DOI: 10.14515/monitoring.2021.2.1830


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For citation:
Biryukova S. S., Sinyavskaya O. V. (2021) More Money — More Births? Estimating Effects of 2007 Family Policy Changes on Probability of Second and Subsequent Births in Russia. *Monitoring of Public Opinion: Economic and Social Changes.* No. 2. P. 48–72. https://doi.org/10.14515/monitoring.2021.2.1830.
Правильная ссылка на статью:
Бирюкова С. С., Синявская О. В. Больше денег — больше рождений? Оценка влияния изменений в семейной политике 2007 г. на вероятность рождения второго и последующих детей // Мониторинг общественного мнения: экономические и социальные перемены. 2021. № 2. С. 48—72. https://doi.org/10.14515/monitoring.2021.2.1830. (In Eng.)

DOI: 10.14515/monitoring.2021.2.1830

MORE MONEY — MORE BIRTHS? ESTIMATING EFFECTS OF 2007 FAMILY POLICY CHANGES ON PROBABILITY OF SECOND AND SUBSEQUENT BIRTHS IN RUSSIA

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Abstract. From 2007 to 2015 total fertility rate in Russia increased from 1.42 to 1.78, following a long period of decline in 1990–1999 and stagnation in 2000-2006. Politicians attribute this growth to a package of pro-natalist policy measures introduced in 2007 and particularly to the maternity (family) capital program, the most well-known innovation of the 2007 reform. Existing studies, although sparse, have not actually proven this point of view clearly yet. This paper aims to reveal whether the pro-natalist measures of 2007 have influenced probability of second and consequent births in Russia. Since in 2007 several family policy measures were introduced simultaneously, and the authors estimate their cumulative effect applying a set of binary logistic regressions on the

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Аннотация. С 2007 по 2015 г. суммарный коэффициент рождаемости в России увеличился с 1,42 до 1,78. Рост показателя произошел после длительного периода его снижения в 1990—1999 гг. и стагнации в 2000—2006 гг. Политики связывают положительную динамику рождаемости с принятием в 2007 г. пакета пронаталистских политических мер, в частности, с программой материнского (семейного) капитала. Однако существующие эмпирические исследования, хотя и немногочисленные, пока не могут с уверенностью подтвердить эту точку зрения. Цель данной статьи — выяснить, повлияли ли пронаталистские меры 2007 г. на вероятность рождения второго и последующих детей в России. Поскольку в 2007 г. был запущен целый

DOI: 10.14515/monitoring.2021.2.1830

panel of Russian Generations and Gender Survey data collected in 2004, 2007, and 2011. The study reveals that the probability of second and subsequent births before the introduction of policy measures does not differ significantly from that observed after it. The authors find no effect of 2007 family policy changes on probability of second and consequent births in Russia. The data shows some signs of selective influence of the 2007 policy changes on women with lower human capital and incomes, however, further studies on bigger samples are needed to prove this fact. The study extends the academic discussion and adds to the pool of empirical evidence on the pro-natalist policy effects on fertility. By demonstrating no significant effects of Russian 2007 family policy measures the paper contributes to the overcoming of existing publication bias in the field.

Keywords: family policy, pro-natalist policy, Russian Maternity Capital Program, Generations and Gender Survey, Russian Federation

Acknowledgments. The authors are grateful for the support granted to the research within the Basic Research Program at the National Research University Higher School of Economics (HSE).

пакет нововведений в семейной политике, авторы оценивают их совокупный эффект посредством серии бинарных логистических регрессий на панельных данных российской части исследования «Поколения и гендер», собранных в 2004, 2007 и 2011 гг. Согласно полученным результатам, показатели вероятности рождения второго и последующих детей до и после введения мер по стимулированию рождаемости существенно не отличаются. Авторы не обнаружили влияния принятых в 2007 г. изменений семейной политики на динамику рождаемости в России. Проведенный анализ выявил некоторые признаки избирательного воздействия политических мер 2007 г. на рождаемость женщин с более низким человеческим капиталом и доходами, однако для подтверждения этого факта необходимо проведение дальнейших исследований на более крупных выборках. Представленный в статье анализ вносит вклад в продолжение академической дискуссии и дополняет пул эмпирических данных о влиянии пронаталистской политики на рождаемость. Не демонстрируя значимого эффекта мер семейной политики, принятых в России в 2007 г., статья способствует преодолению существующей предвзятости публикаций в этой области.

Ключевые слова: семейная политика, пронаталистская политика, российская программа материнского капитала, исследование «Поколения и гендер», Российская Федерация

Благодарность. Авторы благодарны за поддержку, оказанную исследованию в рамках Программы фундаментальных исследований НИУ ВШЭ.

DOI: 10.14515/monitoring.2021.2.1830

Introduction

The question of whether the population, family and, wider, social policies influence fertility occupies the minds of researchers and policy makers for several decades, but still has no clear answer. From the perspective of economic theory of fertility [Becker, 1991], family policy instruments, mainly child benefits and allowances, reduce the costs of having children and thus can contribute to an increase in the number of births. Sociology provides several alternative theoretical explanations, including risk aversion explanation or postponement transition, gender-equity concept, and welfare regime approach [Balbo, Billari, Mills, 2013; Bradshaw, Attar-Schwartz, 2011; Billingsley, 2010]. Despite of the differences among these sociological explanations, they all focus on how various social institutions structure people's life courses and, hence, affect their fertility decisions [Balbo et al., 2013; McDonald, 2000a]. However, most of empirical research focuses on micro-level determinants of reproductive behavior and, furthermore, tries to estimate the effect of separate policy measures (e. g., cash allowances, or formal childcare availability, etc.). Although under certain circumstances (e. g., quasi-experimental or comparative data) this strategy can bring interesting results, it still suffers from the inability to catch the potential complementarity of different policy measures realized simultaneously [Thevenon, 2011].

This question is currently highly relevant for Russia. In 2016, the total fertility rate (TFR) in this country amounted to 1.78 children per woman. The birth rate in the country has been steadily growing since early 2000s up to 2017, yet the most significant increases occurred in 2007, 2008 and 2012. Moreover, in early 2010s the growth of the number of births was mostly associated with an increase in the number of second and subsequent births [Frejka, Zakharov, 2013]. Government officials interpret these processes as an unequivocal indicator of the success of the 2007 family policy measures aimed at supporting families with several children and promoting motherhood, which was only interrupted by economic downturn in the most recent years.

The most well-known instrument is the launch of the maternity (family) capital program; however, the adopted package of policy measures also included an introduction of the lump-sum birth grant and a revision of the maternity and parental leaves and childcare allowances. Very often, the entire increase in TFR is being attributed to the maternal capital program efficiency. However, existing studies do not actually prove this point of view clearly yet [Zakharov, 2013; Tyndik, 2015; Slonimczyk, Yurko, 2014].

In this paper, we attempt to develop this discussion and assess overall effects of the 2007 Russian family policy changes on fertility behavior focusing on second and consequent births. We consider all policy changes introduced in 2007 together as in our opinion it is impossible to separate effects of maternity capital program from effects of all other family policy novelties, and the latter are as important as the former. Therefore, we focus on the following research questions:

— Have the measures of Russian pronatalist policy introduced in 2007 influenced probability of second and consequent births?

— Whether and to what extent their effects on births vary depending on the social and economic characteristics of women?

The paper consists of eight sections. Following this introduction, in Section two, we provide an overview of the family policies launched in Russia in 2007. Section three

DOI: 10.14515/monitoring.2021.2.1830

discusses the theoretical framework of the studies assessing the effects of family policy measures and briefs existing studies considering Russian case. Section four provides a detailed description of the data and methods used in the study. Section five describes the dynamics of fertility indicators before and after the policy introduction. Moving on to modelling, in Section six we present the descriptive analysis of the data, and in Section seven we review the regression analysis results. Finally, in the last section, we conclude the study and provide space for further discussion on the topic.

An overview of the 2007 policy changes

In 2007, the Russian government introduced a number of family policy changes. Most of them were of a monetary nature and in fact increased well-being of families with children. However, their main officially declared goal was to stimulate the second and subsequent births, and hence they were presented from the pronatalist population policy perspective. Overall, there are four major novelties of the 2007 family policy reform.

First, a lump-sum birth grant for those who had their child born, adopted or fostered was added to the system of family benefits. In case of the birth of two or more children, this grant is paid for each child. The amount of the grant was set at 8,000 rubles in 2007 and due to the annual indexation, it reached 18,004.1 rubles in 2020.

Second, the maximum amount of the monthly allowance paid to working mothers during their maternity leave has been increased almost by 1.5 times, from 16,125 rubles to 23,400 rubles in June 2007. By 2020 due to the annual revision, this upper limit of the allowance amounted to approximately 69,000 rubles per month.

Third, rules of the childcare allowance paid to working women during parental leaves until the child is 1.5 years old also changed. Since 2007, its size equaled to 40 % of the woman's average salary calculated for twelve months preceding the childcare leave, no less that 1,500 rubles for the first child and 3,000 rubles for each of subsequent children, but no more than 6,000 rubles. Before this allowance amounted to 700 rubles for all working women regardless of their salary or of the number of children they had already had. In whole, in 2007 it immediately increased the total amount of payments for each woman getting salary over 15,000 rubles per month approximately by 90,000 rubles for the whole period or by 5,300 rubles monthly for 16—18 months. The rules for setting maximum size of this allowance were once more revised in 2011, and in 2020 the maximum monthly payment reached 27,984.7 rubles[1].

At the same time, from January 2007, a monthly childcare allowance for children under 1.5 years old was extended to non-working women, who received 1,500 rubles per month for the first child and 3,000 rubles for each of the subsequent children. By 2020, due to the annual indexation the minimum amounts of the childcare allowance reached correspondingly 6,752 rubles both for first and any subsequent children.

Finally, fourth, and maybe the best-known novelty of 2007 was the introduction of the maternity (family) capital program[2]. This program was adopted for the period of

[1] For a detailed description of the maternity and parental leave regulations and related benefits see [Sinyavskaya, Billingsley, 2015].

[2] Later on, in the paper we will be referring to it simply as to *maternity capital program*.

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2007—2016[3] and aimed at encouraging families to have a second or subsequent child by entitling them to the *maternity (family) certificate*, worth 250,000 rubles in 2007, and indexed by 2020 up to 616,617 rubles. Initially, the certificate money was allowed to be used no earlier than three years after the birth of the child. Generally, families owning the certificates could not get this money in cash. Over the past thirteen years the opportunity to get lump sum payments from the maternity capital was provided several times, during the economic crises' periods, in 2009—2010 (12,000 rubles each year), in 2015 (20,000 rubles), and in 2016 (25,000 rubles). However, apart from that the rules of the program initially allowed using maternity capital funds as a non-cash payment for one of three purposes, namely, (a) to improve family's housing, and this includes both purchase of new housing via mortgage or directly and improvement of the current housing, (b) to pay for the child's education or (c) to invest in the mother's retirement savings. In 2016, this list the government also allowed to (d) spend funds on the purchase of goods and services intended for social adaptation and integration of children with disabilities. In 2020, this program was transformed into a broader social support scheme implying direct financial payments for low-income families at the expense of the certificate; however, within this paper we will focus on the design implemented in 2007—2011.

Altogether these four major novelties of Russian family policy substantially lower childbearing costs and thus constitute a "critical juncture" that might cause changes in fertility behavior [Neyer, Andersson, 2008]. However, almost all of them are cash transfers, unconditional or conditional ones, affecting families at the moment of a childbirth. Although the research proves the more diverse and complex family policy systems to be the more efficient ones [Thevenon, Neyer, 2014], a broader goal of supporting families with children at all stages of their existence has not been recognized in Russia, at least until recently. Problems of reconciliation of childbirth and childcare with mother's employment and hence of early pre-school services availability came to the official governmental discourse just a few years ago. Furthermore, until now these issues remain mainly in the field of rhetoric and do not transform into efficient policy actions. Formal childcare is mostly available for children over three years old, while coverage of children under three was estimated at the level of 18% in 2014/2015 according to Transmonee database [Sinyavskaya, 2017].

The estimates in figure 1 give grounds to assume differentiated effect as well as perception of the adopted policy changes across different socio-economic groups of women or families. Indeed, for non-employed or low-paid women, the cost of the maternal capital certificate exceeds the amount of all other birth-related payments many times, and for them, the maternity capital program becomes the dominant of the reform. To the contrary, for well-paid women employed before the childbirth, the value of all other changes is, at least, comparable, and might be better recognized — since all the allowances are in-cash transfers which affect the current well-being of the families.

[3] In 2016, it was prolonged till 2018, and then transformed to a broader program of social support for families with children.

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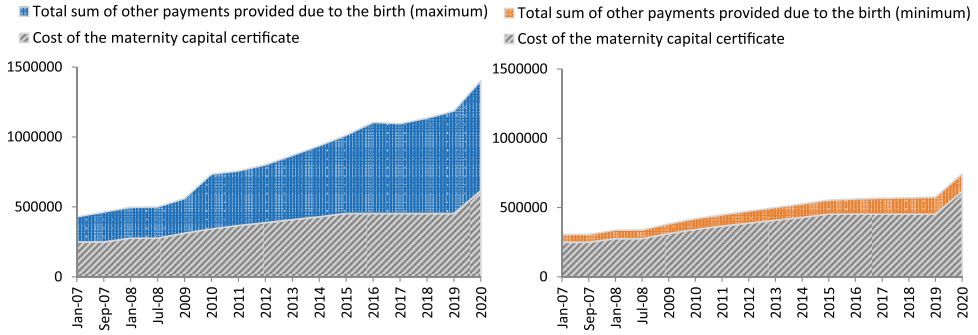

Fig. 1. Comparison of the maternity capital value and other payments provided due to childbirth during the childcare leave in Russian rubles (2007—2020)[4]

Theoretical perspective and previous empirical studies

Measures implemented in Russia in 2007 are essentially cash benefits or financial measures, which are based on the assumption that the main factor of low fertility in this country is low incomes. Hence, by increasing household income the government expected to motivate people to have two or more children. Economic theory, developed by Gary Becker [1991], predicts that the effect of birth-related allowances, which increase household income and decrease direct costs of having children, on fertility would be most probably positive. However, the effect can vary depending on the opportunity costs of having children, which relate to mother's education and labor income [Becker, 1991; Cigno, Ermisch, 1989; Ermisch, 1989]. The only possibility why the allowances might not lead to higher fertility is that families decide to use this money to increase quality of children [Gauthier, 2007]. Though, it can hardly be relevant when we talk about benefits closely related to the moment of childbirth.

The limitation of the classical economic theory of fertility is that it focuses mainly on the completed fertility. In an attempt to overcome this limitation, some models were developed to predict the effect of different policy instruments on the timing of the first births [Cigno, Ermisch, 1989; Walker, 1995]. However, theoretical predictions of the effect of the child allowances on the spacing between births and on the probability of second and subsequent births remain unclear.

The debate about the extent to which family and population policies can influence the reproductive behavior and generate the rise in births in countries with low fertility, has no agreement either in Russia or abroad [see McDonald, 2000b; Sleebos, 2003; Gauthier, 2008; Bongaarts, 2008; Langridge et al., 2012; Zakharov, 2013; Slonimczyk, Yurko 2014, and others]. Results of empirical assessments of the impact of family and population policies on fertility, summarized in several reviews [Sleebos, 2003; Gauthier 2007, 2008], are contradictory both in estimating the direction and the magnitude of the effects of different policy instruments, even when the estimations are based on similar or same data of the same countries, usually the OECD members. Joëlle

[4] Source: Estimates based on the System Garant and Rosstat data.

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Sleebos [2003], summarizing the results of previous research, concludes that direct cash child benefits as well as pro-family tax instruments, in general, have a weak but positive effect on both the TFR and the completed fertility. Anne Gauthier [2007, 2008], in her reviews of the relations between family policy and fertility, claims that there is plenty of empirical evidence of the positive, although small or uncertain, effect of the child allowances on the timing and spacing of births rather than on the final number of births. Angela Luci-Greulich and Olivier Thevenon [2013], testing the impact of various family policy measures on the TFR on the basis of eighteen OECD countries data for 1982—2007, conclude that payments during maternity / parental leave and childbirth allowances have smaller effect than formal child care for children under the age of three or cash benefits for families with children older than one year. Several recent studies of the US Earned Income Tax Credit (EITC) program, based on state-level time-series data on fertility rates, found either very small, limited to some groups of women and temporal positive effect of that program on fertility [Baughman, Dickert-Conlin, 2003; Crump, Goda, Mumford, 2011] or even negative effect of its expansion on high-order births among white women [Baughman, Dickert-Conlin, 2009].

Most of the studies focused on the family policy effects on fertility are based on macro-level data or national time-series data. However, Gerda Neyer and Gunnar Andersson [2008] argue that the influence of the policy instruments on fertility should be based on micro-level individual data.

Anne Gauthier [2007] concludes that most of the micro-level studies also confirm positive effect of cash benefits on fertility, yet there is some variation with respect to the parity. From the perspective of our research, the results of the Kevin Milligan's study [2005] of the effect of the Allowance for the Newborn Children, existed in the Quebec province of Canada in 1988—1997, are quite important. He finds that fertility of families whose childbearing decisions were made exactly during the existence of this allowance increased by 25 %. Furthermore, he reveals the higher response to the policy among high income families. Guy Laroque and Bernard Salanié [2008] estimate that adding a child subsidy of 150 euros per month can increase TFR in France by 0.3 percentage point. Alma Cohen and colleagues also observe an increase in fertility in Israel induced by the mean level of governmental child subsidies; they estimate price elasticity of fertility at the level of 0.540 and benefit elasticity equal to 0.192 [Cohen, Dehejia, Romanov, 2013]. Notably, price elasticity is higher for high-income and secular groups, and the positive effect of subsidies on fertility is particularly high for the lowest 50 % of households differentiated by income. There is more country-specific research which provides some positive evidence. For instance, Mike Brewer and coauthors [2012] estimate almost 15-percentage increase in births among low-income low-educated British women in response to the introduction of Working Families' Tax Credit and the increased level of means-tested Income Support for families with children. Giovanna Boccuzzo et al. [2008] test the effect of the bonus at birth introduced in Italy in 2000 and then re-oriented toward families with lower incomes in 2004. They find some significant effects of this bonus on the reproductive decisions of low educated women related to higher-order (second and particularly third) births. Robert Drago et al. [2009] studying the introduction of Baby Bonus in Australia in 2004 observe the modest growth of the birth rate in response to this measure. Nick Parr [2011] also

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concludes that the effect of the Baby Bonus and Child Care Rebate in Australia are positive but small and much less that the effects of socio-demographic and economic characteristics. Regina Riphahn and Frederik Wiynck [2017], investigating the fertility effect of the 1996 reform of the German child benefit program, obtain results somewhat similar to Kevin Milligan [2005], i. e. find no effect of benefits among low income families and small positive effect among high income families.

Research on the relationship between 2007 family policy measures and fertility in Russia is sparse. There are only two published studies exploring this relationship on the basis of individual micro-data. Sergei Zakharov [2013], using three waves of Russian Generations and Gender Survey (GGS) data, finds that intentions to have another child within three years did not increase from 2004 to 2011 and concludes that the fertility growth shown by the dynamics of TFR was temporal and caused mostly by the birth calendar shifts. Fabián Slonimczyk and Anna Yurko [2014] apply the structural dynamic programming model to the Russian Longitudinal Monitoring Survey (RLMS-HSE) data, with a major focus on the effect of maternity capital measure, which they consider as the most substantial and hence influential 2007 family policy innovation. After including it in the model as a direct and unconditional financial support for families, they find a positive long-term effect of the 2007 policy changes on fertility, at the level of 0.15 children per woman. Also, they do not reveal any significant differential effects of policy on fertility of women living in urban or rural area, with different employment status or educational level. Another study based on the RLMS-HSE data — which was presented within the XXI April International Academic Conference on Economic and Social Development at HSE, although not yet published — applies difference-in-difference approach and shows inconsistent evidence of the impact of the MC policy, ranging from no effect to moderate positive effect [McMullen, Becker 2020].

Data and method

To answer the question on the possible relations between the 2007 family policy changes and subsequent fertility dynamics we use the individual panel data of *Parents and children, men and women in a family and society* survey conducted in Russia (also known as Russian Generations and Gender Survey or Russian GGS). Russian GGS is a part of the international program *Generations and Gender* (GGP)[5]. Three waves of the Russian GGS were conducted by the Independent Institute for Social Policy (IISP) with assistance of the *Demoscope* Research Group and the Max Planck Institute for Demographic Research (MPIDR) in 2004, 2007 and 2011[6]. The period of the survey covers time before and after the 2007 pronatalist family policy measures introduction, and therefore suits well for the aim of this study.

Apart from the GGS, there is only one longitudinal panel survey in Russia that contains information on the wide range of socio-demographic parameters of the population, *Russian Longitudinal Monitoring Survey* (RLMS-HSE). This survey has been

[5] See more in [Vikat et al., 2008].

[6] The Survey was held with the financial support of the Russian Pension Fund, the Max Planck Society for the Advancement of Science, Sberbank of Russia, the United Nations Population Fund (UNFPA), the Ford Foundation, and the Victoria Children Foundation. The datasets for the first two waves were harmonized with the international database and might be found at the official GGP website (in English), and all three waves were transferred to the Joint Economic and Social Data Archive (JESDA) of the Higher School of Economics and might be accessed by request (in Russian).

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running yearly since 1992, and over the years it has become one of the main sources of information for academic studies focusing on dynamics of major economic, social and humanitarian changes in the country. For several times, as we noted in the literature review above, RLMS-HSE was used to estimate effects of the 2007 demographic policies [Slonimczyk, Yurko, 2014; McMullen, Becker, 2020]. However, since the RLMS-HSE questionnaire covers a wide range of topics, information on a range of demographic parameters, including the detailed structure of household and the exact dates of significant demographic events, is less accurate compared to that registered in the GGS, or even absent, which might be crucial for the analysis. For this reason, in our study we employ the GGS data.

The regression analysis presented in the paper is based on a binary logistic model estimated with full 2004—2011 panel subsample. To evaluate the impact of the family policy measures introduced in 2007, the time elapsed between the first and the third waves of the Russian GGS is divided into two intervals. The first interval covers the period from the time of 2004 survey (June-August) to August 2007, while the second interval lasts from September 2007 up to the time of the 2011 survey (May-November). Thus, all the births occurred in the second interval are planned after the introduction of the 2007 family policy novelties. In this paper, we estimate two sets of models. Set A bases on intervals specified by the calendar of field work described above. However, in this case we end up with the non-equal exposure to risk intervals, where Interval 1 (before policies) lasts approximately 38 months, while Interval 2 (after policies) covers over 50 months. Knowing this, we also estimate Set B — with equal exposure to risk intervals, where Interval 2 closes in October 2010.

In both cases the subsample used in the analysis is limited to women who already had had at least one child at the start of the observation, i. e. at the date of the 2004 survey in this case, reported the date of his or her birth and at the same time had stayed in the reproductive age until the end of the observation period, i. e. until the date of the 2011 survey. The upper limit of reproductive age is set at 49 years old. These conditions reduced the size of the analytical panel sub-sample to 1,196 observations.

To assess the impact of the new family policy measures we reorder the files in the following way. We duplicate cases keeping all women's characteristics for 2004 in the initial lines and rewriting them with the 2007 characteristics in the new ones. After that, we add a dummy variable, which turns 0 for cases referring to the first interval and turns 1 in other cases. We reckon that inclusion of this variable in the regression model together with all control variables allow us to instrumentalize the new measures of family policy introduced in 2007. While assessing the model, we cluster all observations by women's ID in order to avoid the within-panel autocorrelation, or the influence of unobservable characteristics.

The dependent dummy variable is set to 1 if a woman had a second or subsequent child within the observation period and to 0 if she had not.

The set of control variables included into the model consists of two major groups. First, we control for the basic demographic characteristics of the women, namely, age group, age at the time of the first birth, partner status, number of children born by the beginning of the observation period together with the age of the youngest child

DOI: 10.14515/monitoring.2021.2.1830

at that moment, and area of living (rural or urban). Second, as economic theory of fertility emphasizes the role of socio-economic characteristics of parents in determining family and reproductive behavior [Becker, 1991], we also control for women's educational level, women's employment status and household's income level measured by self-estimation, even though existing research provide contradictory results of the links between these variables and fertility in Russia [see Kohler, Kohler, 2002; Roshchina, Boykov, 2005; Billingsley, 2011; Sinyavskaya, Billingsley, 2015]. To ensure the comparability of results between different groups of women, all characteristics which could have changed over time are measured at the start of each one of the two observation periods. Sample distributions for all control variables is presented in Appendix 1. Now, as we control for all the characteristics mentioned above, the independent testing variable — an *interval* dummy included into the model — should reflect the effects caused by the new 2007 family policy measures.

Dynamics of fertility

Before proceeding to the regression analysis, we follow the dynamics of fertility on macroeconomic level. Generally, according to the official Rosstat data, period indicator of total fertility rate (TFR) in Russia showed negative dynamics in 1990—1999, then it increased slightly in 2000—2004 and went down in 2005—2006. Starting from 2007 and until 2014 period TFR has been growing steadily among both rural and urban women (see fig. 2). The decline observed in the following years occurred on the background of the economic vulnerability, and therefore might not necessarily indicate ineffectiveness of the demographic policies. However, Tomas Frejka and Sergei Zakharov [2014] note that fertility decline in 1990s matches the beginning of the births postponement process in Russia, and hence the subsequent growth the period TFR might be compensatory, and not necessarily be associated with any increase in cohort fertility. At that, the average age of mothers in Russia is still relatively low. According to estimates based on the unpublished Rosstat data, the average age of mothers at the time of the first birth in 2013 reached 25.2 years, and for second and third births it came up, respectively, to 29.5 and 32.2 years[7]. Thus, the current period TFR dynamics might still be linked to the calendar effects leveling.

The same authors point to the high volatility of the period TFR growth in 2007—2014 [Frejka, Zakharov, 2014]. Indeed, in 2006—2007 its increase amounted to 8.5% of the coefficient value in the first of the two years, in 2010—2011 it made only 1%, in 2011—2012 again rose by 6.8%, and in 2013—2014 increased just by 3.3%. Such fluctuations may indicate instability of the observed trend. Still, the official statistics data has not once detected any fertility decline in 2007—2014.

If we consider the frequencies of the second and consequent births in the GGS subsamples constructed for this study, we observe increase in their number within non-equal exposure to risk intervals and decrease — within equal (see table 1). However, in both cases the change in proportion of women who had second or subsequent child within the observation period is statistically insignificant.

[7] The estimates were kindly provided by Alla Makarentseva (Institute for Social Analysis and Prediction at Russian Presidential Academy of National Economy and Public Administration), contact via makarentseva-ao@ranepa.ru.

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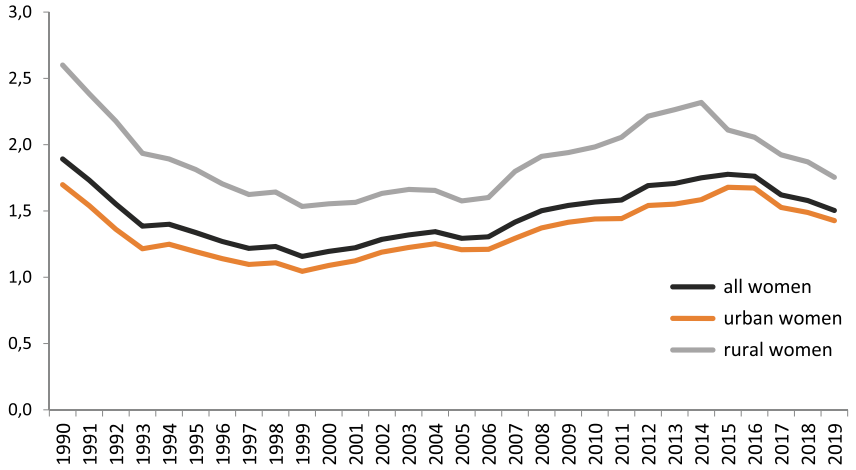

Fig. 2. Period total fertility rate dynamics in Russia, 1990—2019[8]

Table 1. ***Frequencies of second and subsequent births in the panel sample****

	Interval 1		Interval 2a Non-equal exposure to risk		Interval 2b Equal exposure to risk	
	Abs.	**Sample %**	**Abs.**	**Sample %**	**Abs.**	**Sample %**
A woman had not another child born	1115	93.2	1104	92.3	1126	94.2
A woman had another (second or subsequent) child born	81	6.8	92	7.7	70	5.8
Total	*1196*	*100.0*	*1196*	*100.0*	*1196*	*100.0*
Differences in the distributions are not statistically significant						

**Source*: Calculations based on the Russian GGS data.

Descriptive analysis of sample group differences

Before moving on to the modelling effects we study socio-demographic composition of our samples and estimate the differences observed between women who had or had not a second or subsequent child within the observation period.

The principal feature of the panel sample is its aging from the first observation interval to the second one. It shifts upwards women's age structure in the second observation interval, and influences distribution of women by the age of the youngest child at the start of the second observation period and by total number of their children. Hence, women in the second interval have lower chances of a new birth, particularly if they had given a birth in 2004 — September 2007.

Besides, due to sample attrition the proportions of rural population in the samples are significantly higher than the proportion of rural population reported by Rosstat

[8] Source: Rosstat data.

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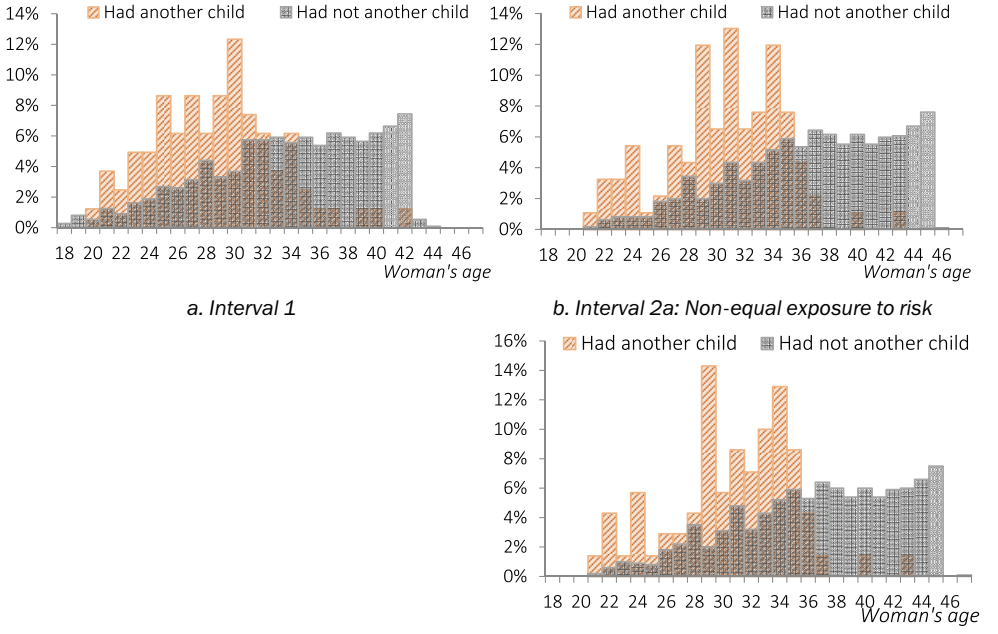
for the country as a whole (see table A1 in Appendix)[9]. We attribute this to the higher mobility of the urban population [Evsyukov, Zhukova, 2012], especially in terms of local (intra-settlement) mobility. Therefore, urban citizens have on average lower chances of staying in the panel sample. This effect in a certain sense counteracts the sample ageing: since fertility in Russia is higher in rural areas, this might lead to overestimation of second and third births' frequencies in the data.

We also observe some differences between the two groups of interest, namely, the women who had a second or subsequent child within the observation period and those who had not. The most obvious difference concerns age composition of these groups (see fig. 3). The distribution of the women who had not a second or consequent child is shifted toward older ages. Those of the women who had a child seems to be symmetric and centered around the age of 28—30 years in the first observation interval, and they become more rambling in the second interval. This could probably indicate some behavioral changes occurring under the influence of the family policy measures.



a. Interval 1

b. Interval 2a: Non-equal exposure to risk

c. Interval 2b: Equal exposure to risk

Fig. 3. Age distribution of women who had and had not another child born at the beginning of the observation period[10]

Another important distinction between women who had and had not a second or consequent child is related to their educational level; we observe significant educational differences both in the first and in the second interval between these groups.

[9] According to the 2010 Census data, proportion of rural population in Russia came down to 26.3%.

[10] Source: Calculations based on the Russian GGS data.

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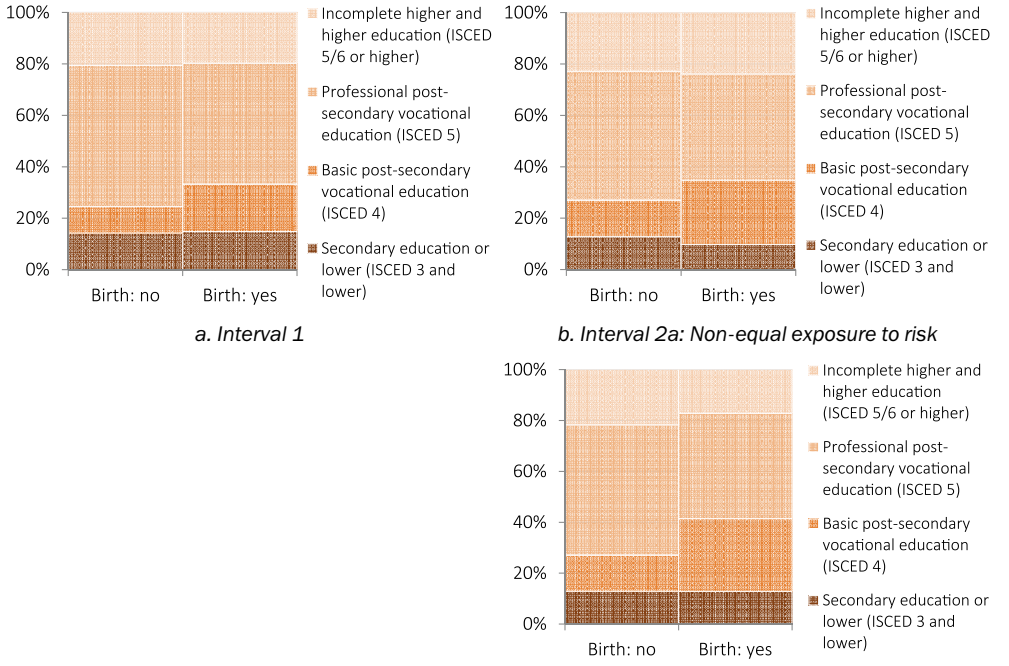
Specifically, in the first interval we discover higher proportion of women with basic post-secondary vocational education (ISCED 4) among those who had another child — 18.5 % against 10.2 % among women who had not a child (see fig. 4). The difference is significant at the 0.05 level. In the second interval this gap between the two groups of women widens, and the difference concerning ISCED 4 education level becomes significant at the 0.01 level both in non-equal and equal exposure to risk intervals, while other differences remain insignificant. Generally, these results may indicate a slight shift towards lowering relative educational level of women having second or subsequent children.



a. Interval 1

b. Interval 2a: Non-equal exposure to risk

c. Interval 2b: Equal exposure to risk

Fig. 4. Composition of women who had and had not another child born by education level at the beginning of the observation period [11]

The results of the descriptive analysis presented above shed light on some possible correlations between important socioeconomic variables and birth occurrence and allow us assuming possible heterogeneity of response to the family policy package among women with different human capital (education level), or selective policy influence. However, we need to control other important characteristics to make any firm conclusion about factors influencing births.

[11] Source: Calculations based on the Russian GGS data.

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Regression analysis results

To find out if the 2007 policy changes had any significant impact on fertility, we estimated a binary logistic regression on the basis of the two panel samples of female respondents (see Section four for details). We estimate models A1 and A2 for non-equal exposure to risk intervals and B 1 and B 2 for equal intervals.

The woman's age expectedly appears to be one of the strongest factors influencing the probability of having a second or subsequent child within the observation period in all models, and the effect remain stable when we shift from one observation interval to another (see table 2). Generally, the higher is the age at the beginning of the observation, the lower are the chances to have another baby, though we observe almost no difference between groups of 25—29 and 30—34-year-olds. The chances for women aged 35—39 are over 7 times lower, and for women over 40 years old — 25 times lower compared to the youngest group.

Table 2. ***Odds ratios for second and subsequent births' occurrence. Estimates from the binary logistic regression models***

		Interval 2a Non-equal exposure to risk		Interval 2b Equal exposure to risk	
		Model A1	**Model A2**	**Model B1**	**Model B2**
Area of living	Urban (REF)	REF	REF	REF	REF
	Rural	1.25 (.22)	1.24 (.22)	1.36* (.25)	1.31 (.24)
Age of a woman at the start of observation	18–24 years old (REF)	REF	REF	REF	REF
	25–29 years old	0.63 (.19)	0.64 (.20)	0.66 (.21)	0.71 (.22)
	30–34 years old	0.63 (.22)	0.63 (.23)	0.58 (.22)	0.63 (.24)
	35–39 years old	0.14*** (06)	0.14*** (06)	0.13*** (06)	0.14*** (06)
	40–47 years old	0.04*** (.03)	0.04*** (.03)	0.04*** (.03)	0.04*** (.03)
Number of children a woman already had at the start of observation	1 (REF)	REF	REF	REF	REF
	2 or more	0.33*** (.07)	0.33*** (.07)	0.35*** (.08)	0.34*** (.08)
Age of the woman's youngest child at the start of observation	0–1 years old (REF)	REF	REF	REF	REF
	2–3 years old	1.49 (.63)	2.06* (.90)	1.23 (.55)	1.75 (.78)
	4–6 years old	2.52** (1.02)	4.13*** (2.00)	2.32** (.97)	3.90*** (1.96)
	7–15 years old	1.73 (.73)	2.89** (1.45)	1.79 (.78)	3.02** (1.59)
	16 years old and older	1.16 (.73)	1.82 (1.28)	1.52 (.99)	2.38 (1.76)
A woman's partner status at the start of observation	Does not have a partner (REF)	REF	REF	REF	REF
	Has a partner	3.77*** (1.01)	3.77*** (1.01)	3.81*** (1.13)	3.80*** (1.13)

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New partner during the observation period	No (REF)	REF	REF	REF	REF
	Yes: found a partner or changed a partner	2.16** (.75)	2.22** (.78)	2.19** (.79)	2.31** (.83)
A woman's highest education level at the start of observation	Secondary education or lower (ISCED 3 and lower, REF)	—	REF	—	REF
	Basic post-secondary vocational education (ISCED 4)	—	2.10** (.68)	—	1.99** (.65)
	Professional post-secondary vocational education (ISCED 5)	—	0.94 (.28)	—	0.81 (.24)
	Incomplete higher and higher education (ISCED 5/6 or higher)	—	1.08 (.37)	—	0.82 (.29)
Household income status (self-estimation) at the start of observation	Hard to make ends meet (REF)	—	REF	—	REF
	Not hard to make ends meet	—	1.10 (.29)	—	1.30 (.35)
A woman's employment status at the start of observation	Working (REF)	—	REF	—	REF
	On a childcare leave	—	2.17** (.82)	—	2.27** (.88)
	Jobless	—	1.45 (.51)	—	1.52 (.55)
	Economically inactive (including studying)	—	0.89 (.24)	—	0.93 (.23)
Interval	Before the introduction of new policy measures (REF)	REF	REF	REF	REF
	After the introduction of new policy measures	1.71*** (.30)	1.70*** (.31)	1.21 (.22)	1.18 (.23)
Pseudo R-squared (McFadden)		*.194*	*.207*	*.179*	*.197*
Significance of the model		***	***	***	***
Number of observations		*2 392 (1 196 clusters)*			

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

Note: Constant was included into the regression but omitted from the table. Source: Calculations based on the Russian GGS data.

Another predictably strong factor of the probability of having a second or subsequent child is woman's partnership status. According to our results, chances of having a second or subsequent child are 3.8 times higher among women who had a partner at the beginning of the observation period. Transition from single status to a relationship or change of a partner over the observation period also has a significant impact on the chances of birth, increasing it by approximately 2.2 times, and the effect remains stable in intervals 1 and 2.

The next factor according to its contribution to fertility is the number of children born by the start of observation and the age of the youngest child. The highest chances to have another child are observed for women with the youngest child approaching the school age, that is, aged 4—6 at the beginning of the observation period. For them

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chances are around four times higher compared to women who had a child less than a year ago. Next are women with children of school age, and chances for them are around three times higher compared to women who had a child less than a year ago. However, the coefficients for this category are statistically significant only in the extended models including socio-economic regressors, which might indicate differences in fertility behavior of women coming from different socio-economic groups. The odds ratios estimations coming with other age groups do not gain their significance at all. Additionally, chances to have a baby are significantly lower for women who already have two or more children.

Socio-economic variables generally have weaker influence on birth probabilities. The educational effects are limited to the approximately two times higher chances of having a second or consequent child observed for a group of women with basic post-secondary vocational education (ISCED 4). Coefficients of the employment status (except for *childcare leave* status), as well as of income level and rural-urban differences, are insignificant.

Finally, estimates concerning the independent interval variable, through which we instrumentalized the 2007 policy effect, in the A set of models show that chances of having a second or subsequent child are 1.7 times higher in the second interval then in the first one. However, this effect vanishes once we shift to the equal exposure to risk intervals, i. e. in the Models B the coefficients coming with the interval variable become statistically insignificant.

To check for possible selectivity of the new family policy measures influence within this study, we additionally estimated A models (showing statistically significant policy effects) with interactions between period and woman's educational level, as well as period and woman's employment status, but did not reveal any statistically significant results. However, the scope of such an analysis is strongly limited by the small sample size, and we believe that the hypothesis of selective influence requires further studies.

Conclusions and discussion

This study assesses how a 'critical juncture' [Neyer, Andersson, 2008], i. e. a package of family policy changes introduced in 2007 was related to the fertility behavior in Russia in recent years. Although the maternity (family) capital program is the most well-known innovation of 2007 family policy reform, we argue that it is a mistake to attribute all observed effects only to this measure. Due to very strict rules of using the maternity (family) capital grant, it has a very limited and delayed effect on the families' well-being. We believe that changes introduced in the same year with regard to the system of child benefits, primarily, to the rules of monthly childcare allowance assignment had a much greater impact on disposable income of families with children and should be considered as a major component of the 2007 family policy reform. Since all measures were introduced simultaneously, the only possibility is to estimate their cumulative effect on subsequent fertility behavior.

Our study reveals that, controlling for all demographic and socioeconomic factors, there is a statistically significant increase in the probability of second and subsequent births in September 2007 to Summer 2011 in comparison with the period of Summer 2004 to September 2007 (models A). However, when we use equal durations of expo-

DOI: 10.14515/monitoring.2021.2.1830

sure to risk before and after 2007, the period effect, although still positive, becomes insignificant (models B). Therefore, based on our data, we can assume that there is no or only weak positive effect of 2007 family policy changes on temporal shifts in fertility. Furthermore, our data do not allow us making any conclusions about completed fertility of the cohorts affected by 2007 family policy reform yet. Therefore, our results are more in line with studies observing only modest financial effects on fertility [Parr, 2011; Riphahn, Wiynck, 2017], or interpreting the existing fertility increase in terms of compensatory growth or fertility model changes [Zakharov, 2013; Frejka, Zakharov, 2014]. In terms of the demographic effect of the pronatalist policy in Russia, we interpret our results as evidence that the introduced programs of financial support, although rather generous, cannot provide the increase in fertility rates inscribed in national programs and plans. However, this does not diminish their importance, since all the introduced measures increase the well-being of families with children and at the same time force the state to gradually recognize their financial and other material needs. They also promote parenting, and help to create a society generally supporting the upbringing of children.

With regard to the effects of other characteristics of women correlated with fertility outcomes, our study confirms evidence from previous research that demographic factors are more strongly correlated with the probability of second and consequent births than socioeconomic characteristics. Partner status and age are still the most powerful factors in explaining fertility outcomes. Controlling for other characteristics, we do not reveal significant differences in probabilities of having second or subsequent births among urban or rural, employed or unemployed women, with low or average and high incomes. The relations between education level and fertility are not linear.

Although looking at the estimates of the changes in payments (see fig. 1) we expected to find higher response to the 2007 family policy measures among low income families, our results do not confirm this hypothesis. Interactions in the Models A appeared to be insignificant, and GGS data do not allow checking this assumption for separate subsamples. The observed lack of heterogeneity of 2007 family policy effects is consistent with the findings of Slonimczyk and Yurko [2014]. These results may indicate a low potential of the monetary pronatalist measures introduced in 2007.

Our study has several limitations. First, within this paper we do not consider the national welfare or family policy on the whole and use a single-policy approach, which can in fact lead to over- or underestimation of the policy effects [Thevenon, 2011; Neyer, 2013]. However, sociological theory stresses that differences among welfare regimes in the level of decommodification and defamilialization as well as in the coverage by social programs can affect the life courses of individuals including their fertility decisions [Mills, Blossfeld, 2005]. Besides, reviewing the welfare state parameters contributes to the results greatly if we can tell to what extent the policy of our interest builds into the national welfare regime. At the same time, there is a lack of the empirical literature on the potential effects of the welfare state regimes on the fertility [Balbo et al., 2013]. Also, to reveal the effects of the different welfare arrangements on fertility we need a cross-country comparative data [Bradshaw, Attar-Schwartz, 2011]. Furthermore, according to Russian experts, the national welfare policy in this country is still very fragmented and does not match any of the common typologies [Sidorina,

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2005]. Finally, we believe that in this study broadening of the policy context would not undermine the conclusions.

Second, we have to admit some methodological shortcomings. We are not able to introduce policy variables in our models directly, which complicates methodology and imposes additional restrictions on the sample under review. Also, the design of this study does not allow us to estimate the final effect of the policy in a change of the parity progression ratios directly, however, since we focus on the second and subsequent births, we do this indirectly. Another important feature is that our analysis covers a relatively short period of four years after the introduction of new family policy measures and does not include years of further fertility growth. In addition, the interval after the policy introduction covers years of economic crisis (2008—2009) which, although was milder in Russia than in the most European countries, could have to some extent affected fertility behavior in the country in short term, and we cannot control for this shock in our study. Finally, limited number of observations and also of events (births) hamper in a more detailed analysis of the factors associated with fertility behavior.

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Appendix

Table A1. ***Sample distributions for full 2004—2011 panel sample***

		Interval 1		Interval 2	
		column%	abs.	column%	abs.
		100.0	*1,196*	*100.0*	*1,196*
Age of a woman at the start of observation	18–24 years old	7.9	*95*	3.3	*39*
	25–29 years old	17.6	*211*	11.2	*134*
	30–34 years old	27.3	*326*	22.0	*263*
	35–39 years old	27.5	*329*	28.2	*337*
	40–47(44) years old	19.7	*235*	35.4	*423*
Area of living	Rural	40.6	*486*	40.6	*486*
	Urban	59.4	*710*	59.4	*710*
Number of children a woman already had at the start of observation	1	50.4	*603*	44.9	*537*
	2	49.6	*593*	53.6	*641*
	3 or more	—	—	1.5	*18*
Age of the woman's youngest child at the start of observation	0–1 years old	11.2	*134*	3.5	*42*
	2–3 years old	12.0	*143*	8.3	*99*
	4–6 years old	16.6	*199*	16.8	*201*
	7–15 years old	46.2	*552*	42.9	*513*
	16 years old and older	14.1	*168*	28.5	*341*
A woman's partner status at the start of observation	Has a partner	75.7	*905*	75.8	*907*
	Does not have a partner	24.3	*291*	24.2	*289*
New partner during the observation period	Yes: found a partner or changed a partner	7.5	*90*	5.2	*62*
	No	92.5	*1,106*	94.8	*1,134*
A woman's highest education level at the start of observation	Secondary education or lower (ISCED 3 and lower)	14.3	*171*	12.9	*154*
	Basic post-secondary vocational education (ISCED 4)	10.8	*129*	15.1	*181*
	Professional post-secondary vocational education (ISCED 5)	54.4	*651*	50.6	*605*
	Incomplete higher and higher education (ISCED 5/6 or higher)	20.5	*245*	21.4	*256*
A woman's employment status at the start of observation	Working	71.0	*849*	79.8	*954*
	On a childcare leave	9.3	*111*	3.4	*41*
	Jobless	6.9	*82*	3.4	*41*
	Economically inactive (including studying)	12.9	*154*	13.4	*160*

DOI: 10.14515/monitoring.2021.2.1830

		Interval 1		Interval 2	
		column%	abs.	column%	abs.
		100.0	*1,196*	*100.0*	*1,196*
Household income status (self-estimation) at the start of observation	Hard to make ends meet	92.1	*1,102*	89.5	*1,070*
	Not hard to make ends meet	7.9	*94*	10.5	*126*

Note: Numbers may not add to 100 due to rounding.

Source: Calculations based on the Russian GGS data.