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A Micro-Data Approach**

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# Determinants of Childbirth in Russia: A Micro-Data Approach<sup>\* \*\*</sup>

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## Abstract

This paper uses the micro-data from the Russia Longitudinal Monitoring Survey (RLMS) to identify factors that explain fertility between 1995 and 2004.

An overview of nationwide birth dynamics in post-Soviet Russia shows that not only do changes in economic conditions move in lockstep with the overall birth rate trend, as has been pointed out by numerous researchers, but so too do proximate determinants of fertility, and suggests that rises and falls in the total fertility rate in Russia are also affected by factors such as demographic timing effects. Although few studies employing micro data have been conducted, it is frequently argued that the shrinking of the economy during the transition to the market economy was the reason for the decline in the birth rate. However, many demographic researchers and sociologists, particularly in Russia itself, attribute the drop in the country's birth rate from the 1990s to the long-term population trend, a view that also has widespread acceptance.

While the previous studies all used fertility data up to 2001, this paper analyses data up to 2004, which is significant as the birth rate has shown a sustained rise since 2001. It was shown that household income levels do not have a significant impact on birth probability, and this may indicate the possibility that economic growth did not lead directly to the recovery in the birth rate. This suggests that social conditions in the broad sense may have caused the birth rate to rise. Finally, the paper examines, from a demographic perspective, the measures to encourage couples to have children that were introduced in the last days of the Putin Administration, which ended in May 2008.

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## 1. Introduction

It is common knowledge that declining birth rates have long been a subject of debate in many countries (Kohler, Billari and Ortega, 2006; Ohbuchi, 1988), and falling birth rates have also been viewed as a serious issue in the former communist countries since the early 1990s, when they began their transition to capitalism, to the 21st century (Philipov and Dorbritz, 2003). In the 1990 the total fertility rates (TFR) in these countries were generally higher than those in Western European countries. From then on, however, they declined rapidly, such that by 2000 the TFR was less than 1.7 in every region except central Asia, the Caucasus countries, Moldova (backward regions that used to be part of the Soviet Union), Albania, and Montenegro. Moreover, most of these countries actually had birth rates of less than 1.5 (Eurostat, 2002; Council of Europe, 2001; Council of Europe, 2005. See Table 1.)

Needless to say, the Russian Federation is one of these countries. In 1989 Russia's TFR was 2.01, but it plummeted following the beginning of the transition to capitalism such that in 1999 and 2000 it had fallen below 1.20. A number of potential reasons for this drop spring to mind. The decline in incomes that accompanied the sharp fall in GDP obviously made it more difficult for families to cover the cost of childrearing. In addition, the former Soviet Union was known for having a high proportion of women in work, and with the employment rate for women remaining high, public facilities for assisting with childrearing such as nurseries and kindergartens, which in the past had been free, started charging for their services. At the same time, company-run kindergartens and other facilities began closing one after another<sup>1</sup>.

Russia's total population began falling in 1992, and the Russian government has implemented various measures to stem this decline. With the TFR dropping below 1.2 in 1999 and 2000, in 2001 the Russian federal government produced a plan for halting the population decline by 2015<sup>2</sup>. This plan offered guidelines for improving the health of citizens and implementing measures to raise the birth rate. However, like so many other "plans" produced by the Russian government<sup>3</sup>, it would be difficult to argue that it had any realistic significance, as no new measures against the declining birth rate and rising death rate were introduced at the time.

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<sup>1</sup> *Vechernaya Moskva*, No. 37, Feb. 3, 2007; *Vechernii Peterburg*, Aug. 25, 2009.

<sup>2</sup> *Rasporyazhenie pravitel'stva RF* ot 24. 09. 2001 No. 1270-r.

<sup>3</sup> An example of such plans is the long-term development program for the Far East and Transbaikalia (Postanovlenie pravitel'stva RF ot 15.04. 1996 No. 480). As for the evaluations on the plan for halting the population decline by 2015, see Mironov (2006), Chairman of the Federation Council of Russia.

The author will not rehash here the overall long-term impact of a declining birth rate, i.e. difficulty in sustaining the pension system, changes in the supply of labour, shrinking markets, and so on (Shirahase, 2006; Takayama and Saito, 2006). With issues such as problems securing labour being frequently taken up in the media<sup>4</sup>, Russia faces the same problems as other countries with low birth rates. Japan and the West are in similar situations, yet when compared with the amount of birth-rate-related research that has been conducted in these countries in recent years, research on the birth rate in Russia remains inadequate. The analysis conducted in Russia and the West has been limited quantitatively.

In Russia there is no equivalent to Japan's National Fertility Survey, which is conducted by the Ministry of Health, Labour and Welfare, and one reason for the paucity of previous research is that the available data is difficult to use. Having said that, micro-level quantitative analysis using the data from the Russia Longitudinal Monitoring Survey (RLMS), which will be discussed later, has already begun, so studying fertility determinants by looking at the characteristics of individuals is by no means impossible.

Russia's TFR actually bottomed out in 1999 and climbed continuously until 2004. It has also risen continually since, save for a temporary dip in 2005 (Rosstat, 2008). Many commentators have pointed to the sustained rise in economic growth since 1999 as a contributory factor (Antonov, 2008; Rosstat, 2009). However, in-depth analysis contending that economic growth did not lead directly to the recovery in the birth rate has also been conducted (Roshina and Boikov, 2005). Finding out whether fertility is determined by economic factors is essential for forecasting the future fertility trend in Russia, which has achieved sustained economic growth by producing ever increasing amounts of raw materials. However, the most recent fertility data employed in previous research involving quantitative analysis was for 2001, making it impossible to grasp the trend for the years that followed. In light of this situation, this paper relies on micro-data from the RLMS, and identifies factors that can explain the fertility trend between 1995 and 2004.

This paper is structured as follows. The next section provides an overview of fertility dynamics in Russia following the collapse of the Soviet Union. It is shown that not only do changes in economic conditions move in lockstep with the overall birth rate

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<sup>4</sup> *Rossiiskaya gazeta-Privolzhje*, Mar. 31, 2007; *Agrmenty i fakty*, Oct. 15, 2008. The decline in Russia's birth rate began at the end of the 1980s (its TFR has been well below 2.0 since 1990), and labour shortages have already emerged as a serious issue. See Figure 2.

trend, as has been pointed out by numerous researchers, but so too do proximate determinants of fertility, and suggests that rises and falls in Russia's TFR are also affected by factors such as demographic timing effects. Section 3 looks at previous research. Although few birth-rate studies employing micro-data have been conducted, it is frequently argued that the shrinking of the economy during the economic transition was the reason for the decline in the birth rate. However, many demographic researchers and sociologists, particularly in Russia itself, hold that the drop in the country's TFR from the 1990s should be attributed to the long-term population trend, a view that has also existed for a long time. Section 4 contains the analysis. While the previous studies all used birth data up to 2001, this paper employs data up to 2004, which is significant as the birth rate showed a sustained rise from 2001 onwards. It was shown that personal incomes did not have a significant impact on fertility-related behaviour at any time during the period subject to the analysis, and this may indicate the possibility that economic growth did not lead directly to the recovery in the birth rate. Finally, the paper examines, from a demographic perspective and taking into account the results of the research in this paper and findings from previous research, the measures to encourage couples to have children that were introduced in the last days of the Putin Administration, which ended in May 2008.

## 2. Fertility Dynamics as Viewed Through Macro Indicators

Russia's population crisis is well known. In 1998, the journal *World Development* carried a feature article on population dynamics in Russia. The article discussed such phenomena as the increase in the death rate among men of working age, the high level of accidents as a cause of death among such men, and the sharp decline in the birth rate.

The falling birth rate and rising death rate saw Russia's population slip into natural decline (see Figure 1) from 1992. Obviously, a low birth rate is a phenomenon seen in many advanced countries, but what has put Russia and other former communist countries in the spotlight is the sheer speed with which the birth rate has dropped, something that was mentioned at the very beginning of this paper.

1989 was the last year in which Russia's TFR exceeded 2.0, yet only four years later (in 1993) it slipped below 1.50 (Rosstat, 2008). The pace of decline in the birth

rate was higher than in any of the European countries in the OECD<sup>5</sup>, and the fact that the birth rate has remained low for over 15 years is a characteristic feature of population dynamics in Russia (see Figure 2).

As Figure 2 shows, however, the TFR bottomed out at 1.16 in 1999, since which it has staged a gradual recovery. So how can the sharp drop in the birth rate at the beginning of the transition to the market economy and the recovery, albeit gentle, from 1999 onwards be explained? Intuitively, one would expect the massive changes in the social system that immediately followed the collapse of the Soviet Union, i.e. the economic crisis and the economic transition, to have had a negative impact on fertility. It is also easy to imagine that the rise in the TFR from 1999 was closely related to the economic recovery. Looking at Figure 3, which illustrates the trends in GDP and the TFR from 1991, one can see that they both followed a similar path<sup>6</sup>. However, it is also worth investigating trends in proximate determinants of fertility, to see whether any complementary factors can be identified.

With regard to marriage dynamics, the marriage rate declined sharply from the early 1990s and remained low until around 2000 (see Figure 4). Even leaving criticism of the correlation with the economic transition aside, it can be seen that the age at which people marry has risen gradually and that the age of women when they have children has also increased (see Figures 5 and 6). This suggests that, as in other countries, the effect of the timing of childbirth may have exacerbated the decline in the TFR during this period.

From 2000, however, the marriage rate exhibited a marked increase. Not only did the marriage rate rise, but as with the period prior to 2000, the mean age at which women married also increased. This suggests that the rise in the TFR since 2000 may have been related to a gradual increase in the age at which women marry and have children, i.e. the timing effects.

Trends in the birth rate for women in different age groups illustrate this even more clearly (see Table 7). Throughout the 1990s the birth rate for women aged 20–24 years, who have the highest birth rate in Russia, exhibited a sharp and fairly sustained decline. This occurred amid a gradual decline in the birth rate among other age groups, which is obviously in accord with the drop in the overall birth rate observed through

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<sup>5</sup> World Bank website, “Key Development Data & Statistics”, <http://web.worldbank.org/WBSITE/EXTERNAL/DATASTATISTICS/0,,contentMDK:20535285~menuPK:1192694~pagePK:64133150~piPK:64133175~theSitePK:239419,00.html>, accessed on September 20, 2009.

<sup>6</sup> However, given that  $R = 0.56$ , it is questionable whether there can be said to be strong correlation.

other data. Although the birth rate for the 20–24 age group showed some fluctuation after the 1990s, it did not register any marked increase. What is worthy of attention, however, is that the birth rate for women in the three five-year age groups from 25–29 to 35–39 years bottomed out in 1999 and began to climb. And indeed, the TFR as seen through macro data has exhibited a steady rise since the major bottom of 1999, with a temporary drop in 2005 as the only blip (see Figure 2). In demographic terms, this can be seen as a result of people temporarily delaying having children during the economic contraction that stemmed from the transition to the market economy. Another possible interpretation is that the general trend in Russia seems to be to have children at older ages.

When examining demographic factors, it goes without saying that attention also needs to be given to parity or birth order (Kaneko, 2004). In 1998, however, ZAGS<sup>7</sup>, an organisation that registers births, deaths, marriages, etc. in Russia, changed the way it registered births. Until then birth records included birth order, but in 1999 the boxes for recording birth order were removed from birth registration forms<sup>8</sup>, making it impossible to gather data on birth order for children born in or after that year<sup>9</sup> (Antonov, 2008, p.59). As a result, Rosstat stopped publishing data on things like the age of women when they had their first child, making it impossible to study this sphere<sup>10</sup>.

### 3. Previous Research

From 1992, Russia's total population began to decline and the death rate rose sharply. The birth rate dropped precipitously following the collapse of the Soviet Union, and this situation soon became an object of inquiry in Russia (Vishnevskii, 1994).

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<sup>7</sup> ZAGS is an organisation that registers births, deaths, marriages, divorces, etc. For more details, see Appendix I of Kumo, Morinaga, and Shida (2007).

<sup>8</sup> Boxes for recording birth order were removed from all birth registration forms (Zapis' akta o rozhdenii, forma No. 1, No. 2, No. 3, No. 4, No. 5).

<sup>9</sup> Obzor Federalnogo zakona No, 143-FZ ot 15. 11. 1997 <Ob aktakh grazhdanskogo sostoyaniya> (v redaktsii Federalnikh zakonov ot 25.10.2001; N138-F3 ot 29.04. 2002 N44-F3 ot 22.04.2003; N46-F3 ot 07.07.2003 N120-F3). Although parity statistics could be obtained using data from the Social Insurance Fund of the Russian Federation, this data probably relates to things like the payment of childrearing allowances, and does not therefore constitute a record of births themselves. In fact, in 2007 there was a discrepancy of almost 150,000 babies between the number of births recorded in the Social Insurance Fund data and the number of births announced by Rosstat based on ZAGS data. See Rosstat, *Sem'ya v Rossii*, 2008, Moskva, p. 77.

<sup>10</sup> In addition, even the survey providing usable micro-data (to be discussed later) only included the question of how many children the woman had had at the time of the survey for a few years after the survey first started to be carried out, making it impossible to perform a comprehensive analysis of parity.

However, it took a fairly long time for work to begin on analyzing the factors behind it, as data obviously needed to be accumulated for a long enough period. Although Vishnevskii (1996) highlighted the coexistence of a decline in the mean age at which women had children and a decline in the birth rate during the early 1990s, a phenomenon that would normally be expected to be self-contradictory, and produced findings emphasising the distinctiveness of Russia in this respect, it should be pointed out that the trend seen since the late 1990s shows that this was ultimately just a short-term phenomenon<sup>11</sup>. In addition, at the beginning of the transition to the market economy, analysis was limited by the fact that it had to rely on macro data. Obviously, though, descriptive research has been conducted continuously not only in Russia itself but also in the West. While many studies have focused on the economic contraction that accompanied the economic transition as a cause (DaVanzo and Grammich, 2001), others have pointed to the timing effect resulting from the fact that policies aimed at encouraging couples to have children, such as increased childrearing allowances, that were introduced at the end of the Soviet era caused the birth rate to rise at the end of the 1980s, which then resulted in it falling back during the early 1990s (Zakharov and Ivanova, 1996). Others, meanwhile, have positioned the decline in the birth rate as being consistent with Russian population dynamics undergoing a long process of modernisation (Vishnevskii, 2006).

Avdeev and Monnier (1995) studied the sharp fall in the birth rate in Russia between the end of the Soviet era and the beginning of the economic transition in the early 1990s by comparing cohort fertility rates over time and among countries. Although their study did not analyze the determinants of birth rates, it provided a fairly straightforward summary of population dynamics in Russia in the second half of the 20th century, a comparatively long period of time. Meanwhile, Kharikova and Andreev (2000), using results from a micro census carried out in Russia in 1994<sup>12</sup>, not only pointed to the economic contraction during the transition to capitalism as a cause of the decline in the birth rate, but also offered an interpretation of it as the continuation of a long-term trend. This interpretation was based on patterns beginning in the Soviet era, trends in the number of births for each cohort, and so on.

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<sup>11</sup> Though why this phenomenon occurred at the beginning of the transition to capitalism may be worthy of further investigation.

<sup>12</sup> This micro census was carried out between February 14 and 23, 1994. Covering 7.3 million people, or 5% of the total population, it gathered data on dwellings, household income and expenditure, birthplace, domicile, educational attainment, marriage, livelihood, occupation, and fertility. See Goskomstat Rossii (1995).



Not many studies have analyzed birth rates using the micro-data from the Russia Longitudinal Survey (RLMS), a survey of Russian households. Kohler and Kohler (2002) studied the effect on birth rates later of job market conditions, an initial desire on the part of the woman to have children, and subjective judgements such as perceptions concerning the economic climate and expectations for the future. However, the scope of the control variables used was limited, while the fact that it covered only a short-period (1995–1997) of the economic contraction makes it difficult to draw clear conclusions from the results.

Grogan (2006), using data from the RLMS between 1994 and 2001, found that high levels of income and education among women boosted the birth rate, while advanced age and a high number of existing children reduced it. She also pointed out that because income has a positive, significant effect on the birth rate, the level of economic growth determines a direction for fertility dynamics. The analysis by Grogan (2006) only covered women who had spouses throughout the entire period studied, and the sample contained only 288 individuals. It must also be pointed out that limiting the sample to women with spouses must have had a big impact on the determinants of fertility identified. It also needs to be borne in mind that, as was the case with the study by Kohler and Kohler (2002), the variables used in the analysis were limited.

Roshina and Boikov (2005) can be said to have conducted the most comprehensive fertility study using RLMS data to date, having employed a broad range of variables and subjected their sample to a wide variety of investigations and analyses. They took into account demographic factors such as age and the number of existing children, economic factors such as income and employment, and various other factors such as health, educational attainment, and ethnicity. The significance of the economic factors was unstable, depending on the model defined. They found that demographic factors, on the other hand, were almost always significant, so argued that explanations should focus on these. In other words, they pointed out that economic conditions and birth rates are not directly connected, which is in line with the view presented in this paper.

Like that used by Grogan (2006), however, the data employed by Roshina and Boikov (2005) stops at 2001, and thus covers only a period of decline in terms of fertility and economic activity. Their study therefore does not capture the period, after 2001, when the birth rate climbed. And given the fact that almost all the former communist countries experienced a decline in the birth rate simultaneously during the early transition period, their conclusion that the birth rate is not influenced by economic

factors is questionable. In light of these weaknesses, this paper will attempt to analyse factors that explain childbirth using data obtained from the RLMS carried out between 1994 and 2004.

## 4. Analysis

### 4.1 Data and Methods

#### 4.1.1 Data

The data employed in this paper comes from forms returned from the RLMS. Although detailed information about the RLMS is available on the survey's website, here is a brief overview<sup>13</sup>.

The RLMS is a micro survey of households and individuals in Russia that has been conducted continuously since 1992. It is organised and coordinated by the Carolina Population Institute of the University of North Carolina in the United States. The survey possesses representativeness of the nation as a whole, and the sample covers at least 3,700 households and 10,000 individuals<sup>14</sup>. Although the aim of the survey is to monitor changes in levels of consumption and health during the economic transition, it also gathers detailed information on the employment situation, incomes, etc. of individuals.

The questions are revised to some degree with each round, and on occasion the questionnaires are altered radically. Basically, however, information on fertility can be obtained at every round from responses to questions concerning women. These include the question, "Have you given birth to a child during the past 12 months?" Responses to this question were used to compile fertility data<sup>15</sup>. However, there were big differences

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<sup>13</sup> The website URL is <http://www.cpc.unc.edu/rlms/>.

<sup>14</sup> Although the sample size changes with each round, Phase I, which was conducted in 1992-1993, targeted approximately 6,000 households, while Phase II, which was conducted from 1994, targeted around 4,000. Because of reasons such as the fact that the sample differed in nature, data from Phase I is not normally used, so only Phase II is referred to here.

<sup>15</sup> For Round IX (2000), however, the question was changed to, "Have you given birth to a child during the past 24 months?" Individuals who answered yes to this question and could be determined as being mothers of a child younger than 12 months using household roster variables were deemed to have given birth to a child during the past year. Round XIII (2004), meanwhile, did not even include a question on whether the subject had given birth, so mothers were identified using roster variables for households with a child under the age of 12 months and deemed to have given birth during the past year. Unfortunately, in both these cases the births of children who had died or been fostered out within 12 months of birth were not included. However, this can be tolerated as a secondary proximity because, for other rounds, even

between rounds in the number and quality of questions concerning women that were asked. For example, questions yielding variables that can be expected to relate closely to the birth rate, such as the number of children the woman has given birth to and whether she has ever had an abortion, were only asked during the first four rounds of Phase II, i.e. Round V to Round VIII. There are therefore limitations in applying to other purposes the results of a survey that was originally intended to yield data on levels of consumption and health situations.

The basic intention was to repeatedly gather cross-sectional data, so the potential for using samples as panel data is limited (Heeringa, S.G., 1997). Grogan (2006), who investigated the attrition of RLMS samples, compared the samples from 1994 and 2001 and showed that the frequency of attrition for individuals with a spouse and households with small children was significantly low. It therefore needs to be borne in mind that these are factors that exert an extremely strong influence on the birth rate.

#### 4.1.2 Methods

Here the author will investigate whether economic conditions, and in particular personal incomes, affect the fertility behaviour of women, or whether other factors have a greater impact. As was seen in section 2, a correlation exists between GDP and the TFR. If this is the result of a direct causal relationship, economic growth in Russia should have contributed to the recovery in the birth rate there. If, on the other hand, researchers like Vishnevskii (2006) and Roshina and Boikov (2005) are right, and Russia's fertility dynamics should be seen as part of a long-term shift in demographic factors, i.e. the modernisation of population dynamics or a second demographic transition, the correlation between GDP and the TFR (see Figure 3) as seen through macro data is coincidental, and it should be assumed that more complex causal relationships exist.

This paper employs micro-data from Round V (1994), the first round of Phase II, to Round XIII (2004), the most recent round for which data was available. It investigates the relationship between individual characteristics of women in Round  $t$  and whether women with these characteristics gave birth to a child in Round  $t+1$ .

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when an analysis was performed with (a) responses by mothers to the question of whether they had given birth and (b) the existence of a child younger than 12 months determined by roster variables both deemed to be explained variables, no marked differences were seen between the results. (Within RLMS samples, there was a 20 per mill difference between the two variables (i.e. whether they answered that they had given birth and whether they had a child younger than 12 months). Incidentally, the infant mortality rate in the whole of Russia between 1994 and 2004 was between 11.6 and 18.6 per mill. See Rosstat, 2008).

The samples of analysis were women between the ages of 15 and 49 years. Whether a woman gave birth to a child in a certain round was the explained variable, while the individual characteristics in the previous round were the explanatory variables<sup>16</sup>. When Roshina and Boikov (2005) performed their analysis and determined their estimation models, there is a possibility that various external shocks and changes in the significance of various different variables were absorbed by the year dummy variables. Attention also needs to be paid to the fact that Russia's birth rate changed course in 1999–2000, so it is necessary to look at whether any changes occurred in the determinants of fertility during the period under analysis. This study therefore begins with a cross-sectional analysis<sup>17</sup>. For this cross-sectional analysis, the problem of a sharp reduction in the size of the sample due to an increase in the number of uncompleted forms, and the resultant failure to obtain significant coefficients, was avoided by limiting the number of variables employed. The following variables are demographic factors: (1) age, (2) whether the woman wants children, (3) the number of children already in the household and its square, and (4) whether the woman has a spouse. (3) is used as a substitute for data on parity, which was not gathered. The following variables are other economic factors: (5) the woman's income, (6) the household's income (real income adjusted using an equivalence scale<sup>18</sup>) and its square, (7) whether the family are owner-occupiers, (8) the woman's subjective judgement on whether she are satisfied with her current life, (9) and whether the woman is in work. The following variables are other explanatory variables: (10) educational attainment (secondary or vocational education, higher education) and (11) whether the woman lives in a rural area. Descriptive statistics for several years are presented in Table 2a. If it can be inferred from this data that women are having children later in life, (1) would be expected to exhibit changes. As is the case when they are used in analyses of the general

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<sup>16</sup> There were two-year gaps between Round VII (survey performed between October and December 1996) and Round VIII (survey performed between October 1998 and January 1999), and between Round VIII and Round IX (survey performed in 2000), whereas the other surveys were conducted at one-year intervals. From Round IX onwards, the surveys were performed between September and December every year. So although the lag was generally one year, for Round VIII and Round IX it was two years (see the variables in the RLMS form data).

<sup>17</sup> However, only panel data is used for the interval between two rounds. This makes it possible to investigate whether individual characteristics at Round  $t$  are determinants of childbirth in Round  $t+1$ .

<sup>18</sup> This equivalence scale is based on OECD standards. Although an attempt was made to use real household incomes, real household expenditures, nominal incomes, etc. that had not been adjusted using an equivalence scale, the cross-sectional analysis produced the same results as those presented in this paper for real household incomes and expenditures. Note that because nominal incomes cannot be normalised, a pooled logit analysis cannot be performed.

level of fertility, a higher value for (3) would be expected to reduce birth probability while an affirmative value for (4) would be expected to increase it. Higher or affirmative values for (5)–(9), on the other hand, which are all economic factors, can, if one adheres to the view that the economic growth from 1999 boosted Russia’s birth rate, be assumed to increase birth probability. If an interpretation in the style of Becker (1960) is adopted, it goes without saying that higher values for (5) raise the opportunity cost of childrearing and can be seen as reducing the likelihood of the woman having children. An affirmative value for (10) will often reduce birth probability, while women answering yes to (11) can be assumed to give birth more frequently than those living in cities.

In addition, to significantly increase the number of explanatory variables that can be compared throughout the entire period and to ensure an adequate sample size, a pooled logit analysis was performed using pooled data for all the rounds. This involved the introduction of some new variables: (A) living with a man of an age eligible to receive pension benefits, (B) living with a woman of an age eligible to receive pension benefits, (C) living area of the dwelling (not including bathrooms etc.), (D) the total floor area of the dwelling (including bathrooms etc.), (E) expectations concerning future standard of living, (F) regional dummies, (G) various indicators of household income, and (H) year dummies. Previous research indicates that higher or affirmative values for (A)–(E) will increase birth probability<sup>19</sup>. (F) enables information on regional characteristics to be gleaned, but the key variables here are (G). To find out whether or not income levels really do affect the birth rate in Russia, the analysis involved the investigation of one income variable after another. The descriptive statistics used in the pooled logit analysis are as shown in Table 2b.

## 4.2 Results

The results of the cross-sectional analysis are presented in Table 3, while those of the pooled logit analysis are shown in Table 4.

It is obvious in Table 3 that age, number of existing children, and presence/absence of a spouse, which are pure demographic variables, had a significant impact on the birth rate in almost every year, and between 1990 and 1999 no other

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<sup>19</sup> None of the variables yielded significant results in the cross-sectional analysis. Given the small sample size for each individual year, they were only used for the pooled logit analysis.

variables exerted any significant influence<sup>20</sup>.

No tendency for birth probability to increase with the age of the mother could be observed<sup>21</sup>. As was predicted, however, the likelihood of a child being born declined as the number of existing children increased, while the presence of a spouse raised birth probability.

On the other hand, it can be said that household income itself did not have any significant effect on the results of the analysis, at least during the 1990s. After 2000, however, higher levels of education and overall satisfaction with life (the latter of which was assessed by the women subjectively) yielded significant results. In addition, being in work sometimes raised birth probability. None of the other variables showed significant results. The wages earned by the woman herself had no impact. The results for educational attainment, meanwhile, revealed that women with relatively high levels of education were more likely to have children than women with very low levels of education, i.e. women who had completed secondary school or had an even lower level of education than that.

So how should these results be interpreted? It would be unnatural to attempt to explain, as Roshina and Boikov (2005) did, the decline in the birth rate that occurred simultaneously in the former communist countries in the early 1990s without any reference to socioeconomic factors.

One possible interpretation is that the economic contraction of the 1990s was so severe, pushing incomes down to a level at which people struggled to survive, that it did not have any significant impact. In other words, the findings may need to be viewed from the perspective that unless incomes are to some degree higher than the above level, any increase in them will not affect people's decisions on whether to have children. After 2000 the economy began to recover, and the results for several years indicate that positive views among individuals about the economic climate raised birth probability. Although it was difficult to see any direct impact from income, there is nothing odd in the notion that a shift in subjective attitudes concerning things like economic growth

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<sup>20</sup> The results for 1995 and 2000 differ in nature from those of the other years. In these years, and these years only, the variables for the number of children in the household and the presence/absence of a spouse were insignificant. This is very different from the findings of previous research. Births in 2000 are assigned a two-year lag stretching back to the Russian financial crisis of 1998. Moreover, 1994–1995 was a period of turmoil in which inflation reached 300% in 1994 and 200% in 1995 (inflation finally fell below 50% in 1996), so perhaps should not be treated in the same way as the other periods.

<sup>21</sup> Even when five-year age groups (15–19 years, 20–24 years, 25–29 years, 30–34 years, etc.) were used, there was no major change in the results.

and adapting to the market economy could have raised the likelihood of women having children.

Now let the author turn his attention to the results of the pooled logit analysis. As expected, factors such as the number of existing children and the age of the woman were significant. In addition, living with people old enough to receive pension benefits, a variable that was not employed in the cross-sectional analysis, raised the likelihood of a woman having children, which is also in line with inferences drawn from previous research. The regional dummies clearly showed that the likelihood of having children was significantly lower in big cities such as Moscow and St. Petersburg than in other regions<sup>22</sup>. Living environments did not have a significant impact. The fact that being an owner-occupier reduces the likelihood of a woman having children may just indicate that a higher percentage of women whose childbearing days are over own their own homes. In addition, 89% of the entire sample, which is a very high figure, were owner-occupiers, and this probably also had an impact (see Table 2b). The reason year dummies did not yield any significant results was probably that the birth rate remained low throughout the period covered<sup>23</sup>.

However, attention should be focused on the following findings from this analysis. The degree of life satisfaction, being in work, and educational attainment consistently showed significant results. Income variables, on the other hand, despite being repeatedly redefined and reemployed, did not yield significant results when using formulas (1) to (4) in Table 2b. These results can be said to more sharply reinforce the findings from the cross-sectional analysis. The focus of this paper has been on whether childbirth can be determined by economic factors, and income levels in particular. As one can see, however, the conclusions that can be drawn are that if the results of the analysis of the impact of household incomes are interpreted literally, they do not have any overall impact, and that childbirth in Russia is determined to a great extent by demographic factors and factors relating to things like social conditions, such as the presence of a stable living environment.

Further conclusions can be drawn from the fact that after 2001 high levels of educational attainment significantly increased childbirth probability and the fact that the results of the pooled logit analysis indicated that high levels of educational attainment

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<sup>22</sup> Although the results are not shown here, it was confirmed that if none of the regional dummies are employed, “living in a rural area” significantly raised birth probability for all specifications.

<sup>23</sup> Unfortunately, the period 1992–1994, when external shocks were probably at their peak, could not be analysed because there was no comparable data.

significantly raised the likelihood of women having children. The phenomenon of education boosting the birth rate is unusual given the experiences of other countries, where the completion of higher education has typically reduced the birth rate by delaying marriage and childbirth, increasing levels of knowledge about health and contraception, and so on (Moriizumi, 2005; Wada, 2004; Eloundous-Enyegue, 1999; Axinn and Barber, 2001). So how can this phenomenon be explained?

One possible explanation is that it may indicate that in Russia, which experienced social turmoil and plunging incomes during the 1990s, educational attainment has become a proxy variable for permanent income. The fact that permanent income cannot be claimed to have been a key determinant of childbirth in the 1990s should be explained in terms of external shocks that occurred at that time, while it may be possible to conclude that from 2000, when the economy began to grow and incomes started to rise, permanent income had a positive effect on fertility. The finding that having a job and being on the whole satisfied with life yielded significant results can probably also be interpreted in the same way.

Changing our perspective once again, while birth rates in the transitional, former communist countries were higher than in some low-birth-rate European countries, they were not at the extremely high levels seen in developing countries. Figure 8 compares the simple means of the TFRs of the former communist countries excluding Central Asia and the Caucasus (both in the former Soviet Union) and Albania, which are shown in Table 1, with those of the European OECD countries<sup>24</sup>. In the 1960s there was hardly any difference between them. From the 1970s, however, the TFRs of the OECD countries gradually declined, and by the early 1980s a gap had opened up. However, it can be seen that from the end of the 1980s the TFRs of the former communist countries plummeted to the levels seen in the OECD countries, and then continued to fall further. If the former communist countries were doing no more than “catching up” in the process of demographic transition, this decline in the birth rate can be seen, as it is by Vishnevskii (2006), as being part of a long-term shift in population dynamics<sup>25</sup>.

Whatever the reason for the plunge, it can be said to be inappropriate to view economic growth and the accompanying rise in incomes as a direct cause of the

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<sup>24</sup> Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and Britain.

<sup>25</sup> However, even if it is seen in this way, an explanation is still needed for why the TFRs of the former communist countries dropped so much faster than those of the OECD countries.



recovery in childbirth in Russia. In this respect, the results of the analysis conducted in this paper yield the same conclusions as those of Roshina and Boikov (2005). Even so, it needs to be borne in mind that the marriage rate and age at marriage, which are proximate determinants of fertility, as well as age at childbirth may also be influenced by income levels and economic conditions. In this sense, the possibility that economic growth may contribute indirectly to boosting the birth rate should not be ignored. This can also be gleaned from the fact that the results of the cross-sectional analysis of the period after 2000 showed that in some years high levels of educational attainment, overall satisfaction with life, and being in work significantly raised birth probability, and from the fact that the pooled logit analysis showed that all these factors significantly raised the likelihood of women having children.

## 5. Conclusions

Previous research on fertility has made it clear, even obvious, that the relationship between women's personal incomes and the likelihood of them having children is not linear. In the case of post-Soviet Russia, however, the macro-level economic recovery and growth and the stabilisation of society coincided with an increase in the birth rate, leading people to assume that there was a correlation between the rise in incomes and the recovery in the birth rate.

However, this paper has shown that high personal incomes do not significantly increase the likelihood of women having children. Having said that, it is certainly possible that the birth rate plunged at around the time the economic transition began because of the sharp drop in incomes and extremely unclear outlook for the future that occurred/existed during the transition. Economic growth or social stability therefore probably contributed, to some extent, to the recovery in the birth rate in Russia. However, the impact of these factors was not direct, making it difficult to judge whether they will continue to produce the same results in the future.

The annual state of the nation addresses given by (former) President Putin in 2005 and 2006 also touched on the problem of the slump in the birth rate, and gave increasing it as a policy goal. This led to childrearing allowances and other benefits being raised in December 2006<sup>26</sup>, and a childrearing support scheme<sup>27</sup> called the

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<sup>26</sup> Federal'nyi zakon ot 5 dekabrya 2006, No.207-FZ o bnesenii izmenenii v otdel'nye akty Rossiiskoi Federatsii v chasti gosudarstvennoi podderzhki grazhdan, imeyushchikh detei. Childrearing allowances and other benefits went from a flat 700 roubles per child to 1,500 roubles for the first child and 3,000

“Mothers’ Fund” being established.

The Mothers’ Fund provides parents of two or more children with a total of 250,000 roubles in subsidies for one of housing, education, or pension contributions, and applies to children born or adopted between January 1, 2007 and December 31, 2016. Given that the mean monthly income in Russia in September 2007 was 12,000 roubles, the value of these subsidies is huge<sup>28</sup>. Under this backdrop, a presidential order to halt the population decline by 2025<sup>29</sup>, which was dated October 9, 2007, was formulated. Unlike the various “plans” produced in the past, this presidential order was accompanied by actual policies. Of course, it is still too early to judge the extent of the impact these measures will have. As this paper has shown, in Russia the impact on fertility behaviour of direct cash payments to families is not easy to predict.

As one can see, the number of births has been rising almost continuously since 1999 (see Figure 1). However, because the number of deaths has also generally remained high, it is difficult to argue that the overall natural decline has been halted. Nevertheless, vital statistics for 2007 and 2008 show that the crude birth rate was at its highest level since the collapse of the Soviet Union in both these years. Meanwhile, the crude death rate has also exhibited a sharp decline in recent years.

In light of these developments, since the second half of 2007, once the number of births had been seen to be in a steady upward trend, (former) President Putin and cabinet ministers have stated on several occasions that their population policies are already having an effect<sup>30</sup>. Although the view that political measures introduced in January 2007 were already influencing fertility behaviour in June of the same year is no more than political spin, quite a few articles in the media have presented it as fact. However, even though they may simply have been overlooked, such arguments fail to take account of demographic factors, and it is therefore difficult to view them as appropriate. The significance of demographic factors can be clearly seen in Figure 9, which shows the population pyramid in 2004, before the series of measures to

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roubles for the second, third, etc. “Federal’nyi zakon ot 1 marta 2008, No.18-FZ o vnesenii izmenenii v otdel’nye zakonodatel’nye akty Rossiiskoi Federatsii v tselyakh povysheniya razmerov otdel’nykh vidov sotsial’nykh vyplat i stoimosti nabora sotsial’nykh uslug” provides for these amounts to be revised in line with the rate of inflation.

<sup>27</sup> Federal’nyi zakon ot 29 dekabrya 2006, No.256-FZ o dopolnitel’nykh merakh gosudarstvennoi podderzhki semei, imeyushchikh detei.

<sup>28</sup> And like childrearing allowances, this amount is revised annually to take account of inflation. *Rossiiskaya gazeta*, Feb. 14, 2008.

<sup>29</sup> Kontsepsiya demograficheskoi politiki RF do 2025 g., 9 oktyabrya 2007 No.1351.

<sup>30</sup> *Izvestiya*, June 1, 2007.; *Rossiiskaya gazeta*, Dec. 25, 2007.

encourage couples to have children had been introduced.

The increase in the number of births following the Second World War can be seen in the swelling in the number of people in their 40s, and the size of the population of their offspring can be seen in the swelling in the number of people in their 20s. Figure 9 is the population pyramid for 2004, and those in their 20s at the beginning of the 20th century have still to reach their peak age for fertility. In short, even in the absence of any measures to boost the birth rate, the first 10–20 years of the 21st century would be expected to see high crude birth rates. In fact, Rosstat, the Russian Federal State Statistics Service, had already predicted, in 2004, that the birth rate would climb continuously until 2016<sup>31</sup>. It goes without saying that the number of births is strongly influenced by the number of people of reproductive age, and it is therefore clearly meaningless to criticise the effect of the measures to encourage couples to have children unless the impact of such factors is eliminated. Even if the policy impact of the aforementioned Mothers' Fund did indeed cause the birth rate to rise since 2007, all it was actually doing was bringing forward the timing of births that could have happened in the future anyway, so there is also a possibility of the birth rate declining again later. In fact, in 2009 Rosstat revised the forecast it made in 2004, and is now predicting that the birth rate will stop rising in 2012 (as opposed to 2016)<sup>32</sup>.

The TFR is also on an upward trend. However, the experiences of other countries make it clear that fertility is not solely determined by short-term factors such as rising incomes or by the economic climate, and the analysis using micro-data performed in this paper can be seen as further evidence for this. Experience also suggests that policy measures to encourage couples to have children may have only a short-term impact. However, the long-term trend will need to be observed to judge whether the fertility trend seen since 2006 will be sustained.

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<sup>31</sup> From internal documents supplied by Rosstat.

<sup>32</sup> Rosstat website, <http://db2.gks.ru/visual2/>. Accessed on September 30, 2009.

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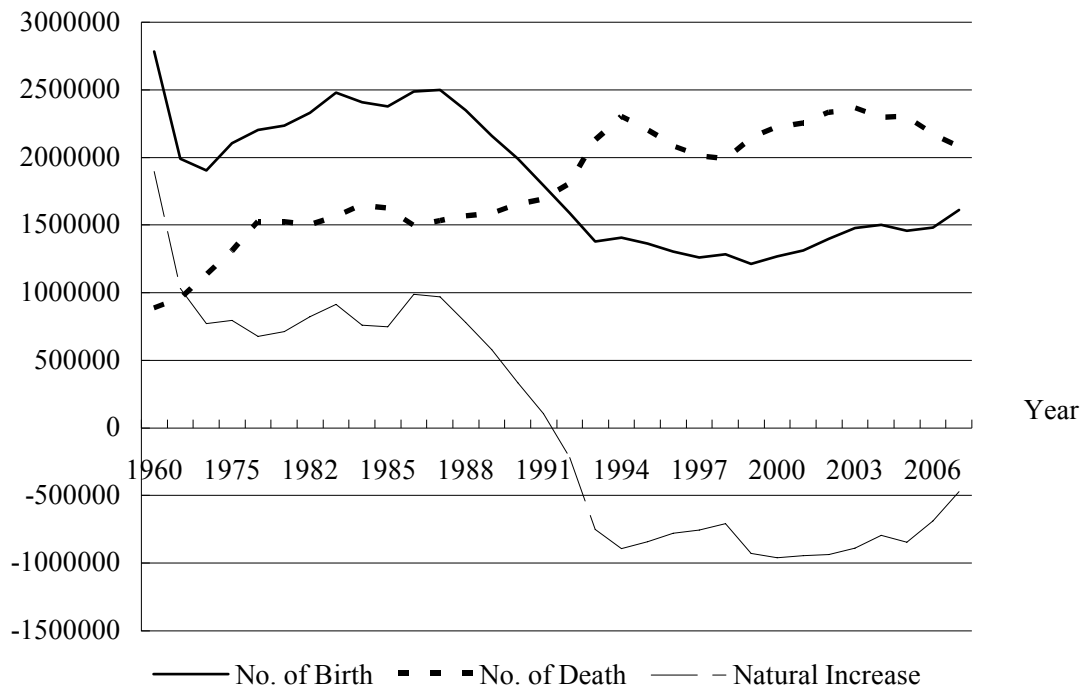
*RSE: Rossiiskii statisticheskii ezhegodnik*, Moscow, Rosstat, various years. (in Russian)

Table 1: Total Fertility Rates in Former Communist Countries

		1965	1970	1975	1980	1985	1990	1992	1995	2000	2005	
Former Yugoslavia	Albania	5.4	4.8	4.4	3.7	3.2	2.9	2.8	2.6	2.3	1.8	
	Bulgaria	2.1	2.2	2.2	2.1	2.0	1.8	1.5	1.2	1.3	1.3	
	Czech Republic	2.2	1.9	2.4	2.1	2.0	1.9	1.7	1.3	1.1	1.3	
	Slovakia	2.8	2.4	2.6	2.3	2.2	2.1	2.0	1.5	1.3	1.3	
	Hungary	1.8	2.0	2.4	1.9	1.8	1.8	1.8	1.6	1.3	1.3	
	Poland	2.5	2.2	2.3	2.3	2.3	2.0	1.9	1.6	1.3	1.2	
	Romania	1.9	2.9	2.6	2.4	2.3	1.8	1.5	1.3	1.3	1.3	
	Montenegro	2.5	2.4	2.4	2.3	2.3	2.0	1.8	1.8	1.8	1.6	
	Croatia	2.2	2.0	2.0	1.9	1.8	1.6	1.5	1.6	1.4	1.4	
	Serbia	2.4	2.3	2.2	2.1	2.0	1.8	1.8	1.7	1.5	1.5	
	Bosnia-Herzegovina	3.4	2.8	2.4	2.1	1.9	1.7	1.5	1.5	1.4	1.2	
	Macedonia	3.6	3.1	2.8	2.5	2.1	2.0	1.9	1.8	1.6	1.5	
	Slovenia	2.3	2.2	2.2	2.1	1.7	1.5	1.3	1.3	1.3	1.3	
	Former Soviet Union	Baltic	Latvia	1.7	2.0	2.0	1.9	2.1	2.0	1.7	1.3	1.2
Lithuania			2.2	2.4	2.2	2.0	2.1	2.0	1.9	1.6	1.4	1.3
Estonia			1.9	2.2	2.1	2.0	2.1	2.0	1.7	1.3	1.3	1.5
East Slavic		Russian Federation	2.1	2.0	2.0	1.9	2.1	1.9	1.6	1.3	1.2	1.3
		Belarus	2.3	2.3	2.2	2.0	2.1	1.9	1.8	1.4	1.3	1.2
		Ukraine	2.0	2.1	2.0	2.0	2.1	1.8	1.7	1.4	1.1	1.2
Moldova		2.9	2.6	2.5	2.5	2.6	2.3	2.1	1.9	1.6	1.7	
Caucasus		Armenia	3.8	3.2	2.7	2.4	2.5	2.5	2.4	2.0	1.7	1.7
		Azerbaijan	5.2	4.7	3.9	3.2	2.9	2.7	2.7	2.3	2.0	2.0
		Georgia	2.8	2.6	2.5	2.3	2.3	2.1	2.0	1.7	1.5	1.4
Central Asia		Tajikistan	6.6	6.8	6.3	5.7	5.5	5.1	4.9	4.5	4.0	3.5
		Kazakhstan	3.5	3.4	3.3	2.9	3.1	2.7	2.5	2.3	1.8	2.2
	Kyrgyz	4.6	4.9	4.9	4.1	4.2	3.7	3.6	3.3	2.4	2.5	
	Turkmenistan	6.5	6.2	5.7	5.0	4.6	4.2	4.0	3.4	2.9	2.6	
Uzbekistan	5.5	5.7	5.7	4.8	4.7	4.1	4.0	3.6	2.6	2.4		

Source: World Bank (2009).

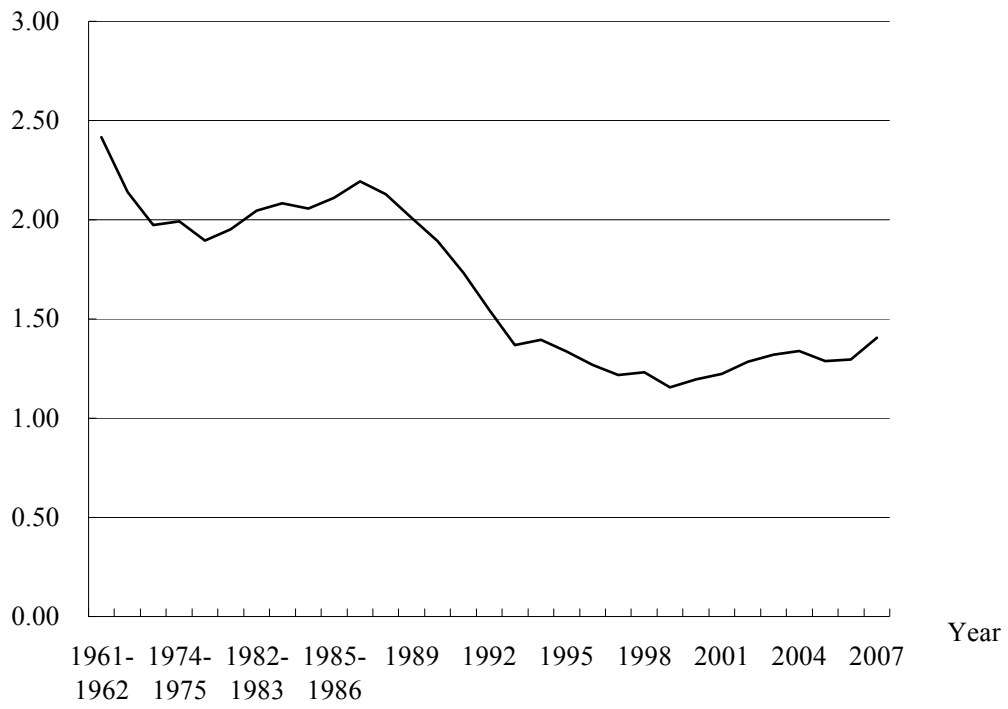
Figure 1: Number of Births and Deaths in Russia



Source: Prepared by the author based on data from Rosstat (2008).

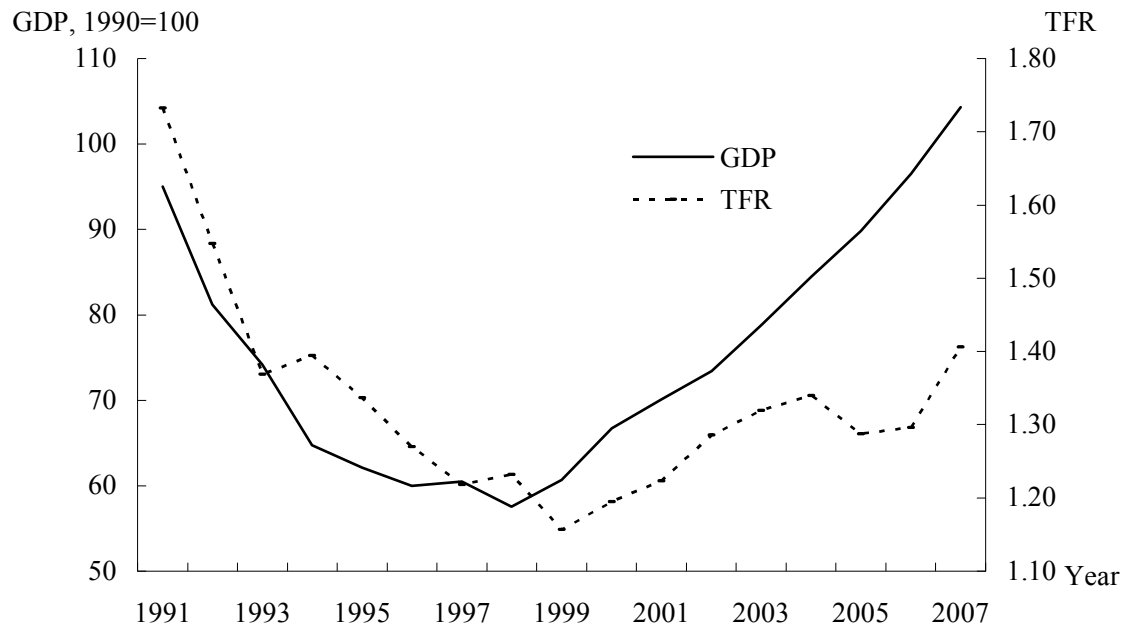


Figure 2: Total Fertility Rate in Russia



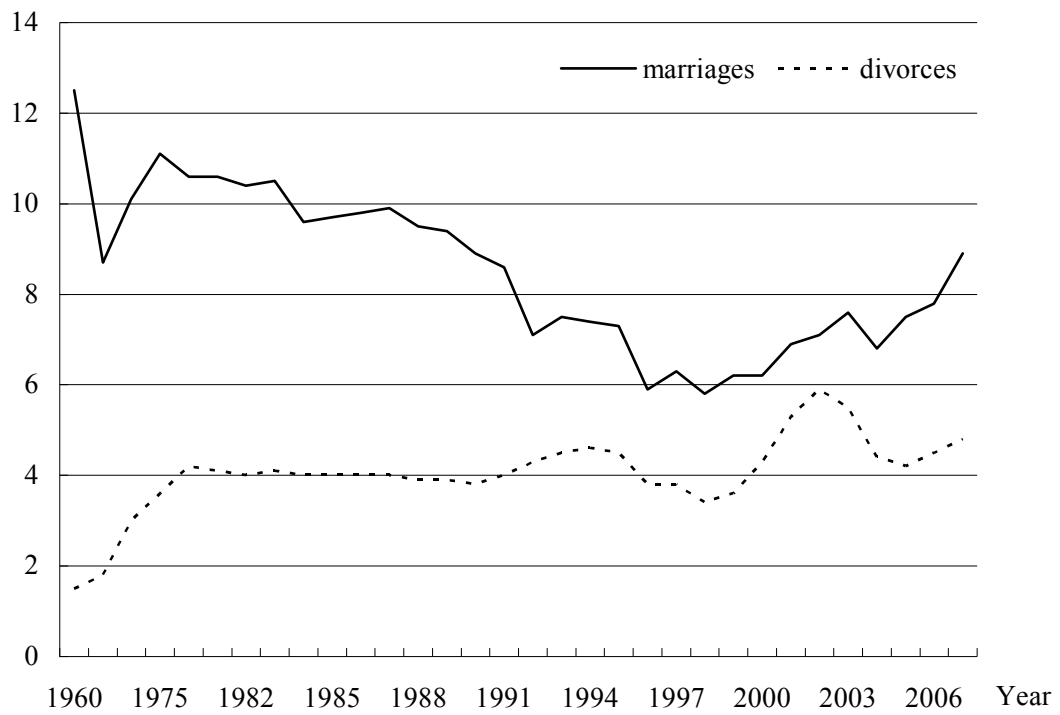
Source: Prepared by the author based on data from Rosstat (2008).

Figure 3: GDP and TFR in Russia (1991-2007)



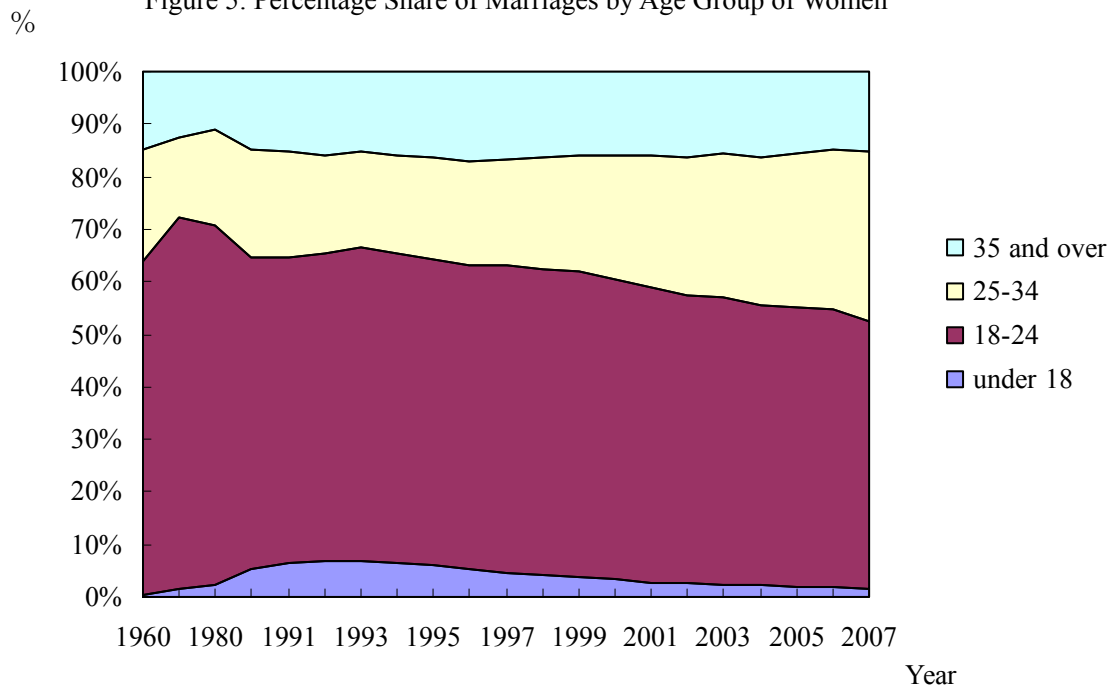
Source: Prepared by the author based on data from Rosstat (2008) and RSE, 2002, 2003, 2009.

Figure 4: Number of Marriages and Divorces per 1,000 People



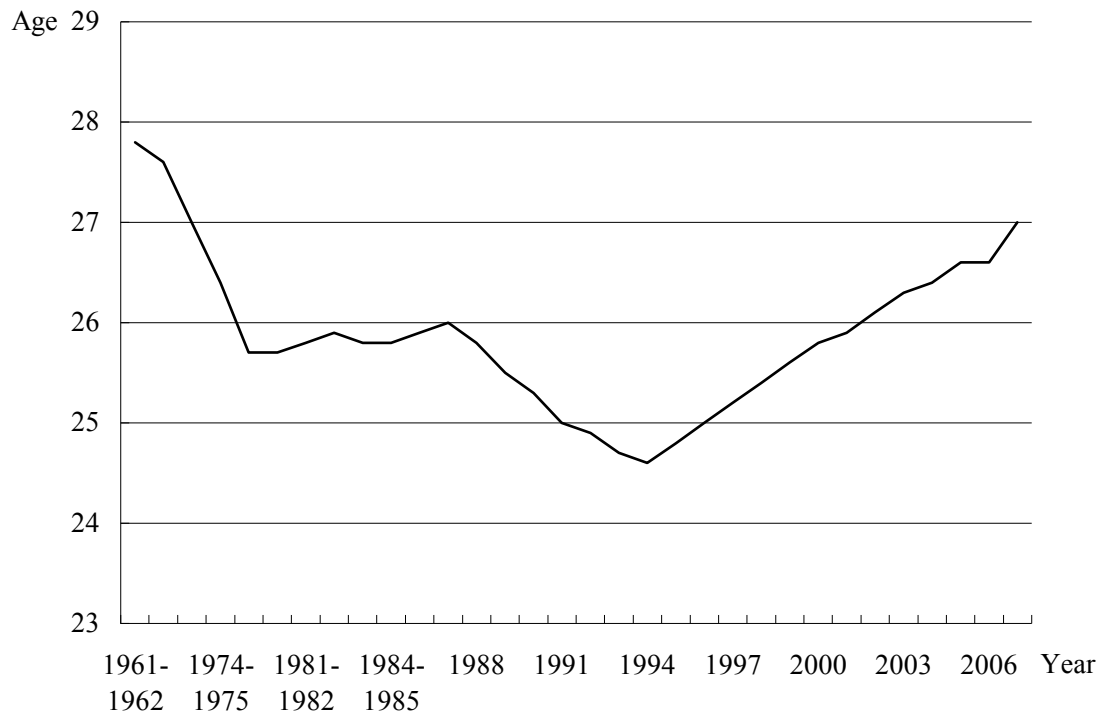
Source: Prepared by the author based on data from Rosstat (2008).

Figure 5: Percentage Share of Marriages by Age Group of Women



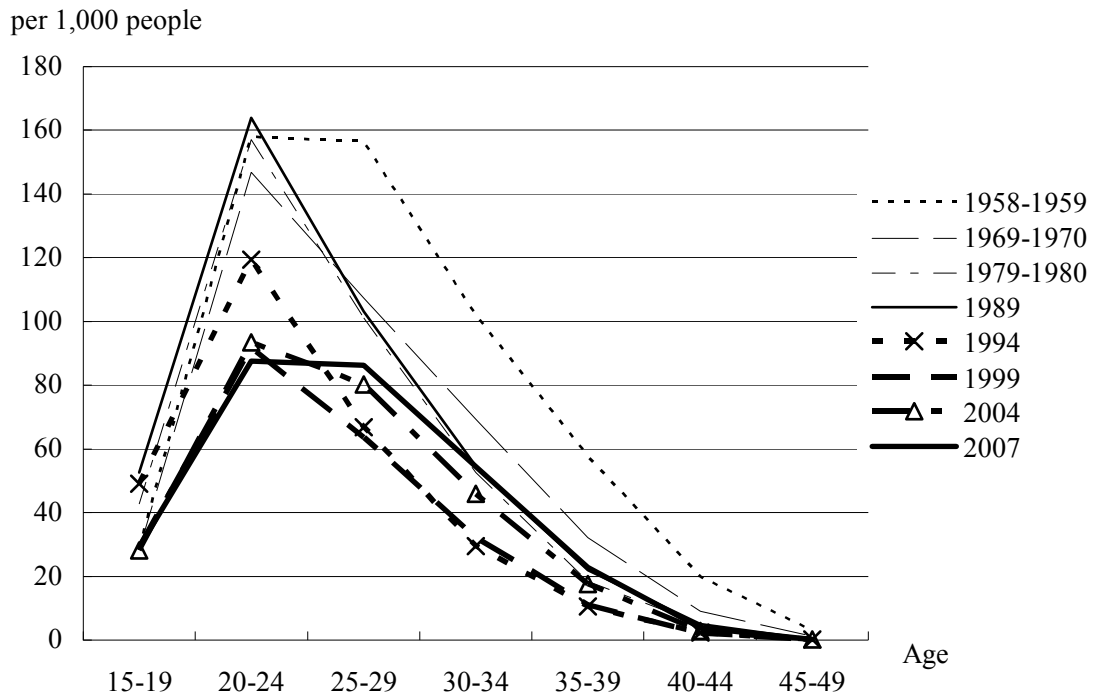
Source: Prepared by the author based on data from Rosstat (2008).

Figure 6: Mean Age of Mother at Childbirth



Source: Prepared by the author based on data from Rosstat (2008).

Figure 7: Birth Rate by Age of Mother



Source: Prepared by the author based on data from Rosstat (2008).

Table 2a: Descriptive Statistics: Cross-Sectional Analysis

	Mean	Standard deviation		Mean	S.D.
Births in 1995	0.027	-	Births in 1998	0.027	-
Individual characteristics in 1994:			Individual characteristics in 1996:		
Age	31.64	10.03	Age	31.74	10.35
Wants children	0.312	-	Wants children	0.218	-
No. of children already in the household	0.839	0.995	No. of children already in the household	1.203	-
Presence of a spouse	0.657	-	Presence of a spouse	0.633	-
Wages of the subject	69276.6	155567.9	Wages of the subject	260399.1	550861.5
Household income (equivalence scale)	3879.3	6689.5	Household income (equivalence scale)	2924.8	3676.5
Owner-occupier	0.902	-	Owner-occupier	0.886	-
Satisfaction with life	0.128	-	Satisfaction with life	0.116	-
In work	0.67	-	In work	0.641	-
Completed secondary or vocational education	0.259	-	Completed secondary or vocational education	0.258	-
Completed higher education	0.451	-	Completed higher education	0.423	-
Living in a rural area	0.243	-	Living in a rural area	0.239	-
Percentage of urban dwellers in sample (nationwide figure: 0.73)	0.76		Percentage of urban dwellers in sample (nationwide figure: 0.74)	0.80	
Age composition (subjects in the age group concerned as a percentage of all subjects between 15 and 34 years)			Age composition (subjects in the age group concerned as a percentage of all subjects between 15 and 34 years)		
15-19 years	23.6		15-19 years	24.3	
20-24 years	25.4		20-24 years	26.8	
25-29 years	24.6		25-29 years	25.9	
30-34 years	26.5		30-34 years	23.0	
Births in 2001	0.028	-	Births in 2004	0.0254	-
Individual characteristics in 2000:			Individual characteristics in 2003:		
Age	31.32	10.55	Age	31.29	10.44
Wants children	0.282	-	Wants children	0.197	-
No. of children already in the household	0.784	0.958	No. of children already in the household	0.707	0.896
Presence of a spouse	0.528	-	Presence of a spouse	0.477	-
Wages of the subject	780.9	2734.9	Wages of the subject	1961.1	3214.2
Household income (equivalence scale)	2559.7	3728.5	Household income (equivalence scale)	3821.9	6275
Owner-occupier	0.903	-	Owner-occupier	0.902	-
Satisfaction with life	0.181	-	Satisfaction with life	0.327	-
In work	0.605	-	In work	0.639	-
Completed secondary or vocational education	0.247	-	Completed secondary or vocational education	0.256	-
Completed higher education	0.431	-	Completed higher education	0.438	-
Living in a rural area	0.282	-	Living in a rural area	0.261	-
Percentage of urban dwellers in sample (nationwide figure: 0.73)	0.72		Percentage of urban dwellers in sample (nationwide figure: 0.73)	0.74	
Age composition (subjects in the age group concerned as a percentage of all subjects between 15 and 34 years)			Age composition (subjects in the age group concerned as a percentage of all subjects between 15 and 34 years)		
15-19 years	26.0		15-19 years	23.0	
20-24 years	27.4		20-24 years	26.4	
25-29 years	25.7		25-29 years	25.9	
30-34 years	20.9		30-34 years	24.8	

Source: Calculated by the author based on forms returned from the RLMS. Percentages of urban dwellers nationwide were calculated by the author based on data from Rosstat (2008).

Table 2b: Descriptive Statistics: Pooled Logit Analysis

	Observations	Min.	Max.	Mean	Standard deviation
Births	20622	0	1	0.03	-
Age	20622	14	48	31.51	10.20
Wants children	20622	0	1	0.25	-
No. of children already in the household	19770	0	8	1.19	0.98
Presence of a spouse	20554	0	1	0.56	-
Living with a man of an age eligible to receive pension benefits	19770	0	1	0.07	-
Living with a woman of an age eligible to receive pension benefits	19770	0	1	0.18	-
Owner-occupier	20531	0	1	0.89	-
Living area of the dwelling	19650	3	230	35.72	16.08
Total floor area of the dwelling	19013	0	310	53.58	21.98
Satisfaction with life	20408	0	1	0.21	-
Expectations concerning future standard of living	17369	0	1	0.28	-
In work	20622	0	1	0.64	-
Completed secondary or vocational education	20622	0	1	0.26	-
Completed higher education	20622	0	1	0.43	-
Living in a rural area	19770	0	1	0.27	-
Northwest region	20622	0	1	0.07	-
Central region	20622	0	1	0.18	-
Volga-Vyatka	20622	0	1	0.18	-
Caucasus	20622	0	1	0.14	-
Urals	20622	0	1	0.16	-
Western Siberia	20622	0	1	0.09	-
Eastern Siberia/Far East	20622	0	1	0.09	-
Household income (equivalence scale)	19718	0	472915	3148.79	5960.26
Household expenditure (equivalence scale)	19770	0	3E+07	5485.05	209860.12
Real household income	19718	0	1040413	8175.47	15282.57
Real household expenditure	19770	0	8E+07	14213.72	566163.92
Number of samples which gave answers to all the questions	15111				

Source: Calculated by the author based on forms returned from the RLMS.



Table 3: Determinants of Childbirth in Russia (Women Between 15 and 49 Years of Age) (1):

Results of Cross-Sectional Logistic Regression

	1995 (Round 6)			1996 (Round 7)			1998 (Round 8)			2000 (Round 9)		
	Odds ratio	Z-value	P> z	Odds ratio	Z-value	P> z	Odds ratio	Z-value	P> z	Odds ratio	Z-value	P> z
Age	0.84 **	-3.95	0.00	0.86 **	-6.71	0.00	0.89 **	-4.27	0.00	0.89 **	-4.21	0.00
Wants children	2.23 +	1.74	0.08	0.77	-0.85	0.40	4.42 **	4.70	0.00	2.45 **	2.88	0.00
No. of children already in the household	0.56	-1.60	0.11	0.32 **	-4.64	0.00	0.52 *	-2.55	0.01	0.90	-0.39	0.70
Square of no. of children already in the household	1.14 *	2.17	0.03	1.22 **	5.09	0.00	1.14 **	3.13	0.00	1.03	0.74	0.46
Presence of a spouse	2.91 *	2.29	0.02	4.15 **	4.32	0.00	3.40 **	3.52	0.00	1.13	0.65	0.52
Wages of the subject	0.99	-0.64	0.52	0.99	-0.69	0.49	0.99 +	-1.82	0.07	1.00	0.13	0.90
Household income (equivalence scale)	0.99	-1.09	0.28	1.00 +	1.67	0.10	1.00	0.26	0.79	0.99	-1.01	0.32
Square of household income (equivalence scale)	1.00	0.42	0.67	1.00	-1.37	0.17	1.00	-0.37	0.71	1.00	0.73	0.47
Owner-occupier	0.45	-1.61	0.11	1.20	0.40	0.69	1.03	0.06	0.95	1.43	0.74	0.46
Satisfaction with life (Reference category: other than the top two levels (“completely satisfied” and “generally satisfied”) in a five-level scheme)	1.01	0.02	0.98	0.98	-0.06	0.95	0.96	-0.09	0.93	1.79 +	1.33	0.09
In work	1.32	0.55	0.58	1.58	1.28	0.20	0.97	-0.09	0.93	2.60 *	2.36	0.02
Completed secondary or vocational education	1.46	0.63	0.53	0.90	-0.26	0.80	0.94	-0.16	0.87	1.02	0.05	0.96
Completed higher education (Reference category for education: Less than completed secondary education)	2.56 +	1.67	0.09	1.10	0.25	0.81	1.09	0.22	0.83	2.11 +	1.65	0.09
Living in a rural area	0.79	-0.44	0.66	1.12	0.35	0.72	0.99	-0.04	0.97	1.34	0.88	0.38
Chi square	54.41 **			96.85 **			107.98 **			65.06 **		
N	1739			2164			2120			2208		
Pseudo R2	0.18			0.17			0.21			0.13		
Log-likelihood	-120.28			-243.44			-208.35			-213.78		
	2001 (Round 10)			2002 (Round 11)			2003 (Round 12)			2004 (Round 13)		
	Odds ratio	Z-value	P> z	Odds ratio	Z-value	P> z	Odds ratio	Z-value	P> z	Odds ratio	Z-value	P> z
Age	0.87 **	-7.31	0.00	0.87 **	-7.36	0.00	0.88 **	-7.31	0.00	0.87 **	-7.21	0.00
Wants children	0.38 **	-3.47	0.00	0.54 **	-2.58	0.01	0.53 **	-2.65	0.01	1.05	0.19	0.85
No. of children already in the household	0.22 **	-6.11	0.00	0.31 **	-5.05	0.00	0.22 **	-6.57	0.00	0.38 **	-3.14	0.00
Square of no. of children already in the household	1.22 **	4.32	0.00	1.22 **	3.66	0.00	1.34 **	6.35	0.00	1.11	0.92	0.36
Presence of a spouse	3.38 **	4.25	0.00	3.06 **	4.25	0.00	1.63 **	3.50	0.00	2.95 **	4.09	0.00
Wages of the subject	0.99	-0.13	0.90	0.99	-1.02	0.31	1.00	0.18	0.86	0.99	-1.58	0.11
Household income (equivalence scale)	0.99	-0.26	0.79	1.00	0.10	0.92	1.00	0.59	0.56	1.00	0.85	0.40
Square of household income (equivalence scale)	1.00	-0.10	0.92	1.00	0.75	0.46	1.00	-0.25	0.80	1.00	-0.59	0.55
Owner-occupier	0.62	-1.53	0.13	0.83	-0.62	0.54	0.64	-1.57	0.12	0.66	-1.50	0.13
Satisfaction with life (Reference category: other than the top two levels (“completely satisfied” and “generally satisfied”) in a five-level scheme)	1.59 +	1.62	0.10	2.67 **	4.30	0.00	1.50 +	1.80	0.07	0.90	-0.43	0.67
In work	1.06	0.20	0.84	2.12 **	2.71	0.01	1.27	0.89	0.37	3.05 **	3.61	0.00
Completed secondary or vocational education	2.53 *	2.56	0.01	2.20 **	2.60	0.01	2.43 **	2.63	0.01	0.95	-0.15	0.88
Completed higher education (Reference category for education: Less than completed secondary education)	2.44 *	2.37	0.02	1.46	1.17	0.24	2.81 **	3.00	0.00	1.33	0.92	0.36
Living in a rural area	2.05 **	2.78	0.01	2.40 **	3.70	0.00	1.16	0.57	0.57	1.25	0.88	0.38
Chi square	136.73 **			157.9 **			133.19 **			123.1 **		
N	2530			2776			2902			2959		
Pseudo R2	0.2			0.18			0.16			0.15		
Log-likelihood	-279.8			-348.3			-348.27			-344.88		

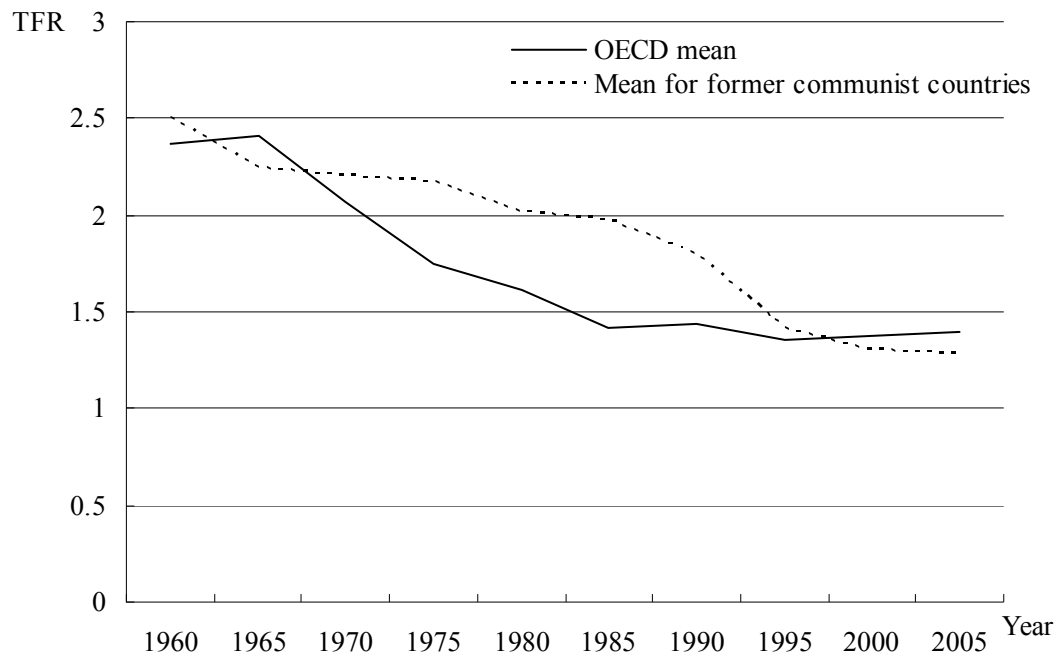
\*\* : significant at 1% level; \* : significant at 5% level; + : significant at 10% level

Table 4: Determinants of Childbirth in Russia (2): Results of Pooled Logit Analysis

	Specification (1)		Specification (2)		Specification (3)		Specification (4)	
	$\beta$	P> Z	$\beta$	P> Z	$\beta$	P> Z	$\beta$	P> Z
Age	-0.13 **	0.00	-0.13 **	0.00	-0.13 **	0.00	-0.13 **	0.00
Wants children	-0.07	0.51	-0.09	0.42	-0.07	0.51	-0.09	0.41
No. of children already in the household	-1.04 **	0.00	-1.04 **	0.00	-1.04 **	0.00	-1.05 **	0.00
Square of no. of children already in the household	0.17 **	0.00	0.17 **	0.00	0.17 **	0.00	0.17 **	0.00
Presence of a spouse	0.92 **	0.00	0.93 **	0.00	0.92 **	0.00	0.93 **	0.00
Living with a man of an age eligible to receive pension benefits	0.43 *	0.02	0.43 *	0.02	0.43 *	0.02	0.41 *	0.03
Living with a woman of an age eligible to receive pension benefits	0.14	0.30	0.16	0.24	0.14	0.29	0.14	0.27
Owner-occupier	-0.46 **	0.00	-0.44 **	0.00	-0.46 **	0.00	-0.45 **	0.00
Living area of the dwelling	-0.01	0.15	-0.01	0.18	-0.01	0.15	-0.01	0.16
Total floor area of the dwelling	0.01	0.13	0.01	0.17	0.01	0.14	0.01	0.17
Satisfaction with life (Reference category: other than the top two levels (“completely satisfied” and “generally satisfied”) in a five-level scheme)	0.37 **	0.00	0.35 **	0.00	0.37 **	0.00	0.36 **	0.00
Expectations concerning future standard of living (Reference category: other than the top two levels (“will improve” and “will probably improve”) in a five-level scheme)	0.17	0.12	0.17	0.13	0.17	0.12	0.16	0.13
In work	0.36 **	0.00	0.33 **	0.01	0.36 **	0.00	0.33 **	0.01
Completed secondary or vocational education	0.52 **	0.00	0.52 **	0.00	0.52 **	0.00	0.52 **	0.00
Completed higher education (Reference category for education: Less than completed secondary education)	0.50 **	0.00	0.48 **	0.00	0.49 **	0.00	0.49 **	0.00
Living in a rural area	0.19	0.12	0.25 +	0.05	0.20	0.12	0.25 +	0.05
Northwest region	0.68 *	0.01	0.66 *	0.02	0.69 *	0.01	0.67 *	0.01
Central region	0.28	0.22	0.31	0.18	0.29	0.21	0.30	0.19
Volga-Vyatka	0.55 *	0.02	0.60 **	0.01	0.56 *	0.02	0.60 *	0.01
Caucasus	0.95 **	0.00	0.97 **	0.00	0.96 **	0.00	0.96 **	0.00
Urals	0.64 **	0.01	0.67 **	0.01	0.64 **	0.01	0.66 **	0.01
Western Siberia	0.59 *	0.02	0.59 *	0.02	0.60 *	0.02	0.59 *	0.02
Eastern Siberia/Far East (Reference category: Moscow and St. Petersburg)	0.69 **	0.01	0.72 **	0.01	0.69 **	0.01	0.72 **	0.01
Household income (equivalence scale)	0.00	0.72	-	-	-	-	-	-
Square of household income (equivalence scale)	0.00	0.48	-	-	-	-	-	-
Household expenditure (equivalence scale)	-	-	0.00	0.15	-	-	-	-
Square of household expenditure (equivalence scale)	-	-	0.00	0.82	-	-	-	-
Real household income	-	-	-	-	0.00	0.92	-	-
Square of real household income	-	-	-	-	0.00	0.52	-	-
Real household expenditure	-	-	-	-	-	-	0.00	0.20
Square of real household expenditure	-	-	-	-	-	-	0.00	0.97
1995 dummy	-0.46 +	0.07	-0.49 +	0.05	-0.46 +	0.07	-0.48 +	0.06
1996 dummy	0.17	0.40	0.17	0.39	0.17	0.40	0.18	0.38
1998 dummy	0.05	0.81	0.08	0.71	0.05	0.80	0.08	0.69
2000 dummy	-0.17	0.46	-0.12	0.59	-0.16	0.47	-0.12	0.59
2001 dummy	0.06	0.76	0.08	0.68	0.06	0.74	0.08	0.67
2002 dummy	0.11	0.56	0.17	0.36	0.11	0.55	0.17	0.35
2003 dummy (Reference category: 2004)	-0.01	0.95	0.00	0.99	-0.01	0.96	0.00	0.99
Constant	-0.85 *	0.01	-0.96 **	0.01	-0.87 *	0.01	-0.93 *	0.01
No. of Observation	15111		15151		15111		15151	
Chi square	563.20 **		568.10 **		563.28 **		567.68 **	
Pseudo R2	0.15		0.15		0.14		0.15	
Log-likelihood	-1655.08		-1667.93		1655.04		-1668.14	

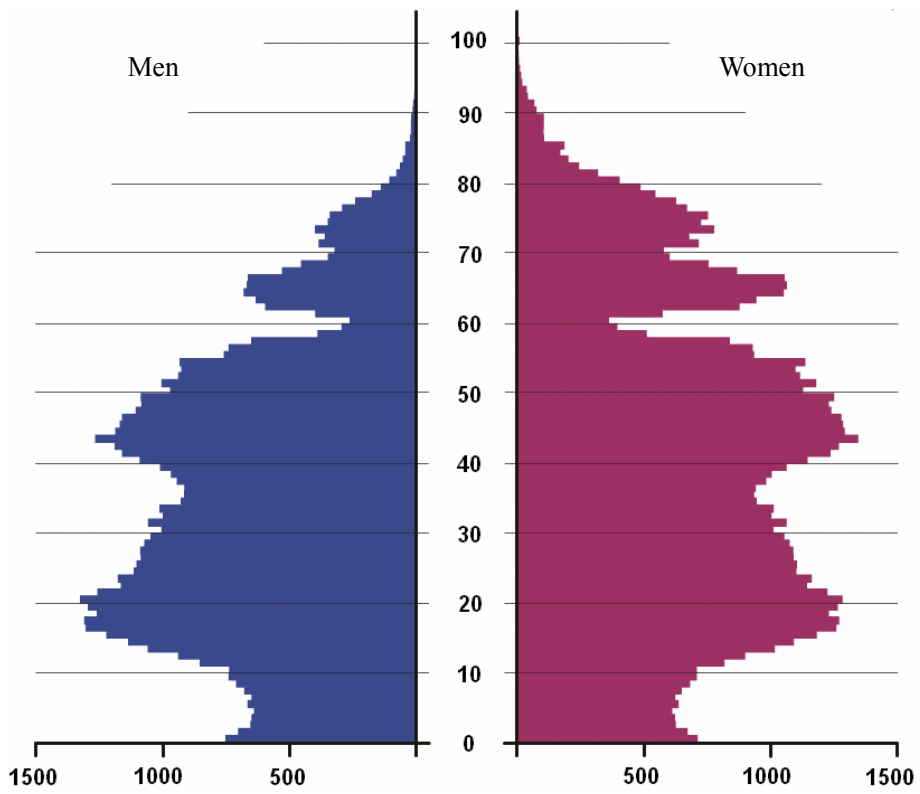
\*\* : significant at 1% level; \* : significant at 5% level; + : significant at 10% level

Figure 8: Mean Birth Rate for the OECD and Former Communist Countries



Source: Same as with Table 1 and Footnote 5.

Figure 9: Population Pyramid for Russia in 2004 (1,000 people)



Source: Internal document supplied by Rosstat

