MATERNITY CAPITAL AND THE MOTHERHOOD WAGE PENALTY: EVIDENCE FROM RUSSIA

by

Kenzhetayev Rustem

A thesis submitted in partial fulfillment of the requirements for the degree of

Master of Arts

in

Economics

at

NAZARBAYEV UNIVERSITY

SCHOOL OF SCIENCES AND HUMANITIES

2022

Acknowledgements

I would like to express my deepest gratitude to my internal advisors, Professor Berk Yavuzoglu and Professor Giulio Seccia, and to my external advisor, Professor Charles M. Becker, for providing me with extensive feedback and support. Their invaluable advice and comments helped me to complete the final version of this paper.

I would also like to thank my family and my sister Zarina for supporting me throughout my Master's journey.

Abstract

This paper analyzes the implications of the maternity capital policy on the earnings of mothers with one or two children under 18 in Russia. The main goals of this paper are to obtain the most recent estimates of the motherhood wage penalty in Russia and to observe the impact of the maternity capital policy on the magnitude and the direction of the motherhood wage gap. I use the Fixed-Effects model to control for the individual-specific heterogeneity and I utilize propensity score matching to control for the self-selection. The results suggest a presence of the motherhood wage gap in the order of 3-4% for one child under 18 and 6-10% for two children under 18 on average. Overall, the maternity capital policy decreased the wage differentials between mothers with two children and non-mothers. However, this decrease was not sufficient to eliminate the motherhood wage penalty or turn it into the motherhood wage premium.

1 Introduction

The start of the 21st century was uneasy for the Russian demographics – in 1999, Russia had experienced the historical minimum in the fertility rates, accompanied by a rise in the mortality rates. The joint effect of these two factors had caused shrinkage of the Russian population. To re-stimulate fertility, the Russian government decided to adopt a set of new pronatalist measures that provide monetary compensation for childbearing. One of these measures has been the maternity capital policy that issues a one-time, tax-free monetary subsidy for mothers that gave birth to the second and subsequent children after 2007. The main objective of this pronatalist policy was to drive fertility closer to the replacement levels; however, some of the Russian demographers were skeptical about the effectiveness of these measures as the policy was targeted towards the subsequent childbearing rather than the first births. As the Russian demographic crisis was one of the main directions of the governmental policies, the importance of maintaining stability in the population was given the top priority. There were other important problems, however, that needed to be addressed. One of them was a growing wage inequality within the country - to these days, Russia still has one of the largest gender-wage gaps while having one of the smallest gender-employment gaps in the world (Atencio & Posadas, 2015). The intra- and inter-gender differences in wages were mostly neglected up until recent decades; the different evaluations of work based on gender started raising more concerns in the post-Soviet era. On top of that, parenthood was also evaluated differently, inclining towards the wage penalties for mothers and wage premiums for fathers.

Although the implementation of the maternity capital policy contributed to the stimulation of the fertility rates at the official level, it is unclear how the policy influ-

enced the motherhood wage gap in the long run, since it takes at least 10 to 15 years on average for a proper assessment of the impact of pronatalist policies according to Russian demographers (Zakharov, 2008). Before the policy, there might have been little incentive to give birth or to adopt a child; however, the monetary motivation could provide some incentive for women, especially for mothers with one child before 2007, to give birth and become eligible for the subsidy, thus influencing their labor market decisions as well as their wages in expectation. From one perspective, the policy could have contributed to the increase in the demand for part-time/family-friendly jobs with lower pay (Grimshaw & Rubery, 2015). Another possible perspective is that the policy could reinforce the prejudice of employers against the mothers with one child since they are more likely to take paid maternity leave, which would impose additional costs on the firm. More generally, the increased probability of employment interruptions and the reduction in human capital during maternity leave could influence the expectations and hiring decisions of employers. If this is the case, the maternity capital policy could have a negative unplanned side effect on the wages of women, which, in long term, may negatively influence their lifetime earnings.

This paper aims to analyze the contribution of the maternity capital policy to the motherhood wage gap by focusing on the wage differentials of mothers with one or two children. The main goals of this paper are: 1) to obtain the most recent estimates of the motherhood wage penalty in Russia; 2) to observe the impact of the maternity capital policy on the magnitude and the direction of the motherhood wage gap. To estimate the wage differentials, the individual-level data from the Russian Longitudinal Monitoring Survey for years 2004-2019 is used. The main difference from the previous studies is the methodology - the Fixed-Effects framework allows me to control for the unobserved individual-specific heterogeneity which was not controlled for in the previous studies

in Russia and the propensity score matching is utilized to control for the self-selection inside the sample. The results suggest a presence of the motherhood wage gap in the order of 3-4% for one child under 18 and 6-10% for two children under 18 on average. Overall, the maternity capital policy seems to decrease the wage differentials between mothers with two children and non-mothers.

The paper is organized as follows: Section 2 provides the overview of the demographic trends in Russia, the pre-and post-Soviet pronatalist policies, and the motherhood wage gap. Section 3 is the review of the available literature on wage differentials between mothers and non-mothers and their connection to the family policies. Section 4 is dedicated to the description of the data and variables. Section 5 describes the methodology and models used in the paper. Section 6 provides the results of the analysis. Finally, Section 7 concludes the study, discusses the limitations and further research.

2 Background

As a response to the decline observed in the fertility rates since mid-20th century, the government of the Russian Federation introduced two rounds of pronatalist policies, first in 1981, then in 2007. The policies were designed to stimulate fertility rates mainly through the monetary subsidies for childbearing.

The 1981 pronatalist policies included monetary compensations and material assistance for the families and married couples with children as well as various improvements to the quality of life (such as improvement in housing conditions, preschool, and school establishments) and better employment opportunities for women (part-time employ-

ment and work at home) (Zakharov 2008). After the introduction of this policy bundle, period fertility rates had rapidly increased from 1981, reaching a local peak of 2.2 births per woman in 1987 - an increase by approximately 15%. However, later analysis shows that the actual number of births per woman did not increase - the main driving factor of the increasing fertility rate was the decrease between the birth intervals (Vishnevsky, 1997). The observed effect of the first round of pronatalist measures was the shortening of birth intervals and the decrease in the average age of mothers (Zakharov, 2008).

The late 1980s was a turning point for the fertility rates in Russia – starting from 1987, fertility rates experienced a sharp decline, reaching a historical minimum of 1.2 births per woman. This decline was associated with the worsening of the economic conditions, quality of life, and the general stability inside of the Soviet Union in the early 90s. The effect of the 1981 pronatalist policy bundle wore off before the economic situation within the country could influence the childbearing decisions of women (Frejka and Zakharov, 2013). After the dramatic decline in the fertility rates, the situation stabilized and the births per woman averaged between 1.2 and 1.4 from the early 2000's up to 2006. The increase in the mortality rate raised another concern – with low fertility rates and high mortality rates, the population of Russia had started declining. The government decided to implement another set of pronatalist measures in response to the demographic crisis. These measures included a notable monetary increase in child-related benefits, a generous rework of parental leave, and a new maternity capital policy (Frejka and Zakharov, 2013).

Figure 1 shows the total fertility rate (births per woman) of the Russian Federation from 1960 to 2019 (World Bank, 2019). The red line represents the 1981 policy measures, which was the governmental response to the fertility decline between 1960 and 1980; the blue line represents the 2007 policy measures in response to the demographic

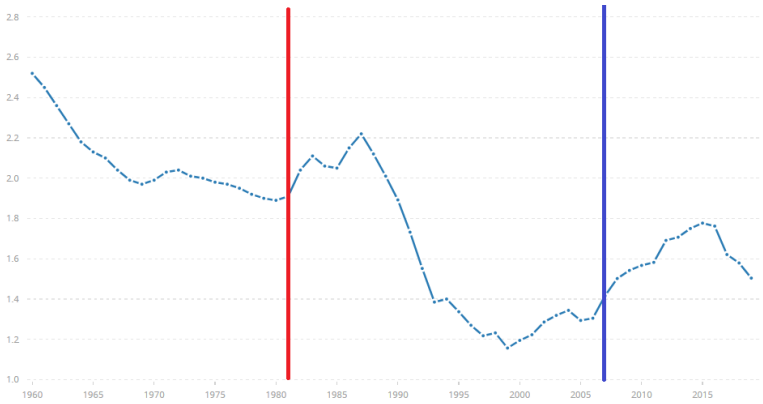

Figure 1: Fertility rate, total (births per woman) - Russia (Source: World Bank)

crisis at the end of the 20th century.

The maternity capital program was introduced in 2007 as an attempt to drive the fertility rates closer to or beyond the replacement level. According to this policy, from January 1 of 2007, any mother who gives birth or adopts a second or a consequent child becomes eligible for a one-time payment, exempt from the income tax – 250,000 rubles or nearly 10,000 U.S. dollars, adjusted for inflation. This subsidy can only be used three years after the birth or the adoption of a child. The expenditures that can be covered by the maternity capital include the education of children, integration of children with special needs into the classrooms, improvement of the living conditions of the household and funding the pension of the mother (Pension Fund of the RF, 2008).

Figure 2 shows the percentage change in the crude birth rates by the number of children based on the data from the Human Fertility Database for period from 2007 to 2018 (HFD, 2022).

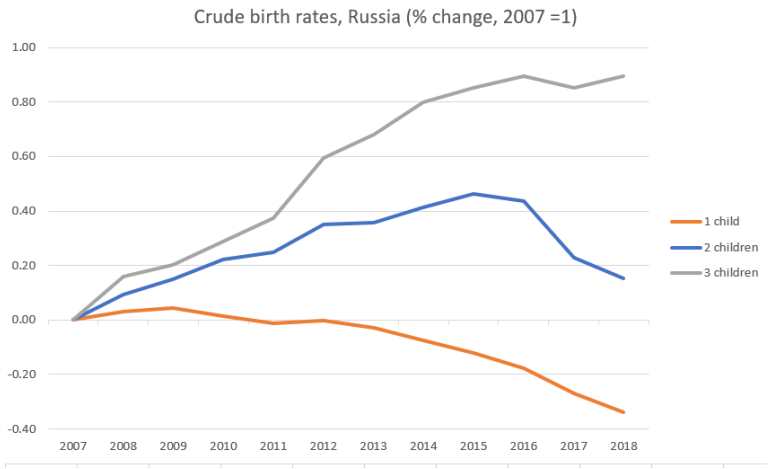

Figure 2: Crude birth rate by order - Russia (Source: HFD, 2022).

From this graph, there is a noticeable increase in the birth rates of 2 and 3 children in the first 10 years, followed by a decline in all categories from 2016. As for the change in the birth rates of 1 child, there was a gradual increase up to 2009 and a steady decline afterward. As the maternity capital policy was mainly targeted towards women with second or subsequent children, these results are not surprising. A closer analysis by Zakharov (2016) reveals that the policy had little to no effect on the group of women between 18 and 24 years old. For all other age groups, the 2007 pronatalist policies increased the birth rates of delayed and higher-order children. The decline of the birth rates for the first child can be explained by the changes in both the reproductive behavior and the family model in Russia. When compared to the end of the 20th century, marriage and family creation became more lagged than before, which, in turn, delays the births of the first children. As "one-child families" became dominant in Russia and the ratio of the firstborn children to total births was high, this lag in the family creation had a negative impact on the total fertility rate (Zakharov, 2016). Moreover, when combined with the increase in the number of births of higher-order children, the average age of childbearing increased, reaching 28 years in 2014. The

maternity capital policy increased the probability of birth of second and higher-order children but the firstborns. However, based on the analysis of the pronatalist policies in 1981, the estimated projection predicts the shrinkage of birth rates for higher-order children. The proportion of nulliparous women would settle around 16% which, in turn, would imply the need for 2.5 births per woman to reach the minimum threshold of the replacement level. Based on the reasons above, some of the demographers argue that the pronatalist measures taken by the government in 2007 had positively affected the fertility rates only to some extent. However, the magnitude of this effect is small and not enough to increase the fertility rates in the long run (Zakharov, 2016).

The decline in the fertility rates, however, was not the only problem faced by the Russian Federation in the late 1990s. While having one of the lowest gender employment gaps, Russia has one of the highest gender wage gaps in the world (Atencio & Posadas, 2015). According to the World Bank estimates, the gender wage gap fluctuated around 28% between 1994 and 2011 . Recent RosStat data shows that the gap decreased to 24.8% in 2019 while staying in the range between 22% and 25% from 2012 to 2018 (RFSS, 2021). Several attempts to decompose this gap had been made. Atencio and Posadas (2015) concluded that the education of women and labor industry are the main driving factors across the different earning percentiles. Their findings reinforce the evidence of the glass ceilings for women in the higher-earning percentiles and sticky floors in the lower percentiles. More recent research by Oshchepkov (2021) suggests that, in addition to the mentioned factors, uneven distribution of males and females across industries has the largest contribution to the income gap, while marital status and the number of children have little to no effect on the dispersion in earnings since the proportion of working men and women who are married and have children is almost identical. However, about two-thirds of the wage gap remains unexplained.

While these studies have provided some insights about the variance in earnings between the gender groups, what happens within the groups was less researched. The increasing number of works that address this issue suggest the presence of a "motherhood pay gap" - a difference in the monetary evaluation of the work performance of mothers and non-mothers as viewed by some, or a penalty for childbearing as viewed by others. Global trends suggest that the motherhood pay gap increases with the number of children, their gender (girls are more likely to help their mother with household chores), and their age. Moreover, the gap is more persistent in developing countries.

There are several directions for possible reasons of the motherhood pay gap as was highlighted by Grimshaw and Rubery (2015). The direction of rationalist economics suggests that the reduced work time and human capital of mothers as well as the presence of interruptions in employment and the selection of family-friendly jobs for the lower pay are the key factors. The sociologists suggest that stereotyping of mothers and lower expectations regarding their productivity contribute to the glass ceiling effect by reducing the likelihood of getting a top or a high-paid position; moreover, there is a noticeable connection of the earning gap to the gender norms within the country. Finally, the comparative institutionalists suggest that the motherhood wage gap depends on the family and childcare policies within the country. The existence of such policies equalizes the employment and wage opportunities for women with children and reduces the motherhood wage gap. It is important to note that the mentioned approaches are likely to have a joint effect on the wages of mothers.

3 Literature review

Numerous studies have linked the topics of maternity and earnings. The past research suggests that part of the motherhood pay gap is explained by the factors such as education, number of children, the timing of birth, and work experience. Empirical evidence from the US presented by Anderson, Binder, and Krause (2002) concludes that the penalty of bearing a child varies with the education of a woman. A cross-sectional analysis of the US data showed that there is no significant wage gap between mothers and non-mothers without a high school degree; however, the wage gap was about 10% for women with finished higher education. Moreover, the number of children was important - there is a significant increase in the wage gap from 4% (presence of one child) to 15% (presence of two and more children). The authors also concluded that the human-capital variables accounted for 60% of the wage gap for high school students and 30% for college graduates. Another paper by Taniguchi (1999) suggests that the age of becoming a mother is an important factor in the determination of the adversity of the pay gap. The results of this study show a significant wage gap between mothers and non-mothers if the age of the mother was between 20 and 27. Moreover, the study found no significant evidence of the effect of marital status on the pay gap. More recent findings by Mortimer and Staff (2012) based on the U.S. microdata argue that the residual gap is explained by the cumulative time of not being in the activities involving the accumulation of human capital such as work and education. Research by Landivar (2020) links delayed fertility (birth of the first-born child) and wages across the occupations; the results suggest that the higher-earners have higher penalties but only if they decide to have a first-born at a young age.

The literature on the motherhood wage gap in Russia was on the rise mainly at the

end of the first decade of the 21st century. Arzhenovsky and Artamonova (2007) use the RMEH (Russian Monitoring of Economics and Health) data for the years 2003 to 2005 to estimate the motherhood wage gap and conclude that the gap was 3.2% on average. Nivorozhkina et. al. (2008) use the RLMS (Russian Longitudinal Monitoring Survey) data. Their results suggest that the gap is larger if the children are under 18 years old, with the gap being around 12% on average. The work by Biryukova and Makarentseva (2017) re-estimated the gap using the RLMS data for 2014. They concluded that the motherhood pay gap was 9.7% on average; for women with children over 18 years old the gap was estimated to be around 4.5%, while for women with children under 18 years old the gap was approximately 13.3%. As in the case with the US, there is a relationship with the education of mothers– it was significantly higher for mothers with primary vocational education or below (31.1% for mothers with children under 18). Pritchett (2015) used the RLMS to estimate the motherhood pay gap focusing on the period between 1994 and 2012. The main difference of this study is the inclusion of other females in the household, the location of the respondents, and their ethnicity. The findings suggest that the wage penalty for mothers is between 15% and 24% for the lowest and highest wage quartiles, respectively, and the size of the penalty is related to education, location, ethnicity, and the number of children inside of the household.

There are few resources, however, on the interaction of the family policies and the wages of mothers in the Russian Federation. This could be explained by the fact that the research on the motherhood wage gap in Russia is still new and ongoing. Moreover, adequate assessment of the family policies and their interactions require up to 10-15 years after their implementation, as mentioned by Frejka and Zakharov (2013). Slonimczyk and Yurko (2014) studied the impact of the maternity capital policy by using the dynamic stochastic model of fertility and labor force participation on the

RLMS data for the period between 2004-2010. They conclude that although the fertility rates respond to the material and financial benefits, this magnitude of this response is small – the maternity capital program increased the fertility by 0.15 children in the long run. Kingsbury (2019) studied the implications of family policies on the gender wage gap and the retirement earnings of mothers in Russia. The author concluded that Russian mothers are at a systematic disadvantage because of the framework of the family policies and the limited access to public childcare. Russian mothers remain the main caregiver for the children, especially if the children are under school age. This transforms into the consequences for childbearing mainly in the form of the gender wage gap. Moreover, the retirement earnings of women with children are smaller because of the unpaid maternity leave. This implies that the motherhood wage penalty may have a negative long-term effect on the lifetime earnings of mothers.

My analysis includes most of the determinants mentioned in the literature. Some of the time-invariant determinants (for instance, ethnicity, race) were omitted since the Fixed-Effect model would not allow me to obtain the estimates for variables with little to no variation over the time.

4 Data

The data are obtained from the Russian Longitudinal Monitoring Survey conducted by the National Research University Higher School of Economics and ZAO "Demoscope" together with the University of North Carolina at Chapel Hill. This dataset is designed for studying the effects of governmental policies on health and socio-economic welfare on both individual and household levels inside of the Russian Federation. The methodology of gathering the data involved surveying individuals on various aspects

of their life to monitor their health status, household expenditures, food consumption, reproductive behavior, and other standards of living. There was a total of 28 rounds of data collection for the years 1994 to 2019. Each round includes over 10,000 individuals from more than 4000 households. The dataset contains over 3000 variables and is representative of the population of the Russian Federation. (HSE et al., 2019).

For this research, I use the data on women from the 13th to 28th rounds of the survey for the period between 2004 and 2019. For the estimation of the motherhood wage gap, I focus on the maternal age population of women (age 16 to 45) who are mothers (have one or two children) and non-mothers (no children). The number of children was restricted to a maximum of two children. In this case, the subsidy can only be redeemed after the birth of the second child. The children's age is restricted to be less than 18 years old since it is assumed that children under 18 require more attention and caregiving; moreover, they are more likely to live together with their mother. This category was further split into children that are less than 7 years old and children that are between 7 and 18 years old. The panel nature of the data allows one to monitor the same individuals over the given period which is useful when estimating the wage equations. My total working sample after matching is 10,696 observations for 3,827 unique mothers.

Table 1 in the Appendix section shows certain before-and-after-policy characteristics of women with two children for the selected years. The more detailed analysis of the data is as follows:

Figure 3 shows the proportion of women based on the settlement type. As can be observed from this graph, there was an increase of mothers with two children in the rural areas and decrease of mothers with two children in urban areas prior to 2010.

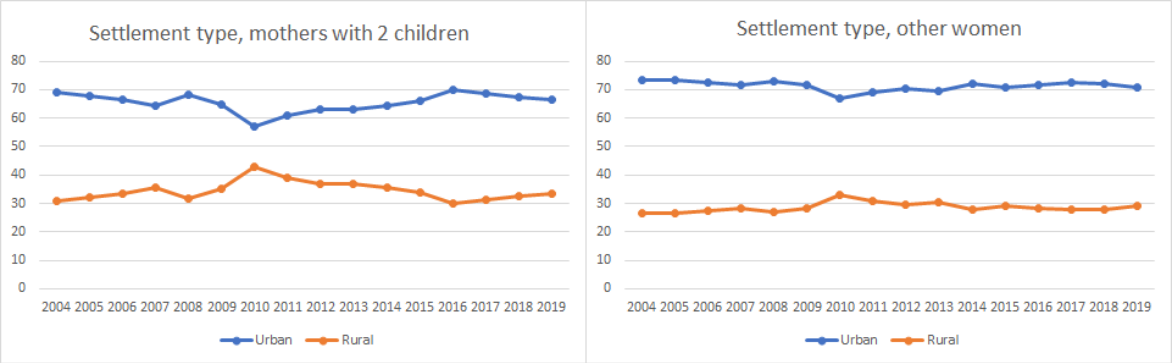

Figure 3: Settlement type

After 2010, however, the trend reversed for the next 6 years and returned to the original direction afterwards. This may indicate that the women in rural areas took advantage of the policy in the first three years. The trend is similar, although not as volatile, for other women.

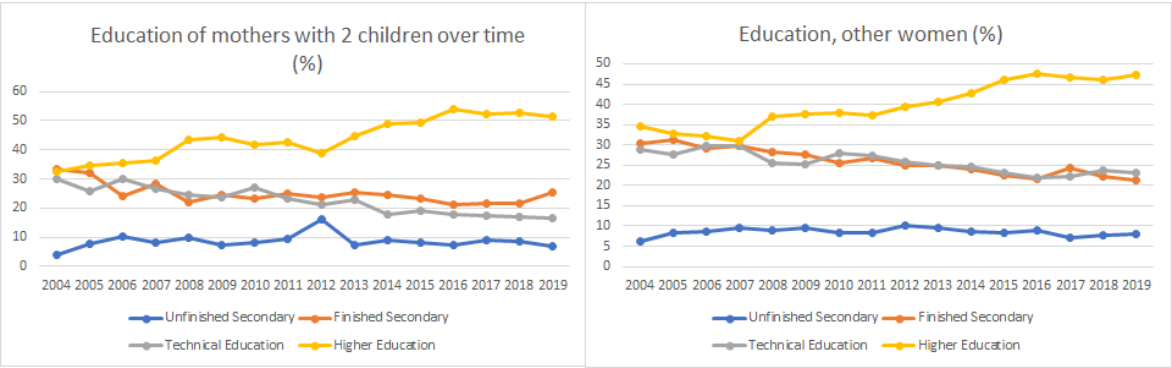

Figure 4: Education

Figure 4 displays the change in the education of women over time. Before the policy, the trends were relatively stable and the majority of women had completed higher education. After the policy, there was a gradual rise in the proportion of women with finished higher education and a gradual decline in the proportion of women with finished secondary and technical education, stabilizing in 2016. This may indicate that more women with technical or finished secondary school diplomas chose to pursue higher education. The proportion of women with unfinished secondary education, on

the other hand, remained relatively still (around 10%), with an occasional spike in 2012 for mothers with two children.

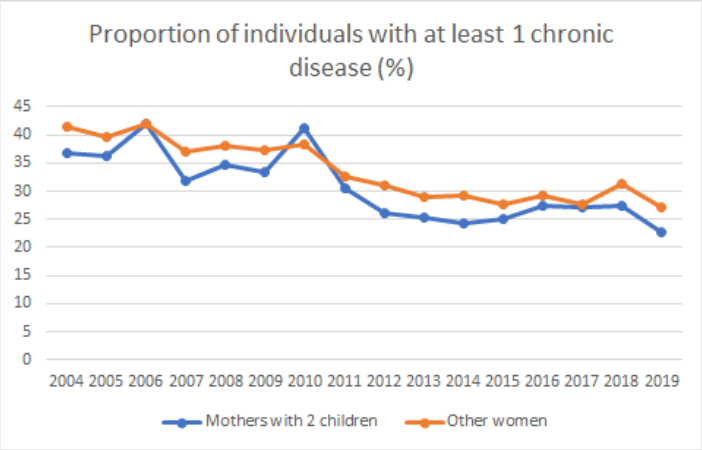

Figure 5: Health indication

Figure 5 displays the potential health indicator of mothers with two children. From this graph, the percentage of mothers with at least one chronic disease was highly volatile between 2004 and 2010, ranging from 32% to 42%. After 2010, the proportion had experienced a sharp decline – this might be connected to the increase in health expenditures in 2010 (5.6% of GDP of the Russian Federation). From 2012, the trend stabilized and the proportion was between 23% and 30%. One can also notice that, based on this indicator, mothers with two children tend to be healthier on average.

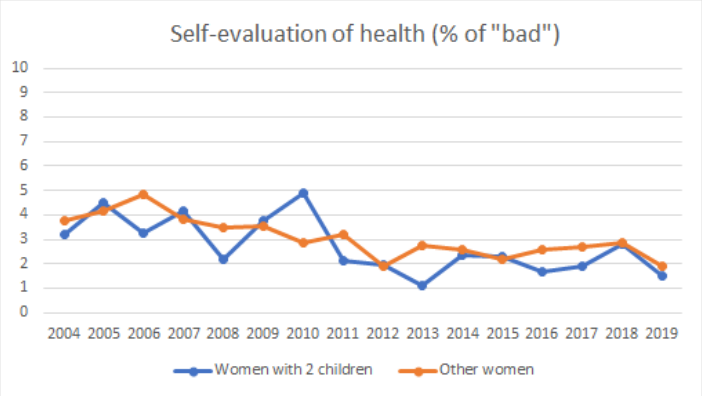

Figure 6: Alternative health indication

Figure 6 shows an alternative health indicator - the proportion of women who reported themselves as having bad health. Although this indicator is volatile, the percentage of women with bad self-reported health stayed between 1% and 5%. The trend of this indicator mostly coincides with the trend observed in the Figure 5.

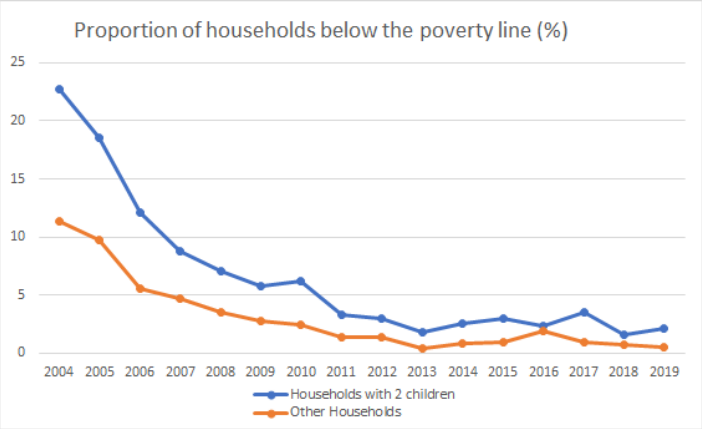

Figure 7: Poverty decomposition of households

Figure 7 shows the proportion of households below the poverty line, according to the RLMS poverty index. The trend shows a steep decline for the households with two children from 23% until 2010; it stays at 3-4% on average for the rest of the years. One can notice that the households with two children have a higher probability to cross the poverty line. This might be connected to the additional expenditures on children.

Finally, Figure 8 displays the average raw differences in monthly wages of women, adjusted for 2004 rubles. The overall chart shows the increase in real wages up to 2013 and the stagnation between 7500 and 8500 rubles afterward. Before 2007, the mean values for all of the three categories were close to each other. From 2007 until 2011, women with one child had the highest average real wages. After that period, women with two children had the lowest average real wages while the average real wages of women with no children and women with one child were approximately equal.

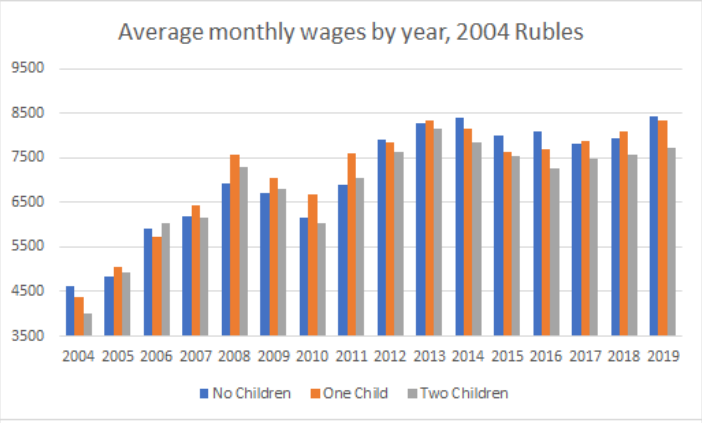

Figure 8: Average monthly real wages, adjusted to 2004 Rubles

5 Methodology

Before estimating the model, we need to address one of the possible sources of endogeneity due to the self-selection. Since the decision of women on having a second child can be altered by the policy (for instance, women that have one child could be stimulated to give birth to a second child to get the monetary compensation), I utilize propensity score matching. Propensity score matching helps to create balanced groups for the females with 2 children based on the vector of the specified parameters. This is done to get the unbiased estimators for the FE model. The process of estimation runs in two steps: the first stage of PSM involves estimating the probability of being treated given the vector of specified variables and calculating the propensity scores while the second stage is matching treated and control group based on the calculated propensity score. From these two stages, one can construct a new dataset based on the existing data and use it for further modeling. In order to estimate the propensity score, the following model is used:

$$Pr(2children = 1|controls) = \beta_0 + \beta_1 age + \beta_2 married + \beta_3 workweekhours + \beta_4 educ + \beta_5 workexperience + \beta_6 lowhealth + \beta_7 nonlabor + \beta_8 otherhhincome + \beta_9 nonlaborsq + \beta_{10} otherhhincomesq + \beta_{11} otherwomen + \beta_{12} urban + \sum_{i=13}^{27} \beta_i year_i$$

where $2children$ equals 1 if a mother has 2 children, *age* is age of a mother, *married* is the marital status, *workweekhours* is the hours in average workweek, *educ* is the level of education of mother, *workexperience* is work experience, *lowhealth* is the health indicator (=1 if mother has at least one chronic disease), *nonlabor* is the non-labor income of the mother (in thousands), *otherhhincome* is the other household income (in thousands), *otherwomen* is a dummy for the other women in the household, *urban* is a dummy for the settlement type and $\sum_{i=11}^{25} \beta_i year_i$ is a vector for the years between 2004 and 2019. Once the propensity scores are obtained, the individuals are matched based on the nearest neighbor matching method without replacement, which implies that individuals from the treatment and the control group are matched if their propensity scores are as close as possible. For matching procedure, I use the caliper value of 0.027, 0.2 of the standard deviation of the probit of the propensity score as was proposed by Stuart and Rubin (2008). Afterwards, the paired observations are saved. As the result of this two-stage process, I obtain a new balanced dataset and estimate the Fixed-Effect model.

One of the criteria for selecting the Fixed-Effect model was an assumption of possible correlation of individual-specific unobserved heterogeneity with the independent variables. Another criteria for selecting the Fixed-Effect model over the Random Effect model for this study was the Hausman test, that rejected the RE model in the favor of the FE model. The general wage equation for the analysis is:

$$lnwagehrs = \beta_{0t} + \sum \beta_{it} X_{it} + \sum \beta_{jt} J_{jt} + c_i + u_{it}$$

where $lnwagehrs$ refers to the natural logarithm of hourly wages, β_{0t} refers to the intercept term, $\beta_{it}X_{it}$ refers to the vector of the independent variables and their respective coefficients, c_i is unobserved individual-specific heterogeneity and u_i is the error term of the regression. In order to estimate the effect of the policy, I add an additional dummy variable *Policy* which equals 1 for years 2010 and later, since the subsidy can be redeemed only after 2010. The vector $\sum \beta_{jt}J_{jt}$ contains the interaction terms of this dummy with mothers who have two children. The estimates of the interaction terms, β_{jt}, will capture the effect of the policy on wages of mothers with two children. This term is exclusive to Model 3a and Model 3b. The detailed description of variables is available in Table 1. Summary statistics are available in Table 3 and Table 4 in the Appendix section.

Variable description	
Variable	Description
Hourly wage (in log)	After-tax wage received in the last 30 days
Age	Age at the time of the survey
Age squared	Age^2
Marital status	*Marital status of a woman:* -Never married (Reference category) -Married and living together -With the past marriage history (divorsed, widowed etc.), not living together

Children under 18	*Categorical variable for children under 18 years old:* - No children under 18 years old (Reference category) - One child under 18 years old - Two children under 18 years old
Children under 7	*Categorical variable for children under 7 years old* - No children under 7 years old (Reference category) - One child under 7 years old - Two children under 7 years old
Children between 7 and 18	*Categorical variable for children between 7 and 18 years old* - No children between 7 and 18 years old (Reference category) - One child between 7 and 18 years old - Two children between 7 and 18 years old

Education	*Categorical variable for education of a woman* - Unfinished secondary education (Reference category) - Finished secondary education - Finished Technical education - Finished Higher education
Workweek hours	Hours in average workweek
Work experience	Work experience, in years
Health indicator	Dummy for controlling health =Low if woman has at least one chronic disease
Non-labor income	Total income - Wages, in thousands
Other household income	Total household income - total income, in thousands
Other women in the household	Dummy for controlling the presence of other women in the household
Urban	Dummy for controlling the settlement type
Year	Year dummies

Table 1: Description of variables

From the table above, one can notice that *workweek hours* and *health indicator* are likely endogenous. In order to address this problem, I generate the lagged version of these variables (i.e. $workweekhours_{it-1}$ and $lowhealth_{it-1}$) and use them as instrumental variables.

This paper estimates three models in total. Model 1 evaluates the general effect of having one or two children below 18 years old. Model 2 introduces the cutoff value for the age of the children (under 7 years old and between 7 and 18 years old). Finally, Model 3 evaluates the effect of the policy on the motherhood wage gap comparing period before 2007 to period after 2010, since the policy is not immediate and the subsidy can only be redeemed after 3 years.

6 Results

Tables 5 in the Appendix section provides the Fixed-Effect estimates for the models before and after the propensity score matching. Each individual affected by the policy formed a pair with an individual not affected by the policy based on the nearest-neighbor matching method. The main goal of the propensity score matching was to produce unbiased Fixed-Effect estimates based on the balanced dataset. The section below compares the outcomes before and after the matching.

Model 1 estimates the motherhood penalty in the presence of one or two children under 18 years old in the household with a reference category of no children under 18. The results for the unmatched (Model 1a) sample suggest a presence of a penalty for maternity of about 2% for having one child under 18 and 6.7% for having a second child under 18 when controlling for the other factors. While the former is not statistically

significant, the latter is significant at 1% significance level. The age of women, marital status, hours in average workweek and health status also explain the earnings of women. The turning point for age is around 27 years. After the turning point, the earnings of women start to decrease – this can be connected to the age of childbearing as was discussed earlier. Married women earn 8.5% less and women with the low health status earn 2% less on average. The negative coefficient on the hours in average workweek implies that the part-time jobs are more beneficial in terms of earnings. Women with technical and higher education earn 8% and 11% more on average. The coefficients on non-labor and other household income are significant at 1%. The direction of the estimates suggests a decrease in wages with the increase in the non-labor income and the increase in wages with the increase in the other household income. The presence of other women in the household has no statistically significant effect on the earnings. The coefficient on the settlement type suggests a presence of a wage premium of 12% for urban workers.

After the matching procedure (Model 1b), the main changes were observed in the magnitude and significance of some of the coefficients. The results for the matched sample suggest that the effect of having one child under 18 is still not statistically significant. The magnitude of the penalty of having two children, on the other hand, decreased to 5% on average. The marital status matters - the magnitude of the coefficients increased significantly: married women earn 13% less on average compared to 8.5% in the unmatched model. There is no statistical evidence of discrimination of women with past marriage history and women with higher work experience. Education and the presence of other women in the household are not statistically significant as well. The increasing year coefficients suggest the increase in wages of mothers over the time. The estimate on the settlement dummy increased in magnitude significantly –

the new premium for living in an urban settlement is 17%.

Models 2a and 2b include the cutoff variables for the age of children. The results for the unmatched data suggest that having one child less than 7 years old generates a wage penalty of 2.7%. On the other hand, the penalty for having a second child is around 5%. Having one or two children between 7-18 years generates a penalty of 2% and 4% respectively. The magnitude and direction of other estimates remain identical to the Model 1a. After the matching procedure, the penalty for two children under 7 years rose to 10% on average - the estimate is significant at 1% significance level. The penalty for one child under 7 increased to 4%. The penalty for having one child between 7 years and 18 years is around 3% and the penalty for having an additional child in this category is 6% - both estimates are significant at 5% level. Being married decreases earnings by 13% and having a past marriage history shows no statistical significance. The presence of other women is not statistically significant. The non-labor income, other household income and their squared terms are significant at 1% and 5% significance levels respectively.

From these models, one can confirm the existence of the motherhood wage gap for mothers with one and two children under 18 years old. The effect of having a second child under 18 years old results in a 5% penalty on average, when not controlling for the age groups within that category and when controlling for the other factors. The large change in the magnitude of the estimates in Models 2a and 2b could be a result of the self-selection inside the sample. When controlling for the self-selection, the estimates suggest that the severity of the motherhood wage gap increases with the number of children. Moreover, the severity is also connected to the age of children – having a second child less than 7 years old decreases the wages by 10% while having a second child between 7 and 18 decreases the wages by 6%. Intuitively, smaller children

require more attention and caregiving and, as the Russian mothers are the primary caregivers for the children under the school age, this finding is consistent with the previous research. The penalties for having one child under 7 and one child between 7 and 18 are similar – both penalties have settled at around 3-4% when controlling for other factors.

The estimates of the motherhood penalty are close to the findings from the previous studies in Russia mentioned in the literature review. It is necessary, however, to compare these estimates with other countries around the world. A paper by Vagni and Breen (2021) measures the recent motherhood penalty estimates for Britain. Their findings suggest that there are severe motherhood wage penalties – the median loss in medium and long-term earnings of mothers is around 45%. Another paper by Kleven et al. (2019), revealed that the median earnings of mothers are lower by 20% in Denmark. Glauber (2018) uses the U.S. microdata to reveal that the penalty was around 2% on average. The motherhood wage penalty was decreasing over time and is negligible for the high-earners; for the low-earners, the hourly penalty was around 4% in 2014. Cukrowska-Torzewska and Lovász (2017) compare the penalty among 26 European countries. Their results suggest that the motherhood penalty in the Southern EU countries (Italy, Spain, Greece) is low (under 1%) or nonexistent. Western EU countries, on the other hand, show mixed results – there is a 20% wage gap in Norway, an 11% wage gap in the UK, and a 10% wage gap in Sweden and Slovenia. CEE (Central and Eastern Europe) countries tend to have the highest wage gaps, ranging from 10% in Hungary to 35% in Germany. Post-socialist countries have a motherhood wage gap ranging between 10-20%. The big difference between the magnitude of the estimates is explained by the duration of the motherhood leave, childcare availability, and the family norms. As CEE countries have higher maternity leave, lower childcare

availability, and family norms skewed towards "male breadwinning", the penalty estimates for those countries are higher as women tend to spend more time outside of the labor. Overall, my estimates suggest that the magnitude of the motherhood penalty in Russia is lower than in other post-socialist countries and is higher than in the U.S. and in the European Union on average.

Finally, Model 3a and 3b estimate the effect of the maternity capital policy on the earnings of women before and after 2010. The results of these models are presented in Table 6. Based on these results, the Russian mothers with two children suffered significant wage penalties before 2007 – the motherhood wage gap was around 16% without controlling for the age of children within the "under 18 years old" category. The policy seems to have a significant positive effect on the wage gap. After 2010, the wage gap decreased by 7% for women with two children under 18 years. When controlling for the age of children, there was a decrease in the wage gap for mothers with two children under 7 years by 7%. However, there is no evidence of the contribution of the maternity capital policy to the wage gap of mothers with two children between 7 and 18 years old. Instead of having a negative side effect as was proposed initially, the maternity capital policy seems to decrease the wage differentials between mothers with two children and non-mothers. There are several possible ways to interpret this finding. First, as was mentioned earlier, the maternity capital subsidy can only be used to cover specific needs, such as expenditures on the improvement of living conditions and the education of children, including pre-school. This allows to reallocate the family budget and potentially increase the childcare expenditures, relieving the "burden of motherhood". Second, the potential increase in housing and childcare expenditures could be positively correlated to the recovery time from birth, allowing women to return to work more quickly. Finally, part of the positive effect could be explained by the rise of

the equal pay movements and the decrease in the overall gender-wage gap as mentioned earlier. An important remark, however, is that the decrease in the motherhood wage penalty did not eliminate the penalty or turn it into the motherhood wage premium. This implies that, although the policy tamed the discriminatory attitudes to some extent, there is still work to be done when it comes to the family policies in Russia.

7 Conclusion

This paper investigates the effect of the maternity capital policy on the motherhood wage gap in the Russian Federation for years from 2004 to 2019. The main goals of this paper were to obtain the recent estimates of differentials in the earnings of mothers and non-mothers and to estimate the impact of the policy to the wage gap between the mentioned categories. The paper uses the Fixed-Effect estimation to control for unobserved individual-specific and time-invariant heterogeneity and the propensity score matching is utilized to control for the self-selection inside the sample.

The findings suggest the presence of the motherhood wage gap in Russia which ranges from 3% to 10% on average and varies with age and number of children when controlling for other factors. The maternity capital policy could have a positive effect on the earnings of women and significantly decreased the wage gap between mothers and non-mothers. The estimated model suggests that the decrease was the strongest if the children were below 7 years old. There are certain limitations of this research to be addressed. First, I expect that the motherhood wage gap highly depends on the gender of children, since girls are more likely to help their mothers. In other words, I expect girls to be more of an asset than a liability. Second, the cutoff value of 7 years is not ideal since we do not observe the effects within the category. It is best to make more

categories every three years until 18 years old since I expect the motherhood penalty to be the most severe when the child needs the most of the caregiving – under 3 years old. The mentioned problems were not possible to address due to the limitations of the dataset. Third, the Fixed-Effect model does not allow me to obtain the estimates for variables with no or little variation over time that can be the determinants of the motherhood wage gap (for instance, ethnicity or other adults in the household). For the identical reasons, the Fixed-Effect model does not allow me to obtain the estimates for education - the intensiveness of the motherhood wage gap should also vary for different education categories.

One possible direction of further research would be to observe the effect of COVID-19 pandemics on the motherhood wage gap while considering the changes between the different industries. Another possible extension of this research would be the inclusion of fathers to measure the wage premium or penalty in the presence of children as well as the gender-wage gap. It is also possible to expand the current research by using the newest RLMS data.

8 References

1. Anderson, D. J., Binder, M., Krause, K. (2002). The motherhood Wage Penalty: Which mothers pay it and why? American Economic Review, 92(2), 354-358. doi:10.1257/000282802320191606

2. Arzhenovsky S. V., Artamonova, D. V.(2007) Assessment of losses of earnings of women with children. Applied Econometrics, no. 7 (3): 66-79.

3. Atencio, A., Posadas, J. (2015). Gender gap in pay in the Russian Federation: Twenty years later, still a concern. Policy Research Working Papers. doi:10.1596/1813-9450-7407

4. Biryukova, S., Makarentseva, A. (2017). Estimates of the motherhood penalty in Russia. Population and Economics, 1(1), 50-70. doi:10.3897/popecon.1.e36032

5. Crude birth rate -Russia. Human fertility database. (2022). Retrieved March 11, 2022, from https://www.humanfertility.org

6. Cukrowska-Torzewska, E. (2017). The impact of parenthood on the gender wage gap: A comparative analysis of 26 European countries. Warsaw : University of Warsaw, Faculty of Economic Sciences. doi:10.26405/WP/WNE/2017/254/25

7. Frejka, T., Zakharov, S. (2013). The Apparent Failure of Russia's Pronatalist Family Policies, Population and Development Review, 39, issue 4, p. 635-647

8. Glauber R. (2018). Trends in the Motherhood Wage Penalty and Fatherhood Wage Premium for Low, Middle, and High Earners. Demography, 55(5):1663-1680. doi: 10.1007/s13524-018-0712-5

9. Grimshaw, D., Rubery, J. (2015). The motherhood pay gap: A review of the issues, theory and international evidence. Human Rights Documents Online. doi:10.1163/2210-7975_hrd-4022-2015018

10. Higher School of Economics, ZAO "Demoscope", Carolina Population Center the Institute of Sociology RAS. (2019). Russia Longitudinal Monitoring survey, RLMS-HSE.
Retrieved from https://www.cpc.unc.edu/projects/rlms-hse

11. Kleven, H., Camille L., Jakob E. (2019). "Children and Gender Inequality: Evidence from Denmark." American Economic Journal: Applied Economics, 11 (4): 181-209. doi: 10.1257/app.20180010

12. Landivar, L. (2020). First-birth timing and the motherhood wage gap in 140 occupations. Socius: Sociological Research for a Dynamic World, 6, 237802312093942. https://doi.org/10.1177/2378023120939424

13. Nivorozhkina L. I., et.al. (2008) The cost of the motherhood: econometric evaluation. Taganrog Institute of Administration and Economics Messenger, No. 1/2008.

14. Oshchepkov A. (2021) Gender Pay Gap in Russia: Literature Review and New Decomposition Results. Gendering Post-Soviet Space. Springer, Singapore. https://doi.org/10.1007/978-981-15-9358-1_10

15. Pension fund of the Russian Federation. (2021). Maternity (family) capital. Retrieved March 27, 2021, from https://pfr.gov.ru/en/matcap/

16. Pritchett, Irina. (2015). Wage Penalties for Motherhood and Child-rearing in Post-Soviet Russia. AAEA WAEA Joint Annual Meeting, July 26-28, San Francisco, California 205241, Agricultural and Applied Economics Association.

17. Russian Federal State Statistics Service. (2021).Unadjusted gender pay gap: difference between average hourly male and female earnings. Retrieved from:https://rosstat.gov.ru/

18. Slonimczyk, F., Yurko, A. (2014). Assessing the impact of the maternity capital policy in Russia. Labour Economics, 30, 265-281.

doi:10.1016/j.labeco.2014.03.004

19. Staff, J., Mortimer, J. T. (2012). Explaining the motherhood wage penalty during the early occupational career. Demography, 49(1), 1–21.

https://doi.org/10.1007/s13524-011-0068-6

20. Stuart, E.A., Rubin, D.B. (2008). Matching with multiple control groups and adjusting for group differences. Journal of Educational and Behavioral Statistics 33(3): 279-306. doi:10.3102/1076998607306078.

21. Taniguchi, H. (1999). The timing of childbearing and women's wages. Journal of Marriage and the Family, 61(4), 1008. doi:10.2307/354020

22. The World Bank. (2018). Fertility rate, total (births per woman) - Russian Federation. Retrieved from https://data.worldbank.org

23. Vagni, G., Breen, R. (2021). Earnings and Income Penalties for Motherhood: Estimates for British Women Using the Individual Synthetic Control Method. European Sociological Review. 37. doi:10.1093/esr/jcab014.

24. Vishnevsky, A. (1997). The population of Russia, 1996.

25. Zakharov, Sergei. (2008). Russian Federation: From the first to second demographic transition. Demographic Research. 19. 907-972. doi:10.4054/DemRes.2008.19.24.

26. Zakharov, S. (2016). Skromniye rezultaty pronatalisticheskoy politiki na fone dolgovremennoy evolutsiyi rozhdaemosti v Rossii. Part 1. Demographic Overview, 3(3), 6-38. https://doi.org/10.17323/demreview.v3i3.1745

Socioeconomic characteristics*

Characteristics \Year	2006	**2007***	2008	2010	2012	2015	2018
Observations							
Number of respondents	1194	1229	1189	773	1298	1395	1386
Number of mothers with 2 children	245	239	231	163	305	392	425
Number of mothers with 2 children (%)	20.50%	19.40%	19.40%	21.10%	23.50%	28.10%	30.60%
Marital status							
Never Married	3.70%	4.90%	5.40%	6.60%	6.80%	5.40%	5.60%
Married and living together	73.80%	73.40%	73.30%	72.40%	73.80%	76.80%	76.20%
With past marriage history, not living together	22.30%	21.70%	21.30%	20.90%	19.30%	17.80%	18.20%
Education							
Unfinished secondary education	8.80%	9.10%	8.70%	8.10%	14.90%	8.20%	8.10%
Finished secondary education	28.20%	29.60%	26.80%	26.10%	20.90%	22.70%	22.10%
Technical education	29.90%	29.10%	25.90%	30.50%	24.80%	22.10%	21.60%
Higher Education	32.90%	32.10%	38.40%	35.30%	39.20%	46.80%	48.20%
Income							
Household below the poverty line	6.90%	5.50%	4.20%	3.10%	1.70%	1.60%	1.10%
Job							
Average workweek hours	42.3	42.4	41.6	41.6	41.6	41.6	41.9
Part-time job	6.90%	5.50%	6.50%	7.60%	5.70%	5.30%	5.40%
Health indication							
Not Healthy (at least 1 chronic disease)	42.10%	37.10%	38.60%	37.70%	31.40%	27.80%	31.20%
Gave birth last 12 month	0.50%	0.50%	N/A	N/A	N/A	0.50%	0.50%
Settlement type							
Rural	32.7%	34.5%	32.1%	42.9%	39.3%	35.1%	31.3%

*Calculated out of the women with 2 children inside the sample

Table 2: Socioeconomic characteristics of women with 2 children for the selected years

Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Log of hourly wage	22409	3.569	.702	.432	6.814
Age	22409	35.47	6.014	17	45
Age^2	22409	1294.272	417.845	289	2025
Marital status	22409	1.132	.475	0	2
Hours in average workweek	22409	41.878	10.993	2	168
Work experience	22409	5.751	5.596	0	21
Health indicator (=1 if low)	22409	.332	.471	0	1
Children under 18	22409	1.094	.629	0	2
Children under 7	22409	.404	.554	0	2
Children between 7 and 18	22409	.745	.654	0	2
Education	22409	17.794	3.148	13	21
Non-labor income	22409	.952	4.723	0	314.869
Other household income	22409	13.278	28.158	0	1864.385
Other women in the household	22409	.987	.114	0	1
Settlement type (=1 if urban)	22409	.712	.453	0	1
Year	22409	2011.894	4.328	2004	2019

Table 3: Summary statistics for the unmatched sample

Variable	Obs	Mean	Std. Dev.	Min	Max
Log of hourly wage	10696	3.595	.697	.432	6.533
Age	10696	34.817	4.505	17	45
Age^2	10696	1232.51	313.176	289	2025
Marital status	10696	1.085	.435	0	2
Hours in average workweek	10696	41.083	10.585	2	168
Work experience	10696	5.735	5.427	0	21
Health indicator (=1 if low)	10696	.292	.455	0	1
Children under 18	10696	1.442	.602	0	2
Children under 7	10696	.489	.601	0	2
Children between 7 and 18	10696	.987	.68	0	2
Education	10696	17.976	3.155	13	21
Non-labor income	10696	1.143	5.965	0	314.869
Other household income	10696	13.8	28.1	0	1622.288
Other women in the household	10696	.99	.099	0	1
Settlement type (=1 if urban)	10696	.663	.473	0	1
Year	10696	2012.57	4.396	2004	2019

Table 4: Summary statistics for the matched sample

Regression results

Fixed-Effect estimates *Dependent variable -* *log of hourly wages*	Model 1a (unmatched)	Model 1b (matched)	Model 2a (unmatched)	Model 2b (matched)
Age	0.0676***	0.0579*	0.0586***	0.0558*
	(0.0171)	(0.0328)	(0.0175)	(0.0331)
Age squared	-0.00125***	-0.00107***	-0.00112***	-0.00107***
	(0.000147)	(0.000295)	(0.000153)	(0.000307)
Marital status				
(Reference: Never married)				
Married and living together	-0.0857***	-0.135***	-0.0877***	-0.134***
	(0.0267)	(0.0489)	(0.0268)	(0.0497)
With past marriage history	-0.0480	-0.0840	-0.0490	-0.0845
	(0.0284)	(0.0510)	(0.0283)	(0.0515)
Hours in average workweek	-0.0173***	-0.0188***	-0.0173***	-0.0188***
	(0.000563)	(0.000883)	(0.000563)	(0.000882)
Hours in average workweek (squared)	0.000145***	0.000150***	0.000145***	0.000148***
	(0.00001)	(0.00002)	(0.00001)	(0.00002)
Work Experience	-0.00105	-0.00113	-0.00105	-0.00106
	(0.00130)	(0.00199)	(0.00130)	(0.00199)
Health status (=1 if low)	-0.0238**	-0.0216	-0.0234**	-0.0216
	(0.0101)	(0.0155)	(0.0101)	(0.0156)
Number of children				
(Reference: no children)				
One child under 18	-0.0176	-0.00394		
	(0.0143)	(0.0271)		
Two children under 18	-0.0672***	-0.0504**		
	(0.0193)	(0.0120)		
One child less than 7			-0.0271**	-0.0411**
			(0.0136)	(0.0197)
Two children less than 7			-0.0521*	-0.102***
			(0.0314)	(0.0426)
One child between 7 and 18			-0.0195*	-0.0318**
			(0.0116)	(0.0197)
Two children between 7 and 18			-0.0400**	-0.0645**
			(0.0199)	(0.0304)

Fixed-Effect estimates *Dependent variable -* *log of hourly wages*	Model 1a (unmatched)	Model 1b (matched)	Model 2a (unmatched)	Model 2b (matched)
Education level				
(Reference: Unfinished secondary education)				
Finished Secondary Education	0.0237	-0.00430	0.0229	-0.00503
	(0.0190)	(0.0316)	(0.0189)	(0.0315)
Finished Technical Education	0.0799***	0.0376	0.0807***	0.0374
	(0.0269)	(0.0403)	(0.0269)	(0.0402)
Finished Higher Education	0.110***	0.0486	0.110***	0.0487
	(0.0316)	(0.0453)	(0.0316)	(0.0452)
Non-labor income (in thousands)	-0.00726***	-0.00987***	-0.00730***	-0.00986***
	(0.00169)	(0.00227)	(0.00170)	(0.00227)
Non-labor income (squared)	0.000005***	0.00009***	0.000005***	0.00009***
	(0.0000006)	(0.0000009)	(0.0000006)	(0.0000009)
Other household income (in thousands)	0.000660***	0.000759**	0.000672***	0.000776**
	(0.000240)	(0.000313)	(0.000241)	(0.000313)
Other household income (squared)	-0.0000003**	-0.0000005**	-0.0000003**	-0.0000005**
	(0.0000001)	(0.0000001)	(0.0000001)	(0.0000001)
Other women in the household	0.0361	0.0437	0.0360	0.0443
	(0.0293)	(0.0510)	(0.0294)	(0.0516)
Settlement type (=1 if urban)	0.126*	0.175***	0.110*	0.158***
	(0.0669)	(0.0522)	(0.0638)	(0.0516)
Year dummies				
2005.year	0.157***	0.180***	0.156***	0.181***
	(0.0236)	(0.0396)	(0.0235)	(0.0394)
2006.year	0.350***	0.376***	0.349***	0.379***
	(0.0341)	(0.0580)	(0.0340)	(0.0576)
2007.year	0.494***	0.505***	0.494***	0.509***
	(0.0458)	(0.0754)	(0.0457)	(0.0749)
2008.year	0.658***	0.700***	0.657***	0.706***
	(0.0583)	(0.0971)	(0.0581)	(0.0963)
2009.year	0.677***	0.740***	0.677***	0.746***
	(0.0705)	(0.117)	(0.0703)	(0.116)
2010.year	0.702***	0.752***	0.700***	0.758***
	(0.0836)	(0.140)	(0.0834)	(0.139)
2011.year	0.798***	0.847***	0.795***	0.854***
	(0.0963)	(0.159)	(0.0961)	(0.158)

Fixed-Effect estimates *Dependent variable -* *log of hourly wages*	Model 1a (unmatched)	Model 1b (matched)	Model 2a (unmatched)	Model 2b (matched)
2012.year	0.885***	0.952***	0.882***	0.960***
	(0.109)	(0.180)	(0.109)	(0.179)
2013.year	1.001***	1.055***	0.998***	1.063***
	(0.122)	(0.201)	(0.122)	(0.199)
2014.year	0.987***	1.047***	0.984***	1.057***
	(0.136)	(0.224)	(0.135)	(0.222)
2015.year	0.975***	1.042***	0.970***	1.054***
	(0.148)	(0.245)	(0.148)	(0.243)
2016.year	0.991***	1.058***	0.986***	1.071***
	(0.162)	(0.266)	(0.161)	(0.264)
2017.year	1.040***	1.127***	1.034***	1.141***
	(0.174)	(0.288)	(0.174)	(0.286)
2018.year	1.139***	1.216***	1.132***	1.231***
	(0.188)	(0.310)	(0.187)	(0.308)
2019.year	1.199***	1.286***	1.191***	1.301***
	(0.201)	(0.332)	(0.201)	(0.330)
Constant	2.986***	3.078***	3.149***	3.171***
	(0.417)	(0.729)	(0.422)	(0.732)
Observations	22,409	10,696	22,409	10,696
R-squared	0.579	0.521	0.579	0.521
Number of groups	5,424	3,725	5,424	3,725

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 5: Fixed Effect estimates for Model 1 and Model 2

Fixed-Effect estimates *Dependent variable - log of hourly wages*	Model 3a (matched)	Model 3b (matched)
Age	0.160***	0.159***
	(0.0235)	(0.0249)
Age squared	-0.00170***	-0.00168***
	(0.000331)	(0.000348)
Marital status		
(Reference: Never married)		
Married and living together	-0.137**	-0.139**
	(0.0560)	(0.0568)
With past marriage history	-0.110*	-0.115*
	(0.0592)	(0.0597)
Hours in average workweek	-0.0326***	-0.0324***
	(0.00317)	(0.00317)
Hours in average workweek (squared)	0.000144***	0.000143***
	(0.00003)	(0.00003)
Work Experience	-0.00304	-0.00293
	(0.00188)	(0.00188)
Health status (=1 if low)	-0.0211	-0.0213
	(0.0157)	(0.0158)
Number of children		
(Reference: no children)		
Two children under 18	-0.161***	
	(0.0381)	
Two children under 18 * Policy	0.0739***	
	(0.0249)	
Two children less than 7		-0.196***
		(0.0737)
Two children less than 7 * Policy		0.0708**
		(0.0724)
Two children between 7 and 18		-0.121***
		(0.0402)
Two children between 7 and 18 * Policy		0.0150
		(0.0343)

Fixed-Effect estimates Model 2a *Dependent variable* - (unmatched) *log of hourly wages*	Model 1a Model 2b (unmatched) (matched)	Model 1b (matched)
Education level *(Reference: Unfinished secondary education)*		
Finished Secondary Education	-0.0259	-0.0275
	(0.0319)	(0.0318)
Finished Technical Education	0.0265	0.0274
	(0.0423)	(0.0421)
Finished Higher Education	0.0617	0.0614
	(0.0482)	(0.0482)
Non-labor income (in thousands)	-0.00922***	-0.00915***
	(0.00247)	(0.00246)
Non-labor income (squared)	0.00113***	0.00114***
	(0.000364)	(0.000362)
Other household income (in thousands)	0.00003***	0.00003***
	(0.000008)	(0.000008)
Other household income (squared)	-0.0000007***	-0.0000007***
	(0.0000002)	(0.0000002)
Other women in the household	0.0208	0.0194
	(0.0569)	(0.0576)
Settlement type (=1 if urban)	0.141	0.123
	(0.121)	(0.115)
Constant	1.266***	1.309***
	(0.426)	(0.626)
Observations	10,696	10,696
R-squared	0.482	0.486
Number of groups	3,827	3,827

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Table 6: Fixed Effect estimates for Model 3