# Fathers' involvement in the family, fertility and maternal employment:

Evidence from Central and Eastern Europe \*

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#### Abstract

For a sample of Central and Eastern European countries, characterized by historically high female labor force participation and currently low fertility rates, we analyze whether fathers' increased involvement in the family (housework and childcare) has the potential of increasing both fertility and maternal

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employment. Using two waves of the Generations and Gender Survey, we show that more paternal involvement in the family increases the subsequent likelihood that the mother has a second child and works full-time. Men's fertility and work decisions are instead unrelated to mothers' housework and childcare. We also show that fathers' involvement in housework plays a more important role than involvement in childcare. The role of fathers' involvement in housework is confirmed when we consider women who initially wanted or intended to have a child, women whose partner also wanted a child or women who intended to continue working.

Keywords: gender revolution, demographic trends, working mothers, gender roles, fertility.

#### 1 Introduction

Central and Eastern European countries are currently experiencing low levels of fertility that, combined with migration losses and low mortality, are leading to population ageing and decline (Lutz, 2010; Cekota and Trentini, 2012; Petrova and Inglot, 2020). In these countries with traditionally high female employment, can a more balanced allocation of household chores and childcare within the couple - the so-called second half of the gender revolution (Goldscheider et al., 2010) - drive an increase in fertility? What are the effects on maternal employment?

We expect father's involvement in housework and childcare activities to have

a positive impact on both fertility decisions and mothers' full-time employment, as it helps to alleviate work-family trade-off, supporting women's decision to have additional children and continue to work.

To test these hypotheses, we use the two waves of panel data from the Generations and Gender Survey (GGS) for five countries in Central and Eastern Europe (Bulgaria, Czech Republic, Hungary, Poland and Russia). Taking into account a large set of individual characteristics of both the mother and the father, we show that more fathers' involvement in housework at the time of the first interview is associated with a higher likelihood that the mother has a second child, works full-time and has both a second child and full-time employment during the second interview. Fathers' involvement in childcare is instead not consistently significant.

Our paper includes several novelties with respect to previous studies, thus contributing to a careful identification of the consequences of fathers' involvement. First, we consider jointly second child and work probabilities, in addition analyzing the two outcomes separately. Second, we analyze the effect of both housework and childcare: their impact is likely to differ, since housework is less directly related to fertility choices, but is also perceived as more onerous and less enjoyable (Gershuny, 2013). Third, we focus on the transition to the second child, which is the most debated demographic issue (Van Bavel and Rozanska-Putek, 2010): biological, psychological and social incentives remain indeed strong enough to have at least one child (Kohler et al., 2006; Morgan and Taylor, 2006) and, despite the below-

replacement levels of fertility, the proportion of women who intend to have two children is dominant in most developed countries (Bongaarts, 2002). Finally, our gender-differentiated analysis allows us to identify the differences between women and men in their perceptions of the division of domestic tasks and the related differential effect on fertility and employment decisions, i.e., the fact that men tend to overestimate (or women underestimate) their contribution, even though they agree that wives spend more time on housework than they do (Lee and Waite, 2005).

There are two additional contributions of our analysis. First, we focus on a sample of Central and Eastern European countries, which is particularly interesting because of their historically high female employment and women's integration in the labor market, which have occurred in tandem with low levels of fertility that recently attracted the attention of policy-makers.

Second, on the methodological side we carefully address potential endogeneity and selectivity issues. Reverse causality implies that fathers contribute more to housework because there is a second child or because the mother works full-time. To avoid this concern, we measure the level of involvement of fathers in the first wave and fertility and employment outcomes only in the second wave. We also perform a sensitivity analysis to address potential selectivity issues of women who choose more collaborative partners because they have high fertility intentions (or desires) or high employment attachment and men who are collaborative because they want another child: we restrict the analysis to those individuals who declare that they

want or they intend to have a child within three years, to those who declare that also their partner wants a child and to those who intend to continue working.

Overall, our results suggest that a greater involvement of fathers in domestic activities may push fertility up, while allowing women to work full-time: fathers' involvement at home helps to overcome women's trade-off between having a second child and working full-time, in countries characterized by traditionally high female employment but currently experiencing low fertility rates.

The paper is organized as follows: the next section describes the context of Central and Eastern Europe; section 3 describes the literature review and introduces our hypotheses; section 4 presents the data and methods, section 5 details the results; and section 6 concludes.

## 2 Fertility and maternal employment in Central and Eastern Europe

Our analysis includes five countries in Central and Eastern Europe: Bulgaria, Czech Republic, Hungary, Poland and Russia. They all share a past history of state socialism and very similar trends in female employment and fertility: a decrease during the last decade of the 20th century followed by a slight increase or flat pattern. The socialist regime greatly expanded women's access to education and reproductive rights, and established extensive state infant and childcare provisions: female

employment was higher than in any other part of the world (UN, 1991), although women were usually employed in low-skilled jobs and lacked opportunities for career advancements. After 1989, these countries underwent significant economic transformations, shifting from the security of generous welfare states to the instability of free market economies. Policies were dismantled and maternity leave and subsidies for childcare were substantially reduced (Mishtal, 2009). As a consequence, female employment fell: women started to face the same unsustainable situation characterizing the first half of the gender revolution in Western countries, with insufficient external support to balance work and family (UNIFEM, 2006).

After 1989, also fertility rates started to decline: many features of contemporary capitalism (e.g., competitive labor markets, the spread of modern contraceptives) created considerably more restraining conditions for childbearing (Caldwell and Schindlmayr, 2003). Immediately after the demise of state socialism, governments were preoccupied with economic and political reforms and did not pay much attention to social and family policies (Frejka and Gietel-Basten, 2016).

Given migration losses and moderate mortality, low birth rate later became a crucial concern. The dominant norm that expects women to have a first birth before age 30 (Perelli-Harris, 2005; Potancokova, 2009; Mynarska, 2010) and the long-standing acceptance of the role of women as income providers (Matysiak and Vignoli, 2013) contribute to a context where women's employment seems to depress fertility less than in Western Europe (Matysiak and Vignoli, 2008), and employed women are at

least as likely to give birth to the first child as are non-employed women (Kantorova, 2004; Robert and Bukodi, 2005; Matysiak, 2009). However, population ageing and decline advanced rapidly (Lutz, 2010) and governments increasingly turned their attention to social and family policies, implementing pro-natalist measures.

We are aware that these countries differ in some aspects. In Bulgaria, Hungary and Russia, people generally hold more conservative views concerning gender roles, while those in Czech Republic and Poland have more liberal, "modern" attitudes (Fodor and Balogh, 2010). During the time period considered (2004 - 2015), Russia had a female employment rate higher than 50%, Hungary slightly below 40% and the others around 45%. The levels of women's employment also reflect the general labor market situation, being parallel to that of men. Moreover, even though governments have been implementing pro-natalist measures in all these countries, the features and the effectiveness of these policies vary by country (see Appendix A).

Despite some differences, all these countries have female employment rates close to the European average and total fertility rates below replacement level. The time period we study (2004 - 2015) represents the general patterns of employment and fertility following the end of the communist regime. The finding that in these countries father's involvement at home supports fertility without reducing maternal employment is encouraging also for countries where acceptance of women's employment is evolving, as well as for countries that are implementing policies to promote fertility.

#### 3 Background and hypotheses

Demographers have widely analyzed the relationship between the increasing role of women in the economy and society in Western countries, known as the gender revolution (Goldscheider, 2000), and the decline of fertility in the last century. During the first half of the gender revolution, characterized by the marked increase in women's higher education and the subsequent strengthening of their labor market role, working women bear the burden of working while continuing to be primary homemakers and caregivers. This first stage of the gender revolution is problematic (Goldscheider et al., 2015): the double burden is difficult to sustain (Hochschild and Machung, 1990), and a situation in which women have to deal with both market work and family without help from partners causes a societal disequilibrium. Therefore, the emergence of a new equilibrium with couples choosing the duality of work and family can be expected (Esping-Andersen and Billari, 2015). As the second half of the gender revolution slowly emerges - where men join women in the private sphere of the household - gender equality may strengthen families and have positive effects on fertility (McDonald, 2000b,a; Goldscheider et al., 2010, 2015). As a macro-level evidence of this assumption, studies show that the most developed and gender equal countries are experiencing a reversal in fertility rates (Myrskyla et al., 2009; Goldstein et al., 2009).

The gender revolution in Central and Eastern European countries is following a slightly different path, since female employment was already high during the communist period. As Hochschild and Machung (1990) note, the extra burden of women in the Soviet Union was disguised, as it was for the black matriarch in the United States, with the image of the supermom working and being the primary house-keeper. Now a more gender egalitarian culture is (slowly) spreading, so that the involvement of men at home may help women to balance work and family and thus enhance fertility.

However, this is not the only possible scenario. Westoff and Higgins (2009) argue that the relationship between gender equality and fertility is context-specific and also depends on how the two dimensions are measured. Along the same lines, Neyer et al. (2013) argue that the results of empirical analyses vary depending on which indicators of gender equality are included, whether women or men are studied, which parity transition and which country is considered in the analysis. A higher involvement of men in domestic tasks could hinder fertility, increasing workfamily conflicts (Schieman et al., 2009) and the opportunity cost of an additional child for fathers. Moreover, a female partner who works full-time increases family income and, if fathers prefer to invest more on one child instead of dividing the additional resources among more children (quality-quantity trade-off, (Becker and Lewis, 1973)), this could be another mechanism against higher fertility.

Research that provides evidence of a positive relationship between fathers' involvement at home and fertility focus on fertility intentions rather than actual behavior, or use retrospective information, which is not able to identify the causal effect of ex ante fathers' involvement on ex post fertility (Olàh, 2003; Tazi-Preve et al., 2004; Mencarini and Tanturri, 2004; Torr and Short, 2004; Cooke, 2004; Pinnelli and Fiori, 2008; Mills et al., 2008; Cooke, 2008; Puur et al., 2008; Meil, 2013). While it is true that intentions are a good proxy of actual decisions, certain socioeconomic and unexpected factors can still prevent their realization (Régnier-Loilier and Vignoli, 2011; Riederer et al., 2019). Moreover, the relation between intentions and behavior also depends on the components of intentions being measured - over a shorter or longer period of time - or on age and family status (Hayford, 2009). Few existing studies have linked ex ante fathers' involvement to ex post fertility: Torr and Short (2004) study a sample of US couples and find that both the most modern and the most traditional housework arrangements are positively associated with fertility. Cooke (2004, 2008) find that father's involvement in childcare increases couple-odds of a second birth in Germany and Italy.<sup>1</sup>

Considering that developed countries still have a mean ideal number of children above two (Bongaarts, 2002; OECD, 2016) and that the recent pattern of fertility in the countries of our sample has been increasing or at least stable (Pison, 2020), a more equal sharing of domestic tasks is likely to help couples to achieve the ideal number of children. We thus propose the following first hypothesis.

H1: The involvement of fathers in housework and childcare duties at the time of

 $<sup>^{1}</sup>$ Some scholars (McDonald, 2000a,b, 2006; Goldscheider et al., 2013; Aassve et al., 2015) also argue that what matters for fertility is the mismatch between gender attitudes and behaviour, more than the division of tasks *per se*.

the first wave of the survey increases the probability of having a second birth between the first and the second wave.

To appropriately test this first hypothesis, we analyze the actual fertility of respondents, taking their fertility intentions into account. For the same individual, we observe fathers' involvement ex ante and fertility outcome ex post.

Fathers' involvement in the family may also be relevant for maternal employment. The literature about the effects of partners' support on maternal employment, actual or intentional, is still quite limited. Werbel (1998) finds that it is positively associated with women's intention to work prior to childbirth in the US, and Seiger and Wiese (2011) find a positive association with mothers' affective wellbeing during her return to employment after maternity leave in Switzerland. Moreover, Stertz et al. (2017) show that women with more egalitarian partners take shorter leaves and decrease their working hours less in Germany, Austria and Switzerland. In contrast, mothers' attitudes do not influence their husbands' behavior. Finally, Almeida et al. (1993) find that wives' longer employment hours are linked to their lower proportional share of childcare and lower absolute levels of housework among Canadian couples. We thus propose the following second hypothesis.

H2: The involvement of fathers in housework and childcare duties at the time of
the first wave of the survey increases the probability that the mother works full-time
during the second wave.

It is then important to analyze together the two decisions - on fertility and

maternal employment - in relation to the partner's contribution and support: indeed, previous research that considers fertility and maternal employment together only takes into account the reciprocity between them (Kantorova, 2004; Robert and Bukodi, 2005; Matysiak, 2009; Matysiak and Vignoli, 2013), thus missing the potential impact of a partner's behavior on both decisions.

We thus propose a third hypothesis, which combines the previous two.<sup>2</sup>

H3: The involvement of fathers in housework and childcare duties at the time of the first wave increases the joint probability of transitioning to a second child and working full-time after childbirth.

Finally, we discuss the relative effect of fathers' involvement in childcare and housework on fertility and maternal employment. We expect housework sharing, especially in routine tasks that have traditionally belonged to women, to have a greater impact on their fertility and work decisions. Even within household chores, routine tasks are considered to be more female-typed (e.g. washing dishes and cleaning), while non-routine tasks are considered to be more male-typed (e.g. car repair, trash removal) (Carlson et al., 2018; Schneider, 2012). During the last decades men have increased and women have decreased their time in housework (Bianchi et al., 2012), but the widest gender gaps remain in female-typed tasks (Craig and Mullan,

<sup>&</sup>lt;sup>2</sup>Hypotheses H2 and H3 differ because H2 hypothesizes that respondents (working and with one child during the first interview) continue working in the second interview, with or without a second birth, while H3 hypothesizes that respondents (working and with one child during the first interview) continue working in the second interview and have a second birth between the two waves.

2011), which research shows that most women and men dislike (Coltrane, 2000). Thus sharing these unpleasant housework tasks can be expected to be more effective in balancing women's conflict between work and family. This is not the only possible scenario: the role of fathers' involvement in childcare gains relevance if we consider that childcare is tiresome and it cannot be postponed, and mothers are more involved in those tasks that require a rigid timetable and have more overall responsibilities (Craig, 2006). Despite these considerations, existing research shows that overall housework is perceived as more onerous and less enjoyable than childcare (Sullivan, 1996; Gershuny, 2013; Poortman and Van der Lippe, 2009). Therefore, while sharing childcare may be more directly linked to fertility outcomes, we can expect involvement in housework, especially in female-typed tasks, to be particularly beneficial for the reduction of women's work-family conflicts and, consequently, to have a greater impact than involvement in childcare on both women's work and fertility decisions. We propose the following corollary which we will test in all the three hypotheses.

COROLLARY: The involvement of fathers in housework is more effective than their involvement in childcare duties.

#### 4 Data and Methods

We use data from the Generations and Gender Survey (GGS) conducted by the Generations and Gender Programme (GGP), a social science infrastructure for research

on family dynamics and relationships. The survey provides micro and macro-level data about partnerships, fertility, attitudes of nationally representative samples of the 18-79-year-old resident population in a large set of countries. The essential feature of the GGS is that it interviews the same individual in two subsequent waves: this allows us to analyze the effect of the domestic division of tasks during the first interview on the likelihood of a second birth before the second interview, without the drawbacks of retrospective data (such as recall bias).

We use information on two subsequent waves for Bulgaria, Czech Republic, Hungary, Poland and Russia. The first interview was conducted in a different year in each country: 2004 in Russia and Bulgaria, 2004-2005 in Hungary, 2005 in Czech Republic, 2010-2011 in Poland. The second wave was collected after two to three years in Bulgaria and Russia, and after three to four years in Czech Republic, Hungary and Poland. To ensure that results are not driven by a particular country, we also perform the analysis by excluding one country at a time and we find consistent results, available upon request. The GGS provides a large set of useful information about household, education, employment and other socio-economic variables. We consider men and women separately, as GGS does not interview couples.

<sup>&</sup>lt;sup>3</sup>Data was also available for France, but we restricted the sample to a group of countries geographically close, homogeneous in terms of past history and, as explained, particularly interesting for their demographic and cultural characteristics.

<sup>&</sup>lt;sup>4</sup>We assume that the small differences in the time passed from one wave to the other and in the year of the interview do not affect the results (Aassve et al., 2015; Riederer et al., 2019). However, as explained below, we adjust each country variable with the average length of the period between waves, to avoid having this heterogeneity confound the magnitude of the odds.

We restrict our sample to individuals cohabitating in the first wave,<sup>5</sup> with one biological child younger than 3 years old <sup>6</sup> whose mother/father remains the respondent's partner in the second wave. We do not include mothers who are already pregnant with a second child during the first interview, nor fathers whose partner is pregnant, because we consider them as already having two children. Women are restricted to be under the age of 45 years old. These restrictions (cleaned from missing values) deliver a sample of 680 women and 490 men, and guarantee that we consider individuals in their fertile age and with children in need of care. We present results only for respondents who are working during the first interview, since they are facing the trade-off between work and family and are therefore the most interesting sample. This additionally restricts our sample to 540 women and 416 men.<sup>7</sup>

GGS also provides information on the individual's intention and both the individual's and the partner's desire to have a child. We use this information to conduct the analysis on some restricted samples: first, we consider individuals who declare that they want or intend to have a child, then those who declare that they want or intend to have a child and that their partner also wants a child. Fertility intentions

<sup>&</sup>lt;sup>5</sup>We also conduct the analysis on the more restricted sample of individuals who cohabitate with the same partner in the two interviews. The number of respondents is very similar and the results, available upon request, are confirmed.

<sup>&</sup>lt;sup>6</sup>We exclude individuals with an older child, who are likely to have reached their intended fertility. For robustness, we also perform the analysis including them and the results, available upon request, confirm the positive effect of housework.

<sup>&</sup>lt;sup>7</sup>We also perform the analysis on all respondents, including not working individuals, and on the restricted sample of couples of both working parents. The results, available in Supplementary Material A, confirm the positive and significant effect of fathers' involvement in housework.

are captured by the question "Do you intend to have a child in the following three years?", of which we consider both "Probably yes" and "Definitely yes" as positive answers, thus excluding "Probably not" and "Definitely not" answers. Fertility desires come from the questions "Do you want a child?" and "Does your partner want a child?": we keep those respondents who answered both "Yes" and "Not sure", thus excluding only those who were sure about not wanting a child ("No") and those who declared they couldn't have a child ("Physically impossible to have a child").<sup>8</sup> The mismatch that we find for some, very few, respondents between fertility intentions and desires has been well explained in the literature by the conceptual difference between wanting and intending to have children. In general, fertility intentions are supposed to be more predictive than fertility desires because they can be viewed as the joint couple's plan (Thomson, 1997) and they include a component of commitment in the wish for a child (Freitas and Testa, 2017). However, there is also some evidence that desires may bypass intentionality and act directly on behavior (Miller, 2011), and we thus decide to consider together individuals who either want or intend to have a child.

For employment intentions, we consider the question "Do you intend to give up your paid work in the next three years?" and restrict the sample to those who do not intend to give up their job and who therefore intend to continue working, keeping

<sup>&</sup>lt;sup>8</sup>The analysis on the more restricted samples of individuals who answered only "Yes," and the analysis on the samples of individuals whose partner only wants a child are only slightly less significant.

only those who answered "Probably not" and "Definitively not".

These sample restrictions aim at solving the selection bias of women who choose more collaborative partners because they have high fertility intentions (or desires) or high employment attachment and men who are collaborative because they want another child. To summarize, we analyze the following sub-samples of female and male respondents (all working during the first interview) according to the combination of their fertility and employment intentions<sup>9</sup> ( $N_w$  indicates the number of each sub-sample of women,  $N_m$  indicates that of men):

- who want/intend to have a child in the following three years  $(N_w=394; N_m=292)$
- who want/intend to have a child and whose partner wants a child  $(N_w=258; N_m=185)$
- who intend to continue working in the following three years  $(N_w=512; N_m=409)$
- who intend to continue working and want/intend to have a child  $(N_w=374; N_m=288)$
- who intend to continue working, want/intend to have a child and whose partner wants a child  $(N_w=244; N_m=182)$ .

GGS provides information on the number of children and on the working status of both the respondent and the partner, from which we derive our three dependent variables. The first one is a dummy that takes value 1 if the respondent has a second child between the two interviews. We attribute value 1 if two conditions are verified: the age of the youngest child in the second wave is lower than the period passed from nine months after the first and the second interview (in order to avoid the

<sup>&</sup>lt;sup>9</sup>We verify with pairwise correlations and chi-squared statistics that these various subsamples are not already affected by housework and childcare arrangements.

possibility that the mother was already pregnant when interviewed the first time) and the total number of biological children declared during the second interview is higher than the one declared during the first interview. We attribute value 1 also if the respondent declares being pregnant (or the partner is pregnant) at the time of the second interview.

The second dependent variable is a dummy that takes value 1 if the respondent works full-time (at least 40 hours per week) during the second interview. Women on maternity leave are considered as working full-time if they have a 40 hour/week contract.<sup>10</sup>

Finally, we construct a third binary variable that takes value 1 if the respondent both has a second child and works full-time during the second interview.<sup>11</sup>

To measure fathers' involvement in housework and childcare, we consider the following question: "Please tell me who in your household does the following tasks" where there are four tasks related to housework (preparing meals, washing the dishes, shopping for food and vacuum-cleaning the house)<sup>12</sup> and four related to childcare (dressing the children, putting the children to bed, staying at home with them when they are ill, playing or taking part in leisure activities).<sup>13</sup>

<sup>&</sup>lt;sup>10</sup>An additional analysis excluding those on maternity leave during the second interview, and who therefore may stop working after the end of the maternity leave, confirms our findings.

 $<sup>^{11}\</sup>mathrm{We}$  also perform this third analysis using a biprobit model and results are shown in Table 5, Appendix C.

<sup>&</sup>lt;sup>12</sup>The survey provided information for a total number of seven housework activities. Following previous studies with GGS data (Aassve et al., 2015; Riederer et al., 2019), we only consider those activities more typically performed by women.

<sup>&</sup>lt;sup>13</sup>Regarding childcare, the survey provided information for a total of six activities. We decided to keep those that match the fact that respondents only have one child younger than 3 years old,

The possible answers for each task are: "Always the respondent," "Usually the respondent," "Respondent and partner about equally," "Usually the partner," "Always the partner," "Always or usually other persons in the household," "Always or usually someone not living in the household," and "Children do it themselves," this last one only for childcare. The score variable of each task can range from 0, if the respondent always performs the task, to 4 if the partner always performs the task. We attribute the intermediate value 2 both if the two partners perform the task about equally and if the task is performed by someone else ("Always or usually other persons in the household," "Always or usually someone not living in the household," or "Children do it themselves," this last category having very few observations since children are younger than 3 years old), since in these cases there is not an unbalanced burden on either partner.

From these answers, we construct four different indicators, which we use to measure men's and women's involvement in housework and childcare.<sup>14</sup> First, we perform a factor analysis (Kroll et al., 2016) and we create an indicator as a factor score of the four tasks for housework and childcare separately: a weighted linear combination of the four tasks, with the factor loadings as weights.<sup>15</sup> Each item's

so we did not consider Helping with homework and Taking the children to/from school, day care center, babysitter or leisure activities.

<sup>&</sup>lt;sup>14</sup>In Table 6, Appendix C, we show the results of the analysis performed on the separate housework and childcare tasks: interestingly, we find that partner's involvement in washing dishes has the most significant effect, in line with the finding that sharing dishwashing is positively associated with women's relationship satisfaction (Carlson et al., 2018).

<sup>&</sup>lt;sup>15</sup>Since we are dealing with categorical variables, before performing the factor analysis we implement a polychoric correlation, a technique used for estimating the correlation between two theorized normally distributed continuous latent variables deriving from two observed ordinal variables.

contribution to the factor score depends on how strongly it relates to the factor, and it only slightly differs between women and men.<sup>16</sup>

Our factor analysis delivers the following indicators:

- 1. Housework(Women) = 0.70 \* meals + 0.79 \* dish + 0.54 \* shop + 0.65 \* clean
- 2. Housework(Men) = 0.74 \* meals + 0.80 \* dish + 0.53 \* shop + 0.64 \* clean
- 3. Childcare(Women) = 0.78 \* dressing + 0.80 \* bed + 0.69 \* illness + 0.6 \* leisure
- 4. Childcare(Men) = 0.78 \* dressing + 0.79 \* bed + 0.67 \* illness + 0.57 \* leisure

The indexes thus constructed range from 0 to around 10, with values around 5 corresponding to an equal contribution of the two partners in domestic tasks.<sup>17</sup> For women, both housework and childcare indexes have overall median values below egalitarian (2.65 and 2.9 respectively). For men both indexes have overall median values above egalitarian (7.22 for housework and 7.73 for childcare), indicating that the great majority of male respondents declare their female partner performs more than half of domestic activities. We transform these indexes into binary variables, considering country-specific thresholds: low partner involvement corresponds to values below the median of the respondent's country, while high partner involvement corresponds to values equal or above the median of the respondent's country.

ables (Holgado-Tello et al., 2010)

 $<sup>^{16}</sup>$ The factor analysis confirmed our choice about the selection of the activities: our four tasks have factor loadings higher than 0.4, suggesting a significant correlation with the latent factor, while the three tasks that we dropped (*Doing small repairs in and around the house, Paying bills and keeping financial records* and *Organizing social activities*) have factor loadings lower than 0.4. Moreover, the items chosen show acceptable reliability (Cronbach's alpha > 0.5).

<sup>&</sup>lt;sup>17</sup>See Figures 2 and 3, Appendix B, for the distributions of these indexes.

In order to allow for the comparability across countries, we also construct an alternative absolute measure of partner's involvement. We define "involved fathers" as those with a score higher than the one obtained when the mother usually performs all tasks by herself, which corresponds to 2.7 for housework and 2.9 for childcare (see Figure 2, Appendix B). In other words, "involved fathers" are those who partially share tasks with the mother, so that the mother does not usually perform all four tasks by herself. We then define "involved mothers" those who score more than 8.1 in housework and 8.4 in childcare for the sample of men (see Figure 3, Appendix B). Scores higher than these values correspond to mothers that usually or always perform all tasks. When we use these absolute measures of involvement, the results of our main text are unchanged (see Table 7, Appendix C).<sup>18</sup>

GGS contains a set of individual variables that we use as controls, as they are reported during the first interview. First, we include both the respondent's and the partner's age.<sup>19</sup> Two binary variables, one for each partner, indicate whether the individual has a college education or not.<sup>20</sup> We then consider as employed all individuals who are employed or self-employed, temporarily on maternity or paternity leave and those who work in military or social services. Since we are

<sup>&</sup>lt;sup>18</sup>In Supplementary Material B we consider as a threshold the overall median value of the countries and we construct the explanatory variable as the simple sum of the scores for each housework or childcare tasks.

<sup>&</sup>lt;sup>19</sup>Since women are younger than 45 years old, a non-linear relation between age and second child is unlikely. However, we also check that by including the squared age our results are unchanged.

<sup>&</sup>lt;sup>20</sup>In order to check that the correlation between mother's and father's education doesn't bias the results, we also perform the analysis considering only the highest education between the two partners.

considering respondents with a child younger than 3 years old, women on maternity leave during the first interview constitute a significant proportion of our sample: the experience of women on maternity leave is different from those who are currently working, but we argue that it is a still relevant condition to consider. We then include two binary variables for women's part-time and full-time work. For the sample of working women, the reference category only includes those on maternity leave, while for the sample of working men also non-working female partners are included. We then include one dummy for full-time working men (we do not include a separate dummy for part-time work because of the low number of observations). For the sample of working men, the reference category includes both those on paternity leave and those working part-time, while the sample of working women also includes non-working male partners.

Respondent characteristics relate to some survey questions for which information is available for the respondent but not for the partner, namely a previous divorce, satisfaction with the partner relationship and attitude towards gender roles. The variable of partnership quality is based on the question: "How satisfied are you with your relationship with your partner/spouse?", to which the interviewed could answer on a scale from 0 (not at all satisfied) to 10 (completely satisfied). We include two different indicators of gender attitude, one referring to the first half (women in

<sup>&</sup>lt;sup>21</sup>As a robustness check, we also perform the analysis without women on maternity leave. Despite the significantly lower number of observations, the results are confirmed in direction and significance for the majority of subsamples. Our main results are confirmed when excluding Czech Republic and Hungary, the countries with the greatest proportion of women on maternity leave.

the public sphere), the other referring to the second half of the gender revolution (men in the private sphere). The first one derives from the question "When jobs are scarce, men should have more right to a job than women" (Alesina et al., 2013; Campa et al., 2010). The scores of the answers range from 1 (strongly agree) to 5 (strongly disagree). We create an ordinary variable which takes value 1 if the respondent (strongly) agrees, value 2 if the respondent neither agrees nor disagrees, value 3 if the respondent (strongly) disagrees. The second one derives from the survey question "Children often suffer because fathers concentrate too much on work". The variable takes three values: 1 if the respondent (strongly) disagrees, 2 if the respondent neither agrees nor disagrees and 3 if the respondent (strongly) agrees. In both cases, higher values correspond to a more gender egalitarian attitude.

We also control for some characteristics of the couple and the household. Since information about income is not available for all countries, we use the survey question "Thinking of your household total monthly income, is your household able to make ends meet?" to control for the family economic situation. The possible answers score from 1 (with great difficulty) to 6 (very easily), and thus low values correspond to a difficult economic situation. A binary variable indicates whether the couple is married and two binary variables control for the use of external paid childcare and for the regular help received by grandparents. Finally, we control for the age of the first child, to consider the relevance of birth interval between first and second child. Table 1 contains descriptive statistics of our variables.

#### 4.1 Methods

We estimate the following 3 logit equations, which correspond to our 3 hypotheses:

$$P_{i,t}(NC) = \beta_0 + \beta_1(Partner's\ Involvement_{i,t-1}) + \beta_2(X_{i,t-1}) + \epsilon \tag{1}$$

$$P_{i,t}(FT) = \beta_0 + \beta_1(Partner's\ Involvement_{i,t-1}) + \beta_2(X_{i,t-1}) + \epsilon$$
 (2)

$$P_{i,t}(NCFT) = \beta_0 + \beta_1(Partner's\ Involvement_{i,t-1}) + \beta_2(X_{i,\ t-1}) + \epsilon$$
(3)

where

- $P_{i,t}$  is the probability that individual i at time t has a new child (1), works full-time (2), has a new child and works full-time (3)
- $Partner's\ Involvement_{i,t-1}$  is the indicator which captures the involvement of the partner of individual i at time t-1 for both housework and childcare activity, as described in section 4
- $X_{i, t-1}$  are control variables for individual i at time t-1 as described in section 4 and Table 1 and referred separately to the interviewed individual and her/his partner
- $\epsilon$  is the error term

We cluster the standard errors at the country level and we include country fixed effects.<sup>22</sup> To avoid having heterogeneity in the timing between first and second survey confound the magnitude of country coefficients, we adjust each country variable with the country-specific average period between the two waves.<sup>23</sup> Equations 1,2 and 3 are estimated separately for women and men.

<sup>&</sup>lt;sup>22</sup>We also control for the country-specific female and male employment rates during the first and second interview, confirming the main findings.

<sup>&</sup>lt;sup>23</sup>The results for our variables of interest remain the same without this adjustment and when we conduct the analysis separately for countries with less than 3 years (Bulgaria and Russia), and countries with more than 3 years (Czech Republic, Hungary and Poland) average period between the two waves.

We present the results of the logistic regressions, which are appropriate to identify direction and significance of the effect for our models with binary dependent variables. We are aware of the criticism that odds ratios for logistic regressions cannot be interpreted as effect measures or be reliably compared across groups because of an omitted variable bias (Mood, 2010); however, results of linear probability models are not different from the ones we present, and thus serve as a robustness check against this potential problem.

#### 5 Results

#### 5.1 Fathers' involvement and fertility outcomes

Table 2A and 2B show the odds ratio of the estimates for Equation 1 for the sample of women and men respectively. Table 2A shows that fathers' involvement in childcare is significantly related to the birth of a second child only for two subsamples of working women, while the involvement in household activities is positive and significant for all the sub-samples considered, suggesting a more robust correlation. The strongest results are found for the sub-sample where both partners want a child (column 3), and for the subsample of working women who intend to continue working and both partners want a child (column 6): the odds of a second child are respectively 1.73 and 1.67 times higher if the father has a high rather than a low involvement in housework activities. These results suggest that an equal sharing of

domestic activity is a significant driver of the choice of working women to have an additional child. Among the control variables, education of the father (consistently with Trimarchi and Van Bavel (2017)) and the mother are relevant. Interestingly, grandparents' support does not seem to be significant for women's fertility decisions.

Table 2B shows that, when we consider men instead of women, the involvement of the mother is not significant. This result is in line with the fact that women always contribute to domestic and childcare activities, while men are the marginal contributors.<sup>24</sup> The age of the mother is negatively, though weakly, related to the probability of a second child, as well as the age of the first child, the presence of a previous divorce and the full-time work of the father; however, the results of these last two variables could be biased by the unbalanced distributions of the observations in their categories. On the contrary, egalitarian attitude (related to the second shift) of the father and good economic condition of the couple matter positively.<sup>25</sup>

<sup>&</sup>lt;sup>24</sup>Considering the positive effect of fathers' involvement on women's fertility outcomes, one could expect a symmetric negative effect of mother's involvement for men. However, our female and male respondents are not partnered with each other and, moreover, women and men have different perceptions about theirs and their partner contribution to housework (Lee and Waite, 2005).

<sup>&</sup>lt;sup>25</sup>Coefficients for country variables that account for the average time between waves capture contextual differences between countries, with respect to institutional settings, family, and pronatalist policies.

## 5.2 Fathers' involvement and maternal employment outcomes

Table 3A estimates Equation 2 for women. Fathers' involvement in housework during the first interview is positively and significantly associated with the probability that the woman works full-time during the second interview in all sub-samples. Control variables play an important role, particularly working full-time at the time of the first interview. Satisfaction with the relationship is negatively and significantly related to the probability of the woman's full-time work, while grandparents' support with childcare is positive and significant. This is an interesting finding for Central and Eastern European countries, where coresidence with grandparents is common (Jappens and Van Bavel, 2012).

Table 3B estimates Equation 2 for men. As expected, we observe that the probability of working full-time for men is not affected by the division of domestic tasks.

## 5.3 Fathers' involvement, fertility and maternal employment outcomes

We finally estimate Equation 3 and consider the joint probability of having a second child and working full-time. Table 4A shows that fathers' involvement in household work is positive and significant in all sub-samples. The involvement of fathers in childcare is positive, but never significant. The involvement of mothers is again not

significantly related to fathers' decisions (Table 4B).

In Supplementary Material C, we also analyze heterogeneous effects within the group of women and we find that fathers' involvement helps to support the decision of more career-oriented women to have a second child and the decision of less career-oriented women to work full-time.

#### 6 Discussion and conclusion

Considering five Central and Eastern European countries, we show that when fathers participate in household chores, it is more likely that women have a second child and work full-time. The involvement of women in housework and childcare plays instead no role for men's decisions. These results are confirmed for women who want or intend to have a child, women whose partners also want a child or women who intend to continue working. While fathers' involvement in housework is always positive and significant for women's fertility and work decisions, involvement in childcare does not play the same consistent, significant role. However, when we consider women's probability of having a second child, fathers' involvement in childcare is also positive and in some sub-samples it turns out also to be significant. It is instead never significant for maternal employment.

Our results refer to the context of Central and Eastern European countries, which are interesting because of both female employment and fertility trends: these countries show levels of women's employment in line with the European average (higher than in Southern and lower than in Northern Europe) and a current fertility rate below replacement. These countries offer the unique opportunity to understand the role of fathers' involvement in a context where women have been traditionally integrated in the labor market and to draw lessons for countries where the role of women as workers is still evolving. It will be worth testing our results in different contexts and analyzing different societal-level factors, when data from a larger set of countries becomes available. Future research will also explain how other demographic dynamics, such as divorce, are influenced by the allocation of family chores within the couple and the birth of a second child.

Population aging and decline accompanied by low fertility rates raise doubts about the future sustainability of welfare states. Observed fertility that is lower than desired also suggests that individuals and couples have fewer children than they want (Morgan, 2003); indeed, our results show that sharing domestic activities may help couples to close this gap (Esping-Andersen, 2017), so that favoring fertility could have positive effects both at the social and individual level. Moreover, gender equality in the private sphere can also reinforce gender equality in the public sphere.

Our finding that a greater involvement of fathers in housework may increase fertility, while allowing women to continue working full-time, has strong policy implications. Policies that encourage a symmetric division of labor within the couple, such as exclusive paternity leaves, may sustain the double-earner family model and the recovery of fertility rates, leading towards a more gender egalitarian equilibrium where mothers work and couples reach their fertility intentions.

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### 7 Tables

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Table 1: Descriptive statistics by country

# Working respondents with one child during the first interview ${\bf Partners\ working\ or\ not}$

	Bulga	ırıa	Czech R	epublic	Hung	$\mathbf{r}\mathbf{y}$	Polai	$\mathbf{nd}$	Russ	ia	Tota	al
	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men
Partner's involvement	0.00	7.50	0.00	0.14	0.41	7 7F	0.41	7.57	0.71	7.41	0.00	7.61
in housework $[1; \approx 10]$	3.33	7.53	2.36	8.14	2.41	7.75	3.41	7.57	2.71	7.41	2.93	7.61
Partner's involvement	2.60	8.19	2.31	8.54	2.65	7.55	3.49	7.72	2.46	8.34	2.80	7.91
in childcare $[1; \approx 11]$	2.00	0.13	2.31	0.04	2.00	1.00	0.40	1.12	2.40	0.04	2.00	1.31
Mother's characteristics												
Age	27.43	27.89	26.45	29.53	27.22	29.03	29.70	29.18	26.03	26.56	27.70	28.44
College education	45%	39%	10%	16%	25%	16%	63%	48%	59%	64%	44%	39%
Not working	-	20%	-	0%	-	8%	-	29%	-	28%	-	20%
Currently on maternity leave	48%	40%	97%	95%	80%	69%	38%	13%	57%	46%	59%	43%
Part-time working	5%	7%	0%	0%	5%	3%	14%	11%	13%	8%	8%	7%
Full-time working	47%	32%	3%	5%	16%	20%	48%	48%	29%	18%	33%	30%
Father's characteristics												
Age	32.42	30.75	30.77	30.74	30.48	30.20	32.64	31.41	29.63	28.00	31.41	30.33
College education	29%	24%	10%	16%	17%	17%	39%	39%	40%	38%	29%	29%
Not working	15%	-	3%	-	9%	-	5%	-	4%	-	8%	-
Currently on paternity leave	0%	0%	0%	0%	1%	4%	1%	0%	0%	0%	0%	1%
Part-time working	4%	5%	0%	5%	6%	6%	4%	10%	9%	4%	5%	7%
Full-time working	81%	95%	97%	95%	84%	89%	90%	90%	87%	96%	86%	92%
Respondent's characteristics												
Previous divorce	4%	0%	6%	0%	2%	2%	1%	2%	5%	10%	3%	3%
Satisfaction with relation to partner $[1;10]$	8.92	8.98	9.26	8.79	8.86	8.97	9.11	9.44	7.85	8.94	8.82	9.10
Egalitarian attitude - First half [1;3]	2.53	1.90	2.45	1.84	2.39	2.22	2.47	2.21	2.19	2.04	2.42	2.11
Egalitarian attitude - Second half $\left[1;3\right]$	2.43	2.38	2.52	2.63	2.76	2.71	2.67	2.64	2.64	2.51	2.63	2.58
Couple characteristics												
Household able to make ends meet [1;6]	2.55	2.50	3.10	2.89	3.39	3.23	3.73	3.63	2.69	2.81	3.15	3.12
Married	80%	86%	77%	89%	80%	82%	92%	91%	91%	90%	84%	87%
External childcare	35%	33%	6%	0%	20%	34%	25%	27%	36%	29%	26%	29%
Grandparents' help with childcare	32%	26%	10%	5%	58%	47%	32%	20%	39%	28%	39%	29%
Age of the first child	1.68	1.61	1.71	1.68	1.14	1.41	1.21	1.57	1.55	1.38	1.38	1.50
Proportion with a second child	0107	0107	FF07	0107	4007	2007	4107	E007	1007	1007	9.607	2207
in the second interview	21%	21%	55%	21%	48%	38%	41%	52%	19%	10%	36%	33%
Number of years	2.52	2.52	3.08	3.11	3.96	3.95	3.88	3.84	2.87	2.86	3.38	3.40
between the two waves	2.02	2.02	J.00	3.11	J.90	J.90	0.00	5.04	2.01	2.00	J.JO	0.40
Number of respondents	135	84	31	19	161	113	138	128	75	72	540	416

Table 2: Odds ratios for the probability of having a second child

		i allei A.	working we			
	All sample	Want/Intend to have a child	Both partners want a child	Intend to work	Intend to work & Want/Intend to have a child	Intend to work & Both partners want a child
Father's involvement						
in housework (ref. Low)						
High	1.27*	1.56**	1.73***	1.29*	1.55**	1.67***
Father's involvement in childcare (ref. Low)						
High	1.25	1.73*	1.98	1.30	1.76*	2.12
Mother's characteristics						
Age	0.98	0.99	1.07**	0.98	0.99	1.07**
College education	1.27*	1.19	0.74*	1.23**	1.16	0.74*
Working part-time	1.06	1.08	0.24**	1.04	1.05	0.22*
Working full-time	1.17	1.18	0.51	1.14	1.14	0.47
Previous divorce	0.88	1.01	0.55	1.05	1.43	0.99
Satisfaction with relationship to partner	1.09*	1.00	0.91*	1.09*	1.00	0.91*
Egalitarian attitude - first half	1.01	1.22	1.13	1.04	1.21	1.14
Egalitarian attitude - second half	1.16	1.15	0.94	1.18	1.18	0.98
Father's characteristics						
Age	0.96+	0.97+	0.99	0.96+	0.97+	0.99
College education	1.33	1.30	1.45**	1.27	1.28	1.41**
Working full-time	1.44	1.30	1.27	1.26	1.12	1.12
Couple characteristics						
The household is able to make ends meet	1.17	1.21+	1.13	1.13	1.15	1.08
Married couple	1.36	1.41	2.07+	1.34	1.38	2.19+
External help with childcare	1.02	0.77	0.89	1.07	0.80	0.90
Grandparents' help with childcare	0.84	0.96	0.99	0.82	0.98	1.00
Age of the youngest child	0.98	0.92	1.10	0.94	0.91+	1.09
Country (ref. Bulgaria)						
Czech Republic	1.63***	1.73***	1.56***	1.69***	1.82***	1.61***
Hungary	1.36***	1.38***	1.21***	1.34***	1.36***	1.19**
Poland	1.16***	1.17***	1.12**	1.15***	1.17***	1.12**
Russia	0.89*	0.91*	0.95	0.88*	0.99	1.02
Constant	0.13***	0.11***	0.04***	0.15***	0.14***	0.04***
Observations	540	394	258	512	374	244

<sup>\*\*\*</sup> p<0.001, \*\* p<0.01, \* p<0.05, + p<0.10

Panel B: Working men

	All sample	Want/Intend to have a child	Both partners want a child	Intend to work	Intend to work & Want/Intend to have a child	Intend to work & Both partners want a child
	(1)	(2)	(3)	(4)	(5)	(6)
Mother's involvement in housework (ref. Low)						
High	0.82	0.86	1.79	0.86	0.88	1.86
Mother's involvement in childcare (ref. Low)						
High	0.83	0.69	0.49**	0.86	0.67+	0.45**
Mother's characteristics						
Age	0.93***	0.92**	0.89***	0.93***	0.93*	0.90***
College education	1.52	1.55	0.86	1.44	1.55	0.82
Working part-time	1.39	1.73	3.54+	1.47+	1.65	3.46+
Working full-time	0.92	1.06	1.36	0.92	1.02	1.34
Father's characteristics						
Age	0.98	0.99	0.99	0.97	0.98	0.98
College education	1.08	0.99	1.23	1.19	0.98	1.17
Working full-time	0.49***	0.48*	0.47**	0.50***	0.47**	0.46**
Previous divorce	0.18***	0.17***	-	0.20***	0.18***	-
Satisfaction with relationship to partner	1.01	1.06	1.08	0.99	1.04	1.03
Egalitarian attitude - first half	1.10	1.15	1.17	1.11	1.12	1.13
Egalitarian attitude - second half	1.19***	1.34*	1.24	1.24***	1.40*	1.29
Couple characteristics						
The household is able to make ends meet	1.18+	1.36***	1.87***	1.18	1.36***	1.88***
Married couple	1.62	1.85	2.14	1.61	1.88	2.23
External help with childcare	1.18	1.06	1.15	1.27+	1.09	1.20
Grandparents' help with childcare	1.61***	1.19	1.56	1.62***	1.19	1.52
Age of the youngest child	0.88+	0.85*	0.59***	0.87*	0.85*	0.58**
Country (ref. Bulgaria)						
Czech Republic	1.10+	0.97	1.32***	1.13*	0.97	1.32**
Hungary	1.21***	1.25***	1.21*	1.20***	1.23***	1.17
Poland	1.39***	1.29***	1.46***	1.38***	1.26***	1.42***
Russia	0.63***	0.54***	0.62***	0.58***	0.54***	0.62***
Constant	1.66	0.71	0.76	2.21+	0.78	1.19
Observations	416	292	185	409	288	182

<sup>\*\*\*</sup> p<0.001, \*\* p<0.01, \* p<0.05, + p<0.10

Table 3: Odds ratios for the probability of working full-time during the second wave

Pane	<sub>Δ</sub> 1 Δ	· V	Vor	king	women
1 and	H	L. V	V OI I	KIIIZ	women

	All sample	Want/Intend to have a child	Both partners want a child	Intend to work	Intend to work & Want/Intend to have a child	Intend to work & Both partners want a child
	(1)	(2)	(3)	(4)	(5)	(6)
Father's involvement						
in housework (ref. Low)						
High	1.48+	1.83***	1.80**	1.45+	1.76***	1.69***
Father's involvement in childcare (ref. Low)						
High	0.81	0.72	0.79	0.79	0.73	0.83
	0.01	V.12		····	····	0.00
Mother's characteristics	1.05+	1.07	1.02	1.04	1.06	1.01
Age College education	1.05+	1.13	1.03 1.33	1.04	1.21	1.49
ŭ	0.65*	0.88	0.86	0.68**	0.98	0.88
Working part-time Working full-time	2.42***	3.00**	2.70***	2.30***	2.70**	2.35***
Previous divorce	0.84	0.38	0.27+	0.98	0.36	0.22
Satisfaction with relationship to partner	0.85**	0.79***	0.27+	0.86**	0.79***	0.77+
Egalitarian attitude - first half	0.95	0.80	0.79+	0.94	0.82	0.88
Egalitarian attitude - mst nan Egalitarian attitude - second half	0.93	0.78*	0.83	0.80	0.85+	0.88
Father's characteristics	0.11	0.10	0.01	0.00	0.00	0.00
	1.00	0.00	0.00	1.00	0.00	0.00
Age	1.00	0.99	0.98	1.00	0.99	0.99
College education	0.93	0.87	0.79	0.85	0.85	0.72
Working full-time	1.28	1.28	1.19	1.33	1.26	1.02
Couple characteristics						
The household is able to make ends meet	0.91*	1.02	1.05	0.90+	1.01	1.07
Married couple	1.03	0.78	1.69*	1.03	0.72	1.82
External help with childcare	1.42	0.98	1.49	1.43	1.06	1.71
Grandparents' help with childcare	1.53**	1.40**	1.32**	1.49*	1.31*	1.21*
Age of the youngest child	0.92	1.04	0.87	0.92	1.06	0.89
Country (ref. Bulgaria)						
Czech Republic	0.56***	0.53***	0.56***	0.57***	0.54***	0.55***
Hungary	0.76***	0.74***	0.82**	0.76***	0.73***	0.79***
Poland	0.95***	0.97	1.04	0.93***	0.94***	1.00
Russia	0.72***	0.68***	0.73**	0.67***	0.64***	0.66***
Constant	3.22	6.51*	8.38	3.65	8.57**	15.78
Observations	540	394	258	512	374	244

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05, + p<0.10

Panel B: Working men

	All sample	Want/Intend to have a child	Both partners want a child	Intend to work	Intend to work & Want/Intend to have a child	Intend to work & Both partners want a child
	(1)	(2)	(3)	(4)	(5)	(6)
Mother's involvement in housework (ref. Low)						
High	1.01	0.99	1.32	0.97	0.97	1.35
Mother's involvement in childcare (ref. Low)						
High	1.31	1.04	1.37	1.41	1.09	1.36
Mother's characteristics						
Age	0.96	0.90***	0.89*	0.94	0.90***	0.90+
College education	1.35	1.40	1.03	1.40	1.49	1.15
Working part-time	0.77	1.25	1.81	0.80	1.28	1.74
Working full-time	0.75	0.60	0.85	0.74	0.57	0.78
Father's characteristics						
Age	1.04	1.10*	1.10+	1.05	1.10*	1.10+
College education	1.05	1.08	1.65	1.09	1.13	1.70
Working full-time	2.80**	4.21***	3.84*	2.92**	4.10***	3.74*
Previous divorce	1.65	-	-	1.35	-	-
Satisfaction with relationship to partner	1.14***	1.18	0.98	1.16***	1.24*	1.02
Egalitarian attitude - first half	1.07	0.97	1.17	1.10	0.98	1.17
Egalitarian attitude - second half	1.27*	1.63*	2.38***	1.31**	1.65*	2.44***
Couple characteristics						
The household is able to make ends meet	1.18	1.25+	1.09	1.19	1.21	1.06
Married couple	0.92	1.58	2.61***	0.88	1.56	2.55***
External help with childcare	1.54+	1.65	0.84	1.57+	1.61	0.83
Grandparents' help with childcare	1.53**	1.28	1.23	1.51**	1.31	1.26
Age of the youngest child	0.88	0.77*	0.86	0.89	0.78+	0.89
Country (ref. Bulgaria)						
Czech Republic	0.97	0.94	0.71***	0.92	0.95	0.68***
Hungary	0.91+	0.83***	0.74*	0.93	0.84***	0.75*
Poland	0.98	0.90*	0.76***	0.98	0.91+	0.75**
Russia	0.89*	0.77**	0.76+	0.88*	0.78**	0.76+
Constant	0.26	0.10*	0.18	0.20	0.06**	0.11
Observations	416	284	185	409	281	182

<sup>\*\*\*</sup> p<0.001, \*\* p<0.01, \* p<0.05, + p<0.10

Table 4: Odds ratios for the probability of having a second child and working full-time during the second wave

### Panel A: Working women

	All sample	Want/Intend to have a child	Both partners want a child	Intend to work	Intend to work & Want/Intend to have a child	Intend to work & Both partners want a child
	(1)	(2)	(3)	(4)	(5)	(6)
Father's involvement						
in housework (ref. Low)						
High	1.62+	1.77**	2.22*	1.67+	1.73*	2.07*
Father's involvement						
in childcare (ref. Low)						
High	1.28	1.57	2.61	1.31	1.54	2.47
Mother's characteristics						
Age	1.06	1.11+	1.14+	1.06	1.12+	1.15+
College education	1.24	1.06	0.93	1.28	1.01	0.95
Working part-time	1.29	1.31	0.24*	1.16	1.23	0.23*
Working full-time	1.46	1.76*	0.55	1.32	1.65	0.48
Previous divorce	0.46	0.36	-	0.60	0.57	-
Satisfaction with relationship to partner	0.92*	0.84***	0.78***	0.91***	0.83***	0.78***
Egalitarian attitude - first half	0.83	0.97	0.74	0.84	0.98	0.71
Egalitarian attitude - second half	0.98	0.93	0.56	0.98	0.93	0.57
Father's characteristics						
Age	0.96	0.96	1.04	0.96	0.97	1.04
College education	0.72	0.62**	0.56***	0.60	0.57***	0.49***
Working full-time	1.10	0.94	0.60	0.92	0.78	0.53
Couple characteristics						
The household is able to make ends meet	1.30*	1.23	0.94	1.30	1.16	0.91
Married couple	1.24	1.00	11.34***	1.24	1.03	12.12***
External help with childcare	1.29	0.89	0.99	1.31	0.90	1.07
Grandparents' help with childcare	0.69*	0.97	1.11	0.70+	1.05	1.22
Age of the youngest child	0.88	0.88	1.04	0.85+	0.88	1.04
Country (ref. Bulgaria)	<u> </u>					
Czech Republic	-	-	-	-	-	-
Hungary	0.94	0.90+	0.91	0.91	0.90+	0.88
Poland	1.12***	1.14***	1.22***	1.10**	1.15***	1.19***
Russia	0.87**	0.96	1.13	0.82**	1.02	1.10
Constant	0.09***	0.08**	0.01***	0.11***	0.08**	0.02***
Observations	509	366	232	483	348	221

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05, + p<0.10

Panel B: Working men

	All sample	Want/Intend to have a child	want a child		to have a child	& Both partners want a child
	(1)	(2)	(3)	(4)	(5)	(6)
Mother's involvement in housework (ref. Low)						
High	0.85	0.99	1.87	0.89	1.02	1.95
Mother's involvement in childcare (ref. Low)						
High	0.90	0.65	0.49*	0.95	0.63+	0.44*
Mother's characteristics						
Age	0.91***	0.89***	0.85***	0.90***	0.89**	0.86***
College education	1.84	1.79	0.95	1.79	1.81	0.90
Working part-time	1.42	1.64	3.41	1.51	1.55	3.29
Working full-time	1.07	1.14	1.60*	1.06	1.08	1.56
Father's characteristics						
Age	1.01	1.04	1.03*	1.00	1.04	1.03+
College education	0.96	0.89	0.98	1.07	0.90	0.95
Working full-time	1.42**	1.68*	1.41	1.52**	1.63*	1.40
Previous divorce	0.21**	0.22**	-	0.24**	0.24**	-
Satisfaction with relationship to partner	1.10***	1.15+	1.06	1.08***	1.14	1.01
Egalitarian attitude - first half	1.04	1.08	1.12	1.06	1.06	1.07
Egalitarian attitude - second half	1.22***	1.40**	1.45	1.28***	1.48*	1.53
Couple characteristics						
The household is able to make ends meet	1.16	1.33**	1.80***	1.15	1.32*	1.80**
Married couple	1.37	1.87	2.20	1.34	1.88	2.28
External help with childcare	1.45*	1.50+	1.31	1.60**	1.54*	1.35
Grandparents' help with childcare	2.05***	1.53*	1.77*	2.06***	1.54**	1.73*
Age of the youngest child	0.80***	0.73***	0.57***	0.78***	0.73***	0.57***
Country (ref. Bulgaria)						
Czech Republic	0.77***	0.76***	1.07	0.79***	0.76***	1.05
Hungary	1.22**	1.26***	1.18+	1.21**	1.24***	1.14
Poland	1.43***	1.33***	1.42***	1.42***	1.31***	1.37***
Russia	0.71***	0.65***	0.69***	0.65***	0.64***	0.69***
Constant	0.18	0.04+	0.17	0.23*	0.04+	0.24
Observations	416	292	185	409	288	182

<sup>\*\*\*</sup> p<0.001, \*\* p<0.01, \* p<0.05, + p<0.10

# 8 Appendix

- $\bullet$   ${\bf Appendix}~{\bf A:}$  More information about the five countries analyzed
- Appendix B: Distributions of partner's involvement scores
- Appendix C: Biprobit, decomposition by tasks and absolute measure

### Appendix A

### More information about the five countries analyzed

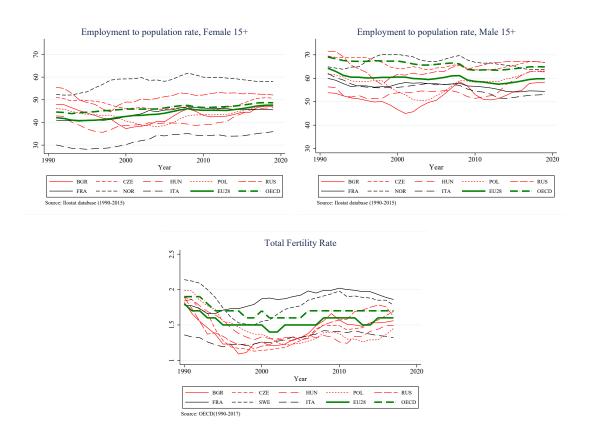


Fig. 1. Employment and Fertility

Figure 1 shows employment (1991-2019) and fertility (1990-2017) rates for the five countries analyzed.

Russia has the highest level of female employment. When socialist policies were dismantled, female employment initially declined, but it soon started to recover with the beginning of the new century. Even if it is not yet at its original level, it is still the highest among these countries. Female employment is also fairly high in

Czech Republic where, after 1989, income actually rose and unemployment remained minimal (Caldwell and Schindlmayr, 2003). According to Michoń et al. (2010), women in the Czech Republic delay motherhood and devote larger amounts of time to work at the expense of the family if they are confronted with a lack of effective support to reconcile work and family. Russia and Czech Republic also have the highest levels of male employment.

Bulgaria and Poland were more severely hit by political and institutional changes after 1989, so that female employment decreased significantly, as did male employment. Despite a slight recovery at the beginning of the new century, female employment is still lower than in the past and there is in these countries a high rate of inactivity among men as well (Michoń et al., 2010). Interestingly, the higher employment rate of Czech Republic and Russia goes with fertility rates higher than in Poland and Hungary, and similar to those of Bulgaria.

In their study about family policies, Frejka and Gietel-Basten (2016) identify four types of policies in post-socialist countries. Russia and Bulgaria are characterized by a *Pro-natalist policies model*, in which the main objective of family policies is to raise fertility and the principal tools to reach this goal are financial. Fertility policies in Bulgaria specifically aim at increasing second births. In Russia, broad pronatalist policies were implemented in 2007, almost doubling the share of family support in GDP. Czech Republic has a *Temporary male bread-winner model*, with family policies combining an entitlement for long parental leaves with a low availability of

childcare. Employers tend to discriminate against mothers and working conditions make it difficult to balance employment and household responsibilities: the impact of motherhood is therefore still high, and the employment rate of women with children under the age of 6 is more than 20 percentage points lower than that of childless women (EC, 2017). Finally, Poland and Hungary have a *Conventional family policies model*, with a combination of maternal leaves, child benefits and childcare. In Poland, the fertility decline was initially perceived as a temporary reaction to the transformation process and governments were slow in implementing policies to favor fertility. In Hungary, political instability has affected family policies and the extent of assistance is not sufficient to alleviate the employment-childrearing dilemma.

## Appendix B

### Distributions of partner's involvement scores

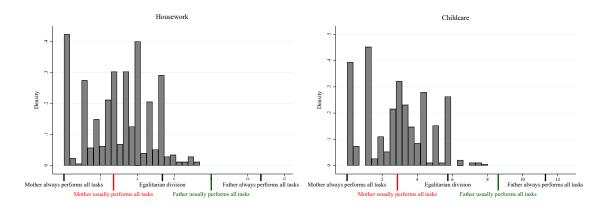


Fig. 2. Father's Involvement Score for the Sample of Women

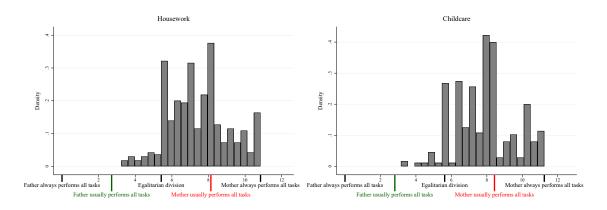


Fig. 3. Mother's Involvement Score for the Sample of Men

# Appendix C

Biprobit, decomposition by tasks and absolute measure

Table 5: Biprobit model to estimate the joint probability of having a second child and working full-time

			P	anel A:	Work	ing wo	men					
	All sam	All sample		Want/Intend to have a child		Both partners want a child		Intend to work		Intend to work & Want/Intend to have a child		to work partners child
	Second child (1)	Work full-time (2)	Second child (3)	Work full-time (4)	Second child (5)	Work full-time (6)	Second child (7)	Work full-time (8)	Second child (9)	Work full-time (10)	Second child (11)	Work full-time (12)
Father's involvement in housework (ref. Low)	1.15*	1.27+	1.30**	1.44***	1.39***	1.42**	1.16*	1.25+	1.30**	1.41***	1.37***	1.36**
Father's involvement in childcare (ref. Low) High	1.15	0.89	1.40*	0.84	1.50	0.89	1.18	0.87	1.42*	0.84	1.58+	0.91
Control variables Country dummies	√ √	√ √	√ √	√ √	√ √	√ √	√ √	√ √	√ √	√ √	√ √	√ √
Athrho Observations	540	0.70+ 540	394	0.68 394	258	0.71 258	512	0.69+ 512	374	0.66+ 374	244	0.68 244

### Panel B: Working men

	All sample		Want/Intend to have a child		Both partners want a child		Intend to work		Intend to work & Want/Intend to have a child		Intend to work & Both partners want a child	
	Second child (1)	Work full-time (2)	Second child (3)	Work full-time (4)	Second child (5)	Work full-time (6)	Second child (7)	Work full-time (8)	Second child (9)	Work full-time (10)	Second child (11)	Work full-time (12)
Mother's involvement in housework (ref. Low)	0.91	0.99	0.93	0.99	1.47+	1.17	0.94	0.97	0.95	0.98	1.51+	1.18
Mother's involvement in childcare (ref. Low)	0.87	1.17	0.79	1.03	0.65**	1.17	0.90	1.21	0.76+	1.06	0.62***	1.18
Control variables Country dummies	√ √	√ √	√ √	√ √	√ √	√ √	√ √	√ √	√ √	√ √	√ √	√ √
Athrho Observations	0.92 416	416	0.80* 292	292	0.68** 188	188	0.91 409	409	0.80* 288	288	0.68** 185	185

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05, + p<0.10

Table 6: Decomposition by task

Odds ratios for the	pro	babil	ity o	f havin	gas	second	chile	l for wo	orking	g wome	n	
	All sa	ample		/Intend ve a child		partners a child	Inten	d to work	Intend to work  & Want/Intend to have a child		& Bo	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Father's involvement in housework (ref. <=1)												
Preparing meals (>=2)	0.75*	-	0.62 +	=	0.70	=	0.74**	=	0.61*	=	0.68	-
Washing dishes (>=2)	1.27*	-	1.63**	-	1.27	-	1.30*	-	1.68*	-	1.32	-
Doing the shopping (>=2)	1.41+	-	1.51	-	1.62	-	1.54*	-	1.69*	-	1.90*	-
Cleaning (>=2)	0.70	-	0.72	-	0.85	=	0.69	-	0.67 +	-	0.78	=
Father's involvement in childcare (ref. <=1)												
Dressing the children (>=2)	_	1.04	-	1.30	_	1.29	-	1.05	=	1.34	_	1.33
Putting to bed (>=2)	_	1.22*	_	1.32	_	1.06	-	1.26+	_	1.32	_	1.08
Staying at home when ill (>=2)	_	1.04	_	1.02	_	1.51	-	1.02	_	0.98	_	1.51
Leisure activities (>=2)	_	0.84	_	0.91	_	1.21	-	0.79	_	0.88	_	1.17
Control variables & Country dummies	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>
Observations	<b>v</b> 540	<b>v</b> 540	<b>v</b> 394	<b>v</b> 394	<b>v</b> 258	v 258	<b>v</b> 512	<b>v</b> 512	<b>v</b> 374	<b>v</b> 374	244	244
OSSEL VALUOID	040	040	J#4	JJ1	200	200	012	U12	21.4	JIT	Arri	2-111
Odds ratios for the	pro	babil	ity o	f worki	ng f	ull-time	e dur	ring the	seco	nd wav	e	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Father's involvement in housework (ref. $<=1$ )												
Preparing meals (>=2)	1.26	-	1.32*	-	1.57 +	-	1.21	-	1.28+	-	1.55 +	-
Washing dishes (>=2)	1.14	-	1.33	=	1.37	=	1.07	Ξ	1.30	=	1.43	-
Doing the shopping (>=2)	0.83**	-	0.86 +	-	0.79	-	0.83*	=	0.81***	-	0.72	=
Cleaning (>=2)	1.03	-	1.05	-	0.86	-	1.12	-	1.18	-	0.95	-
Father's involvement in childcare (ref. <=1)												
Dressing the children (>=2)	-	1.16	-	1.42	-	1.65	-	1.09	-	1.35	-	1.59
Putting to bed (>=2)	-	0.71	-	0.67	-	0.65	-	0.74	=	0.72	-	0.71
Staying at home when ill (>=2)	-	1.98**	-	2.42***	-	2.55*	-	1.80*	-	2.18***	-	2.11+
Leisure activities (>=2)	-	0.78	-	0.73	-	0.44	÷	0.81	-	0.74	-	0.45
Control variables & Country dummies	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>	✓
Observations	540	540	394	394	258	258	512	512	374	374	244	244
Odds ratios for the probability of	of ha	ving	a se	cond ch	ild a	and wo	rking	g full-ti	me d	uring tl	ne se	econd way
<u> </u>	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Father's involvement in housework (ref. <=1)								-				
· · · · · · · · · · · · · · · · · · ·	0.88*	=	0.72	-	0.72	-	0.87+	-	0.71	-	0.73	-
Preparing meals (>=2)					2.15+	_	1.43	-	1.88**	=	2.47+	_
	1.36	-	1.74**	-	2.10							
Washing dishes (>=2)	1.36 1.16	-	1.74** 1.10	=	0.96	-	1.23	-	1.19	-	1.14	-
Washing dishes (>=2) Doing the shopping (>=2)				- -				- -	1.19 0.71	=	1.14 0.69*	
Washing dishes (>=2) Doing the shopping (>=2) Cleaning (>=2)	1.16		1.10	-	0.96		1.23	-		-		
Preparing meals (>=2) Washing dishes (>=2) Doing the shopping (>=2) Cleaning (>=2)  Father's involvement in childcare (ref. <=1) Dressing the children (>=2)	1.16		1.10	1.21	0.96		1.23	1.01		1.44		
Washing dishes (>=2) Doing the shopping (>=2) Cleaning (>=2) Father's involvement in childcare (ref. <=1) Dressing the children (>=2)	1.16	-	1.10 0.78	-	0.96 0.87	-	1.23 0.70**	1.01	0.71	1.44		-
Washing dishes (>=2) Doing the shopping (>=2) Cleaning (>=2) Father's involvement in childcare (ref. <=1) Dressing the children (>=2) Putting to bed (>=2)	1.16	0.98 0.92	1.10 0.78	1.21	0.96 0.87	2.57	1.23 0.70**		0.71	0.75		2.93 0.50*
Washing dishes (>=2) Doing the shopping (>=2) Cleaning (>=2) Father's involvement in childcare (ref. <=1) Dressing the children (>=2) Putting to bed (>=2) Staying at home when ill (>=2)	1.16	0.98	1.10 0.78	1.21 0.90	0.96 0.87	2.57 0.63+	1.23 0.70**	0.89	0.71			2.93
Washing dishes (>=2) Doing the shopping (>=2) Cleaning (>=2) Father's involvement in childcare (ref. <=1) Dressing the children (>=2)	1.16 0.71* - -	0.98 0.92 2.68***	1.10 0.78	1.21 0.90 3.06**	0.96 0.87 - -	2.57 0.63+ 3.04***	1.23 0.70** - -	0.89 2.86***	0.71 - -	0.75 3.25***	0.69*	2.93 0.50* 3.45***

Table 7: Absolute measures of partner's involvement

#### Panel A: Working women

#### Odds ratios for the probability of having a second child

	All sample	Want/Intend to have a child	Both partners want a child	Intend to work	Intend to work & Want/Intend to have a child	Intend to work & Both partners want a child
	(1)	(2)	(3)	(4)	(5)	(6)
Father's involvement (ref. The mother						
at least usually performs all tasks)						
Father involved in housework	1.26*	1.47*	1.71***	1.28+	1.46*	1.64***
Father involved in childcare	1.23	1.55**	1.80+	1.26	1.56*	1.92*
Controls & Country variables	✓	✓	✓	✓	✓	✓
Observations	540	394	258	512	374	244

#### Odds ratios for the probability of working full-time during the second wave

	(1)	(2)	(3)	(4)	(5)	(6)	
Father's involvement (ref. The mother							
at least usually performs all tasks)							
Father involved in housework	1.48*	1.83***	1.91**	1.44*	1.75***	1.80***	
Father involved in childcare	0.75+	0.69	0.64	0.75	0.71	0.67	
Controls & country variables	✓	✓	✓	✓	✓	✓	
Observations	540	394	258	512	374	244	

### Odds ratios for the probability of having a second child and working full-time during the second wave

	(1)	(2)	(3)	(4)	(5)	(6)	
Father's involvement (ref. The mother							
at least usually performs all tasks )							
Father involved in housework	1.68*	1.84***	2.43*	1.73*	1.83***	2.30*	
Father involved in childcare	0.82	0.87	1.20	0.81	0.83	1.13	
Controls & country variables	✓	✓	✓	✓	✓	✓	
Observations	509	366	232	483	348	221	

<sup>\*\*\*</sup> p<0.001, \*\* p<0.01, \* p<0.05, + p<0.10

Panel B: Working men

	All sample	Want/Intend to have a child	Both partners want a child	Intend to work	Intend to work & Want/Intend to have a child	Intend to work & Both partners want a child
	(1)	(2)	(3)	(4)	(5)	(6)
Mother's involvement (ref. The mother						
less than usually performs all tasks)						
Mother more involved in housework	0.78	0.75	1.21	0.81	0.76	1.22
Mother more involved in childcare	0.99	0.83	0.63	1.05	0.84	0.63
Controls & country variables	✓	✓	✓	✓	✓	✓
Observations	416	292	185	409	288	182

### Odds ratios for the probability of working full-time during the second wave

	(1)	(2)	(3)	(4)	(5)	(6)		
Mother's involvement (ref. The mother								
less than usually performs all tasks)								
Mother more involved in housework	0.82	0.86	1.37*	0.79	0.84	1.42**		
Mother more involved in childcare	1.56*	1.46	2.12	1.70*	1.53	2.19		
Controls & country variables	✓	✓	✓	✓	✓	✓		
Observations	416	284	185	409	281	182		

### Odds ratios for the probability of having a second child and working full-time during the second wave

	(1)	(2)	(3)	(4)	(5)	(6)		
Mother's involvement (ref. The mother								
less than usually performs all tasks $\mbox{)}$								
Mother more involved in housework	0.76	0.81	1.22	0.79	0.83	1.24		
Mother more involved in childcare	1.10	0.87	0.71	1.19+	0.88	0.71		
Controls & country variables	✓	<b>√</b>	✓	✓	<b>√</b>	✓		
Observations	416	292	185	409	288	182		

<sup>\*\*\*</sup> p<0.001, \*\* p<0.01, \* p<0.05, + p<0.10