Figure A4 in the online Appendix supports the plausibility of this assumption, as both trends and levels between treated and control couples are not significantly different throughout the 3 years preceding childbirth reported at T0.

As we are also interested in the moderating role of contextual factors on the parenthood effect, the second step of our analytical strategy consists of multilevel modeling with random slopes and cross-level interactions (Heisig & Schaeffer 2019; Snijders & Bosker 2012), weighted with the matching weights produced in the previous step. Our sample includes couples (level 1) nested within countries (level 2), and the two-level random slope model can be written as follows:

$$Y_{ijT_1-T_{-1}} = w_{ab}[\gamma_{00} + \gamma_{01}z_j + \gamma_{10}P_{ij} + \gamma_{11}z_jP_{ij} + U_{0j} + U_{1j}P_{ij} + R_{ij}]$$

where the outcome variable $Y_{ijT_1-T_{-1}}$ denotes changes in the female share of couples' paid working hours between T-1 and T1 measured at the couple level i nested in country j . Our main predictor is the treatment dummy P , which implies having a first child at T0 ($P = 1$) compared to remaining childless ($P = 0$). Furthermore, γ denotes the coefficients, z denotes the country-level variables, and w_{ab} denotes the matching weights from our ATE analysis. We estimate how this treatment predictor varies by country through random slopes and how it is moderated by a country's contextual characteristics through cross-level interactions between macro-level indicators and the treatment dummy. The first part of the right-hand expression, $\gamma_{00} + \gamma_{01}z_j + \gamma_{10}P_{ij} + \gamma_{11}z_jP_{ij}$, consists of the linear combination of the constant γ_{00} and the lower- and upper-level predictors, multiplied by their respective coefficients (or fixed effects). This part is also referred to as the fixed part of the model, in which $\gamma_{01}z_j$ denotes the main effect of the level-2 country variables, and $\gamma_{10}P_{ij}$ denotes that of the level-1 individual variable, i.e., the treatment dummy. $\gamma_{11}z_jP_{ij}$ denotes the cross-level interaction effect; it is the coefficient on a multiplicative interaction term between the lower-level treatment dummy P_{ij} and the cluster-level predictors z_j . The random part of the model is $U_{0j} + U_{1j}P_{ij} + R_{ij}$, in which U_{0j} is the random intercept term, $U_{1j}P_{ij}$ is the product of the random slope term with the lower-level predictor, and R_{ij} is the lower-level residual error.

Results

The first step of our analysis consists of using the DID-PSM model to identify the effect of parenthood on couples' division of paid labor, stratified by pre-birth couple type. Given the prevalence of gendered social norms throughout Europe, we hypothesized that we would find a general reduction in the female share of couples' paid working hours after the first childbirth (H1).

Table 3 Average Treatment Effects for Female Share of Couples' Paid Working Hours (in Percentage), by Pre-parenthood Couple Type

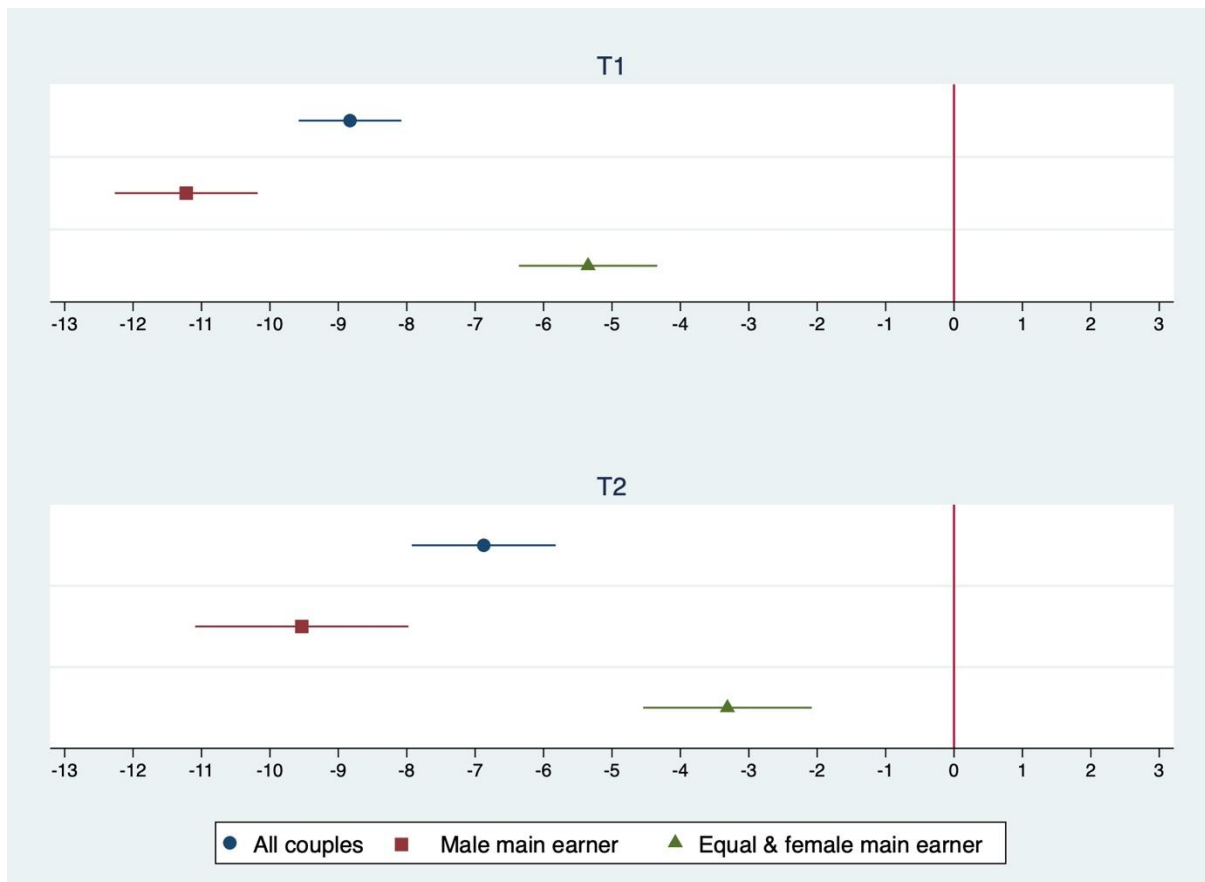
	<i>Pre-parenthood Couple Type</i>	Outcome	S.E.	C.I.		N_t/N_c
<i>T1</i>	<i>All couples</i>	-9.36***	0.44	-9.905465	-8.19362	1,822/9,429
	<i>Male main earner</i>	-11.28***	0.59	-12.44837	-10.12481	1,122/4,592
	<i>Equal & female main earner</i>	-5.56***	0.60	-6.53915	-3.837993	700/4,846
<i>T2</i>	<i>All couples</i>	-6.25***	0.61	-7.762298	-5.363094	626/5,328
	<i>Male main earner</i>	-7.87***	0.89	-10.44619	-6.959075	373/2,505
	<i>Equal & female main earner</i>	-3.51***	0.71	-4.811542	-2.010164	253/2,546

N_t = number of treated, N_c = number of controls

Authors' calculations with EU-Silc Longitudinal data, releases from 2012 to 2019.

Accordingly, in Table 3, the ATE measured at T1 shows a post-parenthood reduction in the female share of couples' total paid working time of 9.05% for all couples. Nevertheless, this negative parenthood effect varies in magnitude across couple types. In couples where the woman was the secondary earner before childbirth, there is a larger reduction in the female share of couples' paid working time (11.29%), whereas in couples where women were equal or main earners, the reduction is considerably smaller (5.48%). The negative effect of parenthood measured at T1 seems to lessen somewhat with time when measured at T2, but the couple type differences remain intact at T2 (See Table 3 and Figure 1). Heterogeneous effects by couple type can be explained by economic-based theories that emphasize the role of relative earning power within a couple. Therefore, our first hypothesis (H1) is supported by the finding that the decline in the female share of couples' paid working hours following parenthood is stronger in couples where the female partner had lower relative earning power before childbirth.

Figure 1 Average Treatment Effects for Female Share of Couples' Paid Working Hours (in Percentage) by Pre-parenthood Couple Type, at T1 and T2



Notes: ⁺ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Authors' calculations with EU-Silc Longitudinal data, releases from 2012 to 2019.

The second step of our analysis consists of multilevel modeling with random slopes and cross-level interactions based on the propensity score weighted sample. This approach allows us to estimate the moderating effect of macro-level factors on the change in women's relative working time after the first childbirth for different couple types. The models displayed in Tables 4, 5 and 6 examine the moderating role of (1) the duration of paid maternity and family leave for mothers, (2) the level of formal childcare provision and (3) a country's gender normative context, respectively. The multilevel models are run separately for each macro-level indicator to maximize the sample size, as the number of countries with valid country-level information varies by macro-level indicator².

² Given that paid maternity leave duration, formal childcare provision, and gender normative context can be correlated, we run a robustness check with multilevel models with the inclusion of all macro-level variables as controls. These results are displayed in Table A10 in the Appendix and are similar in size, direction and significance level to our main results.

As a first observation, we find a relatively important level of country variation, as displayed by the intraclass correlation coefficients (ICC) in Model M0a of Tables 4, 5, and 6. Accordingly, between 19% and 22% of the variation in the over-time change in the female share of couples' paid working hours is explained at the country level. Similar ICCs are seen across pre-birth couple types. In the same vein, the standard deviations of the random intercepts are significant.

Next, in accordance with our earlier results with the ATE effects, we find that parenthood reduces the female share of couples' paid working time across all couple types (M1b & M1c). The overall reduction of 8.54% in the female share of couples' paid working hours after the first childbirth for all couples in Table 4 (M1a) masks the result that in male earner couples, the female relative working time is reduced by 11.41% (Table 4, M1b), while that in equal earner or female main earner couples is reduced by only 4.6% (Table 4, M1c).

The results furthermore show that the effect of first childbirth significantly differs across countries, as evidenced by the standard deviations of the random slopes in M2a, M2b and M2c of Tables 4, 5, and 6. By adding the random slope of the parenthood variable, we observe a drastic reduction in the ICCs, which implies that part of the country variation in changes in the female share of couples' paid working time is explained by the different effect that parenthood has across countries. In addition to introducing random slopes for the parenthood variable (M2), we also add cross-level interactions between the parenthood variable and the macro-level variables (M4) to further examine the moderating effect of contextual factors in Tables 4, 5 and 6.

In Table 4, we test the moderating effect of the duration of paid maternity and family leave for mothers on changes in women's relative paid working time following the first childbirth. We add the length of paid maternity and family leave for mothers as macro-level variable to the models (M3), and let it interact with the parenthood variable (M4). Model M4b of Table 4 shows that each additional week of paid leave for mothers increases the negative effect of parenthood on the female share of paid working hours by an average of 0.2% in pre-birth male main earner couples. In other words, in the country with the shortest available leave (14 weeks in Switzerland), women in such couples reduce their share of working hours by 2.5%, whereas in the country with the longest period of leave (164 weeks in Slovakia), this reduction amounts to 32% (for predicted values, see Figure A5 in the online Appendix). However, Model M4c shows that the same moderation of family leave is not present in couples where the woman had an equal or higher relative earning power prior to parenthood. These findings support our second hypothesis (H2) that longer paid maternity and family leave for mothers is associated with a more gendered division of paid working hours after becoming parents in male main earner couples, but less so in equal earner and female main earner couples.

In Table 5, we examine how formal childcare provision moderates the parenthood effect on changes in women's relative paid working time. The cross-level interaction term between a country's level of childcare provision and the parenthood variable in Model M4b shows that each additional one percent of small children enrolled in childcare facilities reduces the negative effect that parenthood has on the female share of couples' paid working hours by 0.29% in pre-birth male main earner couples. Put differently, in the country with the lowest level of childcare provision (3%

of children enrolled in childcare in Slovakia), women in such couples reduce their share of working hours by 17%, whereas in the country with the highest level of childcare provision (53% of children enrolled in childcare in Norway), this reduction amounts to only 3.1% (for predicted values, see Figure A6 of the online Appendix). Yet, this moderating effect of formal childcare provision is not statistically significant in female equal and main earner couples (M4c). These findings support our third hypothesis (H3) that the availability of formal childcare services reduces the negative effect of parenthood on women's relative paid working time, particularly in male main earner couples.

In Table 6, we assess the moderating effect of a country's gender normative context. The cross-level interaction term a country's gender normative context and the parenthood variable in Model M4a indicates that each additional point on the progressive gender norm scale decreases the negative effect of parenthood on the female share of couples' paid working hours by 13.8% in the overall sample. For example, in a country with relatively conservative gender values where the average scale is 2.46 (Hungary), women reduce their share of working hours by an average of 18.7%, whereas in a gender egalitarian country where the average scale is 3.74 (Denmark), women reduce their share of working hours by an average of only 1.2% (for predicted values, see Figure A7 of the online Appendix). This positive moderating effect is observed for both male main earner couples and female equal or main earner couples, as we see that a one-point increase in a country's progressive gender values decreases the negative effect that parenthood has on women's relative working time by 14.31% (M4b) and 15.77% (M4c), respectively. Hence, our last hypothesis (H4) in which we assume that living in a country with progressive gender norms weakens the negative parenthood effect on the female share of couples' paid working time regardless of pre-birth breadwinner couple type is also supported.

Table 4 Multilevel Regressions with Moderating Effect of Weeks of Paid Maternity and Family Leave Duration for Mothers

	All Couples					Male Main Earner					Equal & Female Main Earner				
	M0a	M1a	M2a	M3a	M4a	M0b	M1b	M2b	M3b	M4b	M0c	M1c	M2c	M3c	M4c
<i>Individual-level</i>															
First Childbirth		-8.54** (0.98)	-10.29*** (2.98)	-10.3*** (2.99)	-0.01 (3.43)		-11.41** (3.67)	-11.21*** (3.05)	-11.21*** (3.05)	0.32 (3.14)		-4.60** (0.96)	-9.30** (2.84)	-9.16** (2.81)	-2.29 (4.10)
<i>Country-level</i>															
Paid Maternity & Family Leave Duration				0.00 (0.00)	0.00 (0.00)				0.01 (0.00)	0.01+ (0.00)				-0.01 (0.01)	-0.00 (0.00)
<i>Interactions</i>															
Childbirth X Paid Maternity & Family Leave Duration					-0.17* (0.08)					-0.20** (0.70)					-0.12 (0.20)
Constant	-5.77*** (1.60)	-1.42 (0.98)	-0.33* (0.15)	-0.44+ (0.24)	-0.57* (0.22)	-6.01*** (1.66)	-0.16 (1.03)	-0.07 (0.21)	-0.32 (0.39)	-0.56* (0.35)	4.69*** (1.34)	-2.41* (0.96)	-0.13** (0.15)	0.11 (0.29)	-0.12 (0.20)
RI Std	7.15 (1.39)	7.10 (1.38)	4.60e-08 (1.76e-06)	7.93e-08 (4.40e-1)	9.66e-08 (4.40e-1)	7.27 (1.44)	7.26 (1.40)	1.36e-08 (9.19e-07)	2.60e-08 (1.08e-06)	4.05e-08 (3.01e-06)	5.71 (1.18)	5.79 (1.19)	4.86e-07 (0.16)	0.001 (0.01)	0.001 (0.01)
RS Std			13.63 (2.64)	13.68 (2.68)	11.28 (2.22)			13.80 (2.59)	13.91 (2.74)	10.67 (2.02)			12.86 (2.50)	12.63 (2.43)	11.82 (2.19)
Residual	13.56 (1.95)	12.87 (1.60)	11.38 (1.40)	11.38 (1.40)	11.38 (1.40)	15.03 (2.05)	13.90 (1.50)	12.10 (1.37)	12.09 (1.50)	12.10 (1.37)	11.11 (1.73)	10.86 (1.62)	10.01 (1.46)	10.01 (1.45)	10.01 (1.45)
Nr of couples	8,112	8,112	8,112	8,112	8,112	4,157	4,157	4,157	4,157	4,157	3,955	3,955	3,955	3,955	3,955
Nr of countries	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
ICC	.22	.23	1.63e-17	4.86e-17	7.21e-17	.19	.21	1.26e-18	4.62e-18	1.12e-17	.21	.22	2.35e-15	1.67e-2	2.49e-15

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Outcome variable: Change in the Female Share of Couples' Total Paid Working Hours (in Percentage)

Authors' calculations with EU-Silc Longitudinal data, releases from 2012 to 2019.

Table 5 Multilevel Regressions with Moderating Effect of Percentage of Formal Childcare Provision

	All Couples					Male Main Earner					Equal & Female Main Earner				
	M0a	M1a	M2a	M3a	M4a	M0b	M1b	M2b	M3b	M4b	M0c	M1c	M2c	M3c	M4c
<i>Individual-level</i>															
First Childbirth		-8.67** (2.70)	-9.31*** (2.39)	-9.30*** (2.39)	-16.63** (6.00)		-11.12*** (3.24)	-9.99*** (2.44)	-9.96*** (2.44)	-18.19** (6.05)		-5.27** (1.83)	-9.41*** (2.54)	-9.38*** (2.53)	-14.63* (5.97)
<i>Country-level</i>															
Formal Childcare Provision				0.00 (0.01)	-0.00 (0.01)				0.01 (0.01)	0.00 (0.01)				0.00 (0.01)	-0.00 (0.01)
<i>Interactions</i>															
Childbirth X Formal Childcare Provision					0.26+ (0.14)					0.29* (0.14)					0.18 (0.18)
Constant	-5.20*** (1.27)	-0.78 (0.83)	-0.29* (0.14)	-0.34 (0.34)	-0.22 (0.33)	-5.38*** (1.31)	0.33 (0.91)	-0.02 (0.19)	-0.27 (0.39)	-0.03 (0.34)	-4.70*** (1.20)	-2.07* (0.83)	-0.30** (0.11)	-0.45 (0.37)	-0.28 (0.32)
RI Std	6.70 (1.18)	6.67 (1.17)	6.59e-08 (3.26e-06)	6.93e-08 (3.31e-1)	8.46e-08 (3.37e-1)	6.76 (1.25)	6.74 (1.21)	2.18e-08 (9.82e-1)	1.92e-08 (1.03e-1)	3.05e-08 (1.07e-1)	6.02 (0.98)	6.10 (0.99)	7.73e-09 (3.48e-17)	1.21e-08 (6.60e-07)	4.17e-09 (1.79e-07)
RS Std			12.92 (2.23)	12.91 (2.32)	12.13 (1.80)			12.98 (2.26)	12.92 (5.01)	11.93 (3.05)			13.59 (2.13)	13.57 (2.11)	13.21 (2.24)
Residual	13.74 (1.77)	13.03 (1.44)	11.50 (1.26)	11.50 (1.25)	11.50 (1.26)	15.00 (1.82)	13.91 (1.35)	12.13 (1.22)	12.13 (1.28)	12.13 (1.24)	11.65 (1.74)	11.34 (1.59)	10.28 (1.42)	10.28 (1.40)	10.28 (1.40)
Nr of couples	11,216	11,216	11,216	11,216	11,216	5,699	5,699	5,699	5,699	5,699	5,517	5,517	5,517	5,517	5,517
Nr of countries	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
ICC	.19	.21	3.28e-17	3.63e-17	5.41e-17	.17	.19	3.22e-18	2.51e-18	6.31e-18	.21	.22	5.66e-19	1.39e-18	1.64e-19

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Outcome variable: Change in the Female Share of Couples' Total Paid Working Hours (in Percentage)

Authors' calculations with EU-Silc Longitudinal data, releases from 2012 to 2019.

Table 6 Multilevel Regressions with Moderating Effect of Gender Normative Context

	All Couples					Male Main Earner					Equal & Female Main Earner				
	M0a	M1a	M2a	M3a	M4a	M0b	M1b	M2b	M3b	M4b	M0c	M1c	M2c	M3c	M4c
<i>Individual-level</i>															
First Childbirth		-8.66** (3.09)	-10.60*** (2.98)	-10.59*** (2.97)	-52.36+ (26.76)		-11.46** (3.83)	-11.41*** (3.06)	-11.36*** (3.05)	-54.79* (26.76)		-4.78** (1.74)	-10.02*** (2.98)	-10.02*** (2.96)	-57.85* (28.45)
<i>Country-level</i>															
Gender Normative Context				0.20 (0.62)	-0.02 (0.62)				0.94 (0.63)	0.55 (0.63)				0.05 (0.72)	-0.47 (0.56)
<i>Interactions</i>															
Childbirth X Gender Normative Context					13.80+ (8.19)					14.31+ (8.22)					15.77+ (8.61)
Constant	-5.87*** (1.61)	-1.45 (1.00)	-0.28+ (0.16)	-0.90 (1.92)	-0.22 (-0.22)	-6.12*** (1.66)	-0.26 (1.04)	-0.04 (0.21)	-2.93 (1.94)	-1.18 (2.75)	-4.88*** (1.38)	-2.50* (1.06)	-0.27* (0.13)	-0.42 (2.23)	1.18 (1.78)
RI Std	7.19 (1.37)	7.14 (1.35)	1.34e-07 (8.11e-06)	1.22e-07 (7.94e-06)	1.52e-07 (8.18e-06)	7.26 (1.43)	7.21 (1.38)	2.78e-08 (1.16e-06)	2.67e-08 (1.18e-08)	4.09e-08 (2.45e-06)	5.90 (1.32)	5.97 (1.34)	1.03e-07 (3.77e-07)	1.00e-07 (3.65e-07)	8.58e-08 (2.49e-07)
RS Std			13.65 (2.93)	13.62 (2.59)	12.67 (1.96)			13.83 (3.13)	13.70 (2.52)	12.64 (2.64)			13.44 (2.89)	13.43 (2.92)	12.46 (1.95)
Residual	13.32 (2.05)	12.60 (1.66)	11.01 (1.45)	11.01 (1.46)	11.01 (1.47)	15.00 (2.15)	13.85 (1.59)	11.93 (1.46)	11.93 (1.46)	11.93 (1.49)	10.50 (1.74)	10.21 (1.60)	9.41 (1.47)	9.41 (1.47)	9.41 (1.47)
Nr of couples	8,261	8,261	8,261	8,261	8,261	4,207	4,207	4,207	4,207	4,207	4,054	4,054	4,054	4,054	4,054
Nr of countries	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
ICC	.22	.24	1.48e-16	1.23e-16	1.90e-16	.19	.21	5.44e-18	5.01e-18	1.18e-17	.24	.25	1.19e-16	1.13e-16	8.31e-17

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Outcome variable: Change in the Female Share of Couples' Total Paid Working Hours (in Percentage)

Authors' calculations with EU-Silc Longitudinal data, releases from 2012 to 2019.

Discussion

Our study investigated the effect of a major life-course transition - parenthood - on couples' employment dynamics, as well as the reasons for heterogeneity in this effect. We examined how couples' pre-birth relative earning patterns influence their division of paid work after becoming parents and how the parenthood effect in different couple types is moderated by contextual factors such as family policies and gender norms. To this end, we used micro-level data from the EU-Silc with a DID-PSM approach to compare the effect of parenthood on couples' division of paid working hours between different couple types in terms of pre-birth earner model. We then added macro-level data from the OECD and the ISSP in a multilevel analysis to examine the country variations in this parenthood effect across couple types.

Overall, our findings showed that, unsurprisingly, parenthood made European dual-earner couples switch to a more gendered division of labor, as there was a general decline found in women's relative paid working time following the birth of a first child compared to the control group who remained childless. In line with results from previous single-country studies (Begall & Grunow 2015; Dunatchik 2023; Kanji 2011; Wood et al. 2018), this parenthood effect varied by women's pre-birth relative earning power in our cross-national study; it was stronger in couples with a male main earner than in those with two equal earners or a female main earner before childbirth. We explained the latter finding by the higher opportunity cost to reduce employment after parenthood for mothers with higher relative earning, as well as their stronger bargaining power when negotiating how to divide paid and unpaid work within the couple. It is noteworthy that some studies indicate that highly educated and class-privileged women choose to downshift their educational or professional opportunities before becoming mothers because of cultural beliefs about motherhood and future work-family conflicts (Bass 2015; Thébaud & Taylor 2021). If so, the gendered effect of parenthood on equal earner or female earner couples may be underestimated in our analysis. However, other studies argue that employment patterns and attitudes become more gendered only after first childbirth and not before (Baxter et al. 2015; Rahim 2014; Yavorsky et al. 2015), showing that women in dual earner couples do not reduce paid employment after becoming mothers, but instead increase unpaid housework through childcare. It seems that although the anticipation of motherhood could downgrade women's long-term career goals, it might affect less their short-term changes in working hours around this event.

We contributed to previous knowledge by assessing how this parenthood effect on couples' division of paid labor was moderated differently by countries' institutional and cultural factors in different couple types. The overall country effects demonstrated that, in accordance with existing studies, long paid maternity and family leave available to mothers strengthened the effect of parenthood on a gendered division of paid labor (Evertsson 2016; Rønsen & Sundström 2002), while a high level of formal childcare provision weakened this effect (Andringa et al. 2015; Boeckmann et al. 2015; Budig et al. 2016). Interestingly, these moderating family policy effects were observed only for couples with a male main earner pre-parenthood, contrasting with the absence of such effects for couples where the woman was the equal or main earner before childbirth, which aligns with studies showing stronger effects of childcare provision for lower educated mothers (Scherer & Pavolini 2023). We also found a reduction in the parenthood effect on women's relative paid working hours in countries with

more cultural support for gender equality and maternal employment, which is in line with previous studies (Craig & Mullan 2010; Musick et al. 2020); this result was evident across couple types.

The heterogeneity in the impact of family policies by couple type suggests that couples in which the woman has a higher relative income make their post-parenthood work division less dependent on the policy context. The stronger the relative earning power of the woman in a couple is, the higher the opportunity cost of reducing her working time is. Therefore, these women may be more likely to start paid work again without exploiting the full duration of the maximum family leave entitlement. Furthermore, they may be more prepared to search and pay for non-institutionalized forms of childcare. Hence, the influences of paid maternity and family leave duration as well as the level of formal childcare provision on their post-birth employment are smaller. However, for male main earner couples, women's opportunity cost is relatively lower than that of their male partners; thus, reducing working time or staying at home might more easily be considered when these women are entitled to long family leave or there is no straightforward childcare solution.

This study made several distinct contributions to the existing research on the parenthood effect on couples' post-birth division of labor. First, our empirical contributions allowed us to better understand the heterogeneity in couples' work arrangements around the transition to parenthood and complement previous work (Kühhirt 2012; Sanchez & Thomson 1997; Wood et al. 2018) by uncovering the relationship between the pre-birth couple earner model and couple-level employment response to parenthood. Second, unlike previous studies, we systematically assessed how country-level factors moderate parenthood effects on couples' division of paid labor in different couple types through a multilevel analysis of 31 European countries. Examining the same factors in a large sample of countries not only added robustness to our findings but also showed how the policy and normative contexts moderate the parenthood effect on couples' division of paid labor differently for different couple types. Third, we anchored variations between couple types in economic-based and gender-role theories and used these theoretical frameworks to better understand the macro-micro link in the heterogeneous country policy effects across couples.

Despite the strengths of our study, the results should also be interpreted in light of several limitations. First, we could only estimate the short-term effect of one and two years post-childbirth, therefore bypassing the long-term parenthood effect on changes in within-couple inequality over the life course (see also Angelov et al. 2016; Kühhirt 2012). Further investigation into the long-term effect is warranted, as some women may take more than two years to return to their pre-parenthood levels of paid working hours, especially in countries where mothers are entitled with maternity and parental leave longer than 2 years, such as Hungary, Slovakia and Finland. Second, female main earner and equal earner couples were not assessed separately in our study, while a clear comparison of the parenthood effect between these two groups is needed in the future, as they exhibit different labor division and employment dynamics. Third, we focused the analysis solely on the heterogeneous effects of parenthood on the division of couples' paid labor; we left the assessment of unpaid labor or a comparison between paid and unpaid labor for future research. Lastly, we looked at the moderating and not causal effects of country context by measuring the macro-level variables at only one time point prior to parenthood instead of examining how a change in a policy or context leads to a change

in parenthood effects.

In spite of the abovementioned limitations, the present study found that the impact of parenthood on couples' division of paid work varies not only between couple types but also across country contexts with an interesting policy message. The strongest shift toward a gendered division of paid labor during parenthood was observed among couples with a gender-traditional earning pattern prior to childbirth. At the same time, it is also for these couples that family policies can make the largest difference in achieving more gender egalitarian paid work trajectories. Family policy changes such as improving the level of formal childcare provision, as well as optimizing maternity and other leave arrangements, may encourage these couples to opt for a more equal division of paid labor after they become parents. Such findings can possibly assist policy-makers with the design of institutional arrangements to help reduce cumulative gender disadvantages over the life course.

References

- Aboim, S. (2010). Gender cultures and the division of labour in contemporary Europe: A cross-national perspective. *The Sociological Review*, 58(2), 171-196.
- Aisenbrey, S., & Fasang, A. (2017). The Interplay of Work and Family Trajectories over the Life Course Germany and the United States in Comparison. *American Journal of sociology*, 122(5), 1448-1484. <https://www.jstor.org/stable/26545922>
- Andress, H.-J., Borgloh, B., Bröckel, M., Giesselmann, M., & Hummelsheim, D. (2006). The Economic Consequences of Partnership Dissolution. A Comparative Analysis of Panel Studies from Belgium, Germany, Great Britain, Italy, and Sweden. *European Sociological Review*, 22(5), 533–560. <https://doi.org/10.1093/esr/jcl012>
- Andringa, W., Nieuwenhuis, R., & Van Gerven, M. (2015). Women's working hours : the interplay between gender role attitudes, motherhood, and public childcare support in 23 European countries. *International Journal of Sociology and Social Policy*, 35(9/10), 582-599. <https://doi.org/10.1108/ijssp-10-2014-0073>
- 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>
- Anxo, D., Mencarini, L., Pailhé, A., Solaz, A., Tanturri, M. L., & Flood, L. (2011). Gender differences in time use over the life course in France, Italy, Sweden, and the US. *Feminist economics*, 17(3), 159-195.
- Avellar, S., & Smock, P. J. (2003). Has the Price of Motherhood Declined Over Time? A Cross-Cohort Comparison of the Motherhood Wage Penalty. *Journal of Marriage and Family*, 65(3), 597-607. <https://doi.org/10.1111/j.1741-3737.2003.00597.x>
- Bass, B. C. (2015). Preparing for Parenthood?: Gender, Aspirations, and the Reproduction of Labor Market Inequality. *Gender & society*, 29(3), 362-385. <https://doi.org/10.1177/0891243214546936>
- Baxter, J., Buchler, S., Perales, F., & Western, M. (2015). A life-changing event: First births and men's and women's attitudes to mothering and gender divisions of labor. *Social Forces*, 93(3), 989-1014. <https://doi.org/10.1093/sf/sou103>
- Becker, G. S. (1991). *A Treatise on the Family* (Enlarged ed.). Harvard University Press.
- Begall, K., & Grunow, D. (2015). Labour force transitions around first childbirth in the Netherlands. *European Sociological Review*, 31(6), 697-712. <https://doi.org/10.1093/esr/jcv068>
- Berk, S. F. (1985). *The Gender Factory: The Apportionment of Work in American Households*. New York: Plenum Press.
- Bianchi, S. M., & Milkie, M. A. (2010). Work and Family Research in the First Decade of the 21st Century. *Journal of Marriage and Family*, 72(3), 705-725. <https://doi.org/10.1111/j.1741-3737.2010.00726.x>
- Bittman, M. (1999). Parenthood without penalty: Time use and public policy in Australia and Finland. *Feminist economics*, 5(3), 27-42. <https://doi.org/10.1080/135457099337798>
- Bittman, M., England, P., Sayer, L., Folbre, N., & Matheson, G. (2003). When does gender trump money? Bargaining and time in household work. *American Journal of sociology*, 109(1), 186-214. <https://doi.org/10.1086/378341>
- Blumberg, R. L., & Coleman, M. T. (1989). A theoretical look at the gender balance of power in the American couple. *Journal of family issues*, 10(2), 225-250.

- <https://doi.org/10.1177/019251389010002005>
- Boeckmann, I., Misra, J., & Budig, M. J. (2015). Cultural and Institutional Factors Shaping Mothers' Employment and Working Hours in Postindustrial Countries. *Social Forces*, 93(4), 1301-1333. <https://doi.org/10.1093/sf/sou119>
- Borst, M. (2018). EU-SILC Tools: eusilcpanel-first computational steps towards a cumulative sample based on the EU-SILC longitudinal datasets.
- Brand, J. E., & Thomas, J. S. (2013). Causal Effect Heterogeneity. In S. L. Morgan (Ed.), *Handbook of Causal Analysis for Social Research* (pp. 189-213). Springer Netherlands. https://doi.org/10.1007/978-94-007-6094-3_11
- Brines, J. (1994). Economic dependency, gender, and the division of labor at home. *American Journal of sociology*, 100(3), 652-688.
- Budig, M. J., Misra, J., & Boeckmann, I. (2016). Work–Family Policy Trade-Offs for Mothers? Unpacking the Cross-National Variation in Motherhood Earnings Penalties. *Work and Occupations*, 43(2), 119-177. <https://doi.org/10.1177/0730888415615385>
- Campolo, M. G., Di Pino, A., & Rizzi, E. L. (2013). The Italian Couples' Division of Labour after a Birth: Do Gender Attitudes Matter? In E. Brentari & M. Carpita (Eds.), *Advances in Latent Variables*.
- Ciccia, R., & Bleijenbergh, I. (2014). After the Male Breadwinner Model? Childcare Services and the Division of Labor in European Countries. *Social Politics: International Studies in Gender, State & Society*, 21(1), 50-79. <https://doi.org/10.1093/sp/jxu002>
- Cools, S., & Strøm, M. (2016). Parenthood wage penalties in a double income society. *Review of Economics of the Household*, 14(2), 391-416. <https://doi.org/10.1007/s11150-014-9244-y>
- Craig, L., & Mullan, K. (2010). Parenthood, gender and work-family time in the United States, Australia, Italy, France, and Denmark. *Journal of Marriage and Family*, 72(5), 1344-1361. <https://doi.org/10.1111/j.1741-3737.2010.00769.x>
- Craig, L., Mullan, K., & Blaxland, M. (2010). Parenthood, policy and work-family time in Australia 1992—2006. *Work, Employment and Society*, 24(1), 27-45. <https://doi.org/10.1177/0950017009353778>
- Dieckhoff, M., Gash, V., Mertens, A., & Romeu Gordo, L. (2020). Partnered women's contribution to household labor income: Persistent inequalities among couples and their determinants. *Social Science Research*, 85. <https://doi.org/10.1016/j.ssresearch.2019.102348>
- Dotti Sani, G. M., & Scherer, S. (2018). Maternal Employment: Enabling Factors in Context. *Work, Employment and Society*, 32(1), 75-92. <https://doi.org/10.1177/0950017016677944>
- Dunatchik, A. (2023). Parenthood and the gender division of labour across the income distribution: the relative importance of relative earnings. *European Sociological Review*, 39(2), 229-246.
- England, P. (2010). The gender revolution: Uneven and stalled. *Gender & society*, 24(2), 149-166. <https://doi.org/10.1177/0891243210361475>
- Esping-Andersen, G. (2009). *The incomplete revolution - Adapting to women's new roles*. Polity Press.
- Eurostat. (2022). *Income and living conditions* <https://ec.europa.eu/eurostat/web/income-and->

[living-conditions/overview](#)

- Evertsson, M. (2016). Parental leave and careers: Women's and men's wages after parental leave in Sweden. *Advances in Life Course Research*, 29, 26-40. <https://doi.org/10.1016/j.alcr.2016.02.002>
- Fasang, A. E., Aisenbrey, S., & Schömann, K. (2012). Women's Retirement Income in Germany and Britain. *European Sociological Review*, 29(5), 968-980. <https://doi.org/10.1093/esr/jcs075>
- Fuller, S., & Cooke, L. P. (2018). Workplace variation in fatherhood wage premiums: Do formalization and performance pay matter? *Work, Employment and Society*, 32(4), 768-788. <https://doi.org/10.1177/0950017018764534>
- Gash, V. (2008). Preference or constraint? Part-time workers' transitions in Denmark, France and the United Kingdom. *Work, Employment and Society*, 22(4), 655-674.
- Geist, C. (2005). The Welfare State and the Home: Regime Differences in the Domestic Division of Labour. *European Sociological Review*, 21(1), 23-41. <https://doi.org/10.1093/esr/jci002>
- Glauber, R. (2007). Marriage and the Motherhood Wage Penalty Among African Americans, Hispanics, and Whites. *Journal of Marriage and Family*, 69(4), 951-961. <https://doi.org/10.1111/j.1741-3737.2007.00423.x>
- Glauber, R., & Gozjolko, K. L. (2011). Do Traditional Fathers Always Work More? Gender Ideology, Race, and Parenthood. *Journal of Marriage and Family*, 73(5), 1133-1148. <https://doi.org/10.1111/j.1741-3737.2011.00870.x>
- Gough, M., & Killewald, A. (2011). Unemployment in Families: The Case of Housework. *Journal of Marriage and Family*, 73(5), 1085-1100. <https://doi.org/10.1111/j.1741-3737.2011.00867.x>
- Heckman, J. J., Ichimura, H., & Todd, P. E. (1997). Matching as an Econometric Evaluation Estimator: Evidence from Evaluating a Job Training Programme. *The Review of Economic Studies*, 64(4), 605-654. <https://doi.org/10.2307/2971733>
- Heisig, J. P., & Schaeffer, M. (2019). Why You Should Always Include a Random Slope for the Lower-Level Variable Involved in a Cross-Level Interaction. *European Sociological Review*, 35(2), 258-279. <https://doi.org/10.1093/esr/jcy053>
- Herrarte, A., Moral-Carcedo, J., & Sáez, F. (2012). The impact of childbirth on Spanish women's decisions to leave the labor market. *Review of Economics of the Household*, 10(3), 441-468.
- Hoherz, S., & Bryan, M. (2020). Provider or Father? British Men's Work Hours and Work Hour Preferences after the Birth of a Child. *Work, Employment and Society*, 34(2), 193-210. <https://doi.org/10.1177/0950017019870752>
- Hook, J. (2010). Gender Inequality in the Welfare State: Sex Segregation in Housework. *American Journal of sociology*, 115(5), 1480-1523. <https://doi.org/10.1086/651384>
- Hook, J., & Wolfe, C. (2012). New fathers? Residential fathers' time with children in four countries. *Journal of family issues*, 33(4), 415-450.
- Kahn-Lang, A., & Lang, K. (2020). The Promise and Pitfalls of Differences-in-Differences: Reflections on 16 and Pregnant and Other Applications. *Journal of Business & Economic Statistics*, 38(3), 613-620. <https://doi.org/10.1080/07350015.2018.1546591>
- Kanji, S. (2011). What keeps mothers in full-time employment? *European Sociological Review*,

- 27(4), 509-525. <https://doi.org/10.1093/esr/jcq022>
- Kaufman, G., & Uhlenberg, P. (2000). The Influence of Parenthood on the Work Effort of Married Men and Women. *Social Forces*, 78(3), 931-947. <https://doi.org/10.1093/sf/78.3.931>
- Killewald, A., & García-Manglano, J. (2016). Tethered lives: A couple-based perspective on the consequences of parenthood for time use, occupation, and wages. *Social Science Research*, 60, 266-282. <https://doi.org/10.1016/j.ssresearch.2016.03.007>
- Kühhirt, M. (2012). Childbirth and the Long-Term Division of Labour within Couples: How do Substitution, Bargaining Power, and Norms affect Parents' Time Allocation in West Germany? *European Sociological Review*, 28(5), 565-582. <https://doi.org/doi.org/10.1093/esr/jcr026>
- Lappegard, T. (2008). Changing the Gender Balance in Caring: Fatherhood and the Division of Parental Leave in Norway. *Popul Res Policy Rev*, 27, 139-159. <https://doi.org/10.1007/s11113-007-9057-2>
- Lechner, M. (2011). The Estimation of Causal Effects by Difference-in-Difference Methods. *Foundations and Trends in Econometrics*, 4(3), 165-224. <https://doi.org/dx.doi.org/10.1561/08000000014>
- 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>
- Lundberg, S., & Rose, E. (2000). Parenthood and the earnings of married men and women. *Labour Economics*, 7(6), 689-710. [https://doi.org/10.1016/S0927-5371\(00\)00020-8](https://doi.org/10.1016/S0927-5371(00)00020-8)
- Mandel, H., Lazarus, A., & Shaby, M. (2020). Economic Exchange or Gender Identities? Housework Division and Wives' Economic Dependency in Different Contexts. *European Sociological Review*, 36(6), 831-851. <https://doi.org/10.1093/esr/jcaa023>
- Musick, K., Bea, M. D., & Gonalons-Pons, P. (2020). His and Her Earnings Following Parenthood in the United States, Germany, and the United Kingdom. *American Sociological Review*, 85(4), 639-674. <https://doi.org/10.1177/0003122420934430>
- Musick, K., Gonalons-Pons, P., & Schwartz, C. (2022). Change and Variation in U.S. Couples' Earnings Equality Following Parenthood. *Popul Dev Rev*, 48(2), 413-443. <https://doi.org/10.1111/padr.12481>
- Neilson, J., & Stanfors, M. (2014). It's about time! Gender, parenthood, and household divisions of labor under different welfare regimes. *Journal of family issues*, 35(8), 1066-1088.
- Notten, N., Grunow, D., & Verbakel, E. (2017). Social Policies and Families in Stress: Gender and Educational Differences in Work-Family Conflict from a European Perspective. *Soc Indic Res*, 132(3), 1281-1305. <https://doi.org/10.1007/s11205-016-1344-z>
- Pettit, B., & Hook, J. (2005). The Structure of Women's Employment in Comparative Perspective. *Social Forces*, 84(2), 779-801. <https://doi.org/10.1353/sof.2006.0029>
- Pfau-Effinger, B. (2005). Culture and Welfare State Policies: Reflections on a Complex. *Interrelation Journal of Social Policy*, 34(1), 3-20. <https://doi.org/10.1017/S0047279404008232>
- Pollmann-Schult, M. (2016). What mothers want: The impact of structural and cultural factors on mothers' preferred working hours in Western Europe. *Advances in Life Course Research*, 29, 16-25. <https://doi.org/10.1016/j.alcr.2015.11.002>

- Rahim, F. (2014). Work-family attitudes and career interruptions due to childbirth. *Review of Economics of the Household*, 12(1), 177-205. <https://doi.org/10.1007/s11150-013-9180-2>
- Rønson, M., & Sundström, M. (2002). Family Policy and After-Birth Employment Among New Mothers – A Comparison of Finland, Norway and Sweden. *European Journal of Population / Revue européenne de Démographie*, 18(2), 121-152. <https://doi.org/10.1023/A:1015532305179>
- Sanchez, L., & Thomson, E. (1997). Becoming mothers and fathers: Parenthood, gender, and the division of labor. *Gender & society*, 11(6), 747-772. <https://doi.org/10.1177/089124397011006003>
- Scherer, S., & Pavolini, E. (2023). Equalizing or not? Public childcare and women's labour market participation. *Journal of European Social Policy*, 33(4), 436-450. <https://doi.org/10.1177/09589287231183169>
- Schober, P. S. (2013). The Parenthood Effect on Gender Inequality: Explaining the Change in Paid and Domestic Work When British Couples Become Parents. *European Sociological Review*, 29(1), 74-85. <https://doi.org/10.1093/esr/jcr041>
- Snijders, T. A. B., & Bosker, R. J. (2012). *Multilevel Analysis: An Introduction to Basic and Advanced Multilevel Modeling* (n. edition, Ed.). Sage Publishers.
- Solera, C., & Mencarini, L. (2018). The gender division of housework after the first child: a comparison among Bulgaria, France and the Netherlands. *Community, Work & Family*, 21(5), 519-540. <https://doi.org/10.1080/13668803.2018.1528969>
- Stauder, J., & Röhlke, L. (2022). The partner market as a resource in couples' bargaining on housework division. *Journal of Marriage and Family*, 84(2), 612-635. <https://doi.org/10.1111/jomf.12802>
- Stier, H., & Lewin-Epstein, N. (2000). Women's Part-Time Employment and Gender Inequality in the Family. *Journal of family issues*, 21(3), 390-410. <https://doi.org/10.1177/019251300021003006>
- Stier, H., Lewin-Epstein, N., & Braun, M. (2018). Institutional change and women's work patterns along the family life course. *Research in Social Stratification and Mobility*, 57, 46-55. <https://doi.org/10.1016/j.rssm.2018.07.001>
- Suárez, M. J. (2013). Working mothers' decisions on childcare: the case of Spain. *Review of Economics of the Household*, 11(4), 545-561. <https://doi.org/10.1007/s11150-013-9189-6>
- Thébaud, S., & Taylor, C. J. (2021). The Specter of Motherhood: Culture and the Production of Gendered Career Aspirations in Science and Engineering. *Gender & society*, 35(3), 395-421. <https://doi.org/10.1177/08912432211006037>
- Thévenon, O. (2009). L'augmentation de l'activité des femmes en Europe: progrès de la conciliation ou polarisation des comportements? *Population*, 64(2), 263-303.
- Van der Lippe, T., Treas, J., & Norbutas, L. (2018). Unemployment and the division of housework in Europe. *Work, Employment and Society*, 32(4), 650-669. <https://doi.org/10.1177/0950017017690495>
- Van Winkle, Z., & Fasang, A. E. (2020). Parenthood wage gaps across the life course: A comparison by gender and race. *Journal of Marriage and Family*, 82(5), 1515-1533. <https://doi.org/10.1111/jomf.12713>

- West, C., & Zimmerman, D. H. (1987). Doing gender. *Gender & society*, 1, 125-151. <https://doi.org/10.1177/0891243287001002002>
- Wood, J., Kil, T., & Marynissen, L. (2018). Do women's pre-birth relative wages moderate the parenthood effect on gender inequality in working hours? *Advances in Life Course Research*, 36, 57-69. <https://doi.org/10.1016/j.alcr.2018.04.002>
- Xie, Y., Brand, J. E., & Jann, B. (2012). Estimating Heterogeneous Treatment Effects with Observational Data. *Sociological Methodology*, 42(1), 314-347. <https://doi.org/10.1177/0081175012452652>
- Yavorsky, J. E., Kamp Dush, C. M., & Schoppe-Sullivan, S. J. (2015). The Production of Inequality: The Gender Division of Labor Across the Transition to Parenthood. *Journal of Marriage and Family*, 77(3), 662-679. <https://doi.org/10.1111/jomf.12189>
- Young, M., & Schieman, S. (2018). Scaling Back and Finding Flexibility: Gender Differences in Parents' Strategies to Manage Work-Family Conflict: Scaling Back and Finding Flexibility. *Journal of Marriage and Family*, 80(1), 99-118.
- Zoch, G., & Heyne, S. (2023). The evolution of family policies and couples' housework division after childbirth in Germany, 1994–2019. *Journal of Marriage and Family*, n/a(n/a). <https://doi.org/10.1111/jomf.12938>

Appendix

Tables

Table A1 *Paid Maternity Leave Duration in months and Gap Between Participant's Interviews in Months*

Country	Maternity Leave Duration (in months)	Gap Between Participant's Interviews	
		Mean (in months)	Median (in months)
Austria	4.0	11.7	12
Belgium	3.7	12.4	12
Bulgaria	-	11.9	12
Switzerland	3.4	12.0	12
Cyprus	-	11.8	12
Czechia	7.0	12.0	12
Germany	3.5	11.9	12
Denmark	4.5	11.6	12
Estonia	-	11.9	12
Greece	10.7	12.1	12
Spain	4.0	12.6	12
Finland	4.4	12.1	12
France	4.0	12.0	12
Croatia	-	12.1	12
Hungary	6.0	12.4	12
Ireland	10.5	12.3	12
Iceland	3.2	11.8	12
Italy	5.4	11.7	12
Lithuania	-	11.7	12
Luxembourg	4.0	12.2	12
Latvia	-	11.9	12
Malta	-	12.0	12
The Netherlands	4.0	12.1	12
Norway	2.2	12.0	12
Poland	5.0	12.0	12
Portugal	1.6	11.5	12
Romania	-	12.0	12
Serbia	-	12.1	12
Sweden	3.9	11.2	12
Slovenia	-	12.0	12
Slovakia	7.0	12.0	12
United Kingdom	13	11.9	12

OECD Statistics Database 2009 plus authors' calculations with EU-SILC Longitudinal data, releases from 2012 to 2019.

Table A2 Average Treatment Effect with Change in Absolute Female and Male Paid Working Hours as Outcome Variable Measured at T1, by Pre-parenthood Couple Type

	Pre-parenthood Couple Type	Outcome	S.E.*	C.I.		N_t/N_c
<i>Female</i>	<i>All couples</i>	-8.81***	0.35	-9.376461	-8.009645	1,822/ 9,427
	<i>Male main earner</i>	-10.21***	0.48	-11.22545	-9.351237	1,122/ 4,598
	<i>Equal & female main earner</i>	-6.16***	0.47	-7.076057	-5.225619	700/ 4,829
<i>Male</i>	<i>All couples</i>	-0.13	0.17	-.7767164	-.1118135	1,822/ 9,427
	<i>Male main earner</i>	-0.08	0.18	-.6284606	.0868304	1,122/ 4,598
	<i>Equal & female main earner</i>	-0.44	0.33	-1.367345	-.0739963	700/ 4,829

N_t = number of treated, N_c = number of controls

Authors' calculations with EU-Sile Longitudinal data, releases from 2012 to 2019.

Table A3 Average Treatment Effect with Change in the Female's Share of Couples Paid Working Hours (in %) as the Outcome Variable, by Pre-parenthood Couple Type at T1 and T2, Separately for Three Couple Types

	Pre-parenthood Couple Type	Outcome	S.E.	C.I.	N_t/N_c
<i>T1</i>	<i>All couples</i>	-9.36***	0.44	-9.905465 -8.19362	1,822/9,429
	<i>Male main earner</i>	-11.28***	0.59	-12.44837 -10.12481	1,122/4,592
	<i>Equal earners</i>	-5.25***	0.68	-6.392569 -3.726283	478/3,234
	<i>Female main earner</i>	-6.70***	1.20	-8.753593 -4.03588	222/1,378
<i>T2</i>	<i>All couples</i>	-6.25***	0.61	-7.762298 -5.363094	626/5,328
	<i>Male main earner</i>	-7.87***	0.89	-10.44619 -6.959075	373/2,505
	<i>Equal earners</i>	-3.60***	0.78	-5.007452 -1.936993	176/1,699
	<i>Female main earner</i>	-3.95*	2.01	-6.26092 -.2775411	77/659

⁺ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

N_t = number of treated, N_c = number of controls

Authors' calculations with EU-SILC Longitudinal data, releases from 2012 to 2019.

Table A4 Average Treatment Effects with the Female's Share of Couples' Paid Working Hours (in %) as the Outcome Variable, by Pre-parenthood Couple Type with the Threshold of 40% for the Relative Income of the Female Partner

Pre-parenthood Couple Type		Outcome	S.E.*	C.I.		N _t /N _c
T1	<i>All couples</i>	-9.36***	0.44	-9.905465	-8.19362	1,822/9,429
	<i>Male main earner</i>	-12.80***	0.73	-14.3324	-11.47644	826/3,036
	<i>Equal & female main earner</i>	-5.56***	0.50	-6.872417	-4.900132	996/6,387
T2	<i>All couples</i>	-6.56***	0.61	-7.762298	-5.363094	626/5,328
	<i>Male main earner</i>	-8.20***	1.08	-11.49944	-7.262126	277/1,463
	<i>Equal & female main earner</i>	-4.57***	0.66	-5.648062	-3.041013	349/3,398

N_t = number of treated, N_c = number of controls

Authors' calculations with EU-SILC Longitudinal data, releases from 2012 to 2019.

Table A5 *Correlation Between Countries' Duration of Paid Maternity and Family Leave for Mothers (in Weeks) of 2009, 2013 and 2017*

Macro-variables	Maternity Leave Length 2009	Maternity Leave Length 2013	Maternity Leave Length 2017
<i>Maternity Leave Length 2009</i>	1.00	-	-
<i>Maternity Leave Length 2013</i>	0.99	1.00	-
<i>Maternity Leave Length 2017</i>	0.98	0.99	1.00

Authors' calculations with OECD Statistics Database 2009, 2013 and 2017.

Table A6 *Correlation Between Countries' Proportion of Small Children (0-2 years old) Enrolled in Formal Daycare (in %) in 2009, 2013 and 2017*

Macro-variables	Daycare Enrolment 2010	Daycare Enrolment 2013	Daycare Enrolment 2017
<i>Daycare Enrolment 2010</i>	1.00	-	-
<i>Daycare Enrolment 2013</i>	0.97	1.00	-
<i>Daycare Enrolment 2017</i>	0.95	0.99	1.00

Authors' calculations with OECD Statistics Database 2010, 2013 and 2017.

Table A7 *Correlation Between Countries' Progressive Gender Values of 2002 and 2012*

Macro-variables	Progressive Gender Values 2002	Progressive Gender Values 2012
<i>Progressive Gender Values 2002</i>	1.00	-
<i>Progressive Gender Values 2012</i>	0.96	1.00

Authors' calculations with ISSP 2002 and 2012

Table A8 *Countries' Macro-Variabes Measured at T-1 (Prior to Treatment)*

Country	Duration of maternity and family leave available for mothers (in weeks)	Proportion (in percentage) of children aged 0-2 enrolled in formal childcare and pre-school	Progressive Gender Values
Austria	73.0	12.5	2.8
Belgium	28.0	39.2	3.0
Bulgaria	.	7.5	2.5
Switzerland	14.0	33.5	3.0
Cyprus	.	30.4	3.2
Czechia	110.0	4.0	2.6
Germany	58.0	26.8	3.3
Denmark	50.0	62.0	3.7
Estonia	.	22.8	.
Greece	43.0	11.3	.
Spain	16.0	26.3	3.1
Finland	159.0	26.6	3.3
France	42.0	47.9	3.1
Croatia	.	8.4	.
Hungary	160.0	9.6	2.5
Ireland	26.0	29.7	3.3
Iceland	26.0	54.8	.
Italy	47.7	23.3	.
Lithuania	.	15.6	.
Luxembourg	42.0	45.8	.
Latvia	.	18.7	2.6
Malta	.	41.2	.
The Netherlands	42.0	54.0	3.2
Norway	88.0	52.6	3.6
Poland	20.0	3.8	2.8
Portugal	30.1	27.1	2.6
Romania	.	9.7	.
Serbia	.	.	.
Sweden	60.0	46.5	3.6
Slovenia	.	34	2.8
Slovakia	164.0	3.0	2.5
United Kingdom	39.0	40.1	3.3
Nr. of Countries	22	31	22

Source: OECD Statistics Database 2009, International Social Survey Programme 2002.

Table A9 Average Treatment Effect on the Treated (ATT) of Percentage Change in the Female's Share of Couples' Paid Working Hours, by Pre-parenthood Couple Type

	Pre-parenthood Couple Type	Outcome	S.E.*	C.I.	N_t/N_c
<i>T1</i>	<i>All couples</i>	-8.62***	0.50	-9.599254 - 7.647727	1,822/1,937
	<i>Male main earner</i>	-11.20***	0.64	-12.45461 - 9.946456	1,122/1,181
	<i>Equal & female main earner</i>	-5.29***	0.67	-6.611059 - 3.977512	700/748
<i>T2</i>	<i>All couples</i>	-7.48***	0.67	-8.791323 - 6.163949	626/626
	<i>Male main earner</i>	-9.35***	1.03	-11.38781 - 7.330692	373/373
	<i>Equal & female main earner</i>	-3.09***	0.80	-4.674331 - 1.515392	253/253

* = Bootstrapped Standard Errors (200 replications)

N_t = number of treated, N_c = number of controls

Authors' calculations with EU-Silc Longitudinal data, releases from 2012 to 2019.

Table A10. Multilevel Regressions with Moderating Effects of Weeks of Paid Maternity and Family Leave Duration for Mothers, Percentage of Formal Childcare Provision, and Gender Normative Context

	All couples			Male Main Earner			Equal & Female Main Earner		
	M1	M2	M3	M1	M2	M3	M1	M2	M3
<i>Individual-level</i>									
First Childbirth	-1.37 (3.58)	-26.53** (8.68)	-68.30* (32.59)	-1.19 (3.40)	- 28.40*** (8.59)	-71.51* (32.46)	-1.78 (3.38)	-22.11** (7.69)	-59.34+ (30.30)
<i>Country level</i>									
Paid Maternity & Family Leave Duration	0.01 (0.00)	0.01** (0.00)	0.01** (0.00)	0.01* (0.01)	0.01* (0.01)	0.01* (0.00)	-0.00 (0.01)	-0.00 (0.01)	-0.00 (0.01)
Formal Childcare Provision	0.00 (0.01)	0.02 (0.01)	0.00 (0.01)	0.01 (0.01)	0.02 (0.01)	0.01 (0.01)	-0.00 (0.02)	0.01 (0.02)	-0.00 (0.02)
Gender Normative Context	-0.73 (0.91)	-0.76 (0.92)	-0.13 (0.96)	-0.18 (0.98)	-0.28 (1.02)	0.03 (1.00)	-0.74 (1.29)	-0.85 (1.31)	-0.47 (1.32)
<i>Interactions</i>									
Childbirth X Paid Maternity & Family Leave Duration	-0.16* (0.08)			-0.19** (0.07)			-0.13+ (0.08)		
Childbirth X Formal Childcare Provision		0.47* (0.20)			0.50* (0.20)			0.40* (0.18)	
Childbirth X Gender Normative Context			18.27+ (9.81)			19.00+ (9.78)			16.06+ (9.09)
Constant	1.69 (2.41)	0.91 (2.40)	-0.51 (2.60)	-0.42 (2.61)	-0.63 (2.71)	-1.29 (2.70)	2.16 (3.24)	2.09 (3.25)	1.23 (3.32)
RI Std	0.57 (1.56)	0.55 (0.34)	0.54 (1.19)	0.51 (0.40)	0.46 (0.22)	0.43 (1.02)	0.50 (0.59)	0.54 (0.40)	0.47 (0.56)
RS Std	11.80 (3.47)	11.50 (1.89)	12.64 (2.31)	11.12 (2.23)	11.22 (2.25)	12.61 (1.92)	10.59 (2.27)	9.54 (1.91)	10.74 (1.81)
Residual	11.12 (1.59)	11.12 (1.59)	11.12 (1.59)	11.95 (1.66)	11.95 (1.66)	11.95 (1.66)	9.71 (1.50)	9.71 (1.50)	9.71 (1.50)
Nr of couples	7,066	7,066	7,066	3,603	3,603	3,603	3,463	3,463	3,463
Nr of countries	18	18	18	18	18	18	18	18	18
ICC	.003	.002	.002	.002	.001	.001	.003	.003	.002

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Outcome variable: Change in the Female Share of Couples' Total Paid Working Hours (in Percentage)
 Authors' calculations with EU-Silc Longitudinal data, releases from 2012 to 2019.

Figures

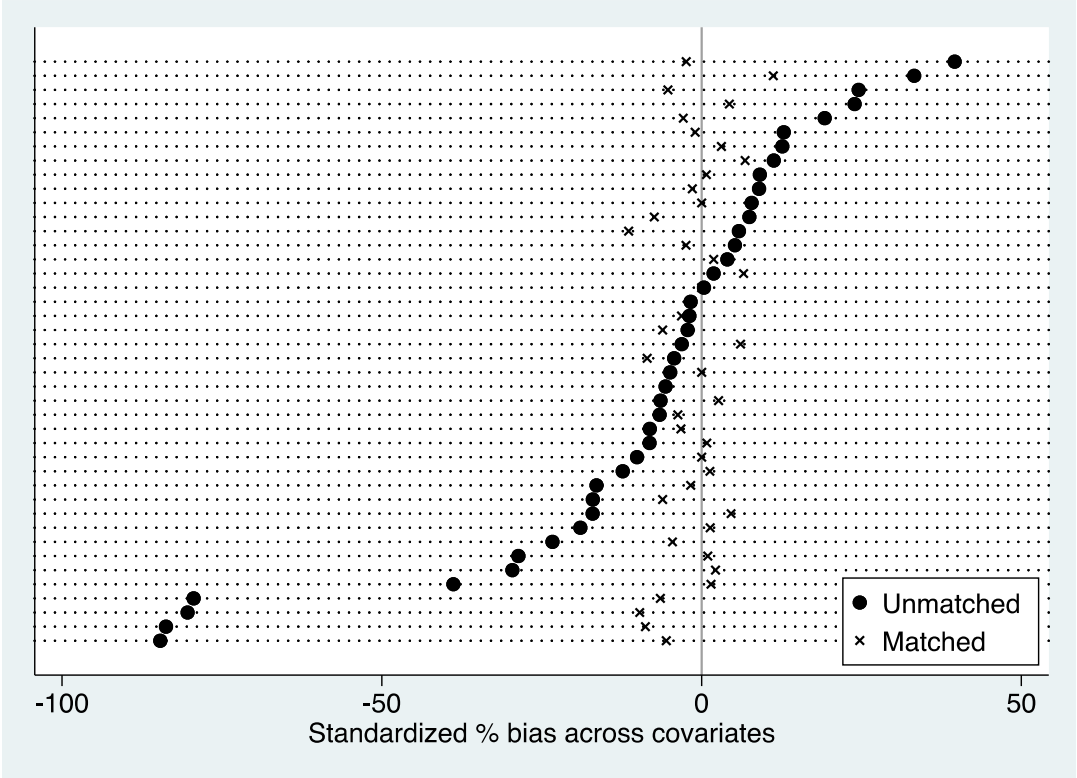


Figure A1 Selection bias reduction across matching covariates (All couples)
Authors' calculations with EU-Silc Longitudinal data, releases from 2012 to 2019.

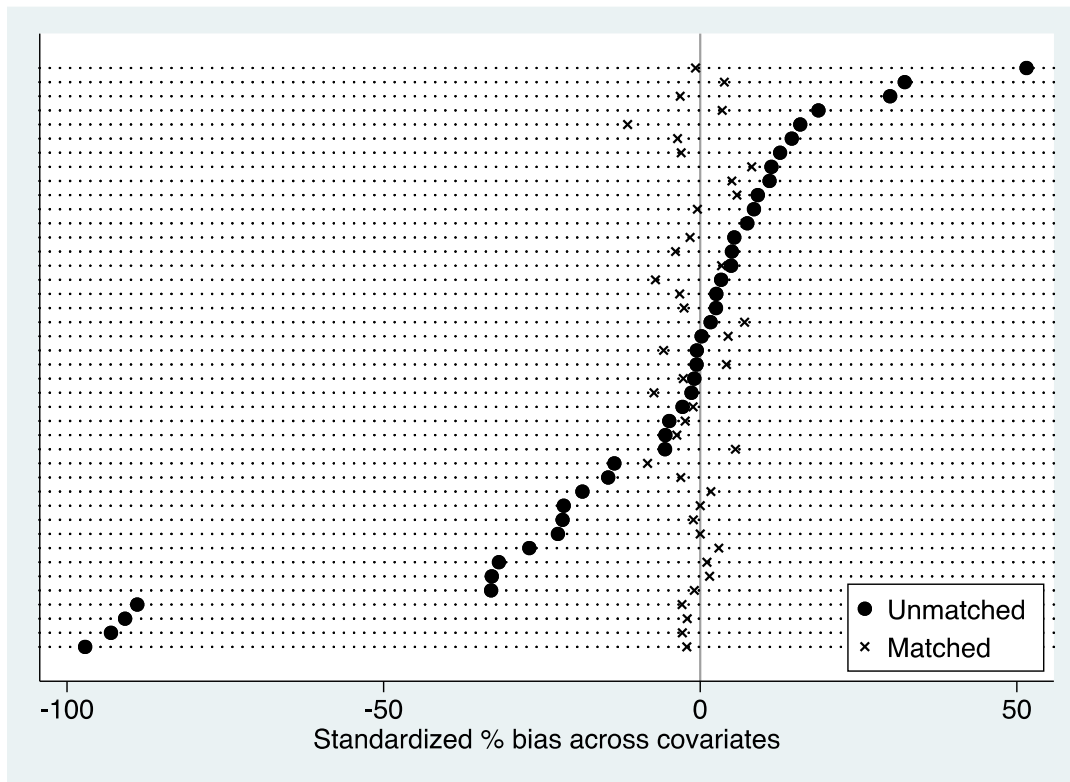


Figure A2 Selection bias reduction across covariates (Male Main Earner Couples)
 Authors' calculations with EU-Silc Longitudinal data, releases from 2012 to 2019.

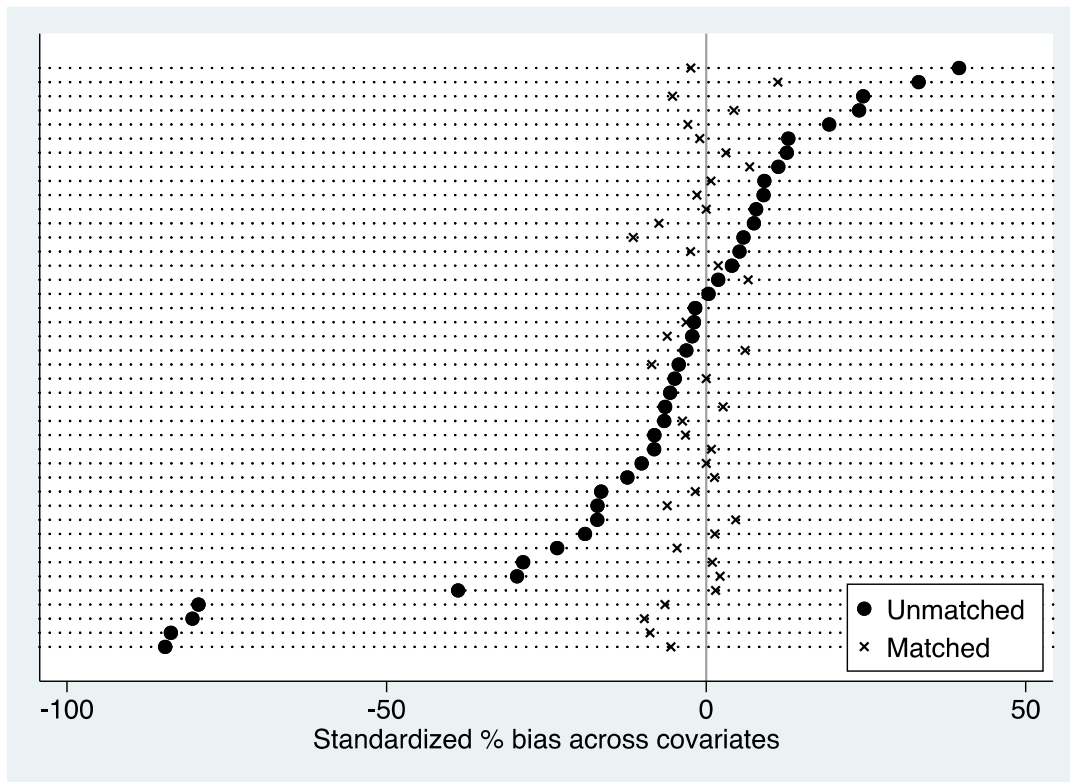


Figure A3 Selection bias reduction across covariates (Female Equal or Main Earner Couples)
 Authors' calculations with EU-Silc Longitudinal data, releases from 2012 to 2019.

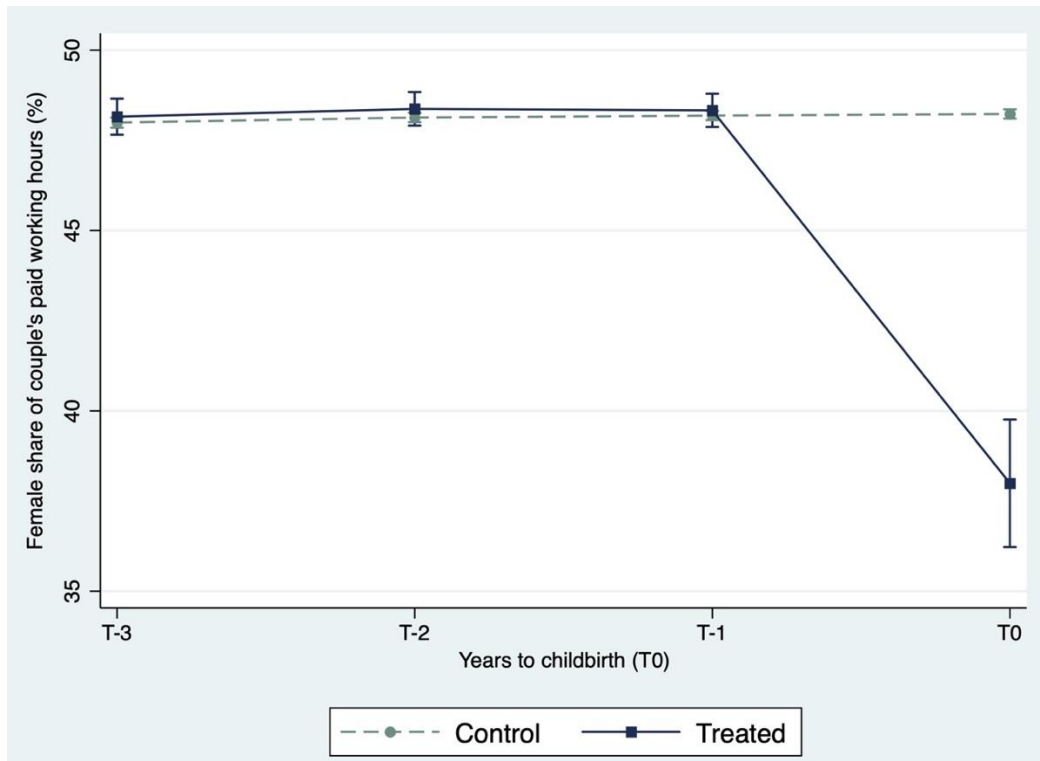


Figure A4. Predicted trends in female share of couples' paid working hours for treatment and control groups in years surrounding the birth of the first child reported at T0. Predictions were computed using Pooled OLS with standard errors clustered at the individual level

In Figure A4, we performed a visual inspection of the parallel trends assumption. According to this assumption, the control group provides the appropriate counterfactual of the trend that the treatment group would have followed if they had not been treated. To evaluate the parallel trends in our data (Figure A4), we calculate predicted values based on a series of regressions predicting the female share of couples' paid working hours by treatment or control group membership. Recent literature indicates that parallel trends will be more plausible if the treatment and control groups are similar not only in trends but also in levels (Kahn-Lang & Lang 2020). The graph shows that neither the trends nor the levels of the female share of couples' paid working hours are significantly different between treated and control couples during the 3 years preceding childbirth; therefore, the parallel trends assumption is plausible. This means that we can assume that the control couples provide the appropriate counterfactual of the trends and levels that the treated couples would have followed if they had not been treated.

In the particular case of the impact of the first birth on the female share of a couple's paid labor, we should consider anticipatory behavior; i.e., a change in work patterns in the preparation for parenthood might undermine the feasibility of the control group as a counterfactual for the treated group. However, previous literature examining the transition to parenthood indicates that employment patterns and attitudes become more gender traditional only after couples experience the birth of their first child and not before (Baxter et al. 2015; Rahim 2014; Yavorsky et al. 2015). This makes our assumption of similarity in the female share of couples' paid working hours between the treated and control groups prior to childbirth reasonable based on previous literature.

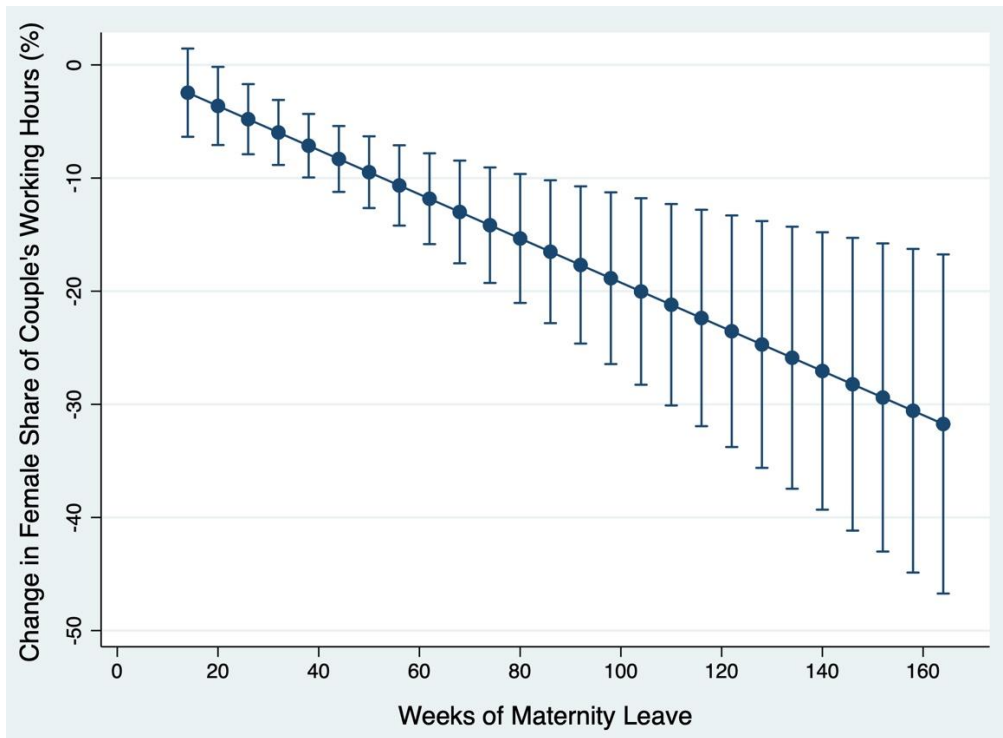


Figure A5. Predicted values of change in female share of couple’s working hours by paid maternity and family leave duration for mothers, in weeks (90% CI), male main earner couples
 Authors’ calculations with EU-Silc Longitudinal data, releases from 2012 to 2019.

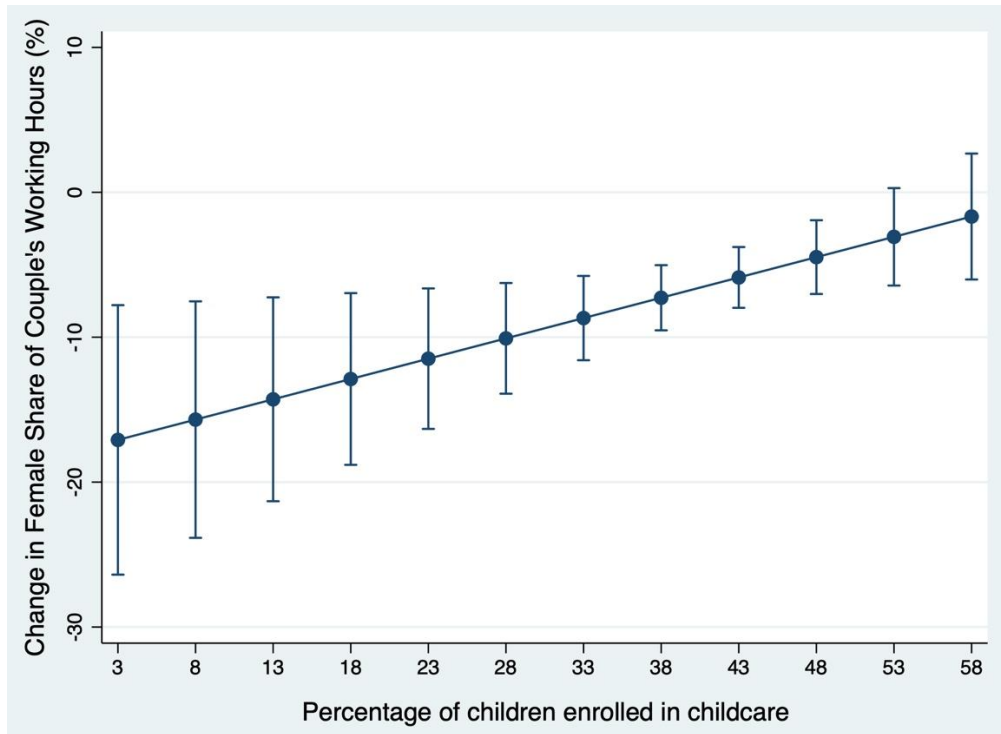


Figure A6. Predicted values of change in female share of couple's working hours by formal childcare provision in percentage (90% CI), male main earner couples

Authors' calculations with EU-Silc Longitudinal data, releases from 2012 to 2019.

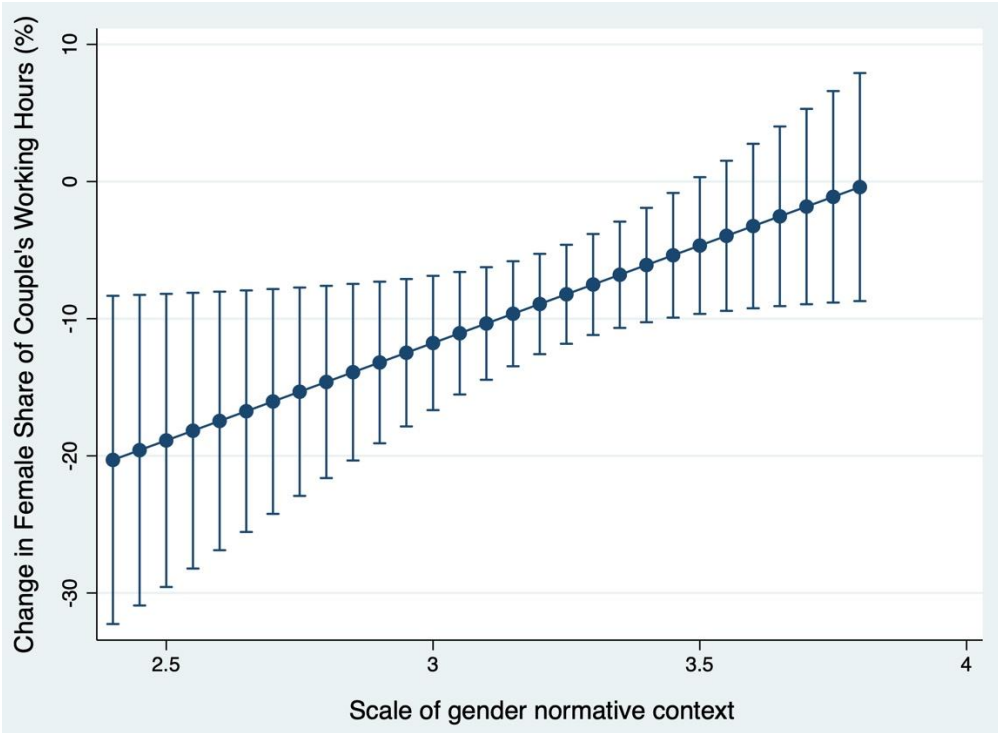


Figure A7. Predicted values of change in female share of couple’s working hours by gender normative context (90% CI)

Authors’ calculations with EU-Silc Longitudinal data, releases from 2012 to 2019.