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# ABSTRACT

## Child Penalty in Russia: Evidence from an Event Study

Despite years of women's progress toward equality, gender disparities in the labour market persist, and parenthood has been identified as one of its key drivers. In this paper we investigate the child penalty in Russia by using longitudinal data from the Russian Longitudinal Monitoring Survey (RLMS) and the methodological framework of event studies. Our findings show that five years after child birth women suffer an earnings penalty, while the same effect is not observed for men. The child penalty for women stems from lower employment after birth. In contrast to similar studies on Western European countries and the US, we do not find child penalties in terms of working hours or hourly wage rates. We further find that mothers' employment penalty is strongly driven by household characteristics and by their spouses' beliefs, while their own beliefs and background play no role.

**JEL Classification:** J16, J13, J31
**Keywords:** child penalty, Russia, event study, RLMS

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## 1. Introduction

Parenthood has heterogeneous effects on labour market behaviours and outcomes, depending on various individual and institutional factors. A common finding in the existing literature is that such effects are asymmetric across genders, with women suffering a considerably larger child penalty compared to men. This penalty can materialise in terms of employment, hours worked, wages and career opportunities.

In this paper, we investigate the existence and the extent of the child penalty[1] in Russia by using longitudinal data from the Russian Longitudinal Monitoring Survey (RLMS) for the period 1994 to 2018. Russia is an interesting case study in itself for various reasons. The Russian labour market lacks part-time jobs and places in kindergartens are insufficient; as a result, maternal employment for mothers with young children is low (Kazakova, 2019). All these factors contribute to a low employment rate of mothers of young children and are potentially able to shape a high child penalty. In addition, in the period considered Russia has experienced extensive reforms, including the introduction of new family policies, which might have significantly impacted the situation of mothers on the labour market. Lastly, Russia is a country that is regarded as a conservative environment in terms of gender equality, gender roles and family models (Pew Research Center, 2019); a deep look into such a case study would therefore enable pulling into the interpretative framework aspects that go beyond the mere economic sphere.

Methodologically, we use the framework of the so-called event studies, a quasi-experimental approach monitoring labour market outcomes in the years around the birth of the child for both mothers and fathers. The implementation of this approach for the analysis of child penalty is not new; however, due to limited appropriate (longitudinal) datasets it is relatively rare. As starting points, we rely on previous event studies on MBA graduates from Chicago business school by Bertrand et al. (2010), on Denmark and on a set of six countries by Kleven et al. (2019a and 2019b, respectively) and on Sweden by Angelov et al. (2016). As in Kleven et al. (2019a and 2019b) the study of the penalty in total earnings is then decomposed into three components: employment, hours worked and hourly wage penalty.

The contribution of our study to the existing literature is twofold. First, we provide evidence on the child penalty for a country for which the empirical literature is scanty and limited to cross-sectional studies (Nivorozhkina and Nivorozhkin, 2008; Biryukova and Makarentseva, 2017; Kingsbury, 2019). At the same time, we add Russia, as a country with institutional and social particularities, to the list of countries where event studies have been conducted. Second, we shed light on the factors able to mitigate or exacerbate the child penalty and the gap between mothers and fathers, particularly focusing on the role of household characteristics and on the social and cultural background of the parents.

Our findings can be summarized as follows: (i) starting from the year before the child birth and over the following five years women suffer an earnings penalty, while a similar effect is not observed for men; (ii) the child penalty for women stems from a decline in labour supply at the extensive margin whereas, contrary to what observed in western Europe and the US, no detrimental effects emerge in terms of hourly wage rates or hours worked; (iii) mothers' employment penalty is strongly driven by household characteristics and by their spouses' beliefs, while their own beliefs and background play no role.

[1] Sometimes also referred to as *motherhood penalty*. The expression *child penalty* is interchangeably used to identify both the labour market loss of: (i) mothers compared to non-mothers, and (ii) mothers compared to fathers. The second definition is consistent with our motivations, as it allows more directly shedding light on gender asymmetries and their social, economic and institutional drivers.

The rest of the paper is organised as follows. In the next section we illustrate the main reference literature our research speaks to. Section 3 provides background information on Russia related to gender inequality, child policies and previous studies on child penalty. In section 4 we describe the dataset and the samples used. Section 5 illustrates the econometric model, the empirical strategy for the estimation of the child penalty and the baseline results. In section 6 we extend our empirical model in order to identify which factors are able to affect the magnitude of the child penalty. In Section 7 we investigate differences in the penalty and its drivers for the first child and additional children and section 8 concludes.

## 2. Literature review

The impact of parenthood on labour market outcomes has been the focus of a growing literature in the past decades, with a variety of conceptual and empirical approaches (see Grimshaw and Rubery, 2015; or Fernández-Kranz et al., 2013). Reviewing this literature is beyond the scope of this paper and we only aim here at providing a bird-eye view on the factors shaping the child penalty and an account of the studies more closely related to our empirical approach.

### *2.1 Microeconomic and socio-cultural factors*

Parenting can impact on labour earnings by shaping labour supply and/or wage rates. On the first side, there is extensive evidence of the childbirth negatively affecting participation rates and hours worked by mothers only (OECD, 2007; Schönberg and Ludsteck, 2014; Brewer and Paull, 2006). This is observed even after accounting for the possible endogeneity of fertility and adverse selection (e.g., Angrist and Evans, 1998; Jacobsen et al., 1999; Cruces and Galliani, 2007). This loss is often paralleled by a penalty in the wage rate (e.g., Lundborg et al., 2017; Adda et al., 2017), especially when mothers experience substantial interruptions in employment (Lundberg and Rose, 2000). Mothers accumulate less job experience and, due to continuing responsibilities in child rearing, face harder career/family conflicts in coping with long hours, heavy travel commitments, and inflexible work schedules. As a result they tend, more often than men, to choose jobs that are family friendly and/or are not competitive for higher paying jobs, which results in falling behind in occupational rankings and wages compared to men (Bertrand et al, 2010; Kleven et al., 2019a).

An interesting strand of literature has identified a number of individual and household attributes that can mitigate or exacerbate the negative effects of childbirth. Among individual attributes, age, education and the type of occupation pre-birth emerge as relevant (see Sigle-Rushton and Waldfogel, 2007; Davies et al., 2000). Household characteristics (income, age/employment status composition) have been less explored, despite being able to shed light on a wider set of aspects related to gender roles beliefs and stereotypes. Interestingly, a few contributions focus on the role of spouses' attributes. Bertrand et al. (2010) show that US graduate mothers with lower-earning spouses suffer only a modest and temporary penalty compared to those with higher-earning spouses, who tend to reduce their labour supply considerably less. Kleven et al. (2019a) find that motherhood penalty in Denmark is strongly related to the labor supply history of the maternal grandparents: women whose mother worked very little compared to the father suffer a large child penalty when they become mothers.

### *2.2 Policy and labour market environment*

The empirical literature has also shown that the size of the penalty depends on the architecture of parental leave and childcare systems and on the model to which the division of

labour within the family is inspired (see Waldfogel, 1998a, 1998b and 2001; Haan and Wrohlich, 2009). Parental leave policies positively impact on women employment continuity and career only when they guarantee job security (Hegewisch and Gornick, 2011) and when the leave is paid (De Henau et al., 2007). Its length should also be appropriate: an excessive duration keeps mothers too long out of employment (Pettit and Hook, 2005; Jaumotte, 2003); on the contrary, if it is too short it increases the risk of women dropping out of the labour market altogether (Keck and Saraceno, 2013). At the same time, the impact of the leave depends on the availability of complementary policies, particularly formal child-care availability and tax/benefit systems (OECD, 2007), especially for full-time employment (Pettit and Hook, 2009). Its importance is instead lower where part-time is more spread (Steiber and Haas, 2012; Havnes and Mogstad, 2009). Availability of places and opening hours also play a crucial role (see Jaumotte, 2003) as well as positive attitudes towards formal childcare (Hegewisch and Gornick, 2011).

Asymmetries in parental leave and childcare provisions across genders still permeate virtually all societies. Even when fathers have opportunities similar to mothers as in northern Europe, the gender gap in the take up rate remains remarkable (see Thorsdottir, 2013, and Hegewisch and Gornick, 2011). Similarly, better availability of child-care facilities only partially addresses the problem, as gender differences in continuing child-rearing responsibilities anyhow persist. This translates into higher difficulties for mothers to re-enter employment and into higher part-time rates (Paull, 2008), when this is an option. Availability and fiscal incentives for part-time work may therefore at the same time provide better chances to go back to employment (see Jaumotte, 2003) and be the main channel through which the child penalty for mothers materializes (see Budig and England, 2001; Gangl and Ziefle, 2009; Davies and Pierre, 2005).

### *2.3 Prior event studies on the child penalty*

The event study approach, also adopted in this paper, has first been employed for similar purposes by Bertrand et al. (2010) on gender differences in career developments of MBAs who graduated between 1990 and 2006 from the Chicago Business School. After graduation, incomes and employment rates soon start diverging in favour of men, due to women experiencing more career interruptions, working shorter hours and more in part-time and self-employment. All such features are closely connected to the birth of children and unfold in the subsequent five years. Conversely, MBA men with children see their earnings increase and their labour supply substantially unaffected by fatherhood.

More recently, Angelov et al. (2016) estimate with a similar approach the impact of childbirth on gender gaps in Sweden, using administrative data from few years before to around 15 years after the birth of the first child. Results indicate that parenthood implies a remarkable enhancement of the long-run gender pay inequality, especially if the woman has low education compared to her spouse. The interpretation of such inequality-increasing effect relies on the asymmetric burden placed on women for child rearing, corroborated by evidence of a decline in their hours worked and of an increase of part-time employment after the birth event.

Kleven et al. (2019a) use administrative data for Denmark over the period 1980-2013 and show that, due to birth of a child, women suffer in the long run a 20% earning penalty compared to men. The gap is explained, in equal proportions, by differences in participation, hours worked and wage rate. The main channel through which the child penalty materializes for women is a relative slowdown of career progression compared to men and a shift towards more family-friendly jobs. The child penalty seems to be transmitted through generations, as women

whose mother worked very little compared to the father suffer a larger child penalty when they become parents.

Kleven et al. (2019b) compare the child penalty for two Scandinavian (Denmark and Sweden), two German-speaking (Germany and Austria), and two English-speaking (United Kingdom and United States) countries. Their results show that a remarkable child penalty is observed in all countries, but its magnitude is smaller for Scandinavian countries and larger for the US and the UK. The components of the child penalty are also heterogeneous, as in the Scandinavian and Germanic countries the earnings penalty is mainly driven by the intensive margin and by wage rate effects; conversely, in the US and the UK, the extensive margin is the key driver of penalties. Descriptive evidence suggests that more conservative gender norms and views might be good candidates to explain the variability of the child penalty across countries.

## 3. Institutional setting, social norms and previous research on Russia

One of the legacies of the Soviet era in post-communist countries is the high level of female labour market participation, as equality of men and women was one of the key ideological tenets of socialism. Compared to the average of OECD countries, Russia has a higher female participation rate, which in 2018 stood at 63.1% (with only six OECD countries reaching higher levels); the gender gap in participation is also well below the OECD average[2]. However, the unadjusted gender pay gap in Russia is, with more than 30 percent, among the highest in the group of high-income countries; despite having slightly declined since the onset of transition, the adjusted pay gap also remains high, around 25% (Atencio and Posadas, 2015). The extent to which such disadvantage is related to parenthood in Russia has been left almost completely unexplored.

The availability of childcare services, the opportunity of part-time jobs and the characteristics of maternal leave policies have been identified as the main institutional factors determining the labour supply of mothers. When compared to OECD countries , Russia has a very low employment rate of mothers with children aged 0 - 2 (25.7 percent) and a relatively high employment rate of mothers whose youngest child is in the age group 3-6 (78.4 percent)[3]. This gap can be explained by two important institutional factors: scarcity of available childcare facilities and low presence of part-time jobs (Kazakova, 2019)[4]. Enrolment in childcare services is also relatively low in Russia: in 2017, 19.0% of children aged 0 to 2 years were enrolled in childcare, while 82.8% of children aged 3 to 5 years attended preschool (compared to average OECD levels of 35.0% and 87.2%, respectively - see OECD, 2019b). The particularly low enrolment rate of the younger cohorts can be explained by the long waiting lists for public preschools (only 1.4% of children attend private institutions) (Kazakova, 2019). Due to the lack of available places in state facilities, informal childcare plays an important role (Pelikh and Tyndik, 2014).

The current framework of family policies in Russia was established in 2007 when a package of measures was designed with the goal of raising the fertility rate. The package included an increase in pregnancy, birth and child benefits; second and higher order births were also progressively more incentivised with the introduction of the so-called "Maternity Capital"

[2] Source: Labor Force Participation indicators, OECD, 2018.

[3] In 2019, in OECD countries the female employment rate for women with the youngest child aged 0-2 was 58.8% while for women with the yougest child aged 3-5 it was 72.%3 (OECD, 2019a).

[4] In 2019 the part-time employment rate in Russia stood at 4% of the employment rate. In contrast, the employment rate in OECD countries amounted to 16.7% in the same year (OECD, 2020).

(or "baby bonus")[5]. Total paid leave for mothers in Russia amounts to 20 months; the first 140 days are remunerated at 100% of the salary, while the remaining period at 40%. After the paid leave period expires, mothers can take an unpaid leave up to a period of 36 months after the child birth. While the leave in Russia is longer than the average of OECD and EU countries (53.9 and 65.8 weeks, respectively) (OECD, 2018), the relatively low remuneration is considered to be a disincentive for women to make use of the whole leave period. Prolonged parental leave duration and low remuneration with job protection are typical of German-speaking countries (Austria and Germany). On the other hand, Scandinavian countries (Denmark and Sweden) offer shorter parental leaves of roughly a year with higher compensations, while English-speaking countries (the UK and the US) have no or very low compensations (one year leave in the UK and 12 weeks leave in the US with job protection).

Aside from the institutional support that working mothers are receiving, social norms can potentially pose severe constraints to female labour supply. The prevailing conservative attitude in Russia places the largest amount of the burden of child rearing and household chores on women. While communism tried to equalise the roles of men and women in the society, the persistence and stability of traditional gender norms in Russia is confirmed by a number of studies (Kalugina et al., 2009; Lacroix and Radtchendko, 2011; Gianelli et al., 2013; Gimenez-Nadal et al., 2019). Within household division of labour is unequal and women are to a large extent taking care of housework and children (Gianelli et al., 2013). The determinants of marriage and divorce have remained stable during and after the transition and people in Russia still enter marriage at a relatively early age (Chiappori et al., 2018). Lastly, Giménez-Nadal et al. (2019) provide empirical evidence that traditional gender norms in housework are intergenerationally transmitted and therefore persistent in Russia. Interestingly, when comparing preferences for traditional roles between different age groups, Russia is an outlier in both east and west Europe: young and mid-age generations have a stronger preference for traditional roles than older ones (Pew Research Center, 2019).

Past studies on Russia compare wages of women with and without children and find evidence of no motherhood penalty (Nivorozhkina and Nivorozhkin, 2008) or of a small penalty (Pritchett, 2015, on hourly wages; Biryukova and Makarentseva, 2017, on monthly earnings). Interestingly, Biryukova and Makarentseva (2017) also find that more educated mothers suffer a higher penalty. A comparative study examining the association between motherhood and monthly wages reports a significant raw motherhood penalty of 22.3 percent in Russia but, once selection into motherhood and individual characteristics are controlled for, the wage gap disappears completely (Budig et al., 2012). In this study, Russia belongs to the group of countries (with Australia, Belgium, East Germany, Finland, Hungary, Italy, Israel and Sweden) where employed mothers do not earn less than childless women once their different characteristics are accounted for. On the contrary, in most countries there is an unexplained part of the motherhood wage penalty between women with and without children. Another comparative study finds that the number of children does not have an effect on women's earnings in Russia, contrary to the majority of other countries considered (Budig et al., 2016). As opposed to these previous studies, which all use cross-sectional data, our research contributes to this literature by applying a more rigorous methodology based on panel data econometrics. Additionally, our study advances the literature by looking at two outcomes which

[5] Recent research has shown that the Maternity Capital increased fertility both in the short- and long-run (Sorvachev and Yakovlev, 2020).

have not been examined so far in the Russian setting in relation to the motherhood penalty: the participation rate and hours worked.

## 4. Data, variables and sample for the analysis

We estimate the child penalty using Russian Longitudinal Monitoring Survey (RLMS) with references years between 1994 and 2018. RLMS is a unique nationally representative panel survey of Russian households, coordinated by Higher School of Economics from Moscow (HSE) which provides detailed information on the health and economic status in the Russian Federation at both household and individual levels. The data has been used extensively to analyse income and wages in Russia (see, among others, Bogomolova and Tapilina, 1999; Jovanovic, 2001; Nissanov, 2017; Borisov and Pissarides, 2020), as well as the gender inequalities (see e.g. Giménez-Nadal et al., 2019).

The RLMS shares with other longitudinal datasets issues of non-random attrition, due in the specific case to natural causes, refusal to continue participation and moving to another area, as no effort is made to trace respondents who have left the original residence (see Kozyreva et al., 2016). Previous research has indicated that in RLMS data these aspects do not pose issues significantly different from other data sources (Lukiyanova and Oshchepkov, 2012; Perugini, 2020; Borisov and Pissarides, 2020).

We study the penalties on overall earnings and then distinguish its three components: employment, hours worked and hourly wage penalty. *Overall earnings* are based on the sum of net money received in the last 30 days from primary (question J10 in RLMS) and secondary job (question J40 in RLMS)[6] and include zero wages for men and women who are not currently employed or are on paid (including maternity leave) or unpaid leave[7]. Non-zero earnings are adjusted for the inflation (2015 = 100) and the 1998 devaluation (1000 RBL was converted to 1 RBL in 1998). *Employment* is a dummy variable based on the present working status variable (J1) and takes the value 1 if the person is currently working, and 0 otherwise (not working, paid (including maternity) or unpaid leave). The *working hours* variable is based on the sum of hours worked in the last 30 days on the first (question J8) and second job (J38)[8]. Hourly wages are calculated by dividing the earnings and working hours from the last 30 days, and transformed into a log form. Both working hours and hourly wages are conditional on being employed.

We analyse labour market outcomes in the period of nine years, starting from three years before the birth, until five years after[9]. For the year of birth, the time variable is set at t=0, and we index all other years accordingly (t=[-3; 5]). We define mothers and fathers based on the

[6] For those who are currently working (question J1), if missing values for variables J10 and J40 are observed, we use average monthly wage in the last twelve months (J13.2) and the total amount of money that personally received in the last 30 days (J60) as proxies for their current wages.

[7] In some cases, where we observe earnings variables for women on maternity leave we replace these values with missing values to preserve the consistency with the employment variable. We assume that they refer to their pregnancy / maternity benefits, which are not the main focus of our research but are included as a control variable for total household income (without wages).

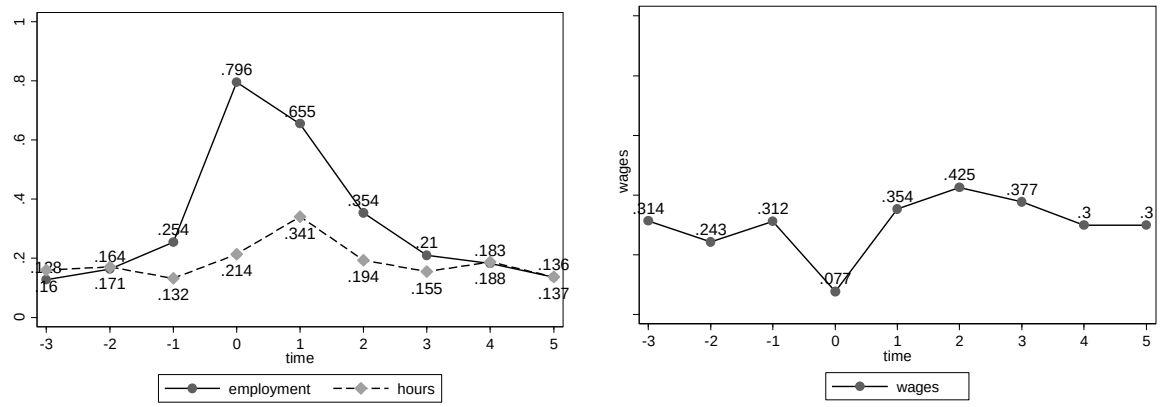
[8] For those who are currently working (based on question J1), if missing values for variables J8 and J38 are observed, we use hours in a usual work week on the primary (j6_2) and secondary job (j36_2) as a proxy for current working hours.

[9] The decision of a nine-year span was based on the trade-off between the period in which we were able to track the same individual in the data and the available number of individuals that we could follow throughout the whole period. Due to attrition, the longer the period was, the lower was the number of individuals that we were able to follow and vice versa. Nine-year period provides, at the same time, a sufficiently long time (similar to Bertrand et al., 2010) and sufficient number of individuals for the analysis.

family relationship identifiers (variables B9) for a child aged zero years (based on the year of birth – B5)[10]. In total, we observe labour market outcomes for 620 mothers and 442 fathers; total number of observations in the estimation amounts to 5,289 and 3,704, respectively. Estimation of hours and hourly wage equation are conditional on being employed.

Figure 1 presents the dynamics of unadjusted gender gaps in employment, hours worked and hourly wages associated to the birth of a child. The left panel indicates that the male/female employment gap before the child birth (years -3 and -2) is about 15 percentage points. The gap starts rising in the year -1, probably due to pregnancy leave and then, as expected reaches its maximum in year 0. Afterwards the gap slowly decreases and returns to the pre-birth level. Similarly, the gap in working hours is about 17 per cent in the years preceding the birth (years -3 and -2), and it reaches its peak in year 1, suggesting that when women go back to work, the gender gap in hours worked does not change compared to pre-birth levels.

**Figure 1. Gender gaps in employment, hours worked (left) and hourly wages (right panel)**




The right panel of the Figure 1 indicates that the gender pay gap in the years before the birth (years -3 to -1) is about 30 per cent, in line with the gaps observed in the literature (see, e.g., Atencio and Posadas, 2015). The gap is slightly higher one, two and three years after the birth (peaking to over 40 per cent), while in years four and five it goes back to before-birth levels. Due to the small number of observations, the remarkable drop of the gap in year 0 cannot be regarded as statistically significant.

## 5. The extent and facets of child penalty in Russia

### *5.1 Baseline econometric model and estimation strategy*

As mentioned previously, we estimate the motherhood penalty for overall earnings, employment, hours and log hourly wages. The existence and magnitude of the child penalty in each of the labour outcomes $Y_{it}$, is estimated with the following model:

[10] The definition of a mother was externally validated via a direct question if the women has given birth in that year. In 97% of the cases women identified via relationship status variables also answered that they have given birth in that year. The direct question was not used as a main definition for mothers as it was not a part of the survey in some years (2000, 2004, 2005, 2008, 2010, 2012) and since there was no similar question for fathers.

$$Y_{it} = \sum_{j\neq -2} \alpha_j I[j = t] + \sum_{j\neq -2} \alpha_{Agej} I[j = t] * Age_{it} + \boldsymbol{X_{it}B} + u_i + \varepsilon_{it}\text{ , t, j= [-3, 5]} \quad (1)$$

where the first expression on the right side of the equation is a set of event-time dummy variables. As we omit the one for j=-2, the coefficients of the remaining dummy variables are changes with respect to two years before the birth. This year is chosen as year of a 'stable' period before the birth, as the labour market outcomes in the year before birth are affected, for women, by the pregnancy leave. In order to present the results in a clearer manner and to decrease the number of parameters to be estimated we merge the outcomes for years two and three, as well as the outcomes for years four and five, therefore ending up with seven dummy variables representing event-time. Therefore t = [-3, -2, -1, 0, 1, 2/3, 4/5][11].

The second term on the right side of the equation indicates the interaction of age[12] with the event dummy variables. This was done in order to account for the effect of having a child in different stages of the parents' carriers. $\boldsymbol{X_{it}}$ is a set of time-varying individual (age squared, education, marital status) and household variables (income of other household members, additional child being born after the first child, and number of elderly (75+) in the household), as well as lagged average two-year GDP growth rate, to account for the effects of the economic cycle. We also include a dummy variable which accounts for the major changes in family policy introduced in 2007 (2007/2018=1, 0 otherwise) as described in section 3. For working hours and hourly wage equations the vector $\boldsymbol{X_{it}}$ also includes controls for the job characteristics (occupation, supervising position, sector of the employer and employment status). The two final components of the model are person fixed effects, which account for all observable and unobservable time-invariant variables, and the error term. The full list of variables included in the analysis and the relevant descriptive statistics are presented respectively in Table A1 and Table A2 in the Appendix.

As discussed in the literature review, existing evidence shows that selection into employment can significantly affect the estimation of the child penalty. Hence, in the estimations for hours worked and wage rates we implement a Heckman-type correction for each event year j = (-3; 5) and gender (m, f)[13]. Results of the participation equations (not reported here and available upon request) show that for women, in the years before giving birth, age is the dominant driver of participation. Conversely, shortly after the birth, being married has a negative effect, whereas in the whole after-birth period higher household income reduces participation. Higher education increases participation in all years. Additional births also obviously decrease participation. Distinctive features of the drivers of participation for men

[11] This was done having in mind particularly the investigations of the drivers of the penalty in the next step of the analysis, with the introduction of interaction terms and the consequent estimation of a higher number of parameters. Similar approach was applied by Bertrand et al., 2010 (Table 8, p. 248).

[12] Age variable is centered at mean for each t and gender in order to preserve the interpretation of the event dummy variables as the effect at the average sample age (by gender) in year t.

[13] To this aim, we first split the sample into subsamples for each event time period and gender (total of 18 subsamples) and in each of them we estimate a selection into employment (1 employed, 0 otherwise), conditional on set of personal and household characteristics (age, age squared, education, marital status, income of other household members, additional child being born after the first child, number of people with disabilities, and total number of household members, lagged average two-year GDP growth rate). Based on the estimated probability of employment we compute inverse Mills ratios (IMRs) as the ratios of the probability density function to the cumulative distribution function (Wooldridge, 2002) and include them as additional regressors. The logic behind the event-time sample split, rather than year-by-year, is that the mechanisms of participation are different in the years before, during, and after the birth. With the inclusion of our lagged GDP variable, we then also control for the potential heterogeneity in selection due to economic cycle.

are the positive effect of being married, the role of education being limited to after-birth years and the irrelevant role of additional births.

### *5.2. Baseline results*

A summary of the estimates of our core coefficients in the baseline model is shown in Table 1. Full estimation results are available in Table A3 in the Appendix; they indicate that the effects of the control variables are in line with ex-ante expectations. For both parents having higher household income (other than their own) lowers the employment probability and wages, whereas positive economic cycle, 2007 benefits reform and higher levels of education increase the likelihood of employment and higher wages. Among job characteristics, higher occupation, work in the private sector and as self-employed have a positive effect on hourly wages, while working in the private sector and having supervisory duties increase the number of hours worked. The birth of an additional child has a significant negative impact on mothers' earnings only, via lower employment probability, whereas being married has a negative effect for mothers and a positive one for fathers, again on employment.

As regards the focus of our paper, our results indicate that five years after the birth of the child women still suffer an earnings penalty, while the same effect is not observed for men. The penalty is the strongest for the year of the birth (Year = 0), and decreases in magnitude as time passes. Additionally, the penalty occurs also for the year before the birth (Year = -1), when earnings are also lower (than two years before the birth) likely due to the pregnancy leave. On the contrary, for men we do not find any substantial evidence of either child penalty or child premium.

The earnings penalty for women stems exclusively from employment penalty, which is significant throughout the whole period monitored (Table 1, column 'Employment' reports the marginal effects; while the same column in Table A3 in the Appendix presents the probit coefficients). Compared to two years before the birth, women's employment probability decreases by 65 percentage points in the birth year, and by 40 percentage points in the year after the birth. Employment in four/five years after the birth remains by about 6 percentage points lower than in the baseline year, albeit this effect is significant only at 0.1 level. Furthermore, in the year before the birth, women's employment is lower by 9 percentage points, due to the pregnancy leave. On the other hand, we find no evidence of penalty in terms of working hours or hourly wage.

The interactions of event-time dummy variables with age (see Table A3) indicate higher earning penalties for older mothers, again mainly stemming from employment. This means that older mothers have more difficulties to re-enter employment after they have given birth, when compared to younger mothers.

The absence of penalties in wage rates and hours worked in Russia stands in contrast to the evidence provided by studies with a similar approach for other countries (Bertrand et al., 2010; Angelov et al., 2016; and Kleven et al, 2019a and 2019b). Our results can be viewed in the context of the specific institutional labour market features in Russia, described in section 3. Limited non-standard employment options make adjustments of female positions more difficult and such low labour market flexibility seems to pose obstacles to reconciling family and work duties. As a result, less women are able to go back to work after having given birth, but those who manage (or decide) to re-enter employment have the same pre-birth employment positions and wages.

**Table 1. Changes in the labour market outcomes of women and men with respect to year of the birth of the child**

| | Earnings[1] | | Employment[2] | | Hours worked[3] | | Hourly wage[3] | |
|---|---|---|---|---|---|---|---|---|
| Women | | | | | | | | |
| Year = -3 | 0.053 | (0.069) | -0.004 | (0.021) | -0.002 | (0.039) | -0.022 | (0.053) |
| Year = -1 | -0.361*** | (0.067) | -0.090*** | (0.021) | 0.025 | (0.037) | 0.028 | (0.052) |
| Year = 0 | -1.335*** | (0.086) | -0.650*** | (0.030) | 0.053 | (0.121) | 0.038 | (0.176) |
| Year = 1 | -1.308*** | (0.111) | -0.400*** | (0.024) | -0.046 | (0.063) | 0.049 | (0.118) |
| Year = 2/3 | -1.027*** | (0.153) | -0.151*** | (0.026) | -0.007 | (0.036) | 0.023 | (0.118) |
| Year = 4/5 | -1.162*** | (0.225) | -0.057* | (0.034) | -0.024 | (0.042) | -0.019 | (0.166) |
| Obs. | 5,289 | | 5,289 | | 2,385 | | 2,385 | |
| Number of individuals | 620 | | 620 | | 566 | | 566 | |
| Men | | | | | | | | |
| Year = -3 | -0.137 | (0.126) | -0.019 | (0.023) | -0.027 | (0.047) | 0.049 | (0.064) |
| Year = -1 | -0.035 | (0.118) | -0.018 | (0.022) | -0.056 | (0.044) | 0.036 | (0.059) |
| Year = 0 | 0.105 | (0.143) | -0.014 | (0.022) | -0.046 | (0.043) | 0.094 | (0.075) |
| Year = 1 | 0.292 | (0.179) | 0.013 | (0.023) | -0.021 | (0.042) | 0.047 | (0.095) |
| Year = 2/3 | 0.413* | (0.235) | 0.011 | (0.021) | -0.079* | (0.043) | 0.141 | (0.127) |
| Year = 4/5 | 0.503 | (0.318) | 0.041* | (0.023) | -0.056 | (0.044) | 0.148 | (0.171) |
| Obs. | 3,704 | | 3,704 | | 2,651 | | 2,651 | |
| Number of individuals | 442 | | 442 | | 418 | | 418 | |

Notes: Robust standard errors in the parentheses: *** p<0.01, ** p<0.05, * p<0.1. All regressions include interactions of age (centred at mean) with event-time dummies, a set of time-varying covariates (age squared, education, marital status, lagged average two-year GDP growth rate, dummy variable for years from 2007-2018, income of other household members, additional child being born after the first child, number of people with disabilities, and total number of household members) and person fixed effects.

[1] The dependent variable in the earnings equation is total monthly earnings, including zero wages for women who are not participating in the labour market. The equation is estimated via fixed-effect tobit (Honore et al., 2000).

[2] The dependent variable in the employment equation is a dummy variable taking the value 1 if the person is employed, and 0 if not employed. Random-effect logit estimator applied, after insignificant Hausman specification test. Coefficients represent the average marginal effects of each of the event time dummy variables. Probit coefficients are presented in Table A3 in the appendix.

[3] Hours worked (in hundreds, per month) and hourly wage equations are conditional on employment. In addition to the already listed regressors they include dummy variables for high occupations (ISCO groups 1-3), supervisory positions, work in the public sector, self-employment and the IMRs for the Heckman correction. Random-effect and fixed-effect estimator applied to hours worked and hourly wage equations, respectively, following the results of the Hausman tests.

## 6. Individual and household heterogeneity and the magnitude of the penalty

Outcomes in Table 1 indicate that the employment penalty virtually drives the whole earnings penalty suffered by mothers. However, this is an average effect that might hide some heterogeneity related to personal characteristics and household circumstances, as some literature reviewed in section 2 suggests. A further step of investigation is therefore needed to identify which factors, if any, are able to affect the magnitude of the penalty. Furthermore, although we have not identified strong main (mean) effects in the terms of hours and hourly wage penalties, there could be factors that enable effects on these sides to emerge as well. We then interact the event dummy variables with a number of covariates in order to uncover which factors moderate or magnify the detrimental effect of the birth of a child on labour market outcomes:

$$Y_{it} = \sum_{j\neq -2} \alpha_j I[j = t] + \sum_{j\neq -2} \alpha_{Age\,j} I[j = t] * Age_{it} + \boldsymbol{X_{it}B} + \sum_{\boldsymbol{j\neq -2}} \boldsymbol{\alpha_{dj} I[j = t]} * \boldsymbol{Z_{it}} + u_i + \varepsilon_{it}\,,$$
t, j= [-3, 5]

(2)

where $\boldsymbol{Z_{it}}$ is a set of variables that we interact with event-time dummies. The $\boldsymbol{Z_{it}}$ consists of *time-varying variables* which are already in equation 1 as additional covariates, such as income[14] or marital status, and *time-invariant variables* such as own and partner's religious beliefs (proxy for conservative attitudes), own and partner's parents education levels and own and partner's mother status on the labour market. For working hours and hourly wage equation we add time-varying job characteristics (occupation, supervising position, sector of ownership and employment status) to the list of the variables interacted. We investigate the effect of each of these factors separately (rather than simultaneously) in order to avoid multicolinearity issues and the estimation of a large number of parameters. We investigate the potential drivers of employment, hours worked and hourly wage penalties and present only the results of the relevant variables of interest (i.e., those that turn out being statistically significant).

A first important piece of information emerging from our estimates is that basically no interaction variables are significant in the models of the drivers of hours worked and hourly wages (results not presented here but available upon request). This confirms the evidence emerging from the baseline estimation and rules out the possibility that this outcome could hide some kind of heterogeneity.

On the contrary, interesting results emerge on the side of employment penalty. Table 2 reports a summary of results (marginal effects) of the significant drivers of female child employment penalties on the labour market; marital status, household income and strength of mother's and father's religious beliefs (see Table A4 for the complete results of the probit estimation)[15].

In column 1 of Table 2 we show again the baseline results (same as in Table 1); they are contrasted in the following columns with the results of augmented specifications (equation 2) in which we subsequently add the interaction of event dummies with each factor that affects employment[16]. Column 2 suggests that married women are less likely to go back to work after having given birth[17]. In the year of the birth and after the birth married women are about 15 percentage points less likely to go back to work than single women. Differences in participation likelihood between married and single women decrease over time, but remain significant, as even after 4/5 years after birth married women are about 10 percentage points less likely to go back to work compared to single women. In fact, for single women, the penalty in 2/3 and 4/5

[14] Income variable is centered at mean for each t and gender in order to preserve the interpretation of the event dummy variables as the effect at the average income for each gender in year t.

[15] As for the remaining variables (own and partner's parents education levels and own and partner's mother status on the labour market), none of the interaction coefficients emerge as steadily significant, despite some of them being *jointly* significant (results available upon request). We cannot exclude that this is to large extent due to the low sample size and the high number of parameters estimated; nonetheless, the weakness of the evidence does not encourage undertaking interpretative efforts and speculations.

[16] After we identified the significant drivers in this manner, we test the effect of the drivers simultaneously. The results, available upon request, suggest that the effects of the significant drivers are independent, remain significant and have approximately the same magnitude.

[17] Given the specification of equation 2, the baseline coefficients represent employment penalties for *single women*, while the sum of the event-time coefficients and interaction coefficients represent the employment penalties for *married women*.

years after the birth is not significant. Additionally, the likelihood of participation for married women in the year before the birth is about 13 percentage points lower than for single women, for whom the coefficient is not even statistically significant. This result indicates not only that married women are more likely to go to pregnancy leave, but that single women rarely use this opportunity.

**Table 2. Mothers' employment drivers (marginal effects)**

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Event-time vars | Baseline estimates | Married | Household income | Own religiousness | Partner's religiousness |
| Year = -3 | -0.004 | 0.027 | -0.003 | 0.038 | -0.028 |
| | (0.021) | (0.031) | (0.021) | (0.048) | (0.035) |
| Year = -1 | -0.090*** | 0.000 | -0.091*** | -0.080* | -0.065** |
| | (0.021) | (0.037) | (0.021) | (0.045) | (0.033) |
| Year = 0 | -0.650*** | -0.539*** | -0.663*** | -0.576*** | -0.670*** |
| | (0.030) | (0.069) | (0.032) | (0.066) | (0.061) |
| Year = 1 | -0.400*** | -0.267*** | -0.406*** | -0.351*** | -0.338*** |
| | (0.024) | (0.049) | (0.024) | (0.047) | (0.036) |
| Year = 2/3 | -0.151*** | -0.042 | -0.148*** | -0.121*** | -0.100*** |
| | (0.026) | (0.042) | (0.026) | (0.041) | (0.034) |
| Year = 4/5 | -0.057* | 0.028 | -0.056* | -0.024 | 0.032 |
| | (0.034) | (0.049) | (0.034) | (0.048) | (0.042) |
| Interaction | | | | | |
| Year = -3 | | -0.055 | 0.008 | -0.047 | 0.027 |
| | | (0.045) | (0.012) | (0.049) | (0.037) |
| Year = -1 | | -0.137*** | -0.005 | -0.012 | -0.049 |
| | | (0.045) | (0.012) | (0.046) | (0.035) |
| Year = 0 | | -0.151* | -0.045** | -0.087 | 0.016 |
| | | (0.079) | (0.020) | (0.072) | (0.069) |
| Year = 1 | | -0.171*** | -0.042*** | -0.056 | -0.089** |
| | | (0.054) | (0.013) | (0.047) | (0.037) |
| Year = 2/3 | | -0.140*** | -0.028** | -0.035 | -0.065** |
| | | (0.042) | (0.011) | (0.036) | (0.027) |
| Year = 4/5 | | -0.103** | -0.018 | -0.039 | -0.098*** |
| | | (0.044) | (0.012) | (0.039) | (0.031) |
| Observations | 5,289 | 5,289 | 5,289 | 5,289 | 4,629 |
| Number of individuals | 620 | 620 | 620 | 620 | 542 |
| Chi-test | | 21.18 | 123.7 | 3.554 | 18.92 |
| Prob > Chii | | <0.01 | <0.01 | 0.737 | <0.01 |

Notes: Robust standard errors in the parentheses: *** p<0.01, ** p<0.05, * p<0.1. Coefficients reported in the table are marginal effects. Complete results of the probit estimates are available in Table A4 and include: interactions of age (centred at mean) with event-time dummies, a set of time-varying covariates (age squared, education, marital status, lagged average two-year GDP growth rate, dummy variable for years from 2007-2018, income of other household members, additional child born after the first child, and number of elderly in the household) and person fixed effects. The dependent variable in the employment equation is a dummy variable equal to 1 if the person is employed, and 0 if the person is not employed. Random-effect logit estimator applied, after insignificant Hausman test.

On the other hand, results in column 3 suggest that higher household income decreases the likelihood to go back to work after having given birth. The interaction is significant up to 3 years after the birth. The magnitude of the effect is not negligible as in all years, and even 2/3 years after the birth, a 10 per cent higher income is associated with about 0.4 percentage points lower likelihood of going back to work. Results from columns 2 and 3 are in line with the

explanations given within the household production theories. If a woman can economically rely on her partner's earnings to meet her and the child's needs, she is more likely to completely devote herself to raising the child. The extent to which this is a deliberate choice, rather than the result of conditioning social or cultural factors, remains an open question. On the other side, single women or those with a lower income are forced to go back to work as early as possible in order to provide resources for raising children.

Column 5 suggests that a higher attachment to religion of the child's father, typically associated to more conservative and traditional attitudes, is associated with a lower probability for mothers to return into employment[18]. Interestingly, no similar effects emerge for mothers' own religious beliefs on their employment probability (Column 4). The interaction with fathers' religiousness is significant in all years after the birth. Women who have strongly religious husbands have about 10 percentage points lower likelihood to go back to work even after 4/5 years than women whose husbands are less attached to religion. The results also suggest that for the latter group employment penalties are not significant four or five years after the birth.

Results in Columns 4 and 5 tell an interesting story about how fathers' conservative beliefs reverberate into mothers' decision to go back to work. Conversely, mothers' own beliefs show no impact. This suggests that a strong asymmetry might exist in decision-making and the distribution of power within the household in favour of the father, as his beliefs are the ones impacting the household model, particularly when and how the female spouse is going to go back to work after having given birth. Therefore, patriarchal values that affect women's employment are transmitted through her husband, rather than her own values. This effect is independent from the effects of the household family variables, as when all the interaction variables are introduced in the model simultaneously the size and the significance of the coefficients for all interaction variables remain unchanged.

## 7. Penalty for the first child and additional children

In Tables 1 and 2 we have provided evidence on the size and drivers of child employment penalty on the overall sample of mothers. In this part of the analysis we repeat the analysis on two separate samples: (i) first-time parents and (ii) parents of additional children. Due to the nature of our research design, the latter group includes women and men who had their previous child at least four years prior to year of birth of the child we use for the definition of the event-time variables[19]. This split is important as, in the first place, it enables us to compare our results more directly to previous event studies on motherhood penalty, all exclusively focused on the first child (Bertrand et al., 2010; Angelov et al., 2016; Kleven et al, 2019a and 2019b). Secondly, there is evidence that parental labour market adjustments may differ remarkably between the birth of the first and additional children (see, for example, Hynes and Clarkberg, 2005; Doren, 2018).

Outcomes presented in Tables A5 (first-time parents) and A6 (parents of additional children) in the Appendix confirm the results from the overall sample of women and men. In both subsamples women suffer earnings penalty, stemming uniquely from participation

[18] Given the specification of the equation 2, event-time coefficients present employment penalties for *women whose husbands have low attachment to religion*, while the sum of the event-time and interaction coefficients present the employment penalties for w*omen whose husbands have high attachment to religion*.

[19] We do not use birth of these children as critical event as we are not able to monitor their parents' labour market outcomes in the years around the birth.

penalty; effects on hours worked and hourly wages are instead not significant. On the other hand, men do not suffer any kind of penalty.

Table 3 reports marginal effects of columns 2 (employment penalty) of Tables A5 and A6. As regards the size of the motherhood employment penalty for the first child, despite our results are not completely comparable with existing evidence on other countries due to data and methodological differences, the pattern of the penalty in Russia seems to resemble the most to one German-speaking countries (see Kleven et al., 2019b). For Russia, however, the penalty seems to plateau earlier and at lower long-term levels (see the dynamics of the penalty in each year, plotted in Diagram A1 in the appendix). This is mirrored by a similarity in the length (relatively long) and design of parent leave systems. As in Russia, Austria and Germany offer relatively long parental leaves (up to three years, of which two years with job protection in Austria; and three in Germany, for both parents until the child is 8 years old). However, the maternity leave allowance is more generous in the two countries than in Russia, being income-based for about one year and guaranteeing a lower flat rate for the rest of the period.

**Table 3. Employment penalty for the first child and for additional children**

| | Full sample | | First child | | Additional children | |
|---|---|---|---|---|---|---|
| Year = -3 | -0.004 | (0.021) | 0.022 | (0.027) | 0.001 | (0.036) |
| Year = -1 | -0.090*** | (0.021) | -0.104*** | (0.026) | -0.096*** | (0.036) |
| Year = 0 | -0.650*** | (0.030) | -0.659*** | (0.038) | -0.693*** | (0.055) |
| Year = 1 | -0.400*** | (0.024) | -0.436*** | (0.033) | -0.422*** | (0.042) |
| Year = 2/3 | -0.151*** | (0.026) | -0.227*** | (0.039) | -0.154*** | (0.048) |
| Year = 4/5 | -0.057* | (0.034) | -0.167*** | (0.051) | -0.065 | (0.063) |
| Obs. | 5,289 | | 3,528 | | 1,761 | |
| Number of individuals | 620 | | 415 | | 205 | |

Notes: Robust standard errors in the parentheses: *** p<0.01, ** p<0.05, * p<0.1.

Coefficients are average marginal effects of each of the event time dummy variables. Probit coefficients are presented in Tables A5 and A6 in the Appendix. All regressions include: interactions of age (centred at mean for each t and gender and within own sample) with event-time dummies, a set of time-varying covariates (age squared, education, marital status, lagged average two-year GDP growth rate, dummy variable for years from 2007-2018, income of other household members, additional child being born after the first child, and number of elderly in the household) and person fixed effects. The dependent variable in the employment equation is a dummy variable equal to 1 if the person is employed, and 0 if not employed. Random-effect logit estimator applied, after insignificant Hausman test.

Our outcomes also highlight that there is an interesting asymmetry in the length of the employment penalties between the two groups of women. While first-time mothers still suffer employment penalties up to five years after the birth (and possibly beyond), employment penalties for additional children are significant up to 2/3 years after the birth. Our results are in line with the finding that not returning to employment is slightly more common for first-time mothers than for mothers experiencing additional births (Hynes and Clarkberg, 2002 and 2005; Klerman and Leibowitz, 1999). A possible explanation of our evidence might be that, as the birth of additional children obviously happens in a later stage of life[20], a higher percentage of mothers has already entered employment before the additional pregnancy and therefore benefits from maternity leave (up to three years with job protection in Russia). At the end of the leave, these mothers have to go back to their job if they want to keep it. On the contrary, among first birth mothers there is a higher share of women who did not enter at all employment before the first

[20] On average, first-time mothers at birth of 24.6 years old, compared to 31 years of the second group. We do not find any other statistically significant differences in covariates between the groups.

pregnancy, due to their young age. As a consequence, not being on maternity leave, they do not have the three-year constraint and they need, as first-time entrants in the labour market, more time and effort to find a job after the child starts attending the childcare facilities.

Table A7 in the Appendix also reveals that the employment drivers differ between the two groups. The penalty augmenting effect of marital status and household income on employment is observed in the first-time mothers group only (columns 2 and 3). After the birth of the first child, married mothers have between 15 and 20 percentage points higher probability to stay out of employment than single mothers, in the year before and in all the years after the birth. Unlike married women, single mothers do not have significant penalty in the year before or 4/5 years after the birth. First-time mothers with higher income have lower likelihood to return to employment for the whole period observed after birth. No similar effects emerge after the birth of additional children (columns 7 and 8)[21].

On the contrary, the impact of father's religious beliefs observed in the total sample seems driven by (and confined to) the birth of children additional to the first (column 10). For these mothers, high levels of religious beliefs of the father are associated with between 11 and 16 percentage points lower likelihood to return to employment. On the contrary, mothers who have less religious partners suffer penalties only in the first year after the birth. Similar outcomes (not reported here, but available upon request) can be observed for fathers' involvement in preparing meals; a higher involvement has a positive effect on female employment prospects after birth, but only for additional children. This evidence seems to indicate that gender roles and beliefs affect mothers' employment prospects only when the number of children increases.

One possible explanation is that, while in the eyes of a conservative father raising one child is still compatible with labour marker participation by the mother, this is not the case when the size of family increases and the role of the woman should become exclusively centred on child-rearing and housework. This is consistent with the literature emphasising how gender beliefs correlate to family size and the unbalanced division of labour within the household (see Kaufman, 2002; Schober, 2013; Baxter et al., 2008).

A second possible explanation, however, is related to the literature on the relationship between gender roles division and the transition to second births, that emphasises how more gender egalitarian attitudes and behaviours of fathers increase the probability of higher fertility rates (see Torr and Short, 2004; Olàh, 2003; Miettinen et al., 2011). Compared to the decision to become a mother first time, in which intrinsic needs and preferences probably play a dominant role, the choice of having additional children might be significantly more conditioned by women to a higher commitment by fathers. This is due to their awareness, also underpinned by the experience with the first child, that raising two or more children is only compatible with labour market participation if housework and child-rearing duties are adequately shared with the partner. Should this be the case, this mechanism could indeed shape the evidence, emerging from our analysis, of a relationship between less conservative behaviours of fathers (so, a higher willingness to share the family workload) and higher probability of mothers to re-enter

[21] As regards marital status, the non-significance of the coefficient might be due to the rather small number of single women having additional children (10% of the sample – amounting to 193 observations); corresponding figures for first-time mothers are 35% and 1,092 observations, respectively. The lack of effects of household income could instead be due to the fact that, consistent with some existing evidence (Doren, 2018), the main labour market adjustments take place with the transition to first parenthood; as a consequence, when additional children arrive the re-organization of the family (in terms of labour supply and income) has already taken place and we observe no visible effects.

employment after the second (or further) birth(s). On the contrary, when the father has more conservative attitudes and biased gender beliefs (and probably more power within the family), employment/career preferences of mothers are weak and have no (or little) relevance in the decision to have additional children. This materializes into housework and child-rearing heavy burdens that prevent or, in the best case, delay mothers' re-entry into employment.

## 8. Conclusions

In this paper we estimated the child penalty in Russia using the unique RLMS data and the event-study approach. Unlike the previous studies for Russia, that typically employed cross-section data to estimate the penalties, the use of the person-fixed effects and the event study framework place the claims of existence (or non-existence) of the child penalty to a higher degree of reliability. We analyse the penalty in overall monthly earnings and then decompose the analysis into three components: employment, working hours and hourly wage penalties.

Our results suggest that women in Russia suffer an earnings penalty throughout the whole period we monitor, i.e., up to 5 years after birth of a child. No similar effects are found on fathers. Child penalty for women materializes in terms of lower employment only, whereas we find no evidence of a penalty in hourly wage rates or at the intensive margin (less hours worked). Our results are in contrast with the previous studies that employ a similar approach for the US (Bertrand et al., 2010), Denmark (Kleven et al., 2019a), Sweden (Angelov et al., 2016) and a set of five European countries plus the US (Kleven et al., 2019b) which found that, in addition to employment penalties, parenthood for mothers also means a long-term decline in hours worked and wage rates. We explain this distinctive result for Russia in view of the specific institutional labour market features of the country; in particular, the limited availability of non-standard employment options poses significant constraints to the possibility to recourse to part-time jobs, frequently incentivised in US and Europe as a way to cope with family responsibilities. Clearly, the labour market institutional architecture in Russia is not conducive to such marginal adjustment mechanisms. Mothers either manage (or decide) to return to the jobs they had before having given birth and with unchanged hours and remunerations (also as an effect of maternity leave provisions); or they do not re-enter, at least in the short-medium term, the labour market. Along the apparent trade-off between facilitating a return to employment but in weaker positions (part-time or low pay jobs) and guaranteeing the quality of jobs at the cost of lower employment, Russia seems to place itself towards the second extreme. Alternatively, given the pronounced gender pay gap between men and women, it could also be argued that what we observe is a sort of a floor effect. If women are not reaching high-earnings position, giving birth will not have a significant impact on their career and they will return to low-paying jobs they had before the birth.

Employment penalty is therefore the only, and quite powerful, channel though which parenthood negatively affects women's position in the Russian labour market. A more detailed analysis of the factors affecting the magnitude of the employment penalty suggests that it might significantly depend on the division of work within the household. When mothers need to provide a crucial contribution as income earners, i.e., if they are single or/and their family has lower levels of income, they go back to work more and earlier. On the other hand, if they can economically rely on their partners or on other family income sources, the traditional division of work kicks in: men go to work to earn income for household, while women stay at home to perform domestic work. This division is further perpetuated if partners' (rather than women's own) beliefs are more conservative. This is supportive to the existing evidence of a strongly unbalanced distribution of power within the family in favour of men, a still persistent feature of Russian society.

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## Appendix

### Table A1. List of variables and abbreviations used in the tables

| *Variable name* | Variable description |
|---|---|
| ***Baseline covariates*** | |
| *married* | Marital status dummy (married=1) |
| *age2* | Number of years (squared) |
| *education* | Highest level of education attained (tertiary education = 1) |
| *lhinc* | Income of other family members (in ln) |
| *add_child* | Variable indicating additional child is born by the same women |
| *gdp10_l* | Average GDP growth in last 2 years, lagged for one year |
| *d2007* | Dummy variable indicating years after the child benefit reform (2007/2016 =1) |
| *share_dis* | Share of individuals with disabilities in the household |
| *eld75* | Number of elderly in the household |
| ***Additional covariates for hours and wage equation*** | |
| *Occupation* | High occupation = 1 (High occupation includes: 1. Managers, 2. Professionals (army personal included), 3. Technicians and Associate Professionals, other occupations=0) |
| *Public* | Sector of ownership (public sector = 1, private sector = 0) |
| *Self-employed* | Status in employment (self-employed = 1, employee = 0) |
| *Supervisory position* | Person has subordinates on his/her job |
| *Mills* | Inverse Mill's ratio from the participation equation |
| ***Time invariant driver variables*** | |
| *low_rel* | *Average own religious beliefs (1 = higher score than 2.5 on a 0-4 scale)* |
| *low_rel_pa* | *Average partners religious beliefs (1 = higher score than 2.5 on a 0-4 scale)* |

**Table A2. Descriptive statistics**

| | Women | | | | | Men | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | N | Mean | St. dev | Min | Max | N | Mean | St. dev | Min | Max |
| **Dependant variables** | | | | | | | | | | |
| earnings | 5,289 | 0.883 | 1.509 | 0 | 24.3 | 3,704 | 2.171 | 2.062 | 0 | 24.9 |
| employment | 5,289 | 0.504 | 0.500 | 0 | 1 | 3,704 | 0.845 | 0.362 | 0 | 1 |
| hours (/100) | 2,385 | 1.651 | 0.485 | 0.1 | 3.6 | 2,651 | 1.893 | 0.550 | 0.1 | 3.6 |
| Log hourly wage | 2,385 | 4.389 | 0.848 | 0.2 | 6.7 | 2,651 | 4.660 | 0.859 | 0.1 | 6.7 |
| **Baseline covariates** | | | | | | | | | | |
| age | 5,289 | 27.791 | 5.974 | 15 | 51 | 3,704 | 30.202 | 6.349 | 13 | 59 |
| add_child | 5,289 | 0.091 | 0.315 | 0 | 3 | 3,704 | 0.081 | 0.293 | 0 | 2 |
| nfm | 5,289 | 3.771 | 1.674 | 1 | 14 | 3,704 | 3.795 | 1.659 | 1 | 13 |
| married | 5,289 | 0.763 | 0.425 | 0 | 1 | 3,704 | 0.877 | 0.329 | 0 | 1 |
| lhinc | 5,289 | 0.392 | 1.894 | -6.3 | 5.5 | 3,704 | -0.578 | 2.569 | -6.3 | 5.4 |
| gdp10_l | 5,289 | 4.373 | 3.814 | -11.6 | 8.6 | 3,704 | 4.310 | 3.887 | -11.6 | 8.6 |
| high_ed | 5,289 | 0.312 | 0.463 | 0 | 1 | 3,704 | 0.248 | 0.432 | 0 | 1 |
| d2007 | 5,289 | 0.610 | 0.488 | 0 | 1 | 3,704 | 0.613 | 0.487 | 0 | 1 |
| **Job Characteristics** | | | | | | | | | | |
| high_oc | 2,385 | 0.553 | 0.497 | 0 | 1 | 2,651 | 0.308 | 0.462 | 0 | 1 |
| sup | 2,385 | 0.175 | 0.380 | 0 | 1 | 2,651 | 0.231 | 0.421 | 0 | 1 |
| public | 2,385 | 0.531 | 0.499 | 0 | 1 | 2,651 | 0.463 | 0.499 | 0 | 1 |
| self | 2,385 | 0.021 | 0.142 | 0 | 1 | 2,651 | 0.039 | 0.193 | 0 | 1 |
| **Participation drivers** | | | | | | | | | | |
| low_rel | 4,403 | 0.861 | 0.346 | 0 | 1 | | | | | |
| low_rel_pa | 4,403 | 0.754 | 0.431 | 0 | 1 | | | | | |

**Table A3. Baseline specification**

| | Women | | | | Men | | | |
|---|---|---|---|---|---|---|---|---|
| VARIABLES | earnings | empl | hours | wage | earnings | empl | hours | wage |
| t= -3 | -0.026 | 0.070 | -0.002 | -0.035 | -0.185* | -0.531** | -0.074* | 0.036 |
| | (0.067) | (0.173) | (0.036) | (0.048) | (0.109) | (0.246) | (0.043) | (0.057) |
| t= -1 | -0.309*** | -0.849*** | 0.029 | 0.027 | -0.006 | -0.133 | -0.063 | 0.056 |
| | (0.066) | (0.177) | (0.036) | (0.050) | (0.109) | (0.272) | (0.042) | (0.054) |
| t= 0 | -1.258*** | -5.279*** | 0.075 | -0.001 | 0.096 | -0.082 | -0.044 | 0.130* |
| | (0.080) | (0.277) | (0.122) | (0.169) | (0.133) | (0.287) | (0.043) | (0.068) |
| t= 1 | -1.156*** | -3.428*** | -0.047 | 0.059 | 0.316* | 0.245 | -0.008 | 0.096 |
| | (0.100) | (0.223) | (0.066) | (0.108) | (0.165) | (0.310) | (0.044) | (0.087) |
| t= 2/3 | -0.754*** | -1.554*** | -0.010 | 0.084 | 0.405* | 0.031 | -0.035 | 0.160 |
| | (0.132) | (0.228) | (0.038) | (0.102) | (0.222) | (0.305) | (0.045) | (0.119) |
| t= 4/5 | -0.735*** | -0.908*** | -0.032 | 0.081 | 0.371 | 0.114 | 0.005 | 0.133 |
| | (0.190) | (0.285) | (0.044) | (0.140) | (0.320) | (0.367) | (0.055) | (0.171) |
| t= -3 * age | -0.001 | 0.112*** | -0.005 | 0.007 | 0.010 | 0.082** | 0.016** | -0.005 |
| | (0.011) | (0.036) | (0.007) | (0.008) | (0.017) | (0.041) | (0.007) | (0.009) |
| t= -1 * age | -0.022* | -0.102*** | -0.001 | -0.005 | -0.001 | -0.031 | 0.009 | 0.008 |
| | (0.011) | (0.033) | (0.007) | (0.008) | (0.017) | (0.043) | (0.007) | (0.009) |
| t= 0 * age | -0.067*** | -0.194*** | -0.003 | -0.036* | -0.007 | -0.037 | 0.022*** | -0.009 |
| | (0.011) | (0.047) | (0.016) | (0.020) | (0.017) | (0.043) | (0.007) | (0.009) |
| t= 1 * age | -0.066*** | -0.222*** | -0.009 | -0.016 | 0.011 | 0.000 | 0.011 | -0.005 |
| | (0.012) | (0.036) | (0.009) | (0.011) | (0.017) | (0.046) | (0.007) | (0.009) |
| t= 2/3 * age | -0.072*** | -0.253*** | 0.002 | -0.022** | -0.015 | -0.060 | 0.018*** | -0.024*** |
| | (0.011) | (0.033) | (0.006) | (0.009) | (0.016) | (0.041) | (0.007) | (0.009) |
| t= 4/5 * age | -0.084*** | -0.264*** | 0.002 | -0.032*** | -0.050*** | -0.111*** | 0.014* | -0.031*** |
| | (0.012) | (0.035) | (0.007) | (0.009) | (0.018) | (0.043) | (0.007) | (0.010) |
| age2 | 0.003*** | 0.004*** | -0.000 | 0.001** | 0.001 | 0.000 | -0.000 | 0.001* |
| | (0.000) | (0.001) | (0.000) | (0.000) | (0.001) | (0.001) | (0.000) | (0.000) |
| add_child | -0.764*** | -2.599*** | 0.062 | -0.105 | 0.026 | 0.080 | 0.031 | -0.078 |
| | (0.061) | (0.173) | (0.060) | (0.086) | (0.103) | (0.292) | (0.039) | (0.051) |
| nfm | 0.013 | -0.028 | 0.013 | -0.018 | 0.028 | -0.092* | -0.004 | 0.013 |
| | (0.013) | (0.031) | (0.008) | (0.013) | (0.022) | (0.050) | (0.009) | (0.012) |
| married | -0.014 | -0.233* | -0.005 | 0.019 | 0.239*** | 0.989*** | 0.071 | 0.002 |
| | (0.050) | (0.122) | (0.026) | (0.039) | (0.093) | (0.212) | (0.047) | (0.058) |
| lhinc | -0.124*** | -0.327*** | 0.004 | -0.019*** | -0.147*** | -0.485*** | -0.003 | -0.027*** |
| | (0.009) | (0.032) | (0.005) | (0.007) | (0.011) | (0.053) | (0.005) | (0.006) |
| gdp10_l | 0.019*** | 0.057*** | -0.001 | 0.022*** | 0.017** | 0.038** | -0.000 | 0.013*** |
| | (0.004) | (0.012) | (0.003) | (0.004) | (0.007) | (0.018) | (0.003) | (0.003) |
| high_ed | 0.275*** | 0.793*** | -0.078** | 0.233*** | 0.211 | 1.448*** | -0.038 | -0.257*** |
| | (0.089) | (0.139) | (0.031) | (0.071) | (0.187) | (0.310) | (0.042) | (0.092) |
| d2007 | 0.231*** | 0.381*** | 0.052** | 0.265*** | 0.544*** | 1.024*** | 0.046 | 0.182*** |
| | (0.051) | (0.119) | (0.026) | (0.041) | (0.082) | (0.198) | (0.028) | (0.040) |
| high_oc | | | -0.045* | 0.177*** | | | -0.040 | 0.078 |
| | | | (0.026) | (0.042) | | | (0.034) | (0.048) |
| sup | | | 0.109*** | 0.010 | | | 0.093*** | 0.125*** |
| | | | (0.029) | (0.041) | | | (0.032) | (0.042) |
| public | | | -0.060*** | -0.172*** | | | -0.070*** | -0.040 |
| | | | (0.023) | (0.039) | | | (0.025) | (0.035) |
| self | | | -0.055 | 0.313** | | | 0.178*** | -0.104 |
| | | | (0.079) | (0.124) | | | (0.059) | (0.078) |
| *Mills* | | | -0.156*** | -0.043 | | | -0.041 | -0.141 |
| | | | (0.056) | (0.076) | | | (0.099) | (0.122) |
| Constant | -1.260*** | -2.093*** | 1.772*** | 3.260*** | 0.482 | 1.115** | 2.035*** | 3.627*** |
| | (0.317) | (0.356) | (0.092) | (0.270) | (0.589) | (0.520) | (0.100) | (0.322) |
| Observations | 5,289 | 5,289 | 2,385 | 2,385 | 3,704 | 3,704 | 2,651 | 2,651 |
| Individuals | 620 | 620 | 566 | 566 | 442 | 442 | 418 | 418 |

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1. Notes next to Table 1 in the main text. This table presents estimation coefficients, while the coefficients in Table 1 are marginal effects.

**Table A4. Baseline employment equation specification + interaction with drivers (mothers)**

| VARIABLES | baseline | lhinc | married | low_rel | low_rel_pa |
|---|---|---|---|---|---|
| t= -3 | 0.072 | 0.228 | 0.077 | 0.404 | -0.098 |
| | (0.174) | (0.259) | (0.174) | (0.378) | (0.274) |
| t= -1 | -0.852*** | -0.172 | -0.876*** | -0.770** | -0.699*** |
| | (0.178) | (0.309) | (0.182) | (0.358) | (0.266) |
| t= 0 | -5.300*** | -4.454*** | -5.107*** | -4.768*** | -5.538*** |
| | (0.278) | (0.563) | (0.287) | (0.532) | (0.502) |
| t= 1 | -3.444*** | -2.539*** | -3.303*** | -3.072*** | -2.945*** |
| | (0.224) | (0.409) | (0.230) | (0.388) | (0.302) |
| t= 2/3 | -1.547*** | -0.809** | -1.432*** | -1.348*** | -1.156*** |
| | (0.229) | (0.346) | (0.234) | (0.333) | (0.283) |
| t= 4/5 | -0.897*** | -0.315 | -0.843*** | -0.691* | -0.179 |
| | (0.286) | (0.404) | (0.290) | (0.393) | (0.346) |
| t= -3 * age | 0.112*** | 0.114*** | 0.113*** | 0.113*** | 0.117*** |
| | (0.036) | (0.038) | (0.036) | (0.036) | (0.038) |
| t= -1 * age | -0.103*** | -0.072** | -0.104*** | -0.102*** | -0.102*** |
| | (0.033) | (0.034) | (0.033) | (0.033) | (0.036) |
| t= 0 * age | -0.197*** | -0.170*** | -0.191*** | -0.194*** | -0.196*** |
| | (0.047) | (0.048) | (0.047) | (0.047) | (0.052) |
| t= 1 * age | -0.224*** | -0.197*** | -0.221*** | -0.222*** | -0.199*** |
| | (0.036) | (0.037) | (0.036) | (0.036) | (0.039) |
| t= 2/3 * age | -0.255*** | -0.227*** | -0.255*** | -0.253*** | -0.242*** |
| | (0.033) | (0.034) | (0.033) | (0.033) | (0.036) |
| t= 4/5 * age | -0.264*** | -0.236*** | -0.265*** | -0.262*** | -0.234*** |
| | (0.035) | (0.036) | (0.035) | (0.035) | (0.038) |
| age2 | 0.004*** | 0.004*** | 0.004*** | 0.004*** | 0.004*** |
| | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) |
| add_child | -2.922*** | -2.927*** | -2.927*** | -2.918*** | -2.999*** |
| | (0.186) | (0.187) | (0.187) | (0.186) | (0.200) |
| nfm | -0.024 | -0.022 | -0.016 | -0.026 | -0.009 |
| | (0.031) | (0.032) | (0.032) | (0.031) | (0.033) |
| married | -0.242** | 0.389 | -0.248** | -0.239* | -0.260* |
| | (0.122) | (0.255) | (0.123) | (0.122) | (0.145) |
| lhinc | -0.326*** | -0.325*** | -0.210*** | -0.325*** | -0.304*** |
| | (0.032) | (0.032) | (0.073) | (0.032) | (0.035) |
| gdp10_l | 0.056*** | 0.055*** | 0.050*** | 0.056*** | 0.059*** |
| | (0.012) | (0.012) | (0.012) | (0.012) | (0.013) |
| high_ed | 0.810*** | 0.816*** | 0.833*** | 0.816*** | 0.875*** |
| | (0.140) | (0.141) | (0.141) | (0.140) | (0.150) |
| d2007 | 0.384*** | 0.370*** | 0.370*** | 0.390*** | 0.375*** |
| | (0.120) | (0.120) | (0.120) | (0.120) | (0.130) |
| t= -3 * var | | -0.264 | 0.050 | -0.374 | 0.204 |
| | | (0.350) | (0.100) | (0.378) | (0.293) |
| t= -1 * var | | -0.978*** | -0.003 | -0.094 | -0.342 |
| | | (0.356) | (0.094) | (0.353) | (0.274) |
| t= 0 * var | | -1.130* | -0.390** | -0.629 | 0.130 |
| | | (0.616) | (0.152) | (0.556) | (0.540) |
| t= 1 * var | | -1.154*** | -0.274*** | -0.426 | -0.752** |
| | | (0.428) | (0.106) | (0.368) | (0.292) |
| t= 2/3 * var | | -0.928*** | -0.221** | -0.227 | -0.522** |
| | | (0.333) | (0.094) | (0.278) | (0.219) |
| t= 4/5 * var | | -0.676* | -0.140 | -0.235 | -0.794*** |
| | | (0.351) | (0.096) | (0.306) | (0.245) |
| Constant | -2.121*** | -2.236*** | -2.166*** | -2.116*** | -1.955*** |
| | (0.357) | (0.361) | (0.359) | (0.357) | (0.391) |
| Observations | 5,289 | 5,289 | 5,289 | 5,289 | 4,629 |
| Number of individuals | 620 | 620 | 620 | 620 | 542 |

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1. Notes next to Table 2 in the main text. This table presents probit estimation coefficients, while the coefficients in Table 2 are marginal effects.

**Table A5. Baseline specification for parenthood penalty for the first child**

| | Women | | | | Men | | | |
|---|---|---|---|---|---|---|---|---|
| VARIABLES | earnings | empl | hours | wage | earnings | empl | hours | wage |
| t= -3 | 0.093 | 0.170 | -0.015 | -0.020 | -0.214 | -0.724*** | -0.105* | 0.022 |
| | (0.087) | (0.213) | (0.051) | (0.072) | (0.134) | (0.276) | (0.054) | (0.074) |
| t= -1 | -0.358*** | -0.809*** | 0.016 | 0.065 | 0.035 | -0.029 | -0.063 | 0.007 |
| | (0.085) | (0.208) | (0.047) | (0.067) | (0.130) | (0.304) | (0.047) | (0.065) |
| t= 0 | -1.379*** | -5.123*** | -0.099 | 0.144 | 0.123 | -0.098 | -0.104** | 0.069 |
| | (0.109) | (0.340) | (0.149) | (0.230) | (0.162) | (0.325) | (0.049) | (0.085) |
| t= 1 | -1.368*** | -3.392*** | -0.051 | 0.131 | 0.331 | 0.511 | 0.002 | 0.021 |
| | (0.140) | (0.281) | (0.078) | (0.155) | (0.206) | (0.364) | (0.050) | (0.111) |
| t= 2/3 | -1.138*** | -1.767*** | -0.017 | 0.125 | 0.466 | 0.394 | -0.057 | 0.111 |
| | (0.193) | (0.307) | (0.045) | (0.157) | (0.284) | (0.353) | (0.052) | (0.158) |
| t= 4/5 | -1.313*** | -1.299*** | -0.027 | 0.143 | 0.439 | 0.417 | 0.014 | 0.021 |
| | (0.283) | (0.404) | (0.053) | (0.220) | (0.418) | (0.437) | (0.065) | (0.233) |
| t= -3 * age | -0.003 | 0.352*** | 0.009 | 0.002 | 0.014 | 0.121** | 0.015 | 0.001 |
| | (0.016) | (0.071) | (0.010) | (0.012) | (0.021) | (0.052) | (0.010) | (0.013) |
| t= -1 * age | -0.041** | -0.124** | 0.017* | -0.010 | 0.011 | -0.028 | 0.010 | 0.015 |
| | (0.018) | (0.056) | (0.010) | (0.013) | (0.023) | (0.057) | (0.010) | (0.013) |
| t= 0 * age | -0.133*** | -0.342*** | 0.021 | -0.045 | -0.001 | -0.037 | 0.021** | -0.005 |
| | (0.018) | (0.074) | (0.026) | (0.036) | (0.024) | (0.058) | (0.010) | (0.013) |
| t= 1 * age | -0.124*** | -0.350*** | 0.012 | -0.029* | 0.026 | 0.041 | 0.016* | -0.001 |
| | (0.019) | (0.060) | (0.013) | (0.017) | (0.025) | (0.062) | (0.010) | (0.013) |
| t= 2/3 * age | -0.125*** | -0.375*** | 0.007 | -0.025* | -0.010 | -0.052 | 0.017* | -0.021 |
| | (0.019) | (0.056) | (0.009) | (0.015) | (0.024) | (0.055) | (0.010) | (0.013) |
| t= 4/5 * age | -0.151*** | -0.397*** | 0.005 | -0.043** | -0.045 | -0.130** | 0.014 | -0.037** |
| | (0.021) | (0.060) | (0.010) | (0.018) | (0.028) | (0.058) | (0.010) | (0.016) |
| age2 | 0.006*** | 0.007*** | -0.000 | 0.001 | 0.001 | 0.000 | -0.000 | 0.001* |
| | (0.001) | (0.001) | (0.000) | (0.001) | (0.001) | (0.001) | (0.000) | (0.001) |
| add_child | -0.834*** | -2.697*** | 0.053 | -0.132 | 0.003 | -0.009 | -0.037 | -0.057 |
| | (0.071) | (0.199) | (0.069) | (0.103) | (0.112) | (0.309) | (0.041) | (0.056) |
| nfm | -0.035 | -0.176 | -0.010 | 0.028 | 0.275*** | 1.036*** | 0.098** | 0.090 |
| | (0.060) | (0.139) | (0.030) | (0.048) | (0.100) | (0.228) | (0.048) | (0.062) |
| married | -0.150*** | -0.373*** | -0.005 | -0.020** | -0.163*** | -0.468*** | -0.006 | -0.041*** |
| | (0.012) | (0.042) | (0.007) | (0.009) | (0.012) | (0.061) | (0.006) | (0.007) |
| lhinc | 0.015*** | 0.052*** | -0.005 | 0.027*** | 0.005 | 0.046** | -0.002 | 0.010** |
| | (0.006) | (0.015) | (0.003) | (0.005) | (0.008) | (0.021) | (0.003) | (0.004) |
| gdp10_l | 0.226** | 0.603*** | -0.081** | 0.291*** | 0.259 | 1.357*** | -0.001 | -0.242** |
| | (0.101) | (0.160) | (0.037) | (0.083) | (0.198) | (0.353) | (0.045) | (0.099) |
| high_ed | 0.209*** | 0.403*** | 0.045 | 0.273*** | 0.453*** | 0.803*** | 0.035 | 0.168*** |
| | (0.065) | (0.144) | (0.032) | (0.053) | (0.096) | (0.231) | (0.032) | (0.048) |
| d2007 | -0.144 | -0.047 | -0.085 | 0.177 | 0.057 | -0.159 | 0.020 | -0.081 |
| | (0.144) | (0.332) | (0.075) | (0.116) | (0.172) | (0.385) | (0.066) | (0.096) |
| high_oc | | | -0.063** | 0.160*** | | | -0.040 | 0.053 |
| | | | (0.031) | (0.054) | | | (0.038) | (0.055) |
| sup | | | 0.130*** | 0.038 | | | 0.083** | 0.119** |
| | | | (0.035) | (0.053) | | | (0.036) | (0.048) |
| public | | | -0.028 | -0.194*** | | | -0.096*** | -0.019 |
| | | | (0.029) | (0.049) | | | (0.028) | (0.040) |
| self | | | -0.081 | 0.209 | | | 0.142* | 0.018 |
| | | | (0.119) | (0.189) | | | (0.073) | (0.096) |
| *Mills* | | | -0.059 | -0.067 | | | 0.004 | 0.047 |
| | | | (0.065) | (0.097) | | | (0.111) | (0.141) |
| Constant | -2.129*** | -3.121*** | 1.883*** | 3.159*** | 0.501 | 0.671 | 2.016*** | 3.376*** |
| | (0.435) | (0.487) | (0.113) | (0.417) | (0.735) | (0.611) | (0.125) | (0.429) |
| Observations | 3,528 | 3,528 | 1,539 | 1,539 | 2,700 | 2,700 | 1,924 | 1,924 |
| Individuals | 415 | 415 | 383 | 383 | 322 | 322 | 303 | 303 |

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1. Notes next to Table 3 in the main text. This table presents probit estimation coefficients, while the coefficients in Table 3 are marginal effects.

**Table A6. Baseline specification for parenthood penalty for additional children**

| | Women | | | | Men | | | |
|---|---|---|---|---|---|---|---|---|
| VARIABLES | earnings | empl | hours | wage | earnings | empl | hours | wage |
| t= -3 | 0.039 | 0.008 | 0.014 | -0.032 | -0.162 | -0.505 | -0.075 | 0.093 |
| | (0.113) | (0.299) | (0.059) | (0.081) | (0.210) | (0.532) | (0.084) | (0.109) |
| t= -1 | -0.376*** | -0.796*** | 0.023 | -0.040 | -0.166 | -0.559 | -0.071 | 0.097 |
| | (0.108) | (0.298) | (0.062) | (0.084) | (0.207) | (0.542) | (0.083) | (0.107) |
| t= 0 | -1.308*** | -5.716*** | 0.347 | -0.197 | 0.161 | -0.158 | 0.051 | 0.207 |
| | (0.141) | (0.525) | (0.219) | (0.290) | (0.275) | (0.563) | (0.082) | (0.140) |
| t= 1 | -1.311*** | -3.485*** | -0.058 | -0.106 | 0.266 | -0.495 | -0.036 | 0.144 |
| | (0.186) | (0.387) | (0.113) | (0.194) | (0.367) | (0.583) | (0.087) | (0.187) |
| t= 2/3 | -0.998*** | -1.271*** | -0.009 | -0.103 | 0.342 | -0.586 | 0.026 | 0.135 |
| | (0.259) | (0.404) | (0.070) | (0.195) | (0.520) | (0.606) | (0.089) | (0.267) |
| t= 4/5 | -1.164*** | -0.540 | -0.078 | -0.213 | 0.308 | -0.414 | 0.050 | 0.123 |
| | (0.380) | (0.526) | (0.086) | (0.273) | (0.758) | (0.747) | (0.110) | (0.386) |
| t= -3 * age | 0.008 | 0.113* | -0.022* | 0.029* | 0.001 | -0.038 | 0.021 | -0.008 |
| | (0.021) | (0.069) | (0.013) | (0.016) | (0.032) | (0.097) | (0.014) | (0.016) |
| t= -1 * age | -0.002 | -0.050 | -0.021 | 0.012 | 0.014 | 0.025 | 0.017 | 0.006 |
| | (0.022) | (0.066) | (0.014) | (0.016) | (0.034) | (0.100) | (0.015) | (0.017) |
| t= 0 * age | -0.048** | 0.032 | -0.054* | -0.001 | -0.001 | -0.052 | 0.022 | -0.022 |
| | (0.022) | (0.104) | (0.031) | (0.037) | (0.034) | (0.099) | (0.015) | (0.017) |
| t= 1 * age | -0.046** | -0.074 | -0.031 | 0.027 | 0.018 | 0.013 | 0.018 | -0.015 |
| | (0.023) | (0.075) | (0.019) | (0.023) | (0.035) | (0.101) | (0.015) | (0.018) |
| t= 2/3 * age | -0.053** | -0.131** | -0.014 | -0.011 | 0.033 | 0.067 | 0.023 | -0.032* |
| | (0.023) | (0.065) | (0.013) | (0.018) | (0.035) | (0.097) | (0.014) | (0.018) |
| t= 4/5 * age | -0.057** | -0.139** | -0.027** | -0.001 | -0.015 | -0.012 | 0.024 | -0.031 |
| | (0.025) | (0.070) | (0.014) | (0.019) | (0.039) | (0.097) | (0.015) | (0.020) |
| age2 | 0.003*** | 0.002** | 0.000 | 0.001* | 0.000 | -0.001 | -0.000 | 0.001 |
| | (0.001) | (0.001) | (0.000) | (0.001) | (0.002) | (0.001) | (0.000) | (0.001) |
| add_child | -0.484*** | -1.800*** | 0.053 | -0.005 | 0.216 | -0.558 | 0.331*** | -0.164 |
| | (0.121) | (0.375) | (0.117) | (0.167) | (0.265) | (0.898) | (0.104) | (0.122) |
| nfm | 0.041 | 0.032 | 0.037 | -0.027 | -0.528 | -0.976 | -0.189 | -0.598*** |
| | (0.100) | (0.296) | (0.055) | (0.074) | (0.349) | (0.990) | (0.178) | (0.201) |
| married | -0.058*** | -0.264*** | 0.020** | -0.023** | -0.122*** | -0.480*** | 0.007 | -0.010 |
| | (0.013) | (0.049) | (0.008) | (0.011) | (0.020) | (0.089) | (0.011) | (0.013) |
| lhinc | 0.017** | 0.038* | 0.004 | 0.015*** | 0.033** | -0.001 | 0.005 | 0.021*** |
| | (0.007) | (0.022) | (0.004) | (0.006) | (0.013) | (0.039) | (0.006) | (0.007) |
| gdp10_l | 0.796*** | 1.191*** | -0.045 | -0.056 | -0.340 | 1.613** | -0.152 | -0.277 |
| | (0.216) | (0.315) | (0.060) | (0.159) | (0.579) | (0.739) | (0.095) | (0.244) |
| high_ed | 0.311*** | 0.373* | 0.067 | 0.303*** | 0.688*** | 1.484*** | 0.054 | 0.180** |
| | (0.082) | (0.223) | (0.044) | (0.064) | (0.157) | (0.409) | (0.060) | (0.077) |
| d2007 | 0.025 | -0.440 | 0.070 | -0.060 | 0.509** | 0.388 | -0.117 | -0.084 |
| | (0.153) | (0.419) | (0.097) | (0.132) | (0.242) | (0.589) | (0.103) | (0.127) |
| high_oc | | | -0.045 | 0.237*** | | | -0.061 | 0.162 |
| | | | (0.046) | (0.071) | | | (0.076) | (0.100) |
| sup | | | 0.085* | -0.039 | | | 0.159** | 0.089 |
| | | | (0.049) | (0.069) | | | (0.069) | (0.085) |
| public | | | -0.112*** | -0.112* | | | 0.006 | -0.052 |
| | | | (0.041) | (0.065) | | | (0.055) | (0.071) |
| self | | | -0.003 | 0.402** | | | 0.259** | -0.347** |
| | | | (0.107) | (0.162) | | | (0.106) | (0.135) |
| *Mills* | | | -0.321*** | -0.087 | | | -0.122 | -0.476* |
| | | | (0.100) | (0.129) | | | (0.225) | (0.255) |
| Constant | -2.373*** | -1.507* | 1.515*** | 2.922*** | 1.728 | 4.198** | 2.410*** | 4.066*** |
| | (0.765) | (0.906) | (0.188) | (0.600) | (1.709) | (1.717) | (0.270) | (0.889) |
| Observations | 1,761 | 1,761 | 846 | 846 | 1,004 | 1,004 | 727 | 727 |
| Individuals | 205 | 205 | 183 | 183 | 120 | 120 | 115 | 115 |

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1. Notes next to Table 3 in the main text. This table presents probit estimation coefficients, while the coefficients in Table 3 are marginal effects.

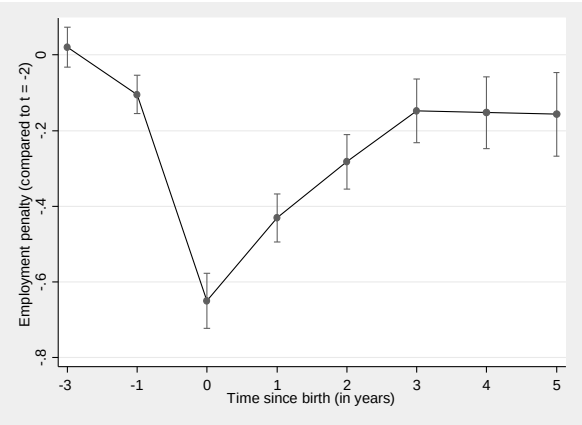
**Table A7. Mothers' employment drivers: first child and additional children**

| | First child | | | | | Additional children | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Event-time vars | Baseline estimates | Married | Household income | Own religiousness | Partner's religiousness | Baseline estimates | Married | Household income | Own religiousness | Partner's religiousness |
| Year = -3 | 0.022 | 0.038 | 0.022 | 0.085 | -0.053 | 0.001 | -0.002 | 0.000 | -0.002 | 0.044 |
| | (0.027) | (0.034) | (0.027) | (0.063) | (0.048) | (0.036) | (0.087) | (0.037) | (0.085) | (0.054) |
| Year = -1 | -0.104*** | -0.009 | -0.104*** | -0.074 | -0.059* | -0.096*** | -0.036 | -0.098*** | -0.146* | -0.098* |
| | (0.026) | (0.040) | (0.026) | (0.055) | (0.039) | (0.036) | (0.100) | (0.036) | (0.080) | (0.050) |
| Year = 0 | -0.659*** | -0.577*** | -0.688*** | -0.628*** | -0.709*** | -0.693*** | -0.432*** | -0.700*** | -0.534*** | -0.664*** |
| | (0.038) | (0.081) | (0.042) | (0.087) | (0.083) | (0.055) | (0.130) | (0.057) | (0.106) | (0.091) |
| Year = 1 | -0.436*** | -0.302*** | -0.439*** | -0.413*** | -0.411*** | -0.422*** | -0.287** | -0.429*** | -0.325*** | -0.318*** |
| | (0.033) | (0.054) | (0.033) | (0.059) | (0.049) | (0.042) | (0.126) | (0.043) | (0.083) | (0.056) |
| Year = 2/3 | -0.227*** | -0.105** | -0.221*** | -0.189*** | -0.202*** | -0.154*** | -0.106 | -0.152*** | -0.140* | -0.083 |
| | (0.039) | (0.050) | (0.038) | (0.053) | (0.049) | (0.048) | (0.094) | (0.048) | (0.074) | (0.057) |
| Year = 4/5 | -0.167*** | -0.058 | -0.155*** | -0.133** | -0.109* | -0.065 | -0.100 | -0.070 | -0.025 | 0.049 |
| | (0.051) | (0.061) | (0.051) | (0.065) | (0.063) | (0.063) | (0.101) | (0.063) | (0.088) | (0.074) |
| Interaction | | | | | | | | | | |
| Year = -3 | | -0.024 | 0.010 | -0.071 | 0.091 | | 0.004 | 0.004 | 0.003 | -0.049 |
| | | (0.058) | (0.018) | (0.064) | (0.052) | | (0.095) | (0.018) | (0.086) | (0.059) |
| Year = -1 | | -0.174*** | -0.018 | -0.034 | -0.086* | | -0.069 | 0.008 | 0.057 | 0.006 |
| | | (0.052) | (0.016) | (0.054) | (0.044) | | (0.107) | (0.017) | (0.081) | (0.056) |
| Year = 0 | | -0.139 | -0.101** | -0.036 | 0.052 | | -0.255* | -0.022 | -0.188 | -0.055 |
| | | (0.093) | (0.039) | (0.093) | (0.091) | | (0.143) | (0.031) | (0.115) | (0.106) |
| Year = 1 | | -0.198*** | -0.041** | -0.027 | -0.044 | | -0.146 | -0.035* | -0.111 | -0.161*** |
| | | (0.061) | (0.017) | (0.057) | (0.047) | | (0.131) | (0.021) | (0.082) | (0.058) |
| Year = 2/3 | | -0.179*** | -0.030** | -0.044 | -0.035 | | -0.058 | -0.014 | -0.016 | -0.108** |
| | | (0.049) | (0.015) | (0.042) | (0.034) | | (0.095) | (0.018) | (0.064) | (0.045) |
| Year = 4/5 | | -0.152*** | -0.033** | -0.040 | -0.067* | | 0.031 | 0.001 | -0.046 | -0.149*** |
| | | (0.052) | (0.017) | (0.046) | (0.038) | | (0.096) | (0.017) | (0.070) | (0.052) |
| Observations | 5,289 | 3,528 | 3,528 | 2,938 | 2,938 | 1,761 | 1,761 | 1,761 | 1,761 | 1,691 |
| Number of individuals | 620 | 415 | 415 | 345 | 345 | 205 | 205 | 205 | 205 | 197 |
| Chi-test | | 23.86 | 86.49 | 8.766 | 12.36 | | 7.129 | 35.90 | 5.667 | 16.15 |
| Prob > Chii | | 0.00121 | 0 | 0.187 | 0.0545 | | 0.416 | 7.57e-06 | 0.462 | 0.0130 |

Notes: Robust standard errors in the parentheses: *** p<0.01, ** p<0.05, * p<0.1. All regressions include interactions of age (centred at mean) with event-time dummies, set of time-varying covariates (age squared, education, marital status, lagged average two-year GDP growth rate, dummy variable for years from 2007-2018, income of other household members, additional child being born after the first child, and number of elderly in the household) and person fixed effects.
The dependent variable in the employment equation is a dummy variable taking the value 1 if the person is employed, and 0 if the person is not employed. Random-effect logit estimator applied, after insignificant Hausman specification test.

**Diagram A1. Employment penalty for the first child, year-by-year detail (average marginal effects with 95% confidence intervals)**

*Mothers*




*Fathers*